

DUCK RIVER WATERSHED, TN



Growth Readiness Report
2007

Project Sponsors

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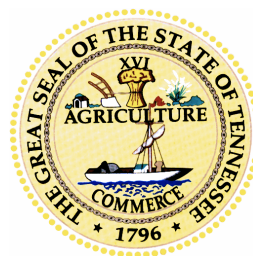
Tennessee Valley Authority

Tennessee Department of Economic and Community Development
State Planning Office

University of Tennessee Water Resources Center

Southeast Watershed Forum

The Nature Conservancy



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ROUNDTABLE COMMITTEES

Streets and Parking

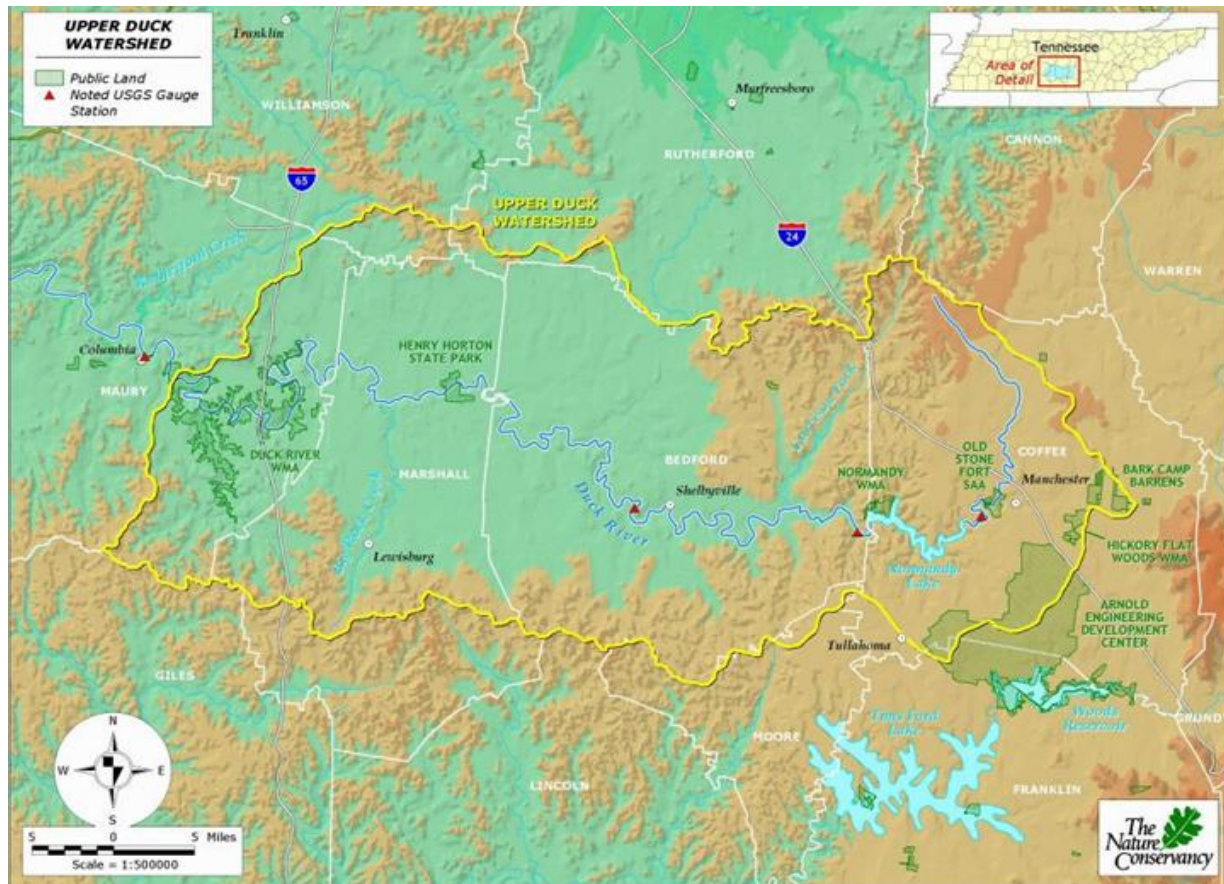
Name:	Dept./Org.:	County:
Bryan Baugher	Codes	Marshall
Jim Bingham	Engineer	Marshall
Billy Clanton	Builder	Bedford
Steve Cunningham	Zoning	Coffee
John Freeman	City Engineer	Bedford
Jim Jones	Vision 2020	Maury
Don Nelson	County Codes	Marshall
Morton Renegar	Zoning Board	Bedford
Robert Smith	Engineer	Coffee
Jerry Williams	Highway Committee	Marshall

