Chapter 4: Natural Resources

NATURAL RESOURCES

4.1 Introduction

This section addresses the natural resources and vital areas found in Oconee County as well as Bishop, Bogart, North High Shoals, and Watkinsville as defined in the *Minimum Planning Standards and Procedures*, Rules of the Georgia Department of Community Affairs, Chapter 110-3-2, as amended. Under the Georgia Planning Act of 1989, natural resources include groundwater recharge areas, wetlands, protected mountains and river corridors, coastal resources, flood plains, soils, steep slopes, prime agricultural and forest land, plant and animal habitat, major park, recreation and conservation areas, and scenic views and sites. To preserve and protect a community's natural resources the Department of Natural Resources established minimum protection standards for natural resources, the environment and vital areas of the state, specifically, water supply watersheds, groundwater recharge areas, wetlands, river corridors, and mountains.

4.2 Physiography and Topography

Topography and slope are important considerations in local planning because they provide indicators of suitability and cost of developing particular sites. Local relief and slope characteristics should be considered, particularly along areas of significant slope, flat or low-lying areas, and along ridges, hillsides and streams. Development without regard to slope and relief can damage the natural environment through increased storm water runoff and soil erosion. In addition, an area's aesthetic quality can be damaged without consideration to topography.

Oconee County, located in the Southern Piedmont Major Land Resource Area, is adjacent to Clarke, Oglethorpe, Greene, Morgan, Walton, and Barrow counties. (See Location Map 1-1). The county covers 186 square miles, or 119,040 acres, of a moderate to steeply sloping plateau. Near stream channels, however, some areas are nearly level, and others have short, steep slopes. There are also a few escarpments.

The Apalachee River forms the southwestern boundary of the county while the Oconee River and McNutt Creek form the northeastern boundary. The county is dissected by tributaries of these rivers. The drainage divide between the Oconee and Apalachee Rivers splits the county in two along its long southeast/northwest axis. Approximately one-third of the county is drained by the Apalachee and two-thirds by the Oconee.

Elevations in the county range from 400 feet above sea level in the southeast edge to 800 feet in the northwest. As Map 6 indicates, the greatest concentrations of steep slopes are along the Oconee and Apalachee Rivers and along tributaries in the southeast part of the county. Slopes of more than 15 percent, such as these, typically require substantial alteration for building development. When stripped of vegetative cover during development, steep slopes becomes susceptible to serious erosion.

Oconee County contains four incorporated towns: Bishop, Bogart, North High Shoals, and Watkinsville.

Bishop lies on U.S. Highway 129/441 in the central part of the county. The town straddles the drainage divide between the Apalachee and Oconee Rivers, and ranges in elevation from 680 to 780 feet above sea level.

Bogart lies along U.S. Highway 29 in the extreme northwest part of the county and is in the Oconee River watershed. Elevations range approximately from 740 to 860 feet above sea level.

North High Shoals lies along the Apalachee River on the southwest boundary of the county. Elevations range from 600 to 750 feet above sea level.

Watkinsville lies in the central part of the county along U.S. Highway 129/441, about 4 miles north of Bishop. Elevations range from 600 to 780 feet draining to the Oconee River watershed.

4.3 Geology and Mineral Resources

An inventory and analysis of local geology and mineral deposits are important in determining site-specific development potential as well as opportunities for expansion of extractive industries as part of the local economic base. Geologically, Oconee County is underlain predominately by biotitic gneiss, mica schist, amphibolite, and sillimanite schist. The only significant mineral found in the county is sillimanite, an aluminum silicate.

4.4 Soils

The soil maps included in this chapter represent prime agricultural soils and soils unsuitable for development. Slope severity, depth to bedrock, water table, and limitation for septic tank drain fields determine the soils' suitability for development.

In planning, an accurate analysis of local soil conditions is necessary. Soil properties directly influence the construction of buildings, highways, the installation of septic tanks, and agricultural activities. Local soil surveys are an invaluable land use planning tool because of the information they provide about site-specific development capability. Soil surveys are the primary data sources for determining prime agricultural lands, suitability of building foundations and septic tank drain fields, slope conditions, wildlife suitability, and flood/wetland conditions. The surveys also can aid planners and local government officials in zoning flood plains, determining the suitability of areas for various uses, and in applying the soil and water considerations of subdivision regulations and building codes to specific developing areas. Soil survey maps also help determine other significant physical properties including the amount of moisture that the soil will hold for plants, the rates that air and water move through the soils, and the kinds and amounts of clays, all of which are important in drainage, irrigation, erosion control, maintenance of good tilth, and the choice of crops.[1] However, the focus of this plan is to identify soils that present opportunities or limitations to development, agriculture, and forestry.

The major threat to soils is erosion, a process that occurs naturally but can accelerate with human activity. Factors influencing erosion are climate, topography, and vegetative cover. The frequency, intensity and duration of rainfall and temperature extremes are the principal characteristics contributing to the volume of runoff from a given area. The topography (size, shape and slope characteristics) of a watershed influences the amount and duration of runoff. The greater the slope length and gradient, the greater the potential for both runoff and erosion. Water velocity will increase as the distance from the top of the slope or the grade of the slope increases. Properties that will determine the erodibility of a soil are texture, structure, organic matter content and permeability. Soils containing a high percentage of the fine sands and silt are normally the most erodible. As the soils' clay and organic matter content increases, the erodibility decreases. Clays act as a binder to soil particles thus reducing erodibility. While clays have a tendency to resist erosion, once eroded, they are easily transported by water. Soils high in organic matter resist raindrop impact; the organic matter also increases the binding characteristics of the soil. Clear, well-graded and well-drained gravels are usually the least erodible soils as the high infiltration rates and permeabilities either prevent or delay runoff.

Vegetative cover is an extremely important factor in reducing erosion from a site. Vegetation will absorb the energy of raindrops, bind soil particles, slow the velocity of runoff water, increase the ability of soil to absorb water, and remove subsurface water between rainfalls through the process of evapotranspiration. By limiting the amount of vegetation disturbed and the exposure of soils to erosive elements, soil erosion is reduced. When vegetation is removed, fertile topsoil is the first to erode. Topsoil erosion eventually results in fewer favorable growing conditions, reduced crop yields, and decreased livestock productivity. It can take one thousand years to form one inch of topsoil, making soils an essentially non-renewable resource. Methods to control soil erosion include leaving vegetative buffers along streams, and contour plowing and terracing, all of which decrease the speed of storm water runoff and permit

[1]DeChira, Joseph and Lee Koppelman. 1984. *Time Saver Standards for Site Planning*. (New York: McGraw-Hill Book Company).

...*Soil Survey Can Help You*, U. S. Department of Agriculture, Soil Conservation Service Program Aid No. 1054 (Washington, D.C.: Government Printing Office, 1988).

more water to soak into the soil.[2] In addition, local governments can control soil erosion from construction, mining, logging and development activities by regulating construction sites.[3]

Table 4-1 lists the soils in Oconee County, total acreage of those soils, and various soil characteristics that pose limitation to development. Additionally, soil limitation for urban uses are classified as slight, moderate, or severe. The geographic location of these soils is determined through analysis of the soil survey maps.

The most common soil types in Oconee County are Cecil sandy loam, 2-6 and 6-10 percent slopes, Pacolet sandy clay loam, 6-10 and 10-15 percent slopes, Madison sandy clay loam, 10-25 percent slope, and Madison sandy loam, 15-25 percent slope. These types make up 50 percent of the total in the county. Erosion has removed most or all of the original surface layers of the predominant soils in the county. Three of the predominant soils pose severe limitations to commercial development due to the steepness of slopes: Madison sandy loam, Madison sandy clay loam, and Pacolet sandy clay loam, 10-15 percent slope. None of the predominant soils pose a severe limitation to residential development. County-wide, 17 percent of the soils pose severe limitations to residential development and 47 percent pose severe limitations to commercial development.

Table 4-1 shows which soils are associated with steep slopes (greater than 15 percent). Twenty-four percent of the total acreage of the county is covered by steep slopes. Steep slopes typically require substantial alteration for building development and pose severe limitations to septic tank drain fields. Alterations to steep slopes change the natural character of an area and can create serious erosion problems. Development activities on steep slopes, when necessary, should always utilize exceptional erosion control measures.

Also included in Table 4-1 are the limitations of the various soils to septic tank drain fields and indicating of soils with seasonal high water tables and with shallow depth to bedrock. Septic tank drain fields are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank to a natural soil. Properties and features that affect absorption of the effluent are permeability, depth to seasonal high water table, depth to bedrock and susceptibility to flooding. County-wide, 32.2 percent of the soils pose severe limitations to drain fields.

Soils indicated as having high water tables are those for which the water table is less than 6 feet below the surface for a continuous period of more than two weeks out of the year. Soils associated with a high water table cover 8 percent of the county. Information about the seasonal high water table helps in assessing the need for specially designed foundations, the need for specific kinds of drainage systems, and the need for footing drains to insure dry basements. Such information is also needed to decide whether or not construction of basements is feasible and to predict how septic tank absorption fields and other underground installations will function.

[2]*Manual for Erosion and Sediment Control in Georgia* (Atlanta, GA: State Soil and Water Conservation Committee, 1975), pp. 13-14.

[3]Stokes, Samuel N., et al. 1989. *Saving America's Countryside: A Guide to Rural Conservation*. (Baltimore: Johns Hopkins).

Table 4-1[4]

Oconee County Soils												
Symbol	Soil Name	Acres	Percentage of Total Acres	Prime Farmland	Steep Slopes	High Water Table	Shallow Depth to Bedrock	Limitation - Septic Tanks	Limitations for Urban use			
									Building Foundation - Houses	Building Foundation - Commercial	Passive Recreation	
											Picnic	Camp/ Playground
AnC3	Appling sandy clay loam, 6 to 10 percent slopes, severely eroded	300	0.3				*	M	SL	M	M	S
AxB2	Appling coarse sandy loam, 2 to 6 percent slopes, eroded	2,070	1.7	*			*	M	SL	M	SL	SL
AxC2	Appling coarse sandy loam, 6 to 10 percent slopes, eroded	910	0.8				*	M	SL	M	SL	M
Bfs	Buncombe loamy sand	375	0.3			*		S	S	S	S	S
CiB	Colfax sandy loam, 2 to 6 percent slopes	570	0.5			*		S	S	S	S	S
Coa	Congaree soils and Alluvial lands	3,885	3.3			*		S	S	S	M	S
Cob	Chewacla soils and Alluvial lands	940	0.8			*		S	S	S	S	S
CYB2	Cecil sandy loam, 2 to 6 percent slopes, eroded	14,835	12.5	*				M	SL	M	SL	SL
CYC2	Cecil sandy loam, 6 to 10 percent slopes, eroded	11,320	9.5					M	SL	M	SL	M
CZB3	Cecil sandy loam, 2 to 6 percent slopes, severely eroded	1,130	0.9					M	SL	M	M	M

[4]*Soil Survey of Clarke and Oconee County, Georgia*, U.S. Department of Agriculture, Soil Conservation Service, February, 1979.

SL = Slight limitation; M = Moderate limitation; S = Severe limitation

Oconee County Soils												
Symbol	Soil Name	Acres	Percentage of Total Acres	Prime Farmland	Steep Slopes	High Water Table	Shallow Depth to Bedrock	Limitation - Septic Tanks	Limitations for Urban use			
									Building Foundation - Houses	Building Foundation - Commercial	Passive Recreation	
											Picnic	Camp/ Playground
DhB3	Davidson clay loam, 2 to 6 percent slopes, severely eroded	1,130	0.9					M	SL	M	M	M
DhC3	Davidson clay loam, 6 to 10 percent slopes, severely eroded	1,750	1.5					M	SL	M	S	S
DhD3	Davidson clay loam, 10 to 15 percent slopes, severely eroded	1,500	1.3					M	M	S	S	S
DhE3	Davidson clay loam, 15 to 25 percent slopes, severely eroded	900	0.7	*				M	M	S	S	S
DqB2	Davidson sandy loam, 2 to 6 percent slopes, eroded	1,620	1.4	*				M	SL	M	SL	SL
DqC2	Davidson sandy loam, 6 to 10 percent slopes, eroded	2,070	1.7					M	SL	M	SL	M
DqE2	Davidson sandy loam, 15 to 25 percent, eroded	1,320	1.1		*			M	M	S	M	S
LDE	Louisburg stony loamy sand, 10 to 25 percent slopes	635	0.5		*		*	S	S	S	S	S
LnC	Louisburg loamy sand, 6 to 10 percent slopes	235	0.2				*	S	M	M	SL	M
LnE	Louisburg loamy sand, 10 to 25 percent slopes	765	0.6		*		*	S	M	S	M	S
MgB2	Madison sandy loam, 2 to 6 percent slopes, eroded	3,440	2.9	*				M	SL	M	SL	SL
MgC2	Madison sandy loam, 6 to 10 percent slopes, eroded	2,070	1.7					M	SL	M	SL	M

SL = Slight limitation; M = Moderate limitation; S = Severe limitation

Oconee County Soils												
Symbol	Soil Name	Acres	Percentage of Total Acres	Prime Farmland	Steep Slopes	High Water Table	Shallow Depth to Bedrock	Limitation - Septic Tanks	Limitations for Urban use			
									Building Foundation - Houses	Building Foundation - Commercial	Passive Recreation	
											Picnic	Camp/ Playground
MgD2	Madison sandy loam, 15 to 25 percent slopes, eroded	2,170	1.8					M	M	S	SL	M
MgE2	Madison sandy loam, 15 to 25 percent slopes, eroded	6,900	5.8		*			M	M	S	M	S
MiB3	Madison sandy clay loam, 2 to 6 percent slopes, severely eroded	300	0.3					M	SL	M	M	M
MiC3	Madison sandy clay loam, 6 to 10 percent slopes, severely eroded	2,170	1.8					M	SL	M	M	S
MiE3	Madison sandy clay loam, 10 to 25 percent, severely eroded	8,275	6.9		*			M	M	S	S	S
MmC2	Madison-Louisa complex, 6 to 10 percent slopes, eroded	430	0.4					M	M	M	SL	M
MmD2	Madison-Louisa complex, 10 to 15 percent slopes, eroded	750	0.6					M	M	S	M	S
MmE2	Madison-Louisa complex, 15 to 25 percent slopes, eroded	2,545	2.1		*			M	M	S	M	S
MvE2	Musella clay loam, 15 to 25 percent, eroded	855	0.7		*		*	S	M	S	M	S
PfD2	Pacolet sandy loam, 10 to 15 percent slopes, eroded	5,150	4.3					M	M	S	M	S
PgC3	Pacolet sandy clay loam, 10 to 15 percent slopes, severely eroded	8,470	7.1					M	SL	M	M	M

SL = Slight limitation; M = Moderate limitation; S = Severe limitation

Oconee County Soils												
Symbol	Soil Name	Acres	Percentage of Total Acres	Prime Farmland	Steep Slopes	High Water Table	Shallow Depth to Bedrock	Limitation - Septic Tanks	Limitations for Urban use			
									Building Foundation - Houses	Building Foundation - Commercial	Passive Recreation	
											Picnic	Camp/ Playground
PgD3	Pacolet sandy clay loam, 10 to 15 percent slopes, severely eroded	9,620	8.1					M	M	S	S	S
PhC	Pacolet-Gullied land complex, 6 to 10 percent slopes	3,530	3.0					M	S	M	M	S
PhE	Pacolet-Gullied land complex, 10 to 15 percent slopes	5,890	4.9		*			S	S	S	S	S
PiD2	Pacolet stony sandy loam, 6 to 15 percent slopes, eroded	260	0.2					M	S	S	M	S
PiE2	Pacolet stony sandy loam, 15 to 25 percent slopes, eroded	475	0.4		*			S	S	S	S	S
RoK	Rock outcrop	75	<0.1					S	S	M-S	M-S	S
WkB	Worsham sandy loam, 2 to 6 percent	530	0.4			*		S	S	S	S	S
Wos	Wehadkee and Alluvial land, wet	3,195	2.7			*		S	S	S	S	S

SL = Slight limitation; M = Moderate limitation; S = Severe limitation

4.5 Prime Agricultural Soils

In Georgia, prime agricultural soils are soils best suited for producing food, feed, forage, fiber, and oilseed crops. These soils have the quality, growing season, and moisture supply needed to produce sustained good yields of crops economically if treated and managed, including water management. "Additional soils of statewide importance" are soils that, in addition to prime agricultural soils, are also important for the production of food, feed, fiber forage, and oilseed crops. The soils economically produce good yields if drained, protected against flooding, if erosion control practices are installed, or if additional water is applied to overcome drought.

As a result of cotton monoculture, by 1935 most or all of the Piedmont topsoil had been eroded. This was accompanied by extensive gully erosion. The remaining prime agricultural land accounts for 19.1 percent of the land in Oconee County (22,640 out of 119,040 total acres). Cecil sandy loam accounts for 65 percent of the prime agricultural land.

Prime agricultural soils in Oconee County are indicated on Maps 12 and 13. They include the following.[5]

Appling coarse sandy loam (AxB2)
Cecil soils (CbA)
Cecil sandy loam (CYB2)
Davidson sandy loam (DqB2)
Madison sandy loam (MgB2)

The Soil Conservation Service has identified soils/lands of statewide importance which are considered good agricultural soils but not prime agricultural soils. These soils/lands located in Oconee County include:

Appling coarse sandy loam (AxC2)
Cecil sandy loam (CYC2)
Congaree soils with alluvial land (Coa)
Davidson sandy loam (CYC2)
Louisburg loamy sand (LnC)
Madison-Louisa complex (MmC2)

It may be desirable to map the good agricultural soils if prime agricultural soils are not being utilized for agricultural purposes.

Assessment

The Implementation Schedule for Oconee County's 1992 Comprehensive Plan included the goal of promoting continued agribusiness activities in the county. Oconee County continues to recognize the contribution of agribusiness to its economic base and to local employment. Protection of prime agricultural soils is an important part of achieving this goal.

To that end, Oconee's Future Land Use Plan identifies a "growth" or "development corridor" generally along the northern portion of the county where existing and future development is planned. The southern portion of the county is primarily identified for continued agricultural use.

Oconee's Zoning, Subdivision and other land development ordinances and policies also support this land use trend by limiting density in the agricultural areas and by concentrating infrastructure, schools and major roadway corridors in the northern end of the county.

In a rapidly growing community such as Oconee, it would be impractical to expect that all prime agricultural soil areas in the "growth corridor" would remain in agricultural use. In some cases, continued agricultural use would be in direct conflict with other established land use trends. Therefore, while some prime agricultural soils will be given over to development in the northern end of the county, the majority of these soils will be protected throughout the larger remainder of the county through the continuation of these land use and economic policies.

[5]Talbert Gerald, U.S.D.A. Soil Conservation Service, Athens, GA.

All jurisdictions in Oconee county have zoning and subdivision regulations which address development in areas with steep slopes. The basic policy is to avoid new construction in these areas. However, this is often unfeasible so the stated goal is to limit development and to consider alternatives and mitigation measures if development must occur in areas with steep slopes.

4.6 Forest Resources

Georgia contains the largest commercial forest acreage of any state. The forest products industry represents one of the state's largest employers. In addition to the economic values, forests are important parts of the ecological system; they prevent soil erosion, provide wildlife habitats, provide aesthetic qualities, and help maintain watersheds. In Georgia many landowners are cutting more trees than they are planting. This practice presents some problems in Georgia because it hinders forest regeneration, a time-consuming process, taking from 25 to 40 years for pine forests to reach market age. Timber harvesting, without planning for regeneration, has long-term social and economic consequences for areas where it occurs. Therefore, an analysis of forest resources is an important component in this element and in the comprehensive plan as a whole.

Forest resources may be considered in both economic and non-economic terms. The non-economic aspects are those intangible characteristics that assist in defining Oconee County. Forests improve air and water quality, enhance sedimentation control, produce pleasant surroundings and views, and moderate temperatures in urban areas.

Oconee County has a total area of 119,040 acres. Forest land comprises 66,561 acres, or 55.9 percent of total acres. This forest land is broken down into the following ownership classes.[6]

Table 4-2

Forest Land Ownership Classes	Acres
Federal	175
State	176
County or Municipal	101
Forest Industry[7]	2,979
Corporate[8]	4,209
Individuals[9]	46,295
Farmers[10]	14,626
Source: Georgia Forestry Commission, July 10, 1991.	

Forest land in Oconee County can be further broken down by timber species type classes:[11]

[6]Georgia Forestry Commission, "Information for Growth Strategies Planning for Oconee County, Georgia", Athens, GA., July 10, 1991.

[7]Companies or individuals operating wood-using plants.

[8]A corporation that owns forested land, but is not in the forest industry.

[9]A person who owns forested land but does not farm and is not incorporated.

[10]A person who operates a farm, either doing the work himself or directly supervising the work.

[11]Georgia Forestry Commission.

Table 4-3

Timber Classes	Acres
Loblolly-Shortleaf Pine	28,245
Oak-Pine	8,418
Oak-Hickory	25,529
Oak-Gum-Cypress	4,209
Elm-Ash-Cottonwood	160
Source: Georgia Forestry Commission, July 10, 1991.	

The table below summarizes the existing undeveloped urban forest within and surrounding Oconee County incorporated areas (within 0.5 and 1.0-mile radius of a town center).

Table 4-4

Urban Forests		
Incorporated Area	Acres Within 0.5 Miles of Town Center	Acres Within 1.0 Mile of Town Center
Bishop	74	561
Bogart	213	981
North High Shoals	250	601
Watkinsville	65	370
Source: Georgia Forestry Commission, July 10, 1991.		

Trees are beneficial to a community. They improve the air quality by trapping and holding dust particles that can irritate or damage lungs. Tree leaves absorb carbon dioxide and other poisonous gases and, in turn, replenish the atmosphere with oxygen. One acre of trees will annually absorb the amount of carbon dioxide equivalent to that produced by a car driven 26,000 miles. Trees properly placed will save energy through cooling in the hot months and serving as windbreaks during winter. Air-conditioning costs may be reduced by 30 percent and heating costs, 20 to 50 percent. Noise pollution may also be reduced. Economic stability increases by attracting and keeping businesses in a community. The National Arbor Day Foundation reports that cities planted with trees are more likely to attract new businesses and are more appealing to tourists. Many commercial retail areas enjoy the business-building benefits of trees. People linger and therefore shop longer in a tree lined area. Apartments in green and wooded areas rent more quickly and tenants stay longer. Office and industrial park developers find they actually save money during the construction process by saving trees and that the space in a wooded setting is more valuable to sell or rent. Businesses located in these wooded developments find their workers are more productive and absenteeism is reduced. Property values can increase as much as 15 percent in areas with well-tended trees. Trees improve water quality by reducing the impact of rain, resulting in less runoff and erosion. This allows more recharging of the groundwater supply. Wooded areas help prevent the transport of sediment and chemicals into streams. Finally, trees create wildlife diversity by providing a local ecosystem and improving the quality of life.

Within urbanized areas, trees mitigate the urban heat island that may be from 3 to 10 degrees hotter than the surrounding region on a summer day. During hot months a heat island creates considerable discomfort and stress and increases air-conditioning bills and the incidence of urban smog. Heat islands are caused by the concentration

of large buildings and the paving of streets and parking lots. Research shows that for every degree of increased heat, electricity generation rises by 1 to 2 percent, and smog production increases by 2 to 4 percent.

Urban forests are declining at an alarming rate, according to a 1987 survey by the American Forestry Association. Of the cities surveyed, only one planted as many trees as it removed. Some cities will replace a certain percentage of their urban trees, yet many cities have no tree replacement program.

Trees are as invaluable in small rural communities as they are in large urban cities. However, because of the small tax base, small cities must often rely on innovative funding for tree care programs as well as on volunteers, not only to raise funds but to provide program leadership and in some cases even for physical labor.

An approach that works well in small communities is setting up a tree board. With help from the Georgia Forestry Commission, tree boards must first conduct surveys of public trees to determine overall program needs. When program needs are determined, priorities are assigned and goals established. A work program is determined which will carry out the goals. Ideally the tree board should serve in a planning and advisory capacity, with qualified city/county employees implementing the plans. But where qualified city/county employees are not available, the tree board can administer and implement the program.

Assessment

Mature trees improve the visual character of subdivisions in a way new landscaping cannot. Mature trees add a permanence and sense of continuity to a newly constructed subdivision. Trees function as a visual and sound buffer to adjacent land uses, as a shade source for energy conservation, and as strategic focal point for subdivision design. An inventory of all existing trees above a certain size and of certain species should be undertaken in the site planning process and marked on the preliminary plat. This map of the mature trees should influence the design of lots, roads, and other open space.

Trees are also susceptible to development in their immediate vicinity. Unless measures are taken during construction to protect them, their life span is shortened. For example, oak trees often die after the soil surrounding the roots is compacted by construction vehicles.

Based on the previously discussed land use policies, the majority of Oconee County's forest areas are probably adequately protected. Additionally, Oconee County has over 54,000 acres or 45.3 percent of its total area currently under agricultural and timberland property covenant agreements as provided for in *O.C.G.A.* Section 48-5-7.4.

Most of the subdivisions being developed include substantial canopy tree preservation. For areas which are experiencing commercial development, Oconee's Zoning Ordinance requires that certain minimum buffer and parking lot trees be planted. Oconee County is currently reviewing these requirements to insure that adequate replacement of canopy trees are included in these provisions. Otherwise, adequate tree protection measures are in place.

4.7 Plant, Animal and Wildlife Habitat

Freshwater Wetlands and Natural Heritage Inventory (FWNHI) lists the following rare element occurrences for Oconee County. A rare element occurrence is a “species of concern . . . considered sufficiently rare or the status unknown so as to warrant the collection of occurrence information.”[12] Of the two rare element occurrences in Oconee County, one is associated with granite outcrops. Specific species/communities observed are lichens, herbaceous vegetation, and shrub/scrub vegetation. The location of the rare element occurrence granite outcrop community, as located by FWNHI, is shown on Map 11. Additionally, granite outcrop locations are visible on Maps 14 and 15 (Soils with a Shallow Depth to Bedrock) as some of these outcrops may also support herb communities as designated in other locations by FWNHI.

[12]"Freshwater Wetlands and Natural Heritage Inventory”, Letter to Joe Tichy, NEGRDC, December 1, 1989.

The information listed is available on a county-wide basis only. No specific rare element occurrences are listed for cities in Oconee County. Location(s) of other plant, animal, and community rare element occurrences has(have) been referenced to a U.S.G.S. Quadrant Map. (See Map 10).

These rare element occurrences are identified so that they and their habitats may be protected.

In addition to the granite rock outcrop, one fish is listed as rare element occurrence.

Notropois callisema, common name "Ocmulgee Shiner" was last observed in the Greshamville Quadrant in September 1970. This fish is not presently listed as protected by the state; however, it is ranked as rare or uncommon in the state.

Assessment

In conclusion, there does not appear to be extensive "rare element occurrences" in Oconee County. The two cited are associated with areas of wetlands and/or shallow bedrock which is normally unsuitable for development.

Wetlands and stream channels are under the jurisdiction of the U.S. Army Corps of Engineers and the State Environmental Protection Division of the Department of Natural Resources.

Oconee County has recently adopted a wetlands protection ordinance in accordance with the State's environmental planning criteria.

This ordinance and the existing State and Federal regulations should be adequate for protection of these areas.

4.8 Parks and Recreation Areas

Major federal, state, or regional parks and recreation areas are identified because of their significant contribution to quality of life. (Local parks and recreation areas are identified in the Community Facilities section of this plan.)

The FWNHI identifies two "significant areas" in Oconee County. "Significant area" includes a broad range of sites, National Natural Landmarks and all state Registered Natural Areas, in addition to areas determined worthy of being listed based on files from DNR's Heritage Trust and Natural Areas Programs. Significant areas in Oconee County include the Oconee River and Apalachee River. (See Map 11).

The Redlands Wildlife Management Area (WMA) is located in the northern tip of the Oconee National Forest in southern Oconee County. Approximately four years ago, the U.S. Forest Service contracted with the Game and Fish Division of the Department of Natural Resources to manage the area designated as Redlands WMA. Redlands is open to the public for camping, hiking, and hunting.

The northern tip of the Oconee National Forest is located in southern Oconee County.

Assessment

Oconee County has no jurisdiction over the Oconee National Forest or Redlands WMA. Oconee County participated in the Regionally Important Resources (R.I.R.) nomination of all streams and rivers for the region. Oconee is also implementing post development storm water management requirements as well as enforcing soil erosion and sediment control regulations. Finally, Oconee is exploring additional water source options, some of which may involve further watershed protection measures.

These measures and the foregoing land use policies should provide adequate protection for at least the short-term to mid-term recreation benefits of the Apalachee and Oconee Rivers.

4.9 Scenic Views and Sites

Scenic views and sites in Oconee County are divided into three categories: Scenic Rivers and Stream Sites, Scenic Roadway Corridors, and Other Science Views. (See Map 20).

1. Scenic Rivers and Stream Sites

    a. Little Lake Oconee
    b. Apalachee River Corridor
    c. The Shoals at North High Shoals
    d. Price Mill Bridge
    e. The Shoals at Apalachee Beach
    f. The Shoals at Barber Creek
    g. Harris Shoals
    h. Whites Dam
    I. Barnett Shoals Dam

2. Scenic Roadway Corridors

    a. GA Highway 53 from Union Church Road to Lane Creek Road
    b. New High Shoals Road near Family Life Enrichment Center
    c. U.S. 441 from Lavista Road to Rockinwood Road
    d. GA 15 from Astondale Road to Greene County line
    e. Elder Mill Road from GA 15 to Antioch Church Road and back to GA 15

3. Other Scenic Views

    a. Crawford Mill
    b. Elder Covered Bridge

Assessment

Most of the "scenic rivers," "stream sites" and "other scenic views" are associated with existing wetlands and stream corridors which are protected as previously discussed. Several of the scenic roadway corridors are outside of the "Development Corridor." Also, Oconee County has recently adopted additional sign regulations which will assist in the protection of these scenic roadway corridors.

With the possible exception of ongoing considerations of the sign regulations, additional scenic protection measures do not seem necessary at this time. However, the county may participate in the Georgia Department of Transportation Scenic Byway Program.

4.10 Protected Mountains

The Environmental Planning Criteria provides for the protection of all land that lies above 2,200-feet elevation and has a slope of 25 percent or greater for at least 500 feet horizontally. No land in Oconee County meets these criteria.

4.11 Coastal Resources

The Environmental Planning Criteria provides for the protection of coastal resources that are vulnerable to the impacts of development. This includes beaches, coastal marshes and estuaries. No land in Oconee County meets these criteria.

4.12 Flood Plains

Flood hazard boundary maps have been prepared for the unincorporated areas of Oconee County and the towns of Watkinsville and North High Shoals. These maps indicate areas of potential flooding in a 100-year flood. Oconee County and North High Shoals have participated in the National Flood Insurance Program since 1989 and 1986 respectively. Bishop and Bogart do not participate in the Flood Insurance Program since no flood prone areas exist in these towns.

The county is bounded on the northeast by McNutt Creek, Middle Oconee River, and the Oconee River, and on the southwest by the Apalachee River. Most of the development has occurred since zoning regulations were enacted, so there has been little development in the flood plains. Watkinsville is drained by Butler Creek and Porters Creek and has no reported problems from flooding. The remaining towns and communities are located at the headwaters of small streams and are therefore not subject to flooding.

The Soil Conservation Service Barber Creek watershed project is located in Oconee County. The project has been completed and includes four flood water retarding structures. Most of the agricultural flood damage is to fields and pastures scattered along the larger streams in the county. Since the mean annual damage is small and scattered, flood damage reduction measures do not appear to be feasible.[13]

Assessment

As the county continues to develop, it may be appropriate to have their flood maps updated as increased urbanization can alter drainage patterns. This process has already been initiated on an incremental basis with the recent completion of revised F.I.R.M. maps for portions of the Apalachee River. Oconee will continue to evaluate the need for additional updates in specific areas where more detailed data is necessary and where development may impact the historic flood elevations. The county's engineering consultant can make periodic recommendations as to which areas may need attention.

4.13 Environmental Planning Criteria

Environmental Planning Criteria, prepared by the Georgia Department of Natural Resources, established minimum standards for local governments to protect water supply watersheds, groundwater, recharge area, wetlands, and river corridors. This protection is essential to public health, safety and welfare.

4.13.1 Water Supply Watersheds

These criteria were established to protect existing and planned surface sources of drinking water. The criteria define four classes of water supply watersheds: 1) larger than 100 square miles supplying reservoirs, 2) smaller than 100 square miles supplying reservoirs, 3) larger than 100 square miles supplying water withdrawals, and 4) smaller than 100 square miles supplying water withdrawals.

Georgia has several major rivers which divide the state into large drainage basins. These drainage basins are also water supply watersheds for numerous local governments. Oconee County is located in the Oconee River Basin which drains approximately 5,320 square miles.

Oconee County is drained by two river systems. The eastern part of the county is drained by the Oconee River and the western part by the Apalachee River. Both of these rivers are large watersheds.

Criteria for the protection of large water supply watersheds are less stringent than those for small water supply watersheds because large drainage basins are less vulnerable to contamination by land use development. There are no minimum protection criteria for stream corridors of the watershed tributary to the water supply intake, except that the stream corridors of the perennial tributaries within a seven-mile radius of a water supply reservoir must be

[13]U.S. Army Corps of Engineers, *Savannah District, Northeast Georgia Water Resources Management Study*, (September, 1987).

protected through maintenance of a 100-foot buffer and exclusion of impervious surfaces, septic tanks and septic tank drain fields within 150 feet of the stream banks. Large supply watersheds within Oconee County include the Oconee and Apalachee Rivers. However, since no intakes or reservoirs are located on either of the rivers, large watershed protection criteria are not presently applicable in Oconee County or its municipalities.

Criteria for the protection of small water supply watersheds are divided between areas within and outside a seven-mile radius upstream of an intake or reservoir. Areas within the seven-mile radius must be protected as follows: 1) maintenance of a one hundred-foot buffer on both sides of the stream as measured from the stream banks, 2) no construction of an impervious surface within a one hundred fifty-foot setback on both sides of the stream as measured from the stream bank; and 3) a prohibition of septic tanks and related drain fields within the one hundred fifty-foot setback area. Areas outside the seven-mile radius are subject to the same protection criteria as areas within the seven-mile radius except that the buffer requirement is fifty feet rather than one hundred feet.

Additional criteria at all locations of the small water supply watershed strictly prohibit the siting of new hazardous waste treatment or disposal facilities. Sanitary landfills are permitted only if they have synthetic liners and leachate collection systems. New facilities that handle hazardous materials under DNR guidelines will be required to perform their operations on impermeable surfaces that have spill and leak collection systems. Impervious surface area located within the watershed is limited to 25 percent or existing use, whichever is greater, of the watershed.

No small watersheds currently exist in Oconee County or its municipalities.

Assessment

No protection measures are required.

4.13.2 Groundwater Recharge Areas

Groundwater recharge areas, as defined by state law, are any portions of the earth's surface where water infiltrates into the ground to replenish an aquifer. Probable "significant recharge areas" have been mapped by the Department of Natural Resources. Mapping of recharge areas is based on outcrop area, lithology, soil type and thickness, slope, density of lithologic contacts, geologic structure, the presence of karst, and potentiometric surfaces. Standards have been issued for their protection, based on their level of pollution susceptibility, soil type, and slope.

In the Piedmont geologic province, rocks have little primary soils. Therefore, significant recharge areas in these provinces are generally those with thick soils and slopes of less than 8 percent. The areas are not mapped at a scale which corresponds to county maps and are difficult to locate with certainty. Other recharge areas include those soils with a rapid percolation rate. Criteria for protection of these areas include restrictions on siting landfills and hazardous waste facilities, on aboveground chemical or petroleum storage tanks, agricultural waste impoundment sites, septic tank drain fields, slow rate land treatment, storm water infiltration basins, and waste treatment basins. Ordinances which enforce the environmental planning standards must be adopted by local governments which have "significant recharge areas" within their jurisdictions. No timetable has been established for the adoption of these ordinances.

Probable groundwater recharge areas in Oconee County are those with thicker soils, characterized by a density of two or more geologic contacts per four square miles and slopes lower than 8 percent. According to information available, recharge areas are located in the unincorporated area of Oconee County between Watkinsville and the Eastville community. Other recharge areas include those located within flood plains.

Criteria for protection of these areas include:

1. no issuing of permits for land disposal of hazardous wastes or for new sanitary landfills not having synthetic liners and leachate collection systems;

2. requirements of impermeable pads for facilities that treat, store or dispose of hazardous waste;

3. secondary containment for new aboveground chemical or petroleum storage tanks having a minimum volume of 660 gallons (tanks for agricultural purposes are exempt provided they comply with all Federal requirements);

4. lining requirements for agricultural waste impoundments; and

5. lot size requirements in accordance with the Department of Human Resources' Manual for On-Site Sewage Management Systems, for new homes and new mobile home parks served by septic tank/drain field systems.

Ordinances which enforce the environmental planning standards must be adopted by local governments which have significant recharge areas within their jurisdiction.

Assessment

On November 2, 1993, Oconee County adopted a Wellhead Protection Ordinance in response to state regulations for community water supply wells. Aquifer recharge areas in Oconee County are largely not subject to development pressures and are offered some level of protection through existing regulations. However, Oconee County, in response to Department of Community Affairs requirements, has adopted aquifer recharge protection that complies with the Department of Natural Resources minimum protection criteria.

4.13.3 Wetlands

Freshwater wetlands are lands transitional between terrestrial and aquatic systems which are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The ecological parameters for designating wetlands include hydric soils, hydrophytic vegetation, and hydrological conditions that involve a temporary or permanent source of water to cause soil saturation.

It is difficult to estimate the value of wetlands as they have both an aesthetic and economic value. Wetlands are beneficial socioeconomically, as well as to fish and wildlife. The benefits to fish and wildlife are the provision of food and habitat, and through food chain support. Socioeconomic benefits include food protection, erosion control, groundwater recharge, pollution abatement, sediment filtering, and the provision of a variety of harvestable natural products. The economic value of wetlands can be illustrated with the following examples: A single 2,300-acre Georgia floodplain wetland naturally provides pollution control benefits worth an estimated $1 million each year. The 552,000-acre Green Swamp complex near Tampa, Florida, stores water for an eventual aquifer recharge with an estimated value of $25 million annually.[14]

It is estimated that more than 54 percent of the wetlands that originally existed in the United States have disappeared due to unplanned development in wetland areas. A net loss of wetlands has continued in many states in recent years, with nearly 90 percent of the losses occurring in the Southeast. The Southeastern states have also seen the clearing, or conversion, of large areas of forested wetlands. A recent survey showed that as of the mid-1980s the state of Georgia had a total wetland area of 7.7 million acres, covering 20 percent of the landscape. This total included 367,000 acres of estuarine wetlands and 7.3 million of freshwater wetlands. The state suffered a net loss of 78,000 acres from the mid-70s to the mid-80s. Over the same period 500,000 acres of forested wetlands were converted, that is cleared but not otherwise unaltered.

The Fish and Wildlife Service of the U.S. Department of Interior has mapped wetlands for Oconee County. Wetlands were identified by an analysis of aerial photographs based on vegetation, visible hydrology, and geography in accordance with "Classification of Wetlands and Deepwater Habitats of the United States." The photographs typically reflect conditions during the specific year and season that they were taken. Thus, a detailed, on the ground, and historical analysis of a single site may result in a revision of wetland boundaries established through photographic interpretation. Additionally, some small wetlands and those obscured by dense forest cover may not be included.

[14]U.S. Fish and Wildlife Service and U.S. Environmental Protection Agency, *Southeast Wetlands: Status and Trends, Mid-1970's to Mid-1980's*.

Oconee County has a total of 1,822.4 acres of wetlands all of which are forested.[15] According to these maps, smaller wetlands are scattered throughout the county. However, the more extensive wetlands are associated with Rose Creek and the Oconee and Apalachee Rivers. Wetlands in the county have been classified into three systems: riverine, lacustrine, and palustrine. Further classification is available for the subsystem, class, and subclass.

The State of Georgia has provided criteria in *O.C.G.A.* §391-3-16, "Criteria for Wetlands Protection" which describes for local government minimal considerations for wetlands protection in the land use planning process with regards to wetlands identified in the Department of Natural Resources freshwater wetlands database. Those minimal considerations are as follows:

1. Whether impacts to an area would adversely affect the public health, safety, welfare, or the property of others.

2. Whether the area is unique or significant in the conservation of flora and fauna including threatened, rare or endangered species.

3. Whether alteration or impacts to wetlands will adversely affect the function, including the flow or quality of water, cause erosion or challenge, or impact navigation.

4. Whether impacts or modification by a project would adversely affect fishing or recreational use of wetlands.

5. Whether an alternation or impact would be temporary in nature.

6. Whether the project contains significant state historical and archaeological resources, defined as "Properties on or Eligible for the National Register of Historic Places."

7. Whether alteration of wetlands would have measurable adverse impacts on adjacent sensitive natural areas.

8. Where wetlands have been created for mitigation purposes under Section 404 of the Clean Water Act, such wetlands will be considered for protection.

It is critical to understand that all freshwater wetlands identified by DNR are protected by federal law and are subject to the same minimal land use planning considerations defined by the State of Georgia.

Although all wetlands are protected under the law, the quality, extent, or present use of some wetlands may qualify them for special consideration regarding mitigation requirements if those wetlands must be altered or degraded. That is, some wetlands may be so valuable in their present condition as to be irreplaceable or to require significant mitigation acreage and efforts. Wetlands in Oconee County which are likely to require substantially or excessive mitigation are listed below and are divided into three categories:

1. Wetlands of extensive area:

    a. Rose Creek in southern Oconee County.
    b. Oconee River in southern Oconee County adjacent to the Oconee and Greene County line.
    c. Apalachee River adjacent to the Oconee/Morgan/Greene County line; near the Walton/Oconee County line near Highway 78; and adjacent to the Oconee/Barrow/Walton County line.

[15]Kundell, James E. And S. Wesley Woolf, *Georgia Wetlands, Trends and Policy Options*, (Carl Vinson Institute of Government, The University of Georgia, Athens, GA, 1986) p. 108.

2. Wetland classifications providing significant wildlife habitat value, those especially significant in the Piedmont, and wildlife corridors. (Codes refer to U.S. Fish and Wildlife designators used on National Wetlands Inventory maps):

    a. seasonally flooded deciduous forest (PFO1C)
    b. temporarily flooded beaver pond (PFO1Ab)
    c. semi-permanently flooded deciduous forest (PFO1F)
    d. semi-permanently flooded deciduous scrub-shrub (PSS1F)
    e. semi-permanently flooded deciduous scrub-shrub beaver pond (PSS1Fb)
    f. permanently flooded river corridor (R2UBH)

3. Wetlands which are rare in the Piedmont, which support unique plant communities, or endangered plant or wildlife species.

It is important to note that the above criterion has been used to delineate wetlands which may require significant mitigation efforts. Those wetlands not so identified continue to be protected by federal law and should not be considered appropriate for alteration or degradation. Without field evaluation and attention to the minimal considerations described in the "Criteria for Wetlands Protection," it is not possible to judge the quality or value of a wetland. These criteria are given in an effort to provide some guidelines to help Oconee County become aware of wetlands which may require considerable mitigation in the event of their alteration or degradation.

Assessment

While Oconee County believes that existing state and federal regulations should be adequate for protection of wetlands, the county has, in response with the Department of Community Affairs' mandate, implemented wetlands protection that complies with the Department of Natural Resources' minimum protection criteria.

4.13.4 River Corridors

River corridors are the strips of land that flank major rivers in Georgia. The State has determined that these corridors are of vital importance to Georgia in that they help preserve those qualities which make a river suitable as habitat for wildlife, a site for recreation, and source for clean drinking water. River corridors also allow for the free movement of wildlife from area to area within the state, help control erosion and river sedimentation, and help absorb flood waters.

The Georgia Planning Act of 1989 provides for the development of coordinated, comprehensive planning by county and municipal governments. Such comprehensive plans will consider the natural resources, environments, and vital areas within the jurisdiction of the local government.

O.C.G.A. §12-2-8 requires the Department of Natural Resources (DNR) to develop minimum planning standards and procedures for the protection of river corridors in the state, and requires local governments to use these minimum standards in developing and implementing local comprehensive plans. The method mandated for the protection of river corridors is the establishment of natural vegetative buffer areas bordering each protected river. Local governments are required to develop river corridor protection plans that will maintain the integrity of this buffer area to the minimum standards established by DNR. Nothing will prohibit local governments from establishing standards that are more restrictive than the minimum standards established by DNR.

A "protected river" includes any perennial river or watercourse with an average annual flow of at least 400 cubic feet per second (cfs) as determined by the U.S. Geological Survey. Portions of the Middle Oconee and Oconee Rivers have been designated by the DNR as protected rivers under this definition. While none of these sections of protected rivers are within the jurisdictions of the municipal governments in Oconee, portions are within the jurisdiction of Oconee County Government as follows: (See Map 26-J)

1. Middle Oconee River

   A. All that portion of the Middle Oconee River lying generally southwest of the center line of the stream channel, beginning at the confluence of McNutt Creek with said river and extending downstream to the confluence of the Middle and North Oconee Rivers. Note: Athens-Clarke County Unified Government has jurisdiction over the opposite side of this river (generally northeast of the center line of the stream channel).

2. Oconee River

   A. All that portion of the Oconee River lying generally southwest of the centerline of the stream channel, beginning at the confluence of the Middle Oconee and North Oconee Rivers and extending downstream to the center line of the Barnett Shoals Road Bridge. Note: Athens-Clarke County Unified Government has jurisdiction over the opposite side of this river (generally northeast of the center line of the stream channel).

   B. The entire width of the Oconee River beginning at the center line of the Barnett Shoals Road Bridge and extending downstream to a point immediately downstream from the confluence of the river with Wildcat Creek.

   C. All that portion of the Oconee River generally west of the center line of the stream channel beginning at a point immediately downstream from the confluence of the river with Wildcat Creek and extending downstream to the confluence of the river with Rose Creek, this point being the boundary corner between Oconee and Clarke Counties. Note: Oconee County has jurisdiction over the opposite side of this section, (generally east of the centerline of the stream channel).

To date, no "rare element occurrences" or threatened, rare or endangered species have been identified within these river corridors, (See Section 4.4, Map 11). With the exception of wetlands mostly on the lower section of the Oconee River, it is not known whether sensitive natural areas are located adjacent to the river corridors. (Policies for the protection of wetlands are discussed in Section 4.16.3.) Significant scenic views and areas do exist along portions of these river corridors.

It is not known whether any archaeological resources exist within the river corridor as the location of such resources is restricted in compliance with the Natural Historic Preservation Act of 1966 and Executive Order 11593. Therefore, in order to adequately evaluate whether a proposed project will endanger such resources, the local government may contact Mr. Dave Hally, Archaeology Department, The University of Georgia.

The most recent historic surveys for Oconee County were completed in 1980. According to these surveys, no historic sites exist within or immediately adjacent to these protected river corridors.

According to the Oconee County Existing Land Use Map, land within the Oconee and Middle Oconee River corridors is primarily used for agricultural purposes, with very limited residential use.

In accordance with the "Criteria for River Corridor Protection" developed by the Department of Natural Resources, any development within the corridor must be in compliance with the below listed criteria. A one hundred-foot natural vegetative buffer will be maintained within the corridor. Should any development require disturbance of the natural vegetative buffer, the buffer will be restored as quickly as possible following any land-disturbing activity within the river corridor. Single-family dwellings, including the usual appurtenances, will not be prohibited within the buffer area as long as the dwelling is in compliance with all local zoning regulations and the dwelling is located on a

tract of land containing at least two acres.[16] Only one dwelling will be located on each two-acre or larger tract, (if the dwelling itself is not located within the buffer area, then the lot size may be smaller). Septic tanks serving the dwelling are permitted within the buffer area; however, the drain field will not be located within the buffer area. Septic tanks and associated drain fields are expressly prohibited within the river corridor for all uses other than single-family residential.

Industrial and commercial land uses within the river corridor which existed prior to the adoption of this comprehensive plan are exempt from these criteria provided that such uses do not impair the drinking quality of the river water and all state and federal government rules and regulations are met.

The construction of road and utility crossings are permitted within the buffer area provided that such crossings meet all requirements of the Erosion and Sedimentation Control Act of 1975, as amended, and any applicable local ordinances on soil erosion and sedimentation control.

The following land uses will be permitted in the river corridor, provided that such uses do not impair the long-term functions of the protected river or the river corridor:

1. Timber production and harvesting, if consistent with best management practices established by the Georgia Forestry Commission and if the drinking quality of the river water as defined by the Federal Clean Water Act, as amended, is not impaired;

2. Wildlife and fisheries' management activities consistent with the purposes of *O.C.G.A.* §12-2-8;

3. Waste water treatment;

4. Recreational usage consistent either with the maintenance of a natural vegetative buffer or with river-dependent recreation;

5. Natural water quality treatment or purification;

6. Agricultural production and management, if consistent with best management practices established by the Georgia Soil and Water Conservation Commission, if the drinking quality of the river water as defined by the Federal Clean Water Act, as amended, is not impaired, and if said activity is consistent with all state and federal laws, and all regulations promulgated by the Georgia Department of Agriculture; and

7. Any other uses permitted by the Department of Natural Resources or under Section 404 of the Clean Water Act, as amended.

The following land uses are specifically prohibited within river corridors:

1. Handling area for the receiving and storage of hazardous waste;

2. Hazardous waste or solid waste landfills; and

3. Other uses unapproved by the Oconee County Board of Commissioners as not being consistent with this river corridor protection plan or this comprehensive plan. All current uses in the river corridor will be permitted provided they do not impair the long-term functions of the river. Future uses, those uses approved after adoption of or amendment to this comprehensive plan, must conform to the River Corridor Protection Plan.

[16]Pursuant to the Criteria for River Corridor Protection, the size of the tract of land shall not include any area that lies within the protected river (for tracts of land that include portions of a protected river, the area between the river banks cannot be counted towards the two acre minimum size).

The Oconee and Middle Oconee Rivers are subject to the River Corridor Protection Criteria. These rivers support some environmentally sensitive areas including wetlands with significant wildlife habitat value and scenic areas.

In addition to protection of these environmentally sensitive areas, the Oconee Rivers provide other assets to Oconee and neighboring counties. These rivers are in a relatively natural state and possess significant recreational, environmental and economic value.

There seems to be significant public support for River Corridor Protection in Oconee County. Oconee supported the NEGRDC Regionally Important Resource nomination (RIR) for all perennial streams in northeast Georgia. Oconee also made an independent nomination to the RIR program for the Apalachee River. While the Apalachee is under the 400-cfs threshold for mandated protection, it is considered one of the cleanest rivers in Georgia and is a potential source of drinking water for Oconee County and neighboring counties. The state in effect adopted both these RIR nominations by selecting statewide water resources for the RIR program.

Additionally, Oconee County participates in the FEMA flood insurance map program, and has a Flood Damage Prevention Ordinance which presently regulates development in flood ways throughout the county. Oconee's Soil Erosion and Sedimentation Control Ordinance serves to prevent soil erosion and protects water quality both inside and above the mandated river corridor protection areas. Oconee's Zoning Regulations also include both a Flood Prone District and a Scenic Preservation District, both controlling development activities in these areas.

Recently, a group of citizens has organized and begun to promote the establishment of greenways within the county. Greenways are corridors or areas of open space which are suitable for pedestrian and bicycle trails, passive recreation and serve to connect and buffer varying land uses. They frequently parallel stream channels, flood ways, utility easements, abandoned rail lines and other transportation corridors. In addition to enhancing open-space and providing recreation, greenways can provide alternate modes of transportation for local residents. Because greenways frequently utilize land areas which are unsuitable for other types of development, they do not generally have negative impacts on local tax base and can actually enhance property values. The compatibility between greenways and river corridors is documented in communities which have promoted these concepts.

It should also be noted that public support for river corridor protection is not unanimous. While many citizens support such policies, others object to additional government regulations, especially when there are additional costs associated with such policies. However, in the long term, failing to protect vital water resources may have a much higher cost to the present and future inhabitants of Oconee County.

In order to protect this valuable resource, Oconee County should consider the following actions:

1. Through the Development Review Committee and Planning Commission, review the existing Soil Erosion and Flood Damage Protection Ordinances in conjunction with the new minimum standards for river corridor protection to insure compatibility.

2. Consider any recommendations resulting from this review as to changes in the existing ordinances and/or additions to the minimum standards.

3. Adopt Department of Natural Resources guidelines for River Corridor Protection, possibly with expansion of the vegetative buffer requirements to two hundred feet in accordance with the Regionally Important Resources nomination. Also consider including the Apalachee River and significant wetlands associated with the protected rivers.

4. Consider existing or future enforcement of Georgia Forestry Commission's Best Management Practices for forestry activities within the corridor.

It is not the intent of this comprehensive plan to prohibit development along these rivers, but rather to protect these rivers from incompatible development.

Assessment

Oconee County will continue to evaluate developmental impacts on its river corridors. Additional water supply options are currently being evaluated. Oconee County will likely make a decision within the next twelve to eighteen months as to whether additional river corridor protection measures are needed as outlined in items 1 through 4 above.

Insert Map 4-1 Development Suitability, Oconee County, Georgia

Insert Map 4-2 Steep Slopes, Oconee County

Insert Map 4-3 Steep Slopes, Cities

Insert Map 4-4 USGS Quadrangle Index, Oconee County

Insert Map 4-5 Natural Heritage Inventory Map, Oconee County

Insert Map 4-6 Prime Agricultural Soils, Oconee County

Insert Map 4-7 Prime Agricultural Soils, Cities

Insert Map 4-8 Soils with Shallow Depth to Bedrock, Oconee County

Insert Map 4-9 Soils with Shallow Depth to Bedrock, Cities

Insert Map 4-10 Soils with High Water Table, Oconee County

Insert Map 4-11 Soils with High Water Table, Cities

Insert Map 4-12 Septic Tank Suitability, Oconee County

Insert Map 4-13 Septic Tank Suitability, Cities

Insert Map 4-14 Oconee County Scenic Views and Sites
—Scenic Rivers and Stream Sites
—Scenic Roadway Corridors

Insert Map 4-15 Georgia River Basins

Insert Map 4-16 Floodplains, Oconee County, Georgia

Insert Map 4-17 Floodplains, North High Shoals, Oconee County, Georgia

Insert Map 4-18 Floodplains, Watkinsville, Oconee County, Georgia

Insert Map 4-19 Location of Public Wells, Oconee County, Georgia

Insert Map 4-20 Probable Groundwater Recharge Areas, Oconee County, Georgia

Insert Map 4-21 Wetlands, Apalachee Quadrangle, Oconee County, Georgia

Insert Map 4-22 Wetlands, Athens, East Quadrangle, Oconee County, Georgia

Insert Map 4-23 Wetlands, Athens West Quadrangle, Oconee County, Georgia

Insert Map 4-24 Wetlands, Barnett Shoals Quadrangle, Oconee County, Georgia

Insert Map 4-25 Wetlands, Greshamville Quadrangle, Oconee County, Georgia

Insert Map 4-26 Wetlands, High Shoals Quadrangle, Oconee County, Georgia

Insert Map 4-27 Wetlands, Statham Quadrangle, Oconee County, Georgia

Insert Map 4-28 Wetlands, Watkinsville Quadrangle, Oconee County, Georgia

Insert Map 4-29 Wetlands, Winder South Quadrangle, Oconee County, Georgia