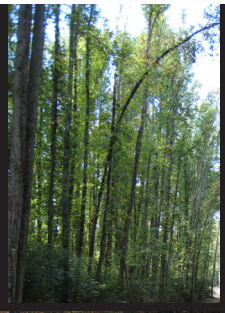
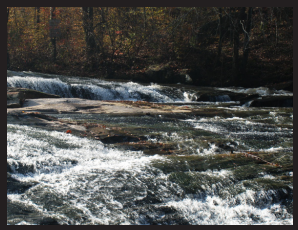
Natural Resources





Introduction

An important aspect of land use planning is the inventory, analysis and preservation of natural resources. Growth patterns are inextricably tied to the limitations of the natural environment. Topography, soils and water availability can be assets or hindrances to various types of development. The understanding of biological patterns and physical processes will allow for the determination of the best manner in which to utilize, manage and conserve these resources. The intention of this element is to inventory the current status of the county's natural resources and analyze this assessment in order to suggest areas best suited for conservation or development.

Forsyth County has already taken extensive steps to protect its environmental resources. Measures include compliance with state mandates such as the Environmental Planning Criteria, Georgia Water Quality Control Act, Georgia Erosion and Sedimentation Act, Georgia Metropolitan River Protection Act as well as federal regulations including the Endangered Species Act, Federal Water Pollution Control Act and identification of flood hazard areas based on federal flood insurance studies.

Protecting the state's vital environmental resources was one of the goals of the Georgia Planning Act of 1989. Included in this Act are minimum standards and procedures known as the Environmental Planning Criteria or Part 5 Criteria, the latter so called because it represented part five of House Bill 215. The Georgia Department of Natural Resources (DNR) and the Georgia Department of Community Affairs (DCA) are responsible for ensuring that local governments comply with the Environmental Planning Criteria. The adoption and enforcement of ordinances applicable to these criteria is required in order for local governments to maintain their eligibility to obtain certain state grants, loans and permits. The rules for the Environmental Planning Criteria establish protection efforts to conserve critical environmental resources. Within Forsyth County, these resources include the Big Creek small water supply watershed, groundwater recharge areas, wetlands and the Etowah River. Although the Chattahoochee River meets the protected river definition, this corridor is further regulated under the Metropolitan River Protection Act. Additional legislative mandates and regulatory agencies related to environmental protection will be reviewed in subsequent sections.

Inventory and Assessment

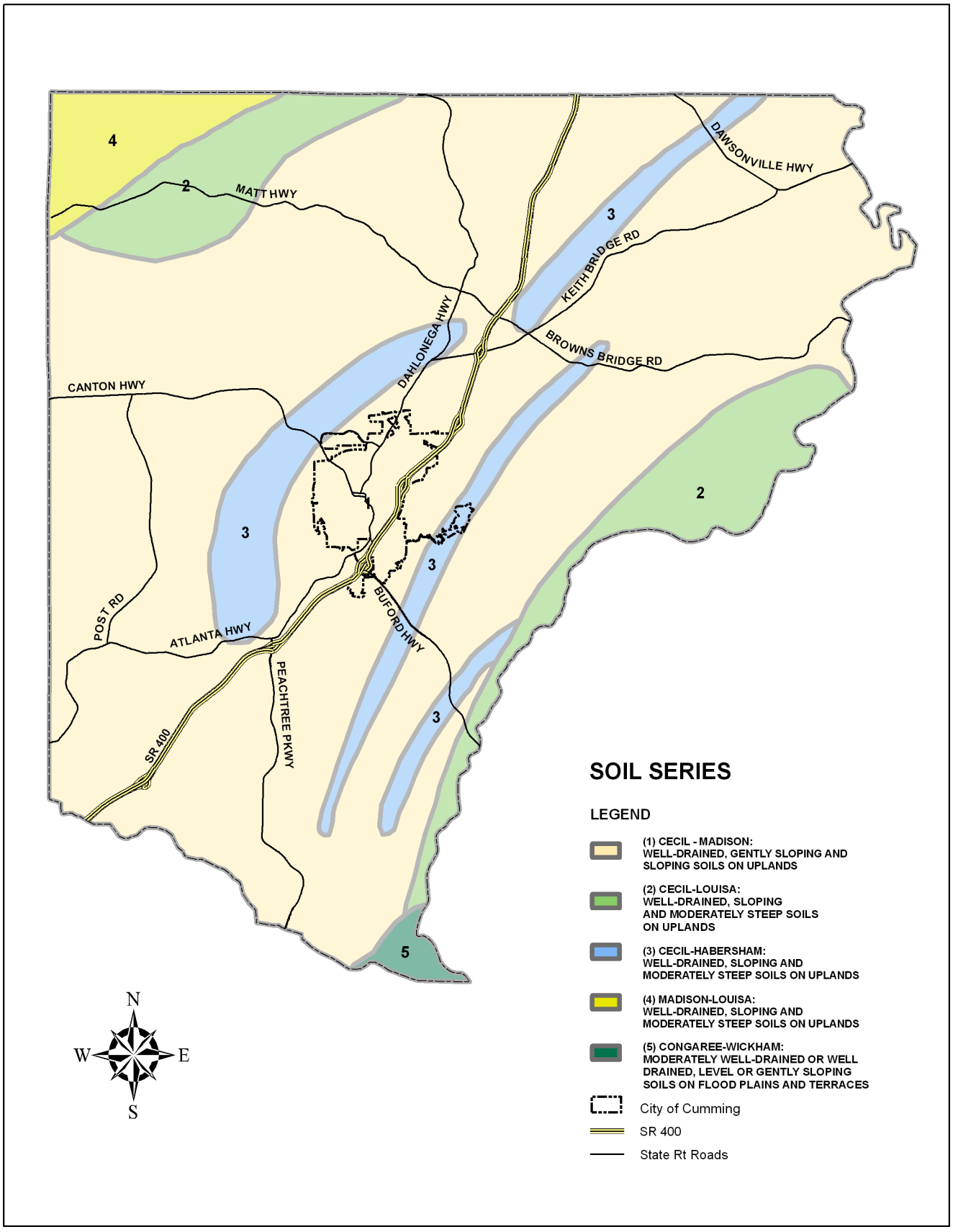
Geology

Soils

An understanding of soil properties and characteristics is essential in determining the suitability of various land uses in a particular area. The U.S. Department of Agriculture (USDA), Soil Conservation Service, provides data on the different soils within the county including their locations and compositions.

The soils in Forsyth County are generally acidic with a few areas having very sandy surface layers. The primary rocks within the county are granite, gneiss, schist, quartzite, hornblende gneiss, mica schist and quartz mica schist. The different soil types within the county are developed from these rocks.

FIGURE 1: SOIL SERIES OF FORSYTH COUNTY



Source: USDA Soil Survey

Forsyth County contains approximately ninety-six different soil types based on the USDA General Soil Survey, but the soils can be grouped under five basic series as shown in Figure 1. A soil series is a group of soils formed from the same or related primary materials under similar conditions of climate, drainage, vegetation and time. The five soil series within Forsyth County are Cecil-Madison, Cecil-Louisa, Cecil-Habersham, Madison-Louisa and Congaree-Wickham as illustrated in Figure 1. Table 1 lists the different soil series along with their percentage of coverage and their agricultural suitability.

TABLE 1: SOIL SERIES OF FORSYTH COUNTY

SOIL SERIES	PERCENTAGE OF THE COUNTY	SUITABILITY
CECIL-MADISON: Well-drained, gently sloping soils on uplands	Covers approx. 74% of the county	Well suited for corn, cotton, small grains, legumes and grass
CECIL-LOUISA: Well-drained, sloping and moderately steep soils on uplands	Covers approx. 9% of the county	Suited for forestry, pulpwood, timber and pines
CECIL-HABERSHAM: Well-drained, sloping and moderately steep soils on uplands	Covers approx. 9% of the county	Suitable for pasture or woodlands
MADISON-LOUISA: Well-drained, sloping and moderately steep soils on uplands	Covers approx. 3% of the county	Slightly suitable for cultivation
CONGAREE-WICKHAM: Moderately well-drained or well-drained, level or gently sloping soils on flood plains and terraces	Covers approx. 5% of the county	Suitable for cultivation

Source: USDA Soil Survey Series

The basic knowledge of both texture and soil materials is very important. In the building of roads in particular, it is essential to know the location of poorly drained soils and whether or not the soil material swells and shrinks.

Table 2 indicates a list of soils in the county that are important for engineering purposes, building construction and agricultural uses. These twenty-two different soils are part of the original ninety-six soil types within the county. The remaining soils not included in this list are not suitable for either engineering or agricultural uses without being significantly modified.

TABLE 2: SUITABILITY OF SOIL ASSOCIATIONS FOR SELECT LAND USES

SOIL TYPE	EARTH WORK DURING EXTENDED WET PERIODS	SEPTIC TANKS AND DRAINAGE FIELDS	BUILDING FOUNDATIONS	AGRICULTURE
Alluvial land – moderately well-drained	Fair	Not Suitable	Not Suitable	Well suited for cultivated crops
Altavista – fine sandy loam, level phase	Fair	Good	Good	Suited for all crops commonly grown in the area
Appling –sandy loam, very gently sloping phase	Fair	Good	Good	Suited for all crops commonly grown in the county

TABLE 2: SUITABILITY OF SOIL ASSOCIATIONS FOR SELECT LAND USES continued

SOIL TYPE	EARTH WORK DURING EXTENDED WET PERIODS	SEPTIC TANKS AND DRAINAGE FIELDS	BUILDING FOUNDATIONS	AGRICULTURE
Buncombe – loamy fine sand	Good	Not Suitable	Not Suitable	Suitable for close-growing crops
Cecil – sandy loam, very gently sloping phase	Good	Good	Good	Suited for all crops commonly grown in the area
Chewacla – silt loam	Poor	Not Suitable	Not Suitable	Excellently suited for all crops grown in the county
Congaree – silt loam	Not Suitable	Not Suitable	Not Suitable	Well suited for cultivated crops
Edgemont –stony sandy loam, moderately steep phase	Good	Good	Good	Best suited for pine trees
Gullied land (all materials)	Good	Good	Good	Best suited for pine trees
Habersham – stony fine sandy loam, moderately steep phase	Very Good	Good	Good	Best suited for pine trees
Hiwassee – fine sandy loam, eroded gently sloping phase	Good	Good	Good	Suited for all crops commonly grown in the county
Lloyd – loam, very gently sloping phase	Fair	Good	Good	Suited for all crops commonly grown in the area
Louisa – fine sandy loam, moderately steep phase	Good	Good	Good	Best suited for pine trees
Louisburg – sandy loam, eroded gently sloping phase	Good	Good	Good	Suited for row crops
Madison – fine sandy loam, eroded gently sloping phase	Good	Good	Good	Well suited for all crops commonly grown in the county
Masada – fine sandy loam, very gently sloping phase	Good	Good	Good	Suited for all crops commonly grown in the county
Seneca – fine sandy loam	Fair	Not Suitable	Not Suitable	Well suited for cultivated crops
Starr – loam	Fair	Not Suitable	Not Suitable	Well suited for cultivated crops

TABLE 2: SUITABILITY OF SOIL ASSOCIATIONS FOR SELECT LAND USES continued

SOIL TYPE	EARTH WORK DURING EXTENDED WET PERIODS	SEPTIC TANKS AND DRAINAGE FIELDS	BUILDING FOUNDATIONS	AGRICULTURE
Thurmont and Braddock – fine sandy loams, very gently sloping phases	Good	Good	Good	Suited for all crops commonly grown in the area
Wehadkee - silt loam	Not Suitable	Not Suitable	Not Suitable	Suitable for hay and pasture
Wicham – fine sandy loam, very gently sloping phase	Good	Good	Good	Suited for all crops commonly grown in the area
Worsham –sandy loam, level phase	Poor	Not Suitable	Not Suitable	Suited for cultivated crops

Source: USDA Soil Survey Series

Minerals

The only minerals now being extracted in Forsyth County are crushed stone and construction sand and gravel. Past mining activity, while including such minerals as talc, marble, mica, manganese and iron, centered for many years on gold. Other minerals either prospected or noted in early reconnaissance reports include silver, copper, lead, platinum, building stones, clay, graphite, kyanite, olivine and semi-precious stones.

Only a few of those known minerals are commercially minable and developable as a resource. DNR's Environmental Protection Division's (EPD) surface mining permitting data, revised in April of 2009, listed six mining operations within the county; two are dredge operations, three are quarries and one is a pit mine. The quarries in the county are all active and range in size from one hundred and fifteen acres to over seven hundred acres.

Due to the nature of the geology in Forsyth County, the likelihood of future large scale mining of base metals and subsurface deposits would be extremely expensive and highly unlikely. The greatest potential for mineral development in the county will continue to be in crushed granite (gravel) and sand.

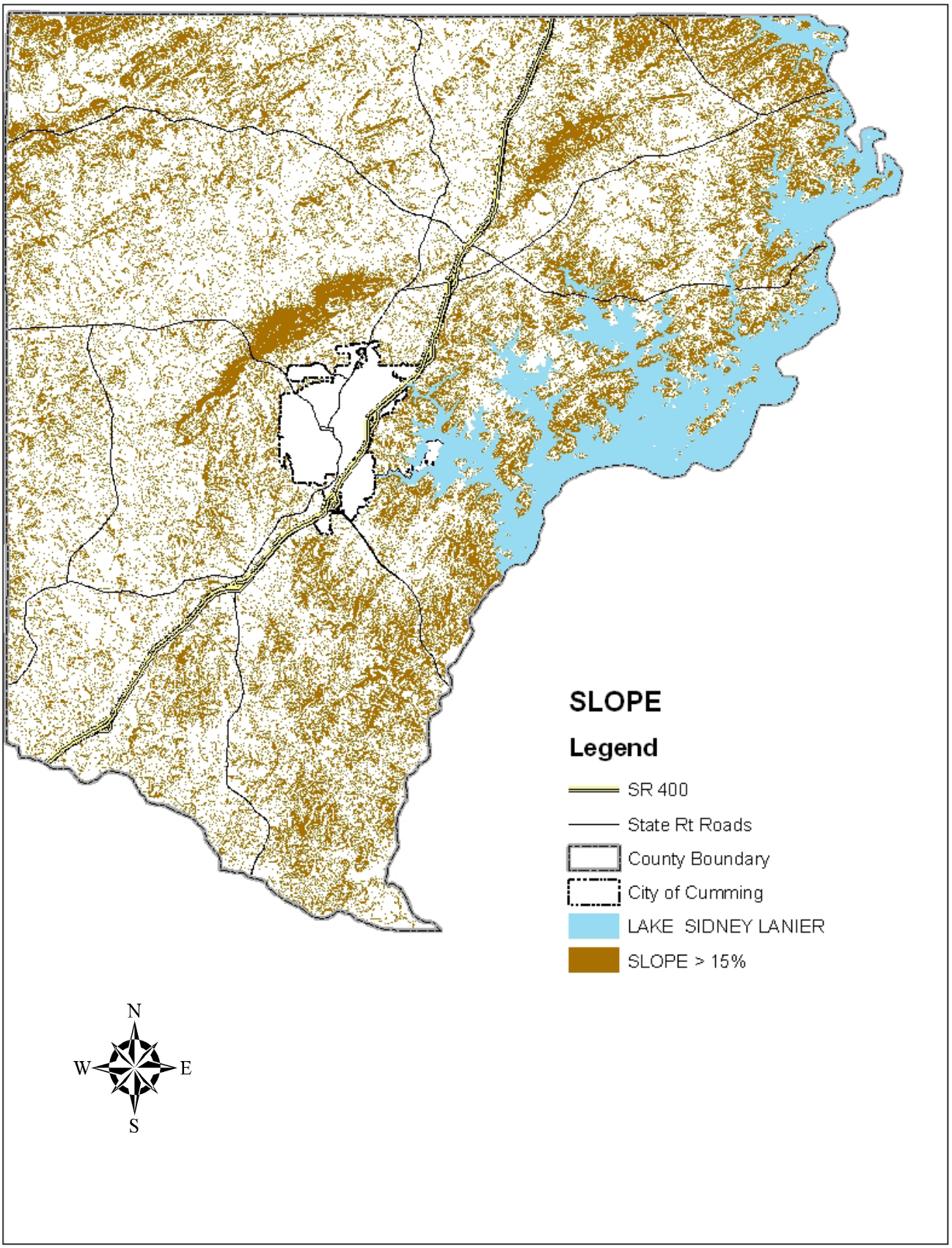
Topography

Steep Slopes

Topographical slopes over fifteen percent are defined as steep by this analysis. Because of susceptibility to erosion problems and lack of stability, steep slopes pose both immediate and future problems for buildings and infrastructure development.