Lot Design

Name:	Dept./Org.:	County:
June Beckum	Zoning Board	Maury
Jody Baltz	City Manager	Coffee
Phyllis Baltzer	Realtor	Maury
Brad Dilling	City Engineer	Maury
Tom Hall	Forester	Bedford
Ron Lamply	Builder	Marshall
Jim Moon	Zoning Board	Marshall
Wayne Neese	Realtor	Bedford
Donald Parker	Builder	Coffee
Wayne Williams	City Codes	Bedford
Danny Wix	Planning Committee	Coffee
Isacc Zimmerle	Builder	Marshall

Natural Areas/Open Space

Name:	Dept./Org:	County:
Mike Anderson	W/W Columbia	Maury
Ed Craig	City Manager	Bedford
David Edwards	Banker	Maury
Cyril Evers	Planning Committee	Maury
Helen Garner	Chamber of Commerce	Bedford
Fred Haley	Forester	Marshall
J. P. Hatch	Planning	Maury
Beau Herring	City Codes	Maury
Freda Jones	Realtor	Coffee
John Miller	Engineer	Coffee
Mary Ann Neil	Realtor/Planning	Marshall



We can chart the course for the future growth of our communities or get carried along by the current, risking the loss of the things we hold dear along the way.

The Issue

How can we have strong economic growth while maintaining the quality of life we value and increasing our region's attractiveness to new business and residents? It is no secret that our communities are facing rapid and unprecedented growth. While that appears to be good for our economy, studies from across the country show that there are real economic costs associated with unplanned growth. The impacts of "business as usual" growth on our natural resources are becoming evident. We are in danger of losing the natural beauty and quality of life that is so important to us and attractive to new business and residents. There are economically-viable development practices

that can help us maintain the quality of our water, decrease the costs of infrastructure and construction, and preserve our quality of life. Good planning is key to successful growth.

Here in the counties of the Duck River Watershed we are blessed with abundant natural resources – from good agricultural land to clean water and beautiful vistas. As growth continues to move southward from Williamson and Rutherford counties we are faced with the consequences of how we respond to that growth. We can chart the course for the future growth of our communities or get carried along by the current, risking the loss of the things we hold dear along the way.

Purpose

In 2005 and 2006 the Duck River Agency, South Central Tennessee Development District, Tennessee Valley Authority (TVA), State Planning Office, The Nature Conservancy and the Southeast Watershed Forum (SEWF) conducted a series of Tennessee Growth Readiness workshops for opinion leaders and decision-makers in the upper Duck River Watershed. The purpose was to convene a broad cross section of community leaders representing planners, elected officials, developers, builders, bankers and realtors and elicit ideas and support for change. Through their recommendations, they have charted a future for growth and development that enhances the world-class resources that make this region so unique and attractive.



Upper Duck Land Use Roundtable Meeting

The Goals

- Reduce impervious cover and associated flooding
- Integrate model development principles and stormwater programs
- Reduce infrastructure costs associated with unplanned growth
- Minimize impacts of growth on water quality
- Decrease pollutants from urban stormwater
- Reduce erosion and sediment entering streams
- Provide incentives to encourage use of model development principles
- Create livable, attractive and desirable communities
- Develop a thoughtful, proactive approach to growth

The program was based on the nationally-recognized work of the Center for Watershed Protection and the University of Connecticut's Nonpoint Education for Municipal Officials (NEMO) program. The Southeast Watershed Forum and Tennessee Valley Authority facilitated the Duck River Growth Readiness workshops and fostered the process of consensus-building. The program was made possible by a 319 grant through the Tennessee Department of Agriculture and TVA

Strategy

Over the next several months, participants compared existing codes and ordinances to the model principles. Three committees were formed to closely review and make recommendations in the three main areas; streets and parking, lot design, and open space. These committees met several times and presented their recommendations to the larger group. The larger group then reached consensus on recommendations for changes to development rules that will promote water-friendly development. The ultimate goal of this 18-month process was to use a regional approach and a collaborative process in order to facilitate the adoption of appropriate recommendations into local zoning and ordinance language.

The Roundtable participants stressed the importance of educating elected officials and opinion leaders about the importance of promoting development that protects water resources, fosters attractive communities and reduces infrastructure costs to local governments. By spring 2007, the committee will recommend benchmark development rules that enable communities within the upper Duck River watershed to accomplish these goals while planning for growth. These recommendations will result in development rules that are acceptable and enforceable.

A primary component of this effort is the creation of a variety of locally relevant PowerPoint presentations, workshops and printed materials for elected officials and decision makers. A calendar for these presentations is currently being compiled.

Land use decisions forever change the landscape and character of our communi-

Over 60 leaders from Maury, Marshall, Bedford and Coffee counties learned about:

- The impact of growth on water quality
- Economic, legal, regulatory and quality of life reasons why water matters
- *22 Model Principles for Better Site Design*

ties, impact our local resources, and are best made with all available information at hand. By choosing to determine how we grow and not merely respond to the forces of growth, we can create a vibrant, attractive and unique region for residents and newcomers alike.

Land use decisions forever change the landscape and character of our communities



Roundtable participants review conservation subdivision plans

TIMELINE

2005

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

2/24

Site Planning Roundtable Management Training

Sixty participants learned about the impact of land use changes on water resources. They were informed of economic, quality of life, and regulatory reasons for strongly considering taking some different approaches that would incorporate a set of model development principles. Finally, they were exposed to the concept of a site planning roundtable, a process for building a regional consensus concerning these model development principals as they may apply across the region. They decided to evaluate local codes and ordinances to see how they compare to the principles and recommended undertaking a site planning roundtable.

5/26

Site Planning Roundtable Kickoff Workshop

Participants learned about the roundtable process and the role they would play in it. They reviewed the information on the impacts of urbanization on water, the importance of water quality, the 22 model development principles, and the results of the Codes and Ordinances Workshop. They talked about growth related water issues in the watershed and identified principles which they thought provided the best opportunity for promoting water-friendly development. They volunteered to serve on one of three workgroups to recommend changes to ordinances. The workgroups were: Streets and Parking, Lot Development, and Natural Areas.

9/29

Site Planning Roundtable Workshop 2

Participants heard from developers about their experience in doing low-impact development in the Fanning Bend Subdivision on Tims Ford Lake in Franklin County and they had the opportunity to ask a lot of questions about how to make that type of development work. They divided into the three work groups, practiced the process for building consensus for change on recommendations for changing ordinances, and agreed upon a process and schedule for developing consensus recommendations.

Multiple Jurisdiction Codes & Ordinances Workshop

In preparation for the workshop, technical representatives from 7 jurisdictions (Chapel Hill, Columbia, Shelbyville, Spring Hill, Tullahoma, Marshall and Maury counties) completed a Codes and Ordinances Worksheet (COW) to compare existing development rules with the model principles. Participants in the workshop reviewed the results and identified opportunities to work together for improvement across the watershed. They endorsed the idea of undertaking a site planning roundtable to build consensus for change.



Maury County Courthouse



Duck River Shoal

2006

JAN FEB MAR APR MAY JUN JUL AUG SEP OCT NOV DEC

5/16

7/27

Site Planning Roundtable Workshop 3

The work groups presented their recommendations, and the full group participated in a process to endorse, raise questions and/or suggest changes to the work group recommendations. Representatives of the work groups agreed to make the requested changes, consensus was reached, and the results were compiled in a report.

Site Planning Roundtable Workshop 4

Everyone who participated in at least one of the workshops was invited back to hear the recommendations from the Site Planning Roundtable and to develop an action plan to promote the implementation of the recommendations across the watershed. Actions will likely be to identify materials that are needed to educate decision-makers and stakeholders about the issues and recommendations, gathering information about changing ordinances, etc.

Creation of Materials & Calendar for Decision Makers Training

A brief PowerPoint presentation and information packets were developed for presentations to local planning commissions, county commissions, city councils and business organizations. These materials, along with the Roundtable Recommendations will be made available to these bodies with the goal of increased understanding of the impacts of growth on water quality and potential changes to current ordinance language.

The ultimate goal of this 18-month process was to use a regional approach and a collaborative process



Pigg School House, Maury County



Bedford County

GROWTH READINESS RECOMMENDATIONS

The following recommendations are a product of the Roundtable sessions and the work of three committees who met regularly to address specific topics. These topics were: a) streets and parking; b) lot design; and c) natural areas.

The numbered principles are the Center for Watershed Protection's 22 Model Principles and served as starting points for the recommendations. Consensus was reached on these recommendations by the larger group at the May Roundtable meeting.

Residential Streets and Parking Lots (Habitat for Cars)

Principle 1. Street Width

Design residential streets for the minimum required pavement width needed to support travel lanes; on-street parking; and emergency, maintenance, and service vehicle access. These widths should be based on traffic volume.

Recommendations:

The minimum pavement width for residential streets is 18 ft. to 22 ft. based upon development type (urban, suburban, rural, traditional neighborhood development/neo-traditional, PUD, cluster) density and traffic volume.

Pavement width is noted with roadside open ditch sections or curb and gutter.

See Figure 1 on pg. 9 for details

Principle 2. Street Length

Reduce the total length of residential streets by examining alternative street layouts to determine the best option for increasing the number of homes per unit length.

Recommendations:

1. Minimum lot width should not be reduced lower than 50 ft. except in clusters, PUD, and PRD.
2. In considering lot width one must put a density requirement on single family residential or community living due to lack of play areas for kids and open space for pets.
3. A cul-de-sac should not be permitted over 2,000 linear feet and a minimum of 150 linear feet.
4. Encourage street length that incorporates a design that complements natural site characteristics.
5. Require connectivity.

Principle 3. Right-of-Way Width

Wherever possible, residential street right-of-way widths should reflect the minimum required to accommodate the travel-way, the sidewalk, and vegetated open channels. Utilities and storm drains should be located within the pavement section of the right-of-way wherever feasible.

Recommendations:

1. Function of street pavement width, utilities and street classification.
2. Require development of composite utility plan with all utilities including services.
3. We recommend a 50 ft. ROW and additional 10 or 20 ft. P.U.D.E. dedicated outside the ROW.
4. Incorporate utilities (sewer, gas, electric) in rear lots only with the homeowners association.

NOTE: Potential utilities in a roadway; gas, power, cable, telephone, water, sanitary sewer, storm sewer (All utility companies desire minimum 10 ft. separation from all other utility companies for maintenance repairs. This would require a minimum ROW of 70 ft.).

Figure 1: Principle 1. Street Width Recommendations

<p>1) 500 Maximum ADT, 18 ft. pavement width with road-side ditches</p> <ul style="list-style-type: none"> a. 3ft. shoulder for pavement stability. b. Should only be considered for minor local, & local streets. c. A Cul-de-sac with a maximum length 750 ft. (due to water quality concerns relating to bacteriological concerns and still meeting fire protection requirements) and a minimum length of 150 ft. d. Maximum speed limit of 30 mph. e. Street grade not exceeding 6%. f. Increase pavement width to include bike paths and pedestrian walkways where applicable. 	<p>2) 500 Maximum ADT, 18 ft. pavement width with curb and gutter</p> <ul style="list-style-type: none"> a. To help control erosion and continue roadway maintenance for streets steeper than 6% and flatter than 2%. b. Should only be considered for minor local & local street. c. A Cul-de-sac with a maximum length 750 ft. and minimum length of 150 ft. d. Maximum speed limit of 30 mph. 	<p>3) 750 Maximum 20 ft. pavement width with road side ditches</p> <ul style="list-style-type: none"> a. 3 ft. shoulder for pavement stability. b. Should only be considered for local streets and small collectors within subdivisions. c. Maximum speed limit of 40-50 mph. d. Street grade not exceeding 6%. e. Should only be considered for local streets.
<p>4) 750 Maximum ADT, 20 ft. pavement width with curb and gutter</p> <ul style="list-style-type: none"> a. To help control erosion and continued roadway maintenance for streets steeper than 6% and flatter than 2%. b. Maximum speed limit 40—45 mph. c. Should only be considered for local streets and small collectors within subdivisions. 	<p>5) 1,000 Maximum ADT, 22 ft. pavement width with road side ditches</p> <ul style="list-style-type: none"> a. 3 ft shoulder for pavement stability. b. Should only be considered for large local or collectors within subdivision. c. Maximum speed limit of 40-45 mph. d. Street grade not to exceed 6%. e. Should only be considered for local streets. 	<p>6) 1,000 Maximum ADT, 22 ft. pavement width with curb and gutter</p> <ul style="list-style-type: none"> a. To help control erosion and continued roadway maintenance for streets steeper than 6% and flatter than 2%. b. Maximum speed limit of 40-45 mph c. Should only be considered for large local or collectors within subdivision