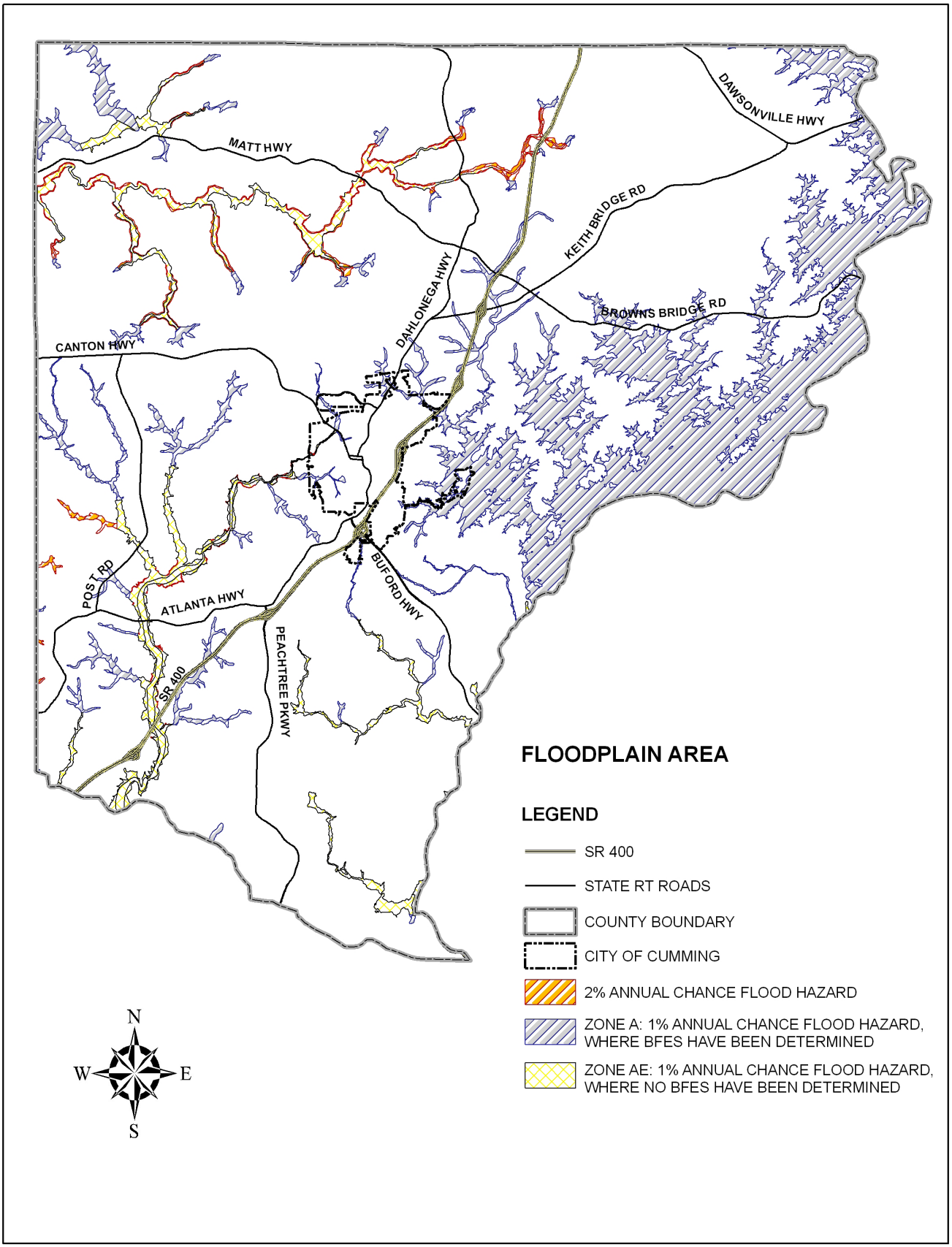
Forsyth County has approximately 44,830 acres of steep slopes, as shown in Figure 2. The county currently does not have any ordinances prohibiting development in these areas. However, due to engineering constraints, it is recommended that development be limited where steep slopes are identified. In locations such as the Sawnee Mountain ridgeline and the steep banks around Lake

FIGURE 2: STEEP SLOPES OF FORSYTH COUNTY



Source: LIDAR Data proivded by Georgia Mountains Regional Commission

FIGURE 3: FLOODPLAIN AREAS OF FORSYTH COUNTY



Source: FEMA 2007 FIRM

Sidney Lanier and the Etowah River, low-density development or parks may be more appropriate.

Protected Mountains
State legislation informally referred to as the Georgia Mountain and River Corridor Protection Act classifies a protected mountain as "all land area over 2,200 feet or more above mean sea level, that has a percentage slope of 25 percent or greater for at least 500 feet horizontally, including crests, summits and ridge tops which lie at elevations higher than any such area." There are no mountains in Forsyth County that meet the DNR protected mountains criteria.

Floodplains
Floodplains are a vital part of any river's ecosystem. These low-lying lands along rivers and streambeds absorb high waters during flooding events and are important for the maintenance of water quality within the surrounding wetlands. Significant flooding within the county primarily occurs along the Big Creek, the Etowah River and the Chattahoochee River. See Figure 3 for floodplain areas within the county.

Special Flood Hazard Area (SFHA) is defined by the county as "the land in the regulated floodplain within a community subject to a one percent or greater chance of flooding in any given year." Floodplain management is required under the National Flood Insurance Act of 1963 and the Flood Disaster Protection Act of 1973. Forsyth County participates in the National Flood Insurance Program (NFIP), which is a federal program that states if a community adopts and enforces a floodplain management ordinance to reduce future flood risks, then the federal government will make flood insurance available within that community as financial protection against flood losses. To meet NFIP requirements, the Federal Emergency Management Agency (FEMA) identifies and maps areas that are prone to flooding throughout the state and provides this information to the communities that participate in the NFIP.

Table 3 names rivers, creeks and branches within the county that have been identified on FEMA rate maps as SFHA. Additional information regarding state waters in the county will be provided in the water resources subsection.

TABLE 3: SPECIAL FLOOD HAZARD AREAS IN FORSYTH COUNTY

Bagley Creek	Haw Creek
Baldridge Creek	Hurricane Creek
Bannister Creek	James Creek
Bentley Creek	John's Creek
Big Creek	Kelly Mill Branch
Black Mill Creek	Little Ridge Creek
Brewton Creek	Orr Creek
Caney Creek	Sawmill Branch
Chattahoochee River	Sawnee Creek
Cheatam Creek	Settingdown Creek
Chicken Creek	Six Mile Creek
Cobb Creek	Squattingdown Creek
Cogburn Creek	Starr Creek

TABLE 3: SPECIAL FLOOD HAZARD AREAS IN FORSYTH COUNTY continued

Dave's Creek	Taylor Creek
Dick Creek	Thalley Creek
Etowah River	Two Mile Creek
Four Mile Creek	Yellow Creek
Harris Creek	Young Deer Creek

Forsyth County is located within the Metropolitan North Georgia Water Planning District (the District), which sets forth strategies and recommendations for effective watershed management and stormwater control. Cities and counties within the District are required to adopt a floodplain management and flood damage prevention ordinance, modeled after a provided example. Forsyth County met the District requirements in 2004 with the adoption of its Floodplain Management and Floodplain Prevention Ordinance. In 2007, the ordinance was revised at the request of FEMA to more fully comply with their regulations. The county's Floodplain Management and Flood Damage Prevention Ordinance, enforced by the county Engineering Department, includes regulations and requirements for future development adjacent to tributaries within flood hazard areas. Minimum undisturbed buffers have been established to control the alteration of stream channels and natural protective barriers.

At a rate of approximately ten percent per year, the county's Engineering Department is currently working on mapping all streams with a drainage area of one hundred acres or greater. This mapping process is in keeping with the District's requirements and, to date, the county has completed approximately thirty percent of the county.

Lands of Conservation Interest

Forest Land

The Stae of Georgia contains the largest area of forest cover in the South with 24.8 million acres. The USDA Forest Service Division defines forest land as "land at least 10 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. The minimum area considered for classification is 1 acre, and the forested strips must be at least 120 feet wide." The Forest Service Division produces an annual forest statistical report for all counties within the state. This report summarizes results of an inventory of the forest resources each year. Based on the survey conducted in 2008, approximately 59,618 acres of the total 144,000 acres of land area within the county, excluding water bodies, were forested.

The three primary forest-type groups within the county are listed in Table 4:

TABLE 4: FOREST TYPE

Forest Type	Thousands of Acres	Percentage
Loblolly-Shortleaf Pine	18.5	27%
Oak-Pine	2.8	4%
Oak-Hickory	46.8	69%

Source: U.S. Forest Service, Forest Statistics for Georgia 1997

Funded in part by the Turner Foundation, the Georgia Land Use Trends (GLUT) Project tracks and examines changes in statewide land use over the last twenty-five years. GIS databases have been created and land cover maps were generated from which forested areas were determined. Table 5 has utilized this data to indicate the amount of forested land within the county.

TABLE 5: TOTAL FORESTED LAND WITHIN FORSYTH COUNTY

Year	1974	1985	1991	1998	2001	2005
Acreage	95,225	86,024	88,732	85,875	78,608	64,628

Source: NARSAL, Athens, GA

In addition to the Forest Statistic Report referenced in Table 4, the Forest Service Division oversees the Forest Inventory and Analysis (FIA) National Program which collects, analyzes and reports information on the status, trends and conditions of America's forests. On an annual basis, the program projects how much forest exists, where it exists, who owns it and how it is changing. Table 6 represents FIA information for forested lands within the county by acres for the years following the NARSAL data.

TABLE 6: ACRES OF FORESTED LAND WITHIN FORSYTH COUNTY

2006	**2007**	**2008**
57,310	60,217	59,618

Source: U.S. Forest Service, Forest Inventory and Analysis Report

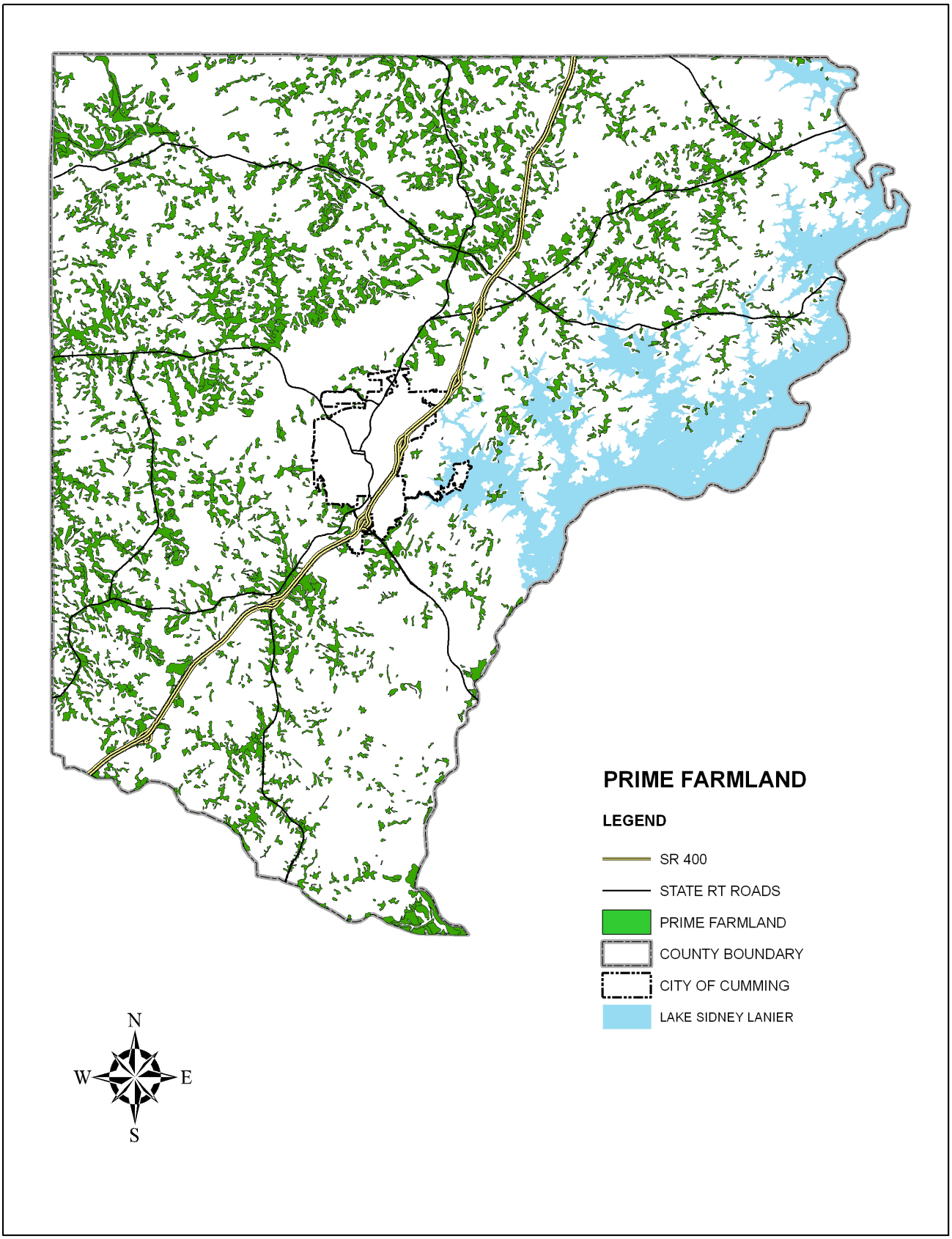
One of the most effective ways to preserve the existing quality of life in Forsyth County is to preserve the existing tree cover and to encourage sustainability of the land in regards to future development. Trees serve many vital functions including the reduction of airborne pollutants, the control of stormwater runoff and erosion control. Forsyth County has adopted a Tree Preservation and Replacement Ordinance, which provides standards for the preservation and replacement of trees during the building construction process for both residential and commercial developments. In the Unified Development Code (UDC), the county has also adopted more extensive regulations for commercial zoning districts as well as areas located within established design overlay districts.

Agricultural Land

Agriculture is a large part of the county's history and has been a way of life for generations. According to the USDA, in 1935, there were approximately 142,759 acres of farmland within the county. By 1950, the number had decreased to 135,169 acres with harvested cropland declining from 46,303 acres in 1934 to 19,981 acres in 1954.

The 2009 Georgia County Guide produced by the Center of Agribusiness and Economic Development at the University of Georgia, reported that there were approximately 33,932 acres of farmland in the county in 2002. Those figures had decreased by 8.7 percent from the previous five years. Figure 4 indicates that 26,437 acres of land within the county are suitable to be classified as prime farmland. Prime farmland was determined by analyzing soil types per USDA data pertaining to soils that consist of fine sandy loam and that are gently sloping, which is considered good for agricultural purposes.

FIGURE 4: PRIME FARMLAND OF FORSYTH COUNTY



Source: USDA Soil Survey

Forsyth County continues to investigate ways to encourage the continuation of viable agricultural businesses. As a way to bridge the gap between the rural-urban interface, the county is participating in a study conducted by Utah State University and Ohio State University titled "Agricultural Adaptation in the Rural-Urban Fringe: Can Communities Make a Difference?" The project is funded by the USDA National Research Initiative Rural Development Program and will summarize the successes and challenges faced by developing agricultural communities. The findings will be made available to assist local and national policy makers in an effort to enhance development efforts targeted at advancing agricultural production and distribution.

The primary agricultural businesses currently in the county are poultry and cattle raising, neither of which are dependant on soil quality. Farming and livestock productions are steadily decreasing as new commercial development and residential growth continues to expand. In addition, the continual diminishment over the past two-and-a-half decades of the county's agricultural economic base has occurred with shifts toward professional and business services as well as manufacturing and construction industries.

The transition away from the historic agricultural community has taken place throughout the region, but Forsyth County has maintained a connection to its agricultural roots through the Cumming-Forsyth County Chamber of Commerce, which highlights both agri-business and tourism. One avenue that the county expresses this heritage is through the Cumming-County Fair and Festival. This annual event emphasizes the agricultural and rural lifestyle once prevalent in the community.

Plant Communities and Animal Habitats

Forsyth County is home to several different species of plants and animals whose primary habitats include streams and riverbeds, bottomland and upland forests and grassy pastures. As development spreads across the county, habitat fragmentation has become an increasing dilemma.

The Wildlife Resources Division (WRD) of DNR maintains a special concerns list which includes federally protected, state protected and other rare or imperiled animals, plants and natural communities. This list is tracked by the Nongame-Endangered Wildlife Program that was created by the General Assembly in 1988 and is supported by the Nongame-Endangered Wildlife Conservation Fund established in 1985. The Nongame-Endangered Wildlife Program is responsible for the management and protection of the state's nongame species.

Tables 7 and 8 list special concern animals and plants within Forsyth County, not including those species found in the Etowah River Basin, which will be discussed in the following section.

TABLE 7: ANIMALS OF SPECIAL CONCERN IN FORSYTH COUNTY

	SPECIES	HABITAT IN GEORGIA
T	Cambarus howardi – Chattahoochee Crayfish	Moderate to swiftly flowing streams with rocky or rubble substrate

"T" indicates species listed as threatened under state status
Source: GA Department of Natural Resources

TABLE 8: PLANTS OF SPECIAL CONCERN IN FORSYTH COUNTY

	SPECIES	HABITAT IN GEORGIA
	Amorpha nitens – Shining Indigo-bush	Rocky, wooded slopes; alluvial woods
	Amorpha schwerinii – Schwerin Indigo-bush	Rocky upland woods
US/T	Platanthera integrilbia – Monkeyface Orchid	Red maple-gum swamps; peaty seeps and streambanks with Parnassia asarifolia and Oxypolis rigidior
US/T	Symphyotrichum georgianum – Georgia Aster	Upland oak-hickory pine forests and openings; sometimes with Echinacea laevigata or over amphiboite

"US" indicates species with federal candidate or with partial federal status
"T" indicates species listed as threatened under state status
Source: GA Department of Natural Resources

Through federal action and by encouraging the establishment of state programs, the 1973 Endangered Species Act (ESA) provides for the conservation of ecosystems upon which threatened and endangered species of fish, wildlife and plants depend. The purpose of the ESA, which is implemented by the U.S. Fish and Wildlife Service (FWS) and the National Marine Fisheries Service (NMFS), is to conserve threatened and endangered species and their ecosystems. There are more than 1,900 species on the endangered species list. The listing of species as endangered makes it illegal to "take" a species, which is defined as a prohibition against harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, collecting or attempting to carry out these actions.

Etowah Habitat Conservation Boundary

The state protected Etowah River and its tributaries, drain portions of eleven counties in north Georgia. It also houses over seventy-five fish species, making it one of the most biologically diverse rivers in the United States. In addition, the Etowah River supplies drinking water, electricity and recreation opportunities to several counties along its corridor. Rapid growth and development along the Etowah River has contributed to the placement of four of its native fish species on the federal endangered species list. A Habitat Conservation Plan (HCP) may be required for certain development projects to save these imperiled species within the identified conservation boundary, illustrated in Figure 5, through regulations for stormwater control and water supply planning that will ultimately contribute to the permanent protection of this high priority watershed. HCPs are reviewed by the FWS and, if approved, this agency grants the applicant an incidental take permit, which safeguards the applicant from penalties for incidental loss of species as long as the plan is followed. Several jurisdictions within the conservation boundary have submitted a joint HCP for FWS consideration that will relieve development applicants from submitting individual plans within a participating jurisdiction. At the current time, Forsyth County upholds regulations to protect the Etowah River corridor through the county's overlay protection district, which satisfies the state's Part V Criteria for this river corridor.

Tables 9 and 10 list federal or state rare, endangered and threatened species located within the Etowah River Basin.

FIGURE 5: ETOWAH HABITAT CONSERVATION BOUNDARY

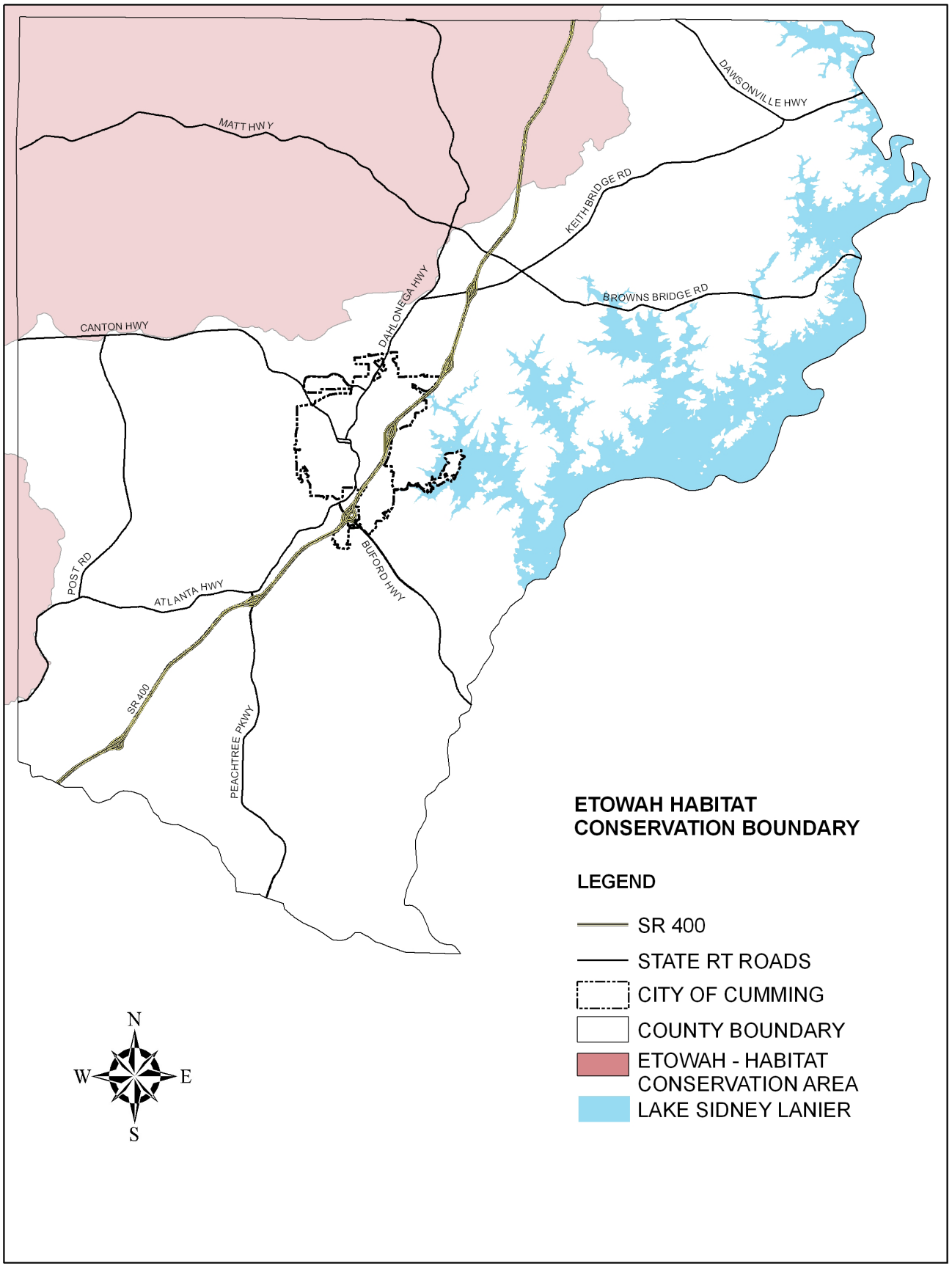


TABLE 9: IMPERILED FISH SPECIES OF THE ETOWAH RIVER BASIN
Listing of Endangered and Threatened Species

NAME	STATUS	HABITAT
Etheostoma etowahae Etowah Darter	FED / GA	Small to medium-size streams over cobble to gravel in areas of swift current
Etheostoma scotti Cherokee Darter	FED T / GA	Small to medium-size creeks w/moderate current and rocky substrates
Etheostoma brevirostrum Holiday Darter	GA	Small creeks to moderate-size rivers in gravel and bedrock pools
Macrhybopsis aestivalis Coosa Chub	GA	Swift currents over gravel substrates
Noturus munitus Coosa Madtom	GA	Main stems of the Etowah and Conasauga Rivers
Percina antesella Amber Darter	FED / GA	Riffles and runs of medium-size river
Percina lenticula Freckled Darter	FED	Swift deep runs of main river channels probably over with rocky substrates
STATUS REFERS TO FEDERAL (FED) OR STATE (GA)		

"T" indicates species listed as threatened under state status
Source: GA Department of Natural Resources Wildlife Resource Division

TABLE 10: IMPERILED FISH SPECIES OF THE ETOWAH RIVER BASIN
Listing of Rare (R) or Candidate (C) Species

Percina kusha – Bridled Darter	FED. C / GA. R	Riffles and flowing pools with moderate to swift currents
STATUS REFERS TO FEDERAL (FED) OR STATE (GA) CANDIDATE (C) REFERS TO SPECIES PRESENTLY UNDER STATUS REVIEW FOR FEDERAL LISTING		

Source: GA Department of Natural Resources Wildlife Resource Division

Green Infrastructure

Green infrastructure refers to a well-designed and locally managed network of protected open space, including water resources, that incorporates passive recreation, natural resource conservation, scenic viewshed preservation and enhancement of community amenities such as the expansion of its transportation network via multi-use trails. Green infrastructure maintains ecological systems, sustains natural resources vital to its residents, contributes to community health and quality of life while serving as a component of economic development and tourism for the region.

Since 1999, the conservation and protection of open space has been an identified comprehensive plan goal and a component of the county's implementation strategies. The purpose of such protection is to provide an interconnected network of conserved natural areas that will fulfill multiple objectives including the conservation of ecological resources and processes as well as the provision of passive recreational opportunities for human health and enjoyment. To date, approximately 2,298 acres have been acquired in the form of county-owned passive recreation parks, conservation easements per county requirements and public greenway trails. The subsections below inventory the specific features of the county's green infrastructure network.

Parks

The Forsyth County Parks and Recreation Department owns and operates approximately 2,516 acres of parkland over half of which is passive-use. Passive-use parks are intended for recreation that does not alter the landscape substantially since natural and scenic resources are emphasized for recreational viewing and low impact activities. Facilities such as trail systems in which non-motorized uses are permitted, picnic areas and boat launches are typical passive-use amenities; such facilities do not contain designated space for organized sports. Active recreational facilities will be inventoried in the Community Facilities component. See Table 11 for passive-use parks currently in operation; greenspace bond acquisitions are listed separately in Tables 14 and 16 since these represent future parks except for the Sawnee Mountain Preserve.

TABLE 11: COUNTY-OWNED PASSIVE-USE PARKS

NAME	ACREAGE
Poole's Mill Park	9.6
Sawnee Mountain Preserve	963
Windermere Park	118.8

Poole's Mill Park is a neighborhood park which provides creek access, a historic covered bridge, nature trail, small native plants garden, picnic areas, playground and a horseshoe pit in the northwest part of the county. Windermere Park, located within the Windermere subdivision in the southern portion of the county, is primarily a passive-use park facility that includes a nature trail.

The Sawnee Mountain ridgeline has become a central amenity for the county and region. This property has been developed into the Sawnee Mountain Preserve, which is being constructed in three phases. Phases I and II have been completed and are currently open to the public. These two phases comprise 3.5 miles of hiking trails, two picnic pavilions, a playground, 120-seat outdoor amphitheater, tree house, canopy walk learning platform, native plant garden, learning library and sustainably constructed visitor center for interpretative and passive recreational

programming. The final stage of development, Phase III, will add another four miles of hiking trails for visitors to enjoy as well as additional restroom facilities, a wilderness training area and the potential renovation of a former residence located on the ridgeline as a viewing and programming site.

In 2005, Sawnee Mountain Preserve began winning regional awards for its planning and design. Two awards were granted by the Georgia Urban Forestry Council and another from the Association County Commissioners of Georgia and Georgia Trend Magazine as noted below.

- Georgia Urban Forestry Council in 2005:
  'Most Outstanding Greenspace Plan'

- Georgia Urban Forestry Council in 2008:
  'The Grand Award for the Sawnee Mountain Preserve Visitor Center'

- The Association County Commissioners of Georgia and Georgia Trend Magazine in 2009:
  'The Georgia County Excellence Award'

Recreational Areas

These areas are managed by federal, state and local government agencies that ensure natural resources are safeguarded so that they may be enjoyed by the public for leisure purposes.

State Heritage Preserve

The Georgia Heritage Trust Act of 1975 was created to "preserve important and endangered elements of Georgia's heritage." The Buford Trout Hatchery is composed of 38.364 acres along the Chattahoochee River. The hatchery was dedicated in 1998 by Governor Zell Miller and DNR as a state heritage preserve to protect, conserve and manage the natural, recreational and historic resources of the area for the benefit of present and future generations. The primary purpose of the hatchery is to serve as a public fishing area and fish production facility in addition to supporting wildlife related activities such as the provision of walking trails and bird watching. The property on which the hatchery is located is to be used for habitat management, scientific research and recreational activities.

Lake Sidney Lanier

The U.S. Army Corps of Engineers (Corps) owns 186 miles of shoreline within the county along Lake Sidney Lanier and has developed seventy-six recreational areas. These recreational areas include boat ramps, campgrounds, picnic tables, beaches and swimming areas. Twenty-two of these recreational areas are located within Forsyth County. Table 12 list areas along Lake Sidney Lanier within Forsyth County that are owned by the Corps.

TABLE 12: U.S. ARMY CORPS OF ENGINEERS RECREATIONAL AREAS WITHIN FORSYTH COUNTY

PARK NAME	ACREAGE
ATHENS PARK (UNDER DEVELOPMENT)	53.5
BALD RIDGE CREEK CAMPGROUND	55.6
BALD RIDGE MARINA	37.5
BETHEL PARK	85.4
CHARLESTON PARK – COUNTY OPERATED	154.3
HABERSHAM MARINA	2.54
KEITH'S BRIDGE PARK	25.4
PORT ROYALE MARINA (FORMERLY LAN MAR)	65.0
LITTLE RIDGE PARK	67.0
LONG HOLLOW PARK	28.8
LOWER POOL PARK	9.9
MARY ALICE PARK – CITY OPERATED	111.9
SAWNEE CAMPGROUND	32.6
SHADY GROVE CAMPGROUND – COUNTY OPERATED	107.4
SIX MILE PARK	13.8
TIDWELL PARK	7.4
TWO MILE PARK	35.6
VANN'S TAVERN PARK	16.5
WAR HILL PARK * – DAWSON COUNTY OPERATED	108.0
WEST BANK PARK (NO BOAT RAMPS)	23.7
WEST BANK OVERLOOK PARK (NO BOAT RAMPS)	4.0
YOUNG DEER CREEK PARK – COUNTY OPERATED	13.3

*SPANS FORSYTH COUNTY AND DAWSON COUNTY
Source: U.S. Army Corps of Engineers

National Park Service

Over several centuries, even before recorded history, people have been attracted to the Chattahoochee River valley. The Chattahoochee River stretches 540 miles from the mountains of north Georgia within Habersham County to its convergence with the Flint River at Lake Seminole in the southwestern corner of the state. The river's name means 'painted rock' in the Cherokee language and was used historically by both the Cherokee and Creek Indian tribes as well as white settlers. By the 1970s, the resources that made the river special were being threatened and depleted. On August 15, 1978, President Jimmy Carter signed legislation to protect a portion of the river valley for natural, scenic, recreational and historic purposes, which came under the jurisdiction of the National Park Service.

The Chattahoochee River National Recreation Area (CRNRA) stretches forty-eight miles along the Chattahoochee River beginning at Lake Sidney Lanier, just south of Buford Dam. The portion of the CRNRA located within Forsyth County is composed of 215.76 acres and includes sections of Bowman's Island and Settles Bridge, which are divided between Forsyth and Gwinnett Counties. Bowman's Island is one of fifteen land based units within the CRNRA, which provides a variety of activities for visitors including hiking, picnicking, rafting, canoeing, kayaking, horseback riding and fishing. The river is rated, according to the International Scale of River Difficulty, as a Class I and II waterway with some segments assessed as Class III and may be paddled in every season. Fishing opportunities for trout, bass and catfish provide anglers a vari-

ety of species throughout the year. The CRNRA continues downstream through four additional counties before concluding at Peachtree Creek on the border of the City of Atlanta and Cobb County.

Improvements related to the McGinnis Ferry Road bridge replacement will add amenities to CRNRA within the county through the addition of a parking lot, boat ramp and picnic area adjacent to a new stormwater quality pond on land that is currently owned by the county. The county will donate the land and new facilities to the NPS in order for it to be maintained as federal park property. This facility is scheduled to be completed by the end of 2010. This facility will eventually connect to planned trail networks within Forsyth and Fulton Counties by way of a pedestrian underpass connection thereby creating a linked, inter-jurisdictional trail system.

Greenways

The county currently has twenty-nine miles of greenway projects listed in its Bicycle Transportation and Pedestrian Walkways 2025 Plan. These projects are listed below along with their existing or proposed locations.

TABLE 13: FORSYTH COUNTY GREENWAY PROJECTS

Greenway Project	Location and Route of Greenway
Big Creek (Phase I) *Completed*	From south of McFarland Road traveling north along Big Creek and concluding at Fowler Park on SR 9
Big Creek Extension (Phase II and III) *Completed*	From SR 9 traveling north along Big Creek and ending at Bethelview Road
Big Creek Extension (Phase IV)	From Bethelview Road to Kelly Mill Road
Big Creek Extension (Phase V)	From Kelly Mill Road to the Sawnee Mountain Preserve visitor's center
Chattahoochee River (Phase I)	From Settles Bridge to McGinnis Ferry Road
Chattahoochee River (Phase II)	From Buford Dam Road to Settles Bridge
Etowah River	From the Cherokee County border to the Dawson County border
Sawnee Mountain Greenway	From Poole's Mill Park to Sawnee Mountain Preserve

The Big Creek Greenway project is currently under construction and is being developed in phases. Phases I, II and III were completed in the summer of 2009. Phases IV and V are still under design and are projected to be completed by the end of 2011. See Figures 6, 7 and 8 for existing and proposed phases with connections to county recreational areas. The greenway trail is composed of a twelve foot wide concrete multi-use path in addition to boardwalk and non-motorized vehicular and pedestrian bridges over floodplain and wetland areas. When completed, the Big Creek Greenway will be compatible with Americans with Disabilities (ADA) regulations and will contain approximately 15.2 miles of trails at a total cost of 14.3 million dollars. The Forsyth County Bicycle Transportation and Pedestrian Walkways 2025 Plan recommends that this greenway eventually connect with the City of Alpharetta's Big Creek Greenway to provide an inter-jurisdictional multi-use trail network.

Figure 6: Big Creek Greenway

Figure 7: Big Creek Greenway

The Chattahoochee River Greenway will also be developed in phases. Phase I is proposed to be completed by the year 2019 and the overall project by 2025. The twelve foot wide multi-use path will extend from Buford Dam Road to McGinnis Ferry Road. The Chattahoochee River Greenway will contain approximately 9.47 miles of trails at an estimated cost of 10 million dollars.

The Etowah River Greenway will span from the Cherokee County border to the Dawson County border along the river corridor and will contain approximately 5.87 miles of multi-use trails. The estimated cost for the twelve foot wide concrete path is 6.2 million dollars.

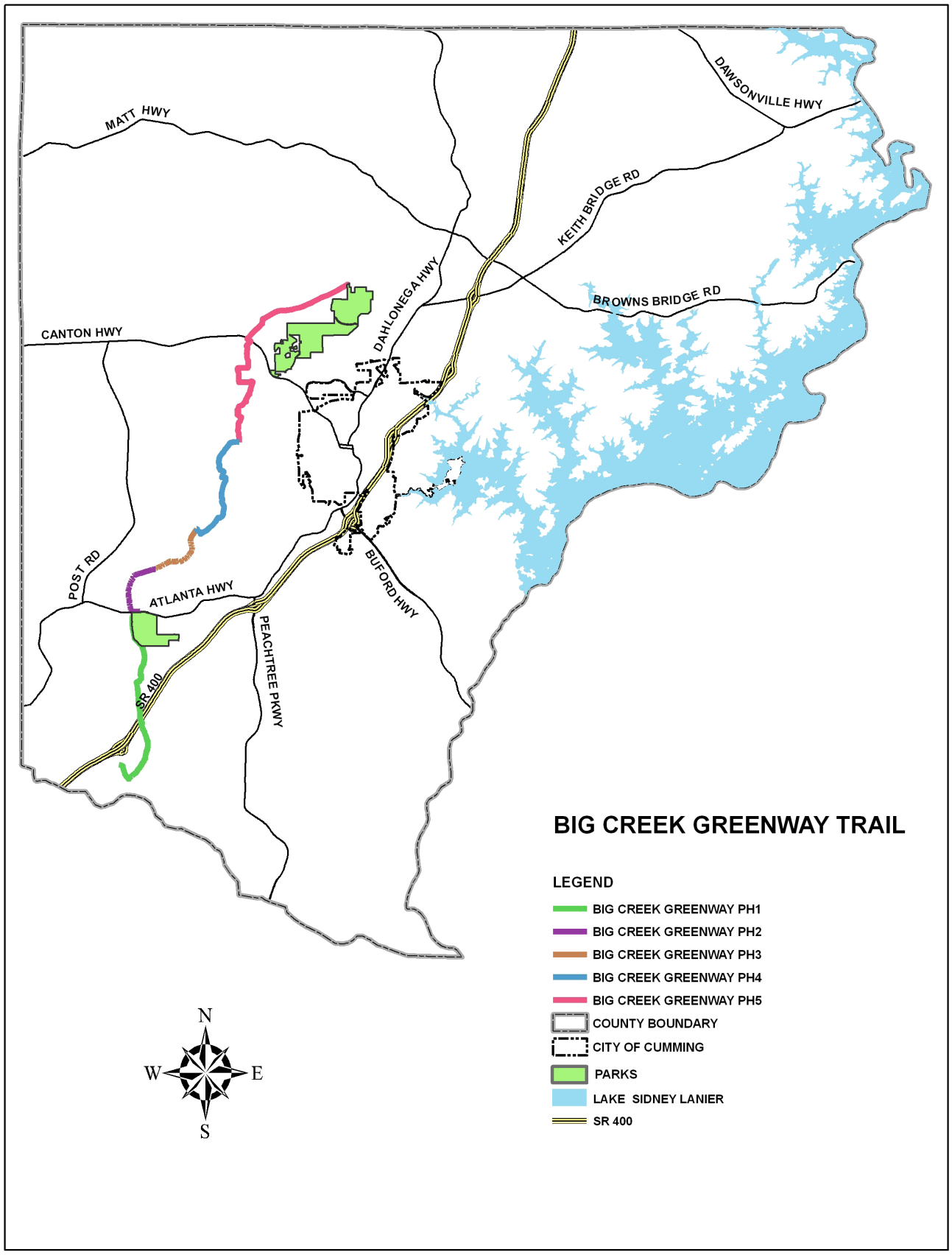
The fourth multi-use project is the Sawnee Mountain Greenway. The twelve foot wide paved concrete multi-use path will connect to Phase III hiking trails within the Sawnee Mountain Preserve. The proposed completion date of this project is 2025. The greenway will extend from the Sawnee Mountain Preserve to Poole's Mill Park, spanning 7.96 miles. The cost of the project is estimated at 9 million dollars.

Canoe Trails

The Parks and Recreation Master Plan identified the potential implementation of a blueway or canoe trail along the Etowah River based on public input. The plan also identified the City of Canton as being in the process of developing a water trail amenity that could feasibly be extended through Cherokee County to provide a future inter-jurisdictional connection within the river corridor.

In February of 2008, Forsyth County voters approved a $100 million park, recreation and green space general obligation bond. The intentions of this bond are to improve and expand existing parks, purchase lands for future active recreational parks and acquire land for passive recreational uses.

FIGURE 8: BIG CREEK GREENWAY TRAIL WITHIN FORSYTH COUNTY



One of the proposed bond projects is a canoe trail with facilities on the Etowah River. This project is programmed to include a canoe launch, parking area, restroom facilities, natural surface trails and primitive camping. The property for these facilities, referred to as Eagle's Beak, has been purchased by bond money as noted in the greenspace acquisition section and one million dollars from the bond will go towards the design and construction of this site.

The Georgia Department of Transportation (GDOT) will be funding the construction of a canoe launch site which will include a boat ramp, picnic area and a small parking lot on approximately one acre of land along McGinnis Ferry Road. The anticipated date of completion for the project is by the spring of 2012. The property will be donated by the county to CRNRA so that they may maintain this newly constructed facility. A pedestrian underpass will connect this site with the McGinnis Ferry unit to the south located within Fulton County.

Conservation Areas

Environmentally Sensitive Land

Environmentally susceptible areas such as streambanks, floodplains and wetlands are protected through buffers and best management practices via county regulations which incorporate state and federal mandates.

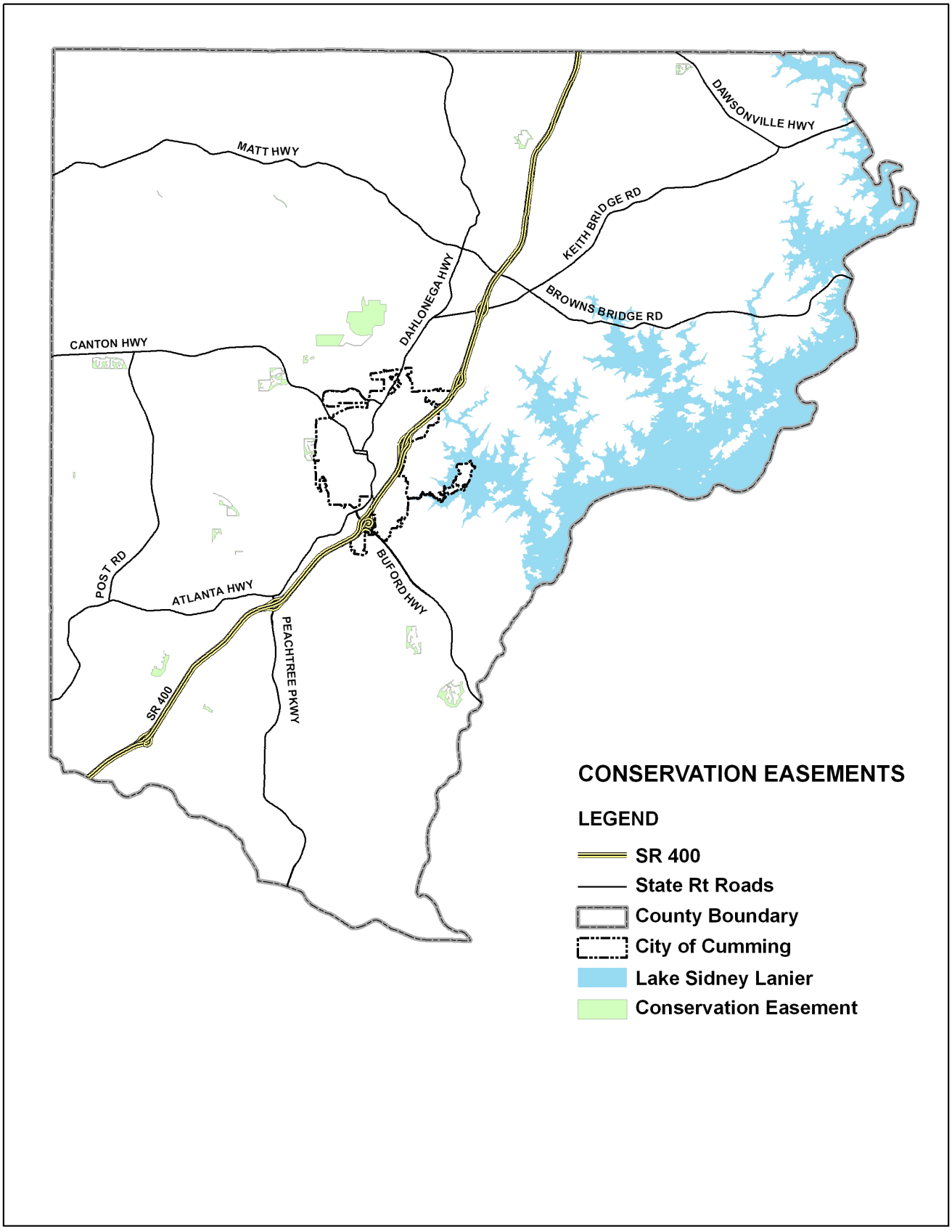
To safeguard streambanks, the Unified Development Code (UDC) requires buffer regulations that apply to all land development activities on properties containing state waters, as defined in the code, which coincides with the state definition. The code asserts that state waters must be protected with an undisturbed natural vegetative buffer, which shall be maintained for fifty feet, measured horizontally, on both banks; an additional setback shall be retained for twenty-five feet, measured horizontally, beyond the undisturbed natural vegetative buffer, wherein all impervious cover is prohibited. These regulations exceed state requirements per the Georgia Erosion and Sedimentation Act and meet the model ordinance requisites for the Metropolitan North Georgia Water Planning District.

Floodplain and wetland regulations are located in the county's flood ordinance. This ordinance mandates that no structure or land shall be located, extended, converted or structurally altered without fully complying with county regulations and those set forth by state and federal agencies. Refer to Figure 3 for a map of floodplains and Figure 15 for wetlands located within Forsyth County.

Conservation Easements

The UDC defines a conservation easement as a legally enforceable agreement that guarantees permanent protection of land resources through restrictions on existing and future land uses of a defined tract. Conservation easements are required for conservation subdivisions and are sometimes necessitated by zoning conditions. Property acquired with Georgia Community Greenspace funds required conservation easements to meet state requirements. To date, the county has obliged 781.10 acres be placed under conservation easement status. These properties are denoted in Figure 9 and represent open space that will remain in a natural state in perpetuity for future generations.

FIGURE 9: COUNTY-REQUIRED CONSERVATION EASEMENTS



Greenspace Aquisition

The Georgia Community Greenspace Program (Program) was passed into law in 2000 under Governor Roy Barnes and properties acquired under this program continue to be administered through DNR. The Program encouraged rapidly growing counties to voluntarily set aside, either through policies or rules, twenty percent of their land area as connected open greenspace. The Program defines greenspace as "permanently protected land and water, including agricultural and forestry land, that is in its undeveloped, natural state or that has been developed only to the extent consistent with, or is restored to be consistent with, one or more listed goals for natural resource protection or informal recreation." It states that no future development may occur on the preserved land if the construction is not compatible with the intent of the Program.

The Georgia Greenspace Trust Fund was created along with the Program and allocated $90 million from 2001 through 2003 by the Georgia General Assembly for the acquisition of county greenspace. In 2004, the Program was not funded due to a lack of state revenues, but the regulations imposed on the existing acquired properties remain valid in perpetuity. These funds were voluntary, non-competitive and county-based. Counties eligible for grants were required to develop and implement a plan to permanently protect at least twenty percent of its geographic area as natural, undeveloped greenspace. See Table 14 for a list of properties within the county acquired through Georgia Greenspace funds.

TABLE 14: GEORGIA COMMUNITY GREENSPACE FUND ACQUISITIONS

Mashburn Property (part of Sawnee Mountain Preserve)	90 acres
Barker Property (part of Sawnee Mountain Preserve)	11.18 acres
Bethelview Trailhead Park (to be developed as a component of the Big Creek Greenway)	14.71 acres

In 2005, Governor Sonny Perdue signed into law the Georgia Land Conservation Act (Act), which created the Georgia Land Conservation Partnership (GLCP) and established ten primary land conservation goals and objectives for the state. This act essentially replaced the Georgia Community Greenspace Program. The Act created the Georgia Land Conservation Trust Fund and the Georgia Land Conservation Revolving Loan Fund, both managed by the Georgia Environmental Facility Authority (GEFA). An initial $100 million in grants and low interest loans were provided to local governments and DNR for the purchase of conservation easements or land for eligible projects. In 2006, an additional $5 million was included in the budget. In 2008, the Georgia General Assembly approved amendments to the Act, which included the ability for non-government entities to receive low interest loans from the program. The amendment also allows the Georgia Forestry Commission and other state agencies and authorities to be eligible to receive competitive grants. To date, the county has not received any funds due to a funding shortfall in 2008 that has remained in effect.

In addition to property acquired through the Georgia Community Greenspace Program, the county voter-approved bond in February 2008 apportioned $36 million for greenspace land acquisition. Improvements and acquisitions for open space recreational facilities were also included, consisting of $8 million for the Big Creek Greenway, $1.8 million for phase three of the Sawnee Mountain Preserve, $4 million for a northwest community park (Wallace Tatum property), $4

million for a north community park (Lanierland) and $1.1 million towards Corps parks.

The county defined greenspace in the context of the bond referendum as "protected natural, ecological and cultural resources provided and maintained to benefit residents, businesses and visitors. It preserves undisturbed open space; protects air and water quality; offers passive outdoor recreation opportunities; and promotes and enhances the quality of life of the community. Greenspace is land that remains in a relatively natural state. It helps make the community attractive, livable, and economically competitive and viable." Unlike properties obtained through state greenspace funds, there are no requirements to legally protect county bond purchased acreage in perpetuity through conservation easements or deed restrictions.

In the selection of greenspace property, technical expertise was provided by county staff and consultant services. Properties within the county were first evaluated based on a ranking of the following goals: Evenly distributed greenspace throughout the county; protection of water quality; increase of passive recreation opportunities; protection and improvement of wildlife corridors and habitat; preservation of cultural resources; preservation of scenic resources; provision of alternative transportation routes; economic benefit to the county; and maximum acquisition value. Each goal had a series of identified characteristics upon which parcels would be evaluated as noted in Table 15. Potential parcels for acquisition were then scored based on the number of goal characteristics a given parcel exhibited with higher scores indicating a preferable location.

TABLE 15: FORSYTH COUNTY GREENSPACE ACQUISITION GOALS

Goal	Property Characteristics
Evenly distributed greenspace throughout the county	Population density Number of parks and population served Number of acres and population served Condition of land Accessibility Vacant lots Existing easements
Protection of water quality	Aquifer recharge areas Rivers/streams/ water bodies Wetlands Highly erodible soils Heavily vegetated parcels Length of shoreline/ stream bank 303d streams
Increase passive recreation opportunities	Topography Water features Vegetation Open space (cleared land) Size of parcel Location
Protection and improvement of wildlife corridors and habitat	Riparian and lake buffers Wetlands Properties adjacent to vegetated areas Heavily vegetated parcels Known wildlife areas

TABLE 15: FORSYTH COUNTY GREENSPACE ACQUISITION GOALS continued

Goal	Property Characteristics
Preservation of cultural resources	Historic registered homes and structures Archeological resources Scenic resources Large specimen trees Agricultural land Unique ecological areas
Preservation of scenic resources	High visibility areas Heavily vegetated areas Water features Unique natural features Presence of cultural resources Large specimen trees
Provision of alternative transportation routes	Location of schools Location to greenways Existing infrastructure easements Floodplains
Economic benefit to the county	Increase value of adjacent properties Create revenue with wetland credits Reduce expenditure for required mitigation projects Create recreation revenue opportunity
Maximize acquisition value	Number of people served per acre Cost per acre Current use Donation vs. acquisition Donation through local ordinance

Figure 10 shows the ranking of all parcels not already owned by local, state or the federal government. The nodes on the map were designated based on a preponderance of high ranking parcels as well as the presence of recreational resource inter-connectivity as identified through the Bicycle Transportation and Pedestrian Walkways 2025 Plan. This map should serve as a basis for future greenspace acquisitions when funds become available.

Table 16 indicates the properties that were purchased with bond funds based on consideration of the goal rankings developed for the acquisition process and the locations are shown in Figure 11.

TABLE 16: FORSYTH COUNTY PARKS AND GREENSPACE BOND ACQUISITIONS

PROPERTY NAME	ACREAGE*
BUICE PROPERTY	39
EAGLE'S BEAK PROPERTY	225
ECHOLS ROAD PROPERTY	85
LANIERLAND PROPERTY	109
HARRISON PROPERTY	63
MCCLURE PROPERTY	100
WALLACE TATUM PROPERTY	185
WINDERMERE PROPERTY**	31

*Acreage is approximate

**Additional acreage purchased for existent park; does not represent park acreage total

FIGURE 10: PRPOPOSED GREENSPACE AQUISITION AREAS

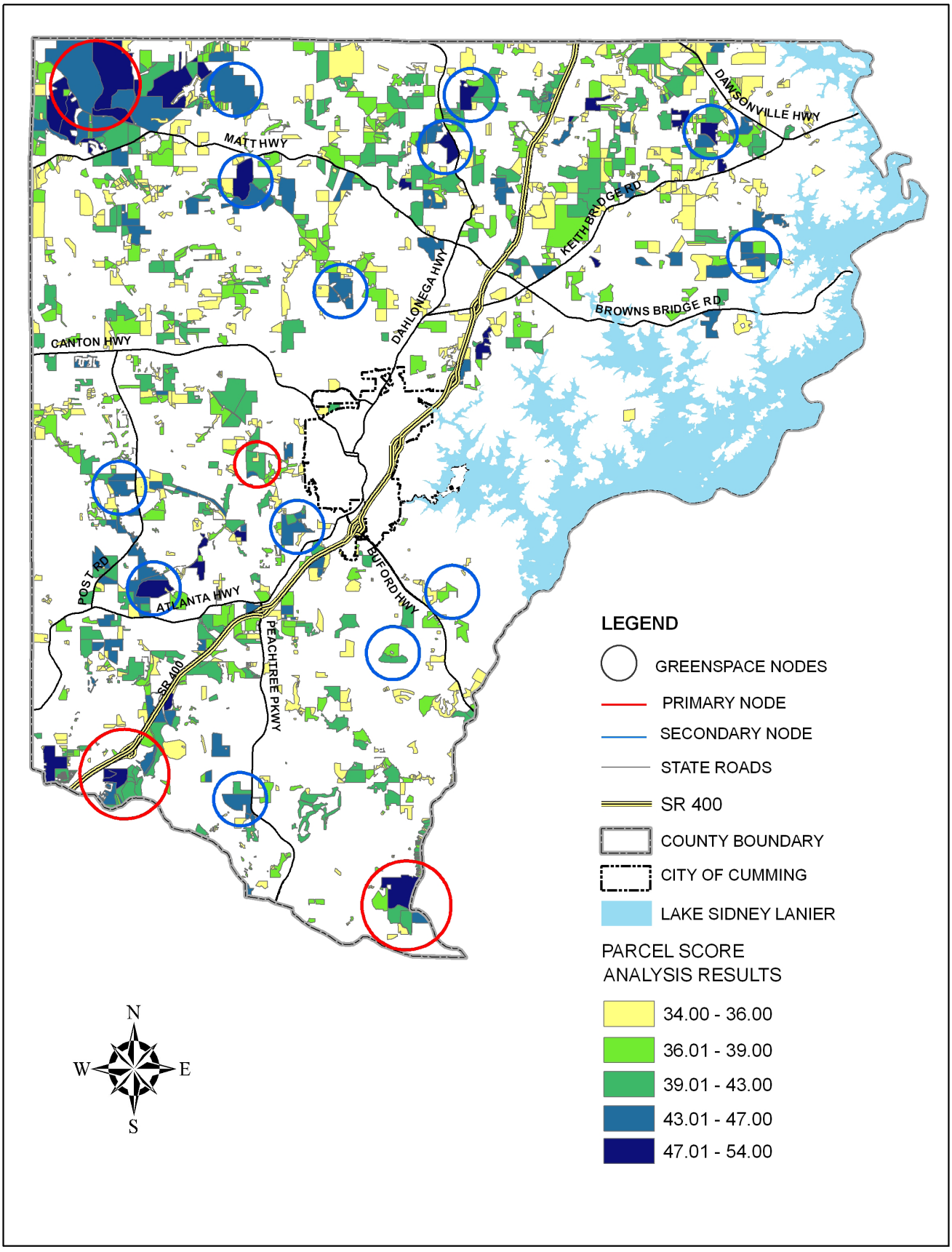
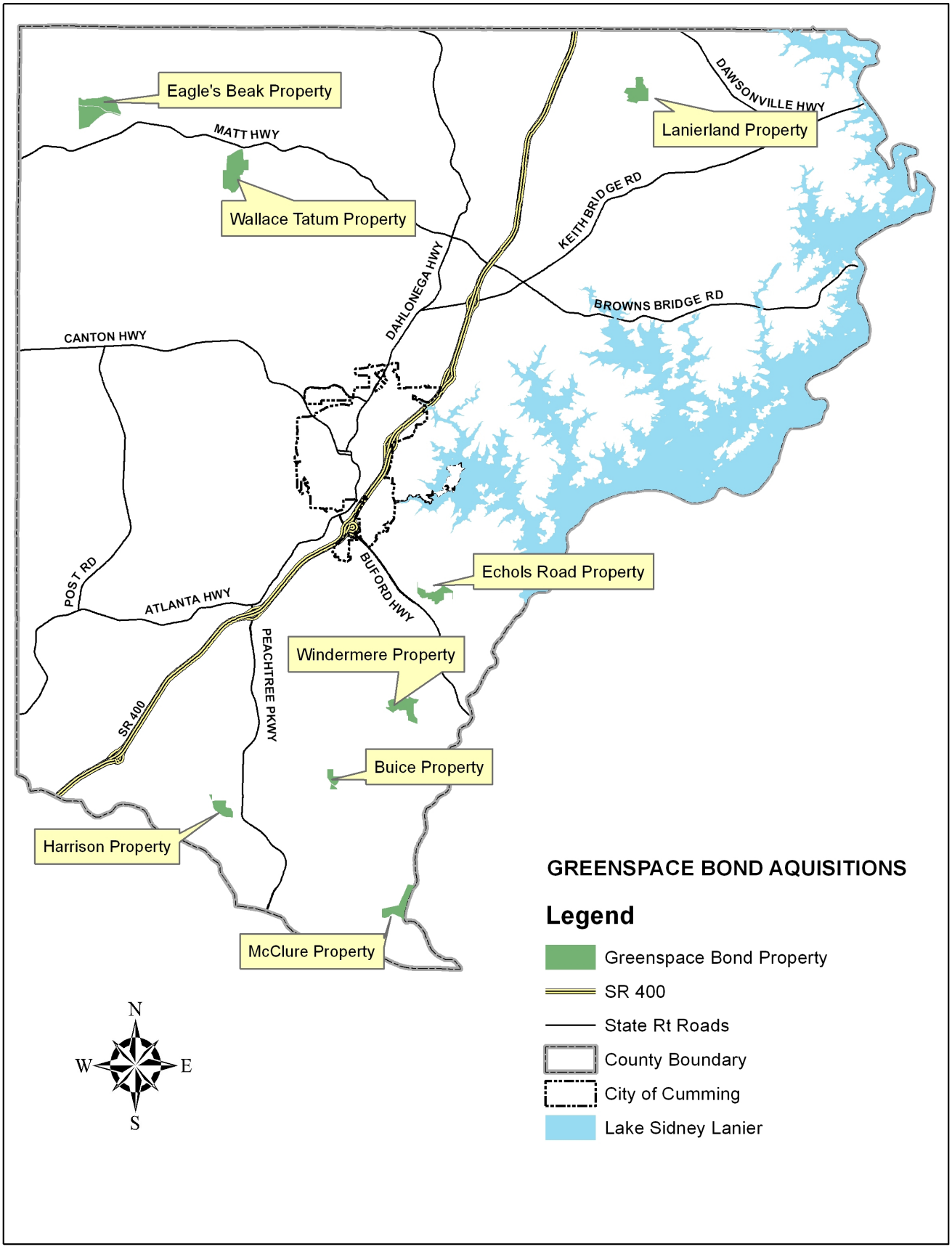


FIGURE 11: GREENSPACE BOND AQUISITIONS WITHIN FORSYTH COUNTY



Landmarks and Vistas

The rolling topography, Lake Sidney Lanier and the rural character of the northern portion of the county provide many scenic views across the jurisdiction into neighboring municipalities. For instance, the ridgeline of Sawnee Mountain, in the central portion of the county, can be seen from a distance in all directions. The eagle's beak formation of the Etowah River, in the northwest corner of the county, holds cultural significance to the Cherokee Indians. The overlook at Buford Dam offers expansive views of Lake Sidney Lanier and the Chattahoochee River.

Forsyth County has begun to take steps towards protecting these significant landmarks and vistas. The county owns 963 acres of land on Sawnee Mountain, which is the county's largest park and one that focuses on passive recreation and scenic enjoyment. The county has also acquired 225 acres encompassing the eagle's beak formation and 100 acres along the Chattahoochee River towards the southern tip of the county; both of these properties will be designed and managed as passive recreational parks. Other measures in the county that assist with the preservation of scenic resources include a development option for conservation subdivisions that require conservation easements as well as a tree ordinance that seeks to maintain or replace tree canopy as development occurs. In addition, the sign ordinance restricts the size of advertising signage throughout the county, which is particularly important along transportation corridors.

Recognition of scenic resources is possible through the National Scenic Byways Program (NSB). This federal program recognizes designated roads as National Scenic Byways or All-American Roads based on cultural, historic, natural, recreational and scenic features. Forsyth County may pursue designation in the future for roads or highways that exemplify the legacy of time's past when agriculture was the predominant way of life. The green infrastructure network is also an integral component of scenic preservation since it offers tracts of open space and pedestrian corridors that allow both land and water access to a multitude of picturesque settings found throughout the county.

Water Resources

Water resources are important both regionally and locally since water supports jurisdictions economically, is essential to public health, key to the sustainability of ecological processes and boosts quality of life through recreational opportunities. Forsyth County has a variety of water resources available for municipal drinking water, wildlife habitat and recreation. These include surface waters, such as lakes, streams and wetlands as well as below-ground aquifers. All streams in Forsyth County drain into two major river basins, the Chattahoochee River Basin to the southeast and the Coosa River Basin in the northwest. The county is also divided into seven watersheds: Lake Lanier, Big Creek, Etowah, Settingdown, Little River, Chestatee and the Chattahoochee.

The Chattahoochee River Basin is part of the larger Apalachicola-Chattahoochee-Flint (ACF) River Basin, which drains into the Gulf of Mexico. The Chattahoochee River Basin can be subdivided into the three watersheds of Lake Lanier, Big Creek and the Chattahoochee. The man-made Lake Sidney Lanier, which is the largest lake to be entirely contained in the State of Georgia, occupies more than 13,500 acres in Forsyth County. Several tributaries drain into the lake

including Six-Mile Creek, Four-Mile Creek, Two-Mile Creek, Taylor Creek, Bald Ridge Creek and Sawnee Creek. Below the dam, water in the southeast portion of the county drains into the Chattahoochee River. These waters include Haw Creek, Dave's Creek, James Creek, and Dick Creek. The Big Creek watershed, located in the southwestern portion of the county, drains into the Chattahoochee River below the City of Roswell water supply intake in Fulton County.

The Etowah River watershed, which flows through the northwest portion of Forsyth County, joins the Coosa River northwest of the City of Atlanta, to form the Coosa River Basin. The river eventually drains into the Gulf of Mexico as part of the Alabama-Coosa Tallapoosa (ACT) River Basin. The Settingdown Creek watershed flows into the Etowah River just west of Forsyth County.

In March 2000, the Community Watershed Assessment and Watershed Management Plan was produced for the county through an inter-jurisdictional agreement with Hall County and the City of Gainesville as part of a state requirement related to permitting processes for new wastewater discharges and surface water withdrawals. The purpose of the study was to evaluate the environmental health of streams and to develop a management plan to control pollution in selected watersheds. This report includes water quality and biological assessments, modeling development, impacts assessment and recommendations for future management. The goal of the plan is to provide data for sound watershed management decisions as the county grows while continuing to maintain adequate water quality. Since the adoption of the study in 2003, three comprehensive water plans have been approved by the regional water authority, which augments the 2003 information. These three plans include the Water Supply and Water Conservation Management Plan, Watershed Management Plan and the Wastewater Management Plan. The county received confirmation from GA EPD in May 2009 after a state compliance audit indicated that it was "making a good faith effort to comply with the three District plans."

Forsyth County is one of sixteen counties located within the District, which was created by the Georgia General Assembly in 2001 to establish policy and promote intergovernmental coordination of all water issues from a regional perspective. It is through the District, that Forsyth County complies with Georgia's Statewide Water Management Plan prepared by EPD in coooperation with the state's Water Council and enacted on February 2008 by the Georgia General Assembly. The state-wide plan was mandated by the 2004 Comprehensive Statewide Water Management Planning Act so that water resources are managed "to support the state's economy, to protect public health and natural systems and to enhance the quality of life for all citizens (O.C.G.A. 12-5-522(a))."

The District created six model stormwater management ordinances that address a wide variety of stormwater related issues including stormwater runoff, floodplain management, stream buffer protection, prohibited discharge and unlawful connections to stormwater infrastructure, litter control and conservation subdivisions. Jurisdictions within the District are required to adopt these, or similar, model ordinances in order to stay in compliance and maintain their permitting status for increased water withdrawal, new or increased discharge, or for a municipal separate storm sewer or storm drain system permit. To fulfill state regulations, Forsyth County has adopted ordinances for stormwater management and flood control as well as code regulations for stream buffers and conservation subdivisions. In regards to floodplain management, the county

conforms to the Federal Emergency Management Agency's (FEMA) regulations so that it may continue to be a participating community in the National Flood Insurance Program (NFIP).

State Waters

The UDC mirrors the definition from the Georgia state code for state waters as "any and all rivers, streams, creeks, branches, lakes, reservoirs, ponds, drainage systems, springs, wells, and other bodies of surface or subsurface water, natural and artificial, lying within or forming a part of the boundaries of the state which are not entirely confined and retained completely upon the property of a single individual, partnership or corporation."

Under section 303(d) of the Clean Water Act, states are required to create a list of impaired waters within their geographic boundary. Impaired waters are defined as "waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes." The law states that these jurisdictions prioritize their waters via a list and for each one, develop a Total Maximum Daily Load (TMDL), which is a calculation of the maximum amount of a pollutant a waterbody can sustain and still safely meet water quality standards. The National Water Quality Inventory Report to Congress, which is also called the 305(b) report, is one of the main tools used to inform Congress and the general public about water quality conditions in the United States. This report describes our water quality, identifies widespread problems of national significance and explains different programs that have been created to restore and protect our waters. In 2008, the U.S. Environmental Protection Agency (EPA) required all states to move to a five-part categorization of their waters. The GA EPD adopted EPA's five-part categorization method along with the amended 2008 305(b) and 303(d) reports. These five categories and their descriptions are listed below:

Category 1 – Data indicates that waters are meeting their designated use(s).

Category 2 – A water body has more than one designated use and data indicates that at least one designated use is being met, but there is insufficient evidence to determine that all uses are being met.

Category 3 – There was insufficient data or other information to make a determination as to whether or not the designated use(s) is being met.

Category 4a – Data indicates that at least one designated use is not being met, but TMDL(s) have been completed for the parameter(s) that are causing a water not to meet its use(s).

Category 4b – Data indicates that at least one designated use is not being met, but there are actions in place, other than a TMDL, that are predicted to lead to compliance with water quality standards.

Category 4c – Data indicates that at least one designated use is not being met, but a pollutant does not cause impairment.

Category 5 – Data indicates that at least one designated use is not being met and TMDL(s) need to be completed for one or more pollutants.

Tables 17 and 18 list state waters within the county, their location and category classification:

TABLE 17: 2008 INTEGRATED 305 (b) and 303 (d) List
Streams Supporting Designated Uses

STREAM	LOCATION	RIVER BASIN	USE/VIOLATION	EXTENT	CATEGORY & CAUSE
Chattahoochee River	Buford Dam to Dick Creek	Chattahoochee	Recreation/Drinking	8 Miles	1
Dick Creek		Chattahoochee	Fishing	2 Miles	1
Haw Creek	Headwaters to Chattahoochee	Chattahoochee	Fishing	3 Miles	1
Brewton Creek	Etowah River Subwatershed No. 1 Dam to Bannister Creek	Coosa	Fishing	2 Miles	1

TABLE 18: 2008 INTEGRATED 305 (b) and 303 (d) List
Streams Not Supporting Designated Uses

STREAM	LOCATION	RIVER BASIN	USE/VIOLATION*	EXTENT	CATEGORY & CAUSE
Big Creek	Headwaters to Cheatham Creek	Chattahoochee	Fishing	3 Miles	4a,UR
Chattahoochee River	Dick Creek to Johns Creek	Chattahoochee	Recreation/Drinking	12 Miles	5, NP & UR
Four Mile Creek	Lake Lanier Tributary	Chattahoochee	Fishing, FC	3 Miles	4a, NP
James Creek		Chattahoochee	Fishing, FC	2 Miles	4a, NP & UR
Kelly Mill Branch	Headwaters to Orr Creek	Chattahoochee	Fishing, FC	2 Miles	4a,UR
Orr Creek	U/S Castleberry Road (Tyson Foods) to Big Creek	Chattahoochee	Fishing, FC	3 Miles	4a, UR
Sawnee Creek	Lake Lanier Tributary	Chattahoochee	Fishing, FC	2 Miles	4a, NP
Six Mile Creek	Headwaters to Lake Lanier	Chattahoochee	Fishing, FC & Bio F	2 Miles	4a & 5, NP & UR
Taylor Creek	Dawson/ Forsyth Counties	Chattahoochee	Fishing, FC	3 Miles	4a, NP
Two Mile Creek		Chattahoochee	Fishing, FC	5 Miles	4a, NP
Bannister Creek	Reservoir #4 to the Etowah River	Coosa	Fishing, Bio M	2 Miles	4a, NP
Settingdown Creek	Squattingdown Creek to Thalley Creek	Coosa	Fishing, Bio F	3 Miles	5, NP
Settingdown Creek	Thalley Creek to Hurricane Creek	Coosa	Fishing, Bio M	8 Miles	4a, NP

Source for Tables 17 & 18: Water Quality in Georgia Report - Appendix A NP: Non-Point Source UR: Urban Runoff

Forsyth County implements its municipal separate storm sewer system (MS4) permit requirements to address issues with the 303d and 305b lists. This includes investigating point source pollutants and taking appropriate enforcement action to see those pollutants remediated.

Water Supply

Reservoirs

Lake Sidney Lanier

In 1946, Congress sanctioned the construction of Buford Dam as part of the overall development of the nation's waterways that targeted river systems for national defense, flood control, power production, navigation and water supplies. The chief purposes of Buford Dam were specifically for flood control, navigation and hydropower. Ground breaking took place in 1950 within Gwinnet County and construction continued until 1957. Lake Sidney Lanier is federally operated by the Corps.

Forsyth County, as part of the District, relies on rivers and storage reservoirs as its main source of water supply. The Chattahoochee River system, which includes Lake Sidney Lanier, is the primary water supply source for the region and accounts for more than sixty percent of the water supply within the District.

In the 1970s and 1980s, the Corps contracted with several Georgia communities to draw water from Lake Sidney Lanier without Congressional approval. Although these interim contracts were set to expire in January of 1990, the Corps allowed the withdrawals to continue, which exacerbated serious water disputes between the States of Georgia, Florida and Alabama over reallocation that resulted in several lawsuits involving the Corps since 1990. The county currently purchases water from the City of Cumming whose contracts with the Corps allowed water withdrawals from Lake Sidney Lanier at a rate of two-and-a-half million gallons per day via the 1978 contract and five million gallons a day per the 1985 contract. In the fall of 1988, a contract gave consent for ten million gallons a day to the City of Cumming. These interim contracts expired in 1990 as previously mentioned.

A federal district court ruling made in July 2009 granted metropolitan Atlanta three years to obtain Congressional approval for reallocation of Lake Sidney Lanier's water storage beyond the Congressionally authorized withdrawals from the 1950s for the Cities of Gainesville and Buford. The court ruling stated that if a resolution was not found within a three year period, the allocation will revert to the baseline operation of the mid-1970s with only the Cities of Gainesville and Buford permitted to make lake withdrawals. During the three year period, current water supply withdrawals may continue. This ruling was overturned in June 2011 by a federal appeals court, which has remanded the Corps to reconsider Georgia's 2000 request for additional water supply allocations and to make a determination of its own scope of authority within one year regarding the operation of Buford Dam and Lake Sidney Lanier with respect to water supply provisions and balancing this with other authorized purposes.

In looking to the future, water supply sources must be expanded within the District to meet the projected demands for the year 2035. The District's current plan combines aggressive water conservation, expansion of existing factilities and the development of new water supply sources. The largest water supply source for the District will continue to be the Chattahooochee River in

conjunction with Lake Sidney Lanier and a number of tributaries over the next thirty years and beyond. If increased withdrawal from Lake Sidney Lanier is not forthcoming, state, regional and local water plans will have to be readjusted and new water resources pursued to meet projected demand.

Forsyth County has indicated interest in inter-jurisdictional planning of the Glades Reservoir and Shoal Creek Reservoir that are both identified in the District's water supply plan. At this time, no financial and allocation agreements have been formalized, but inter-jurisdictional discussions are expected to continue.

Etowah Watershed

The May 2009 Water Supply and Water Conservation Management Plan, produced by the District, indicated that Forsyth County could utilize the Etowah Watershed for potential reservoirs, including Shoal Creek noted above. The county has conducted preliminary investigations for the development of various sites. A reservoir of any size would take an average of ten to fifteen years to complete, from the planning stages to being fully operational.

Additional Surface Water

In 2007, the county applied for a surface water withdrawal permit from EPD. The source would be the Chattahoochee River on county-owned property for a maximum daily amount of 24 million gallons per day. This supply would be utilized by county areas not located within the City of Cumming's water service boundaries. If EPD approves the permit, additional state as well as federal permits would be required.

In March 2011, Forsyth County signed a resolution to support the raising of Lake Sidney Lanier to increase the elevation of full pool from 1,071 feet above sea level to 1,073 in an effort to meet increased water demands at a lower cost and impact than other options, particularly reservoir construction.

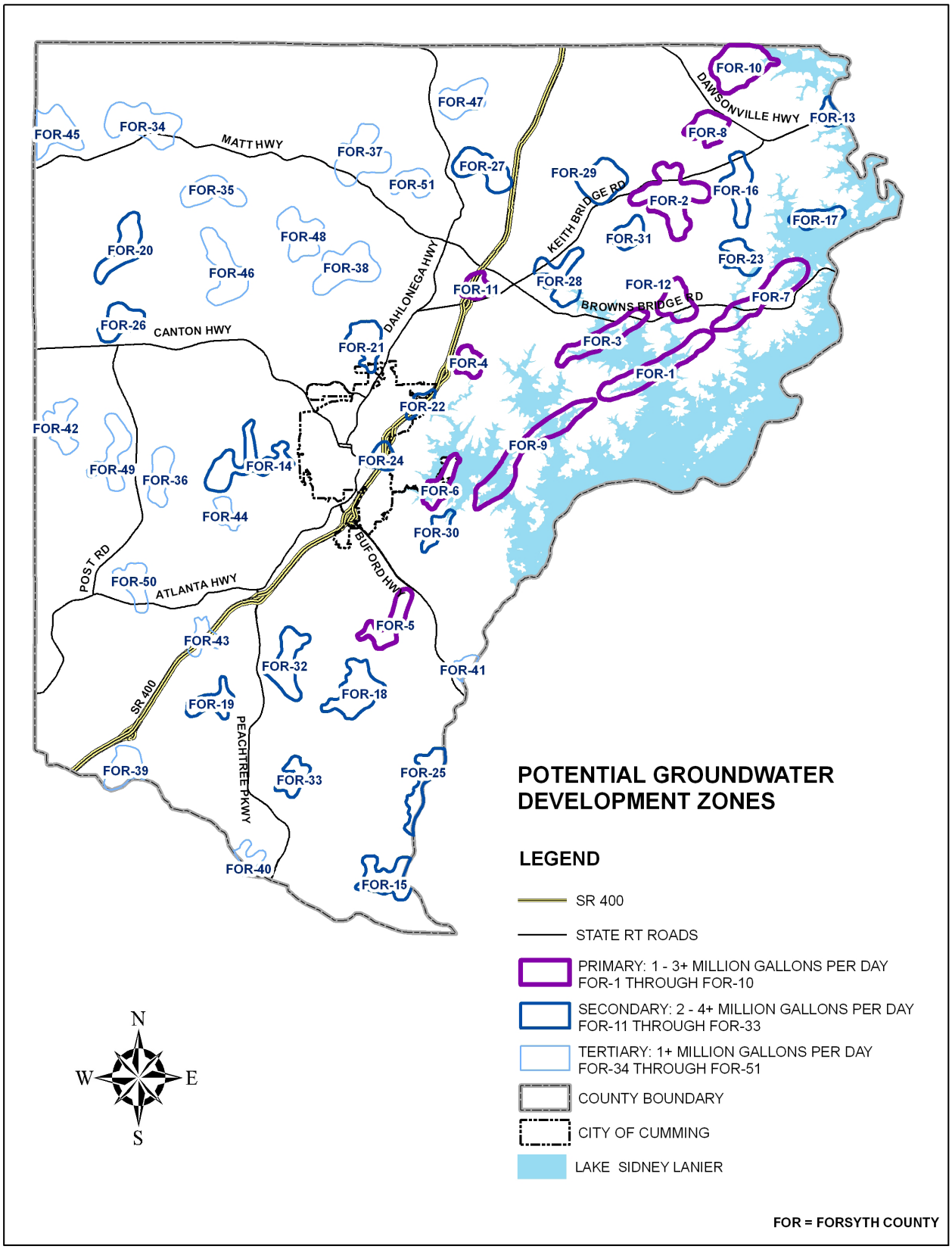
Existing quarries may also become a resource in the long-range planning period when such uses could come into consideration for adaptive re-use plans. Other jurisdictions, including the City of Atlanta, have moved forward to incorporate former rock quarries as part of a multi-faceted approach to water supply planning.

Water supply options as outlined here were summarized in a water supply study presented to the Forsyth County Board of Commissioners in April 2011. These options will be carefully considered as the county moves forward in addressing water supply for existing and future populations.

Groundwater Resources

In 2006, Emery & Garrett Groundwater, Inc. (EGGI) completed Phase I of a groundwater investigation for Forsyth County. The county's intention for this investigation was to use the proposed water data to supplement existing surface water sources. The result of this examination identified fifty-one zones within the county where groundwater development is considered favorable. Phase I of the study indicated that the development of 2.5 to 5+ million gallons of potable water was achievable per day. However, it should be noted that EGGI's exploration efforts have been restricted to evaluating only "above" surface (aerial platforms) and "ground" surface hydrogeo-

FIGURE 12: POTENTIAL GROUNDWATER DEVELOPMENT ZONES IN FORSYTH COUNTY



Source: Emery & Garrett Groundwater, Inc.

logic information. Further studies such as exploratory test well drilling may modify the ranking of these zones and the estimated groundwater capacity for the county.

EGGI's groundwater exploration and development program is divided into seven phases as follows:

Phase I	Delineation of zones (subareas)
Phase II	Determination of test well drilling site locations (geophysical surveys)
Phase III	Exploratory test well drilling
Phase IV	Installation of large-diameter production wells
Phase V	Long-term pumping test on highest yielding wells
Phase VI	Preparation of final hydrogeologic report for groundwater supply source
Phase VII	Construction of pump house(s) and installing all pumping equipment and other applicable appurtenances

To date, EGGI has completed Phase I and II of the study as of September 2008. Figure 12 maps the fifty-one groundwater zones. Based on the hydrogeological data that was collected and compiled for the report, EGGI predicted that the following water supply goals from groundwater sources are achievable and the different zones combined into three categories could yield from one to over four million gallons per day.

Water Supply Watersheds

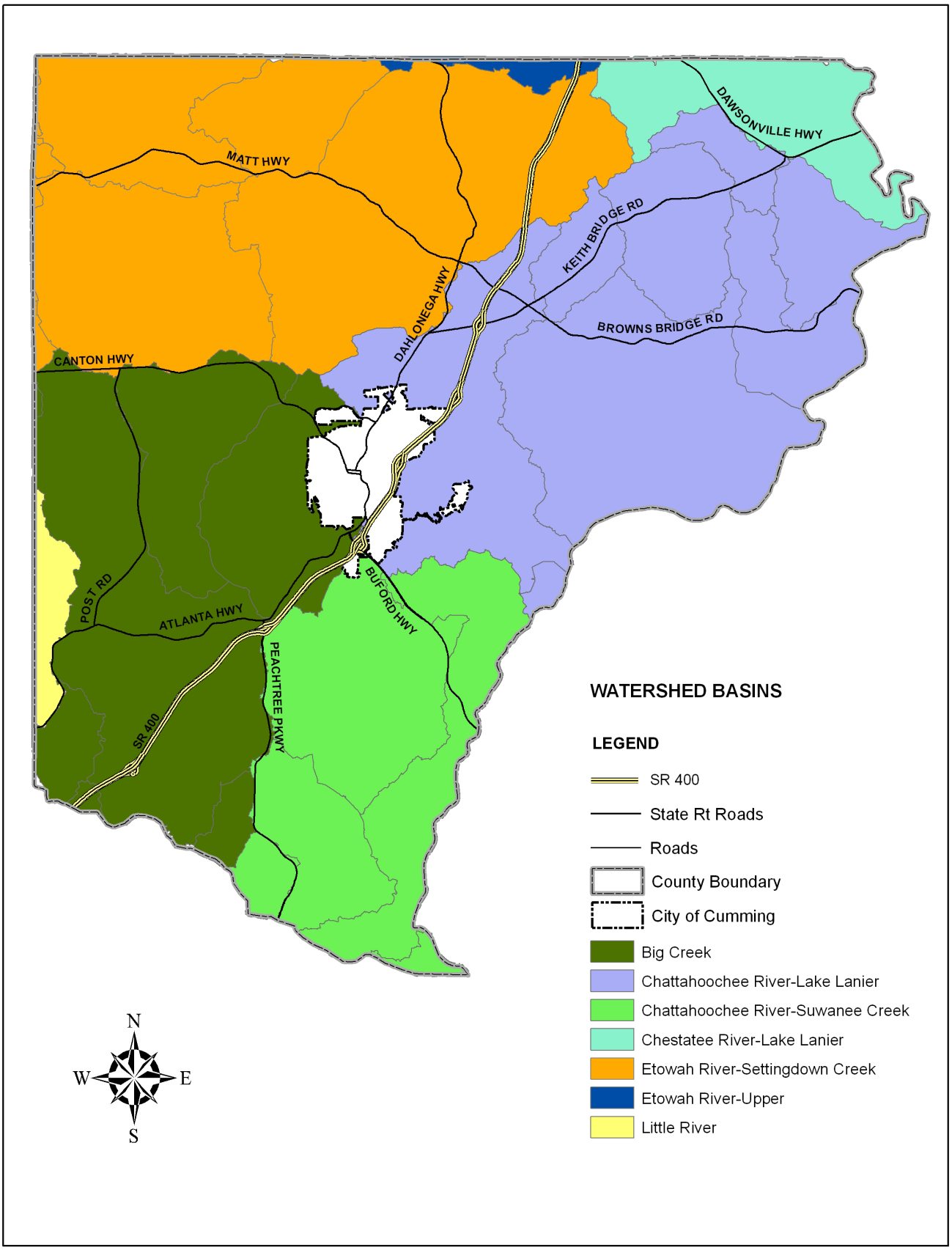
A water supply watershed is the area where rainfall runoff drains into a river, stream or reservoir used as a source of public drinking water supply. Protection of these watersheds is important to ensure public health and reduce the amount of purification needed to provide safe drinking water. All seven major watersheds found in the county are shown in Figure 13 including Big Creek that is a legislatively protected watershed based on the state's Environmental Planning Criteria. The criteria entails a set of standards be created that allows development of a water supply watershed without contaminating the water source to a point where it cannot be treated to meet drinking water standards. The measures are determined by water supply watershed size and proximity to a water intake facility. Watersheds of less than 100 square miles in size are considered small water supply watersheds while ones greater than 100 square miles are considered large. There are additional requirements for the seven mile radius surrounding a water intake facility.

The Big Creek watershed, in the southwest section of the county, is slightly smaller than 100 square miles and is therefore considered a small water supply watershed. Although there is a water intake site for the City of Cumming within the Lake Lanier watershed, the state's criteria do not apply to federal lakes.

Big Creek

According to DNR, the entire Big Creek watershed constitutes 96.4 square miles. The City of Roswell withdraws water at an intake that is located less than seven miles south of the Forsyth County boundary. For this reason, the county has adopted a Protected Water Supply Watershed Overlay District for the area to comply with the state's Environmental Planning Criteria. Within the seven-mile radius, DNR requires the following: A 100 foot buffer on both sides of the stream as measured from the stream banks with a 150 foot setback and the prohibition of septic tanks

FIGURE 13: WATERSHED BASINS OF FORSYTH COUNTY



Source: USGS Hydrologic Units (HUC 10)

and septic tank drainfields within this setback. In addition, the perennial stream corridors within the Big Creek watershed, upstream and outside the seven mile radius of the City of Roswell water intake point, are protected by the county's code general requirements for all stream corridors. The prohibition of septic tanks and septic tank drainfields within the stream setback also applies to the following streams: Bentley Creek, Cobb Creek, Harris Creek, Chatham Creek, Kelley Mill Branch, Sawmill Branch, Cumming Twin Lakes and Bagley Creek.

Criteria that specifically applies to a small water supply watershed include: New sanitary landfills are allowed only if they have synthetic liners and leachate collection systems; new hazardous waste treatment or disposal facilities are prohibited; the impervious surface area, including all public and private structures, utilities, or facilities, of the entire water supply watershed shall be limited to twenty-five percent or existing use, whichever is greater; new facilities which handle hazardous materials of the types listed in Section 312 of the Resource Conservation and Recovery Act of 1976, excluding underground storage tanks, and amounts of 10,000 pounds on any one day or more, shall perform their operations on impermeable surfaces in conformance with any applicable federal spill prevention requirements or the requirements of the Standard Fire Prevention Code.

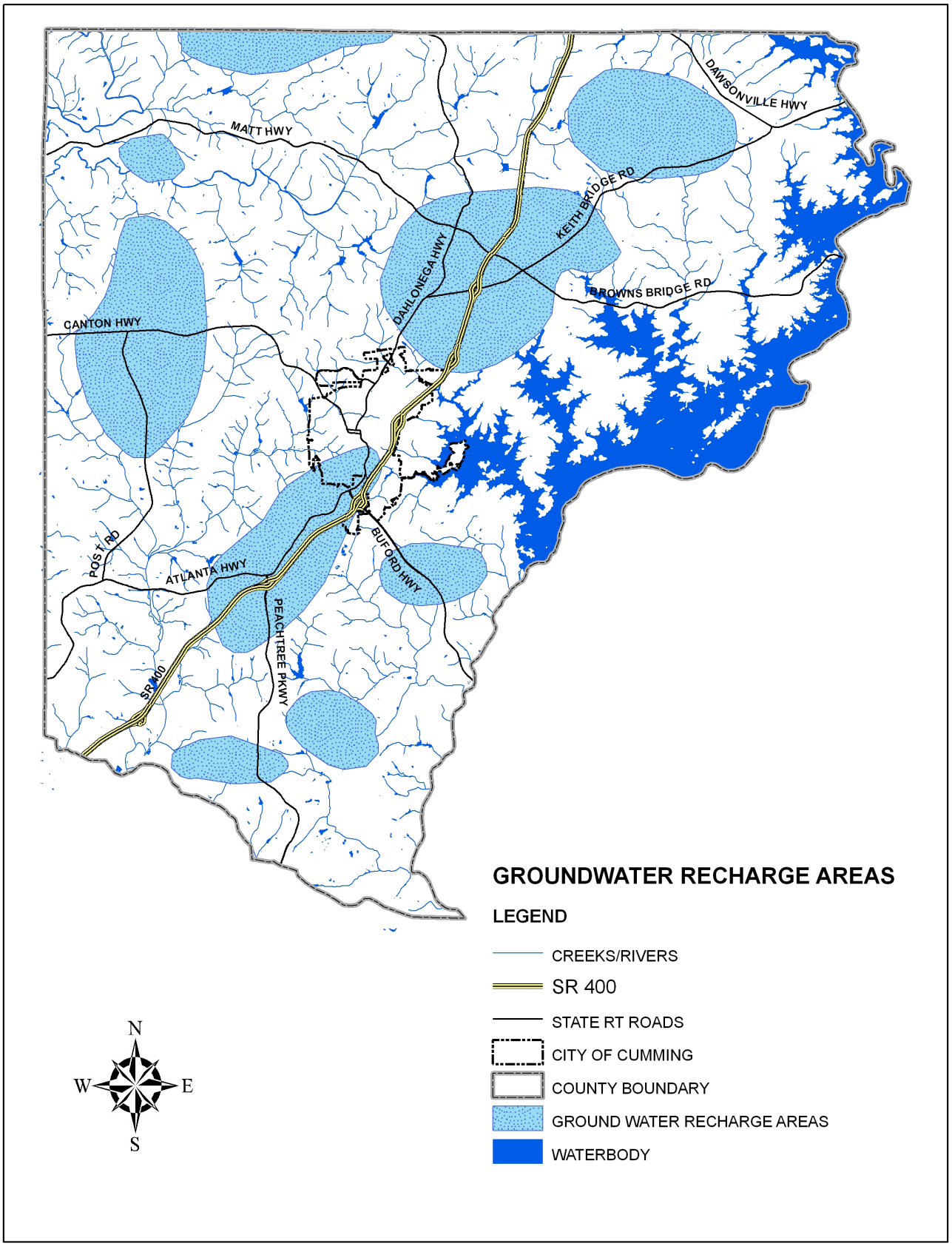
A limitation of twenty-five percent impervious surface within the Big Creek watershed applies to several jurisdictions. These include: Forsyth County, Cherokee County, Fulton County, the City of Alpharetta, the City of Cumming and the City of Roswell. A detailed analysis of the Big Creek watershed's impervious coverage within Forsyth County was completed in the fall of 2009, which indicated that approximately fourteen percent was composed of impervious surfaces including but not limited to public and private roads, driveways, building footprints, parking lots, sidewalks and a host of miscellaneous structures such as tennis courts and swimming pools. The impervious surface area requirement was calculated based on the portion of the watershed within unincorporated Forsyth County per the Unified Development Code.

Groundwater Recharge Areas

Groundwater recharge occurs in areas composed of topography and geology that allow percolation of surface water through the soil into an aquifer. These permeable surfaces raise the groundwater table and slow the flow of water into streams during rain events; they also provide a source of drinking water. If the aquifer becomes polluted, it is virtually impossible to decontaminate it. The groundwater recharge areas were mapped by DNR in Hydrologic Atlas #18, 1989 edition. The mapping was based on outcrop areas, lithology, soil type and thickness, slope, density of lithologic contacts, geologic structure, presence of "karst" topography and potentiometric surfaces. The Hydrologic Atlas # 20, 1992 edition entitled 'Groundwater Pollution Susceptibility Map of Georgia,' indicates areas of high, average and low pollution susceptibility. In the adoption of local ordinances, this map dictates the minimum lot sizes allowable for the construction of new homes and other structures that rely on septic tank systems. Forsyth County has adopted a list of criteria to be followed within any significant groundwater recharge area:

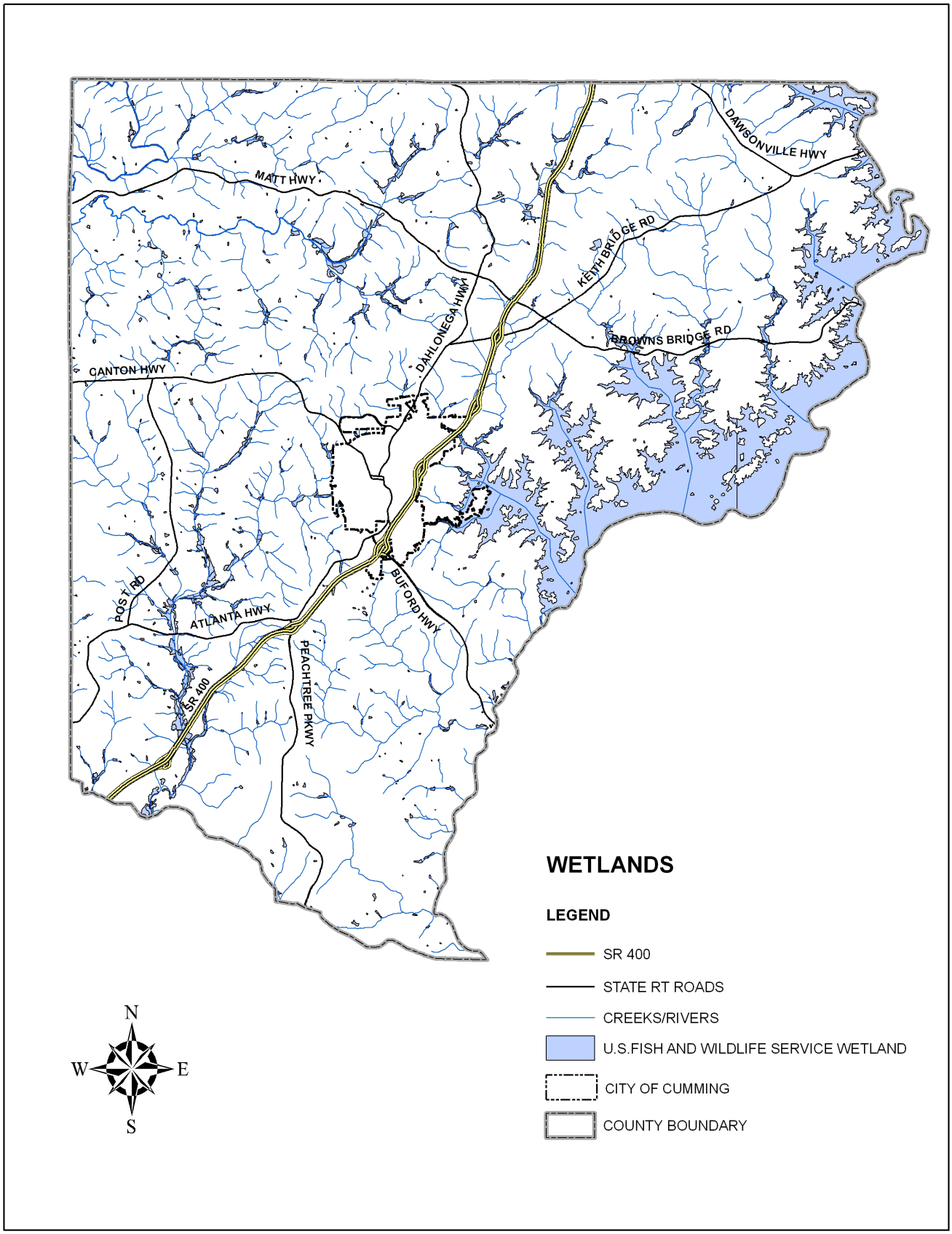
- DNR will not issue permits for sanitary landfills not having synthetic liners and leachate collection systems
- DNR will not issue permits for the land disposal of hazardous wastes
- DNR shall require all new facilities be permitted to treat, store or dispose of hazardous waste

FIGURE 14: GROUNDWATER RECHARGE AREAS OF FORSYTH COUNTY



Source: Georgia Department of Natural Resources

FIGURE 15: WETLANDS OF FORSYTH COUNTY



Source: U.S. Fish and Wildlife Service

to perform such operations on an impermeable pad having a spill and leak collection system
- New above-ground chemical or petroleum storage tanks, having minimum volume of 660 gallons, shall have secondary containment for 110% of the volume of such tanks or 110% of the volume of the largest tank in a cluster of tanks; such tanks used for agricultural purposes are exempt; provided they comply will all federal requirements

Protected Rivers

In 1973, the Georgia General Assembly enacted the Metropolitan River Protection Act (MRPA). This act established a 2000-foot corridor along both sides of the Chattahoochee River and its impoundments for the 48 miles between Buford Dam and Peachtree Creek. In 1998, MRPA was amended to extend the corridor an additional 36 miles downstream to the southern limits of Fulton and Douglas Counties. MRPA required that the Atlanta Regional Commission (ARC) adopt a plan, whose primary goal is the preservation and protection of water quality within the corridor since it is the region's primary source of drinking water, and to review development within the corridor for consistency with this plan. A large section of the Chattahoochee River corridor is located along the southeastern boundary of Forsyth County. The county is required to coordinate development activities along the corridor with the Georgia Mountains Regional Commission (GMRC). GMRC forwards any development proposal to the EPD as part of the standard review process.

Wetlands

Wetlands are areas with permanently or temporarily saturated soils that influence the unique plant and animal communities living there. They serve valuable ecological functions for the community in terms of flood water retention, soil erosion control, groundwater recharge and pollution filtration. The county has adopted a wetland protection district and coordinates with land disturbance permit applicants regarding Corps review if the project is subject to the Clean Water Act 404 permitting process. The largest areas of wetlands can be found along Big Creek, Settingdown Creek and the Etowah River. Additional wetlands can be found in association with the shoreline of Lake Sidney Lanier and in small, man-made ponds. The WFS National Wetlands Inventory maps are used to identify potential wetland sites as shown in Figure 15.

Potential Conservation Tools

Forsyth County remains one of the fastest growing counties in the State of Georgia. This growth trend is not without potential costs, including the diminishment of valuable natural resources. Some of these resources possess not only recreational and scenic worth, but are crucial to the expansion of the area since they are tied to key infrastructure needs such as water. For example, the Chattahoochee River, Lake Sidney Lanier, the Etowah River and Big Creek watershed are vital resources on which a multitude of land uses depend. In addition, contributions to the green infrastructure network will continue to gain significance as a community amenity while more residents make the county their home, thereby requiring additional recreational opportunities and intensifying the need to protect natural areas. The preservation of the county's rural heritage, most often glimpsed in pastures that emphasize the gently sloping landscape associated with the Piedmont region, is another consideration since a sizeable portion of the county is located within a pastoral setting, which is an important asset contingent upon resource protection.

In an effort to balance development expansion with natural resource conservation, there are a variety of regulatory tools and outreach opportunities that may be utilized to promote sustainability. The following tools represent conservation options not previously reviewed.

Regulatory

Conservation Subdivisions

The primary design criteria for conservation subdivisions is the provision and conservation of open space with allowance for the same amount of developable square footage found within conventional residential development. The county code regulations intend to minimize the impacts of new construction while contributing to the green infrastructure network. This is accomplished through the supply of contiguous open space that decreases visual and environmental effects through the incorporation of at least forty percent of the total land area as both primary and secondary conservation areas as defined in the code. These areas must be legally protected through conservation easements to ensure that unauthorized use and further subdivision of land does not occur. Mass clearing or grading is prohibited in the identified conservation areas and no less than five acres of contiguous open space is necessitated based on the minimum acreage size for the total development. The code offers flexibility in the minimum lot sizes per residential zoning district in order to achieve consolidated open space.

Tree Protection and Replacment Ordinance

This ordinance sets standards for the preservation and replacement of trees to perform the vital functions related to soil, air and water quality and stabilization that trees impart as an element of the natural environment. Additionally, trees provide wildlife shelter and food as well as granting shade, wind breaks, sound barriers and beautification to the built environment. The tree ordinance requires the maintenance of fifteen to twenty units per acre depending on the type of zoning district and calls for the replacement of specimen or landmark trees in the majority of these districts. These requirements are instituted for commercial, industrial, mixed use and residential land uses.

Soil Erosion and Sediment Control Ordinance

This ordinance requires Best Management Practices (BMPs) for all stages of land disturbing

activities since such actions may lead to excessive soil erosion and resulting sedimentation pollution. This ordinance is pursuant to the Georgia Water Quality Control Act and the Metropolitan River Protection Act; furthermore, it adheres to measures found within the Manual for Erosion and Sediment Control in Georgia.

Transfer of Development Rights Program
The original county greenspace program identified the potential of creating a transfer of development rights (TDR) program through which development rights from one property can be conveyed to another property. Value for development rights must be established and sending and receiving areas would be ascertained on a case-by-case basis. Once development rights for a particular piece are conveyed, a conservation easement is then placed on the sending property to protect natural resources in perpetuity. A program of this type requires codification and represents a prospective conservation tool for the county to consider that has been adopted by other jurisdictions within the state.

Funding, Technical Assistance and Incentive Programs

Federal

CONSERVATION AND REINVESTMENT ACT OF 1999 (CARA)

The Conservation and Reinvestment Act of 1999 (CARA), was passed by the House and approved by the Senate Committee on Energy and Natural Resources in 2000 to allocate revenues from outer continental shelf oil and gas activities for federal and state resource acquisition and protection, urban recreation, wildlife protection and related purposes. CARA was created to provide for the permanent protection of resources and to meet outdoor conservation and recreation needs.

Beginning in fiscal year of 2002, CARA, also known as H.R. 701, has annually provided 450 million dollars to the Land and Water Conservation Fund for federal and state land acquisition.

THE LAND AND WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) was created by Congress in 1965 to provide matching grants to states and local governments for the purchase and development of public outdoor recreational areas and facilities. The intent of the program is to create and maintain nationwide recreational spaces. The Congressional Act designated that a portion of receipts from offshore oil and gas leases be placed in the fund annually. The LWCF Program is divided into two distinct funding pools: State grants and federal acquisition funds. Locally, projects have included thousands of neighborhood playgrounds, soccer fields and baseball diamonds across the country.

Since its creation, the LWCF has been administered by several different departments beginning with the Bureau of Outdoor Recreation (BOR) who oversaw the program from 1965 to 1978. In 1978, the Heritage Conservation and Recreation Service (HCRS) was created and took over the program until 1981 when the LWCF was transferred to the NPS, who currently administers it today.

Forsyth County has received several LWCF grants in the past for the development of various projects including Sharon Springs Park, Midway Park and Bennett Park. More recently, the

county was awarded a grant for the rehabilitation of Ducktown Park, located on Heardsville Road in the northwestern section of the county. The proposed use of the $100,000 grant will be for the construction of an ADA restroom facility, soft surface walking trail, volleyball court, horseshoe pits, additional parking and a new sign.

RIVERS, TRAILS AND CONSERVATION ASSISTANCE PROGRAM

The Rivers Trails and Conservation Assistance Program is also known as Rivers and Trails or RTCA. They provide technical assistance to non-profit organizations, community groups, and local, state and federal agencies to protect open space, conserve rivers and develop trails and greenways.

The RTCA program implements the mission of the NPS by helping communities achieve tangible conservation successes. RTCA is currently partnering with Forsyth County for the creation of the Etowah River canoe trail for conservation education, outdoor recreation and transportation. RTCA will also be developing a concept plan for a county park along the Etowah River that includes the canoe trail.

U.S. DEPARTMENT OF AGRICULTURE, NATURAL RESOURCES CONSERVATION SERVICE: CONSERVATION INNOVATION GRANTS

The Conservation Innovation Grant (CIG) was established in 2002, with the amendment of the Farm Security and Rural Investment Act, and is administered by the Natural Resources Conservation Service (NRCS).

The CIG is a voluntary program whose intention is to "stimulate the development and adoption of innovative conservation approaches and technologies while leveraging federal investment in environmental enhancement and protection, in conjunction with agricultural production."

Funding for the CIG is announced each year via a funding notice and is available in the fifty states, the District of Columbia, the Commonwealth of Puerto Rico, Guam, the U.S. Virgin Islands, American Samoa and the Commonwealth of the Northern Marina Islands. Under the CIG, Environmental Quality Incentives Program (EQIP) funds are used to award competitive grants to non-federal governmental or non-governmental organizations, tribes or individuals. CIG funding is available for single- or multi-year projects.

319(h) NONPOINT SOURCE IMPLEMENTATION GRANT PROGRAM

In 1987, Congress amended the Clean Water Act to create the 319(h), Nonpoint Source Management Program. This program provides for federal guidance to help direct state and local efforts. Under section 319(h), states, territories and Indian tribes may receive funding to assist with a wide range of water quality activities that seek to prevent, control and abate nonpoint source pollution.

The funding for the grant comes from the U.S. Environmental Protection Agency, but is distributed through EPD. Funds are awarded through a competitive application process to eligible public organizations. Approved applicants are required to match at least forty percent of the total project cost either through local funds or in-kind services. Priority is given to total maximum daily loads (TMDL) implementation plans, watershed management plans or best management

practices (BMPs) identifying pollutant load reductions. These plans must specifically assuage the violations identified in Georgia's section 305(b) and 303(d) list of impaired waters. The eventual goal is to restore these impaired waters for which plans have been developed and then implemented.

SAFE, ACCOUNTABLE, FLEXIBLE, EFFICIENT TRANSPORTATION EQUITY ACT: A LEGACY FOR USERS (SAFETEA-LU)

SAFETEA-LU is a federal program administrated by the Georgia Department of Transportation. It addresses many challenges facing the state's current transportation system such as traffic congestion, intermodal connectivity and environmental protection. In addition, approximately 175 million dollars in grants and technical assistance has been authorized through 2009 to states for the development of scenic byways and to execute projects along highways designated as National Scenic Byways, All-American Roads, America's Byways and state recognized scenic byways.

Approximately 370 million dollars was authorized through 2009 under this program for the development and maintenance of trails for recreational purposes such as equestrian, bicycling and off-road vehicle leisure activities. Although this program expired in September of 2009, it has continually been extended by the federal government throughout 2010 and into 2011.

State

GEORGIA LAND CONSERVATION PROGRAM

The Georgia Land Conservation Act (the Act) was endorsed in 2005 and serves as the foundation for the Georgia Land Conservation Program thereby replacing the Georgia Community Greenspace Program. The Act was created to promote partnerships for the conservation of land resources identified by cities or counties as locally valuable or identified by DNR as having statewide significance.

The goals set forth in the Act include but are not limited to "water quality protection for rivers, stream, and lakes; wetlands protection; protection of riparian buffers and other areas that serve as natural habitat and corridors for native plants and animal species; and connection of existing or planned areas contributing to the goals of the statute." Initial priorities include the conservation of land for the protection of fragile natural habitats.

GEORGIA CONSERVATION TAX CREDIT PROGRAM

In 2006, the Georgia legislature passed the Georgia Conservation Tax Credit Program (GCTCP), House Bill 1107. The stated purpose of GCTCP was to "provide for income tax credits with respect to qualified donation of real property for conservation purposes." The conservation tax credit is to increase the financial incentive for willing landowners to donate land or place a conservation easement on their property.

This program provides a state income tax credit for fee simple donations of property or conservation easements to a qualified organization. Taxpayers can claim a credit against their state income tax of 25% of the fair market value of the donated property, up to a maximum credit of $250,000 per individual and $500,000 per corporation.

GCTCP is administered jointly by DNR and the Georgia Department of Revenue. DNR is re-

sponsible for determining whether or not donated properties are suitable for conservation purposes described in the program and for providing certification of suitability to the landowner.

GEORGIA RECREATION ASSISTANCE FUND

Defined under state law, the general purpose of the Recreation Assistance Fund (RAF) "is to provide grant assistance to eligible applicants for acquisition of real property and/or development of recreation facilities for general purpose public recreation." Funding is appropriated by the Georgia General Assembly in the annual or supplemental budget process and awarded as grants to applicants with proposed projects to increase the local supply of public recreation lands and facilities through the purchase of real property, facility development or the rehabilitation of existing facilities.

All grants are subject to various state and federal laws, rules and regulations. These include but are not limited to environmental compliance as specified in the National Environmental Policy Act (NEPA), the Georgia Environmental Policy Act (GEPA) and non-discrimination laws.

DNR'S SUSTAINABILITY DIVISION

Since 1993, DNR's Sustainability Division, formally known as the Pollution Prevention Association Division, has been providing free technical assistance related to pollution prevention, resource conservation, waste reduction, by-product reuse and recycling. In 2004, the Sustainability Division created the Partnership for a Sustainable Georgia (the Partnership). The Partnership promotes environmental leadership and acknowledges superior achievement. The goals of the Partnership are "to foster environmental leadership and exemplify organizational excellence."

The Sustainability Division developed a tiered incentive program to raise participation in the Partnership. Partnership benefits include technical support, networking opportunities and community recognition with specific perks associated with each level as criteria are attained.

DCA'S WATERFIRST COMMUNITY PROGRAM

DCA's WaterFirst Community Program (WaterFirst) is a voluntary partnership between local governments, state agencies and other organizations focused on water resource management. This program requires jurisdictions to consider the relationships between land use development and water quality across political and geographic boundaries.

WaterFirst is a three-step program. The first step is to decide to pursue becoming a WaterFirst Community through tailored project goals based on the environmental and economic conditions of the area. The second step is to exceed minimum state requirements with the goals set forth in step one; community recognition occurs once these goals are reached. The third step is to maintain baseline achievements while setting additional goals through program updates.

In order to be eligible for the WaterFirst Program, a community must be a qualified local government and is required to submit an application to DCA for approval. To be designated as a WaterFirst Community, the applicant is obligated to meet criteria in seven areas: Watershed assessment; stormwater master planning; wastewater treatment and management; water supply planning; water supply protection; water conservation; and water reclamation and reuse. Technical assistance and special workshops are provided by DCA's Office of Environmental Manage-

ment for all participants in the WaterFirst Program. Forsyth County achieved recognition as the state's eighteenth WaterFirst Community in March 2010.

Local

AGRICULTURAL USE TAX ASSESSMENT PROGRAMS

Bona fide agricultural property can be assessed for ad valoreum property tax through one of two special assessment programs: Conservation use valuation or preferential agricultural assessment. Both programs require land, up to 2,000 acres, be dedicated for valid agricultural purposes under a ten year covenant agreement. Conservation use valuation allows an assessement based on current use rather than fair market value. Preferential agricultural property can be assessed at seventy-five percent of the value which other tangible real property is levied. Agricultural preferential assessment applies to all land and up to $100,00 in agricultural production or storage building value while conservation use valuation applies only to land values. Property owners may apply to the Forsyth County Board of Tax Assessors for preferential assessment under O.C.G.A. Section 48-5-7.1 to obtain a reclassification of their agricultural property. In 2010, Forsyth County in had more than 790 parcels compromising over 24,000 acres of property utilizing a tax preferential status based on agricultural uses.

THE ETOWAH INITIATIVE, UNIVERSITY OF GEORGIA

The Etowah Initiative (the Initiative) is a service learning course which allows students to apply their classroom experiences of policy, design and ecological principles to real world situations. The Initiative brings together students from the University of Georgia with community stakeholders facing specific environmental challenges.

The mission of the Initiative program is "to help protect the ecological integrity of the Etowah River basin by working with stakeholders to reduce the impact of human activities on water quality and biodiversity." Some of the key goals for this hands-on program include water quality and the protection and restoration of aquatic species through the best available science, design and policy concepts.

In the fall of 2003, Initiative students completed a study on "Conserving Natural Resources and Expanding Recreational Opportunities in the Upper Etowah Watershed" as a follow-up project to a prior 2001 Regional Greenspace Plan. A component to the overall plan was a proposed canoe trail that identified a paddling route, which would help to expand an individual's general ecological awareness of the Etowah River corridor.

Non-Governmental Organizations

LAND TRUSTS

The Land Trust Alliance, which was created in 1982 as a collaborative effort of approximately 450 state and local land trusts, for the sharing of policy, information and training, defines a land trust as a "non-profit organization that, as all or part of the mission, actively works to conserve land by undertaking or assisting direct land transactions – primarily the purchase or acceptance of donations of land or easements." Land trusts work with both landowners as well as the community to preserve land for future generations. Most land trusts are community-based organizations that are well acquainted with local needs and are able to identify lands that contain natural

habitats as well as lands that offer recreational, agricultural and conservation uses. The Georgia Environmental Policy Institute indicates that there are over forty active land trusts within the State of Georgia.

Community Outreach

KEEP FORSYTH COUNTY BEAUTIFUL

Keep Forsyth County Beautiful (KFCB) was formed in 1993 to preserve the county's resources such as parks, wildlife habitat and waterways from the anticipated rapid growth of the community. The mission of KFCB is "to cooperate with government, businesses, schools, civic organizations and citizens in a joint effort to improve beautification, litter reduction and recycling."

KFCB hosts several annual events to incorporate volunteer participation and public awareness of environmental issues. The organization focuses on education and voluntary, hands-on involvement for recycling, litter prevention and water conservation. KFCB also sponsors an annual awards banquet to recognize residents, schools, clubs and businesses for a commitment to "keeping the county green." Other KFCB events include: Bring One for the Chipper Christmas Tree Recycling, The Great American Cleanup, Liberty Gardens Ceremony, Phone Book Recycling Contest, America Recycles Day and Electronics Recycling Events.

GEORGIA ADOPT-A-STREAM

The Georgia Adopt-A-Stream (AAS) Program is a unique effort to involve the public and local communities in water quality assessment and protection. The program is housed as part of the Nonpoint Source Program in the Water Protection Branch of the Georgia EPD. The AAS Program has four main objectives including public awareness of the state's nonpoint source pollution and water quality issues; provision of citizen focused tools and training to evaluate and protect local waterways; encouragement of partnerships between citizens and local government; and the collection of quality baseline water quality data. To accomplish these goals, the AAS program, which has more than 7,000 state-wide volunteers and 225 active groups, encourages individuals and communities to monitor and improve sections of streams, wetlands, lakes or estuaries.

SAWNEE MOUNTAIN PRESERVE

The Sawnee Mountain Preserve offers a variety of activities to many different groups, including schools and the general public. The Preserve's new visitor center offers free admission and interactive exhibits on the natural and cultural histories of Sawnee Mountain. In addition, the center also provides a resource library for environmental and natural history education. School classes are available year round as well as public programs. Class topics range from plant identification, art or gardening to wildlife studies, geology or local history. The different programs have both indoor and outdoor components and take advantage of the Preserve's resources.

RIVERS ALIVE

Rivers Alive was conceived in the early 1990s by Curtis Farrar, a past DNR board member, with the idea of cleaning up state rivers. The first state-wide cleanup focus was organized by the DNR Wildlife Division in 1992. In 1993, the different organizations for river cleanup were divided among the various DNR divisions: Wildlife Resources, Environmental Protection, Coastal and Water Resources. In 1999, the various cleanup organizations throughout the state unified togeth-

er to form Rivers Alive.

Rivers Alive is the State of Georgia's annual volunteer waterway cleanup event. Its mission is to "create awareness of and involvement in the preservation of Georgia's water resources." The event targets all waterways in the state including streams, rivers, lakes, beaches and wetlands. Rivers Alive is sponsored by EPD's Georgia Adopt-A-Stream Program and DCA's Keep Georgia Beautiful Program, in cooperation with Help the Hooch.

UPPER CHATTAHOOCHEE RIVERKEEPER

The Upper Chattahoochee Riverkeeper (UCR) was created in 1994 by a group of environmentalists, scientists and community activists to protect the Chattahoochee River Basin. The mission of the UCR is to "advocate and secure protection and stewardship of the Chattahoochee River and its tributaries and watershed in order to restore and conserve their ecological health for the people, fish and wildlife that depend on the river system." The primary focus area includes more than 200 miles of the Chattahoochee River and 3,600 square miles of watershed. The protected area begins at the river's headwater in the Chattahoochee National Forest and continues downstream, through the City of Atlanta, to West Point Lake in Heard County.

The Chattahoochee River, which is the primary drinking source for approximately four million Georgians, Alabamians and Floridians, has been named one of the most endangered rivers in the United States due to poor water quality. The UCR, which has more than 5,000 members, uses advocacy, education, research, communication, cooperation, monitoring and legal actions to protect and preserve the Chattahoochee River and its watershed.

1071 COALITION

The 1071 Coalition, formed in November of 2008, is a non-profit organization comprised of citizens, civic groups, businesses and other entities dedicated to maintaining the water level of Lake Sidney Lanier. The Coalition's mission is to work towards sustaining Lake Sidney Lanier at 1071 feet above sea level, which is the full capacity of the lake.

The Coalition has several main objectives including the commission of an economic impact study of Lake Sidney Lanier, the urging of government officials to assign the lake political priority and to take action in the best interest of Georgians as well as serving as a voice in the public relations struggle between the states over water allocation.

LAKE LANIER ASSOCIATION

The Lake Lanier Association (the Association) is the oldest volunteer group working to protect the lake's quality and water level and to preserve its legacy for future generations. Founded in 1966, the Association's mission is "dedicated to a clean and full lake Lanier to enhance its economic value to Georgia."

The original group was founded by homeowners living on the lake. Today, the group is comprised of approximately 4,500 members including lake residents, individuals, families, businesses, boaters and fishermen. The Association sponsors many programs such as "Shore Sweep" and "Adopt a Lake," geared towards keeping the waters and shorelines clean and beautiful. It also serves as a voice for citizens around the lake and across the region interested in lake protection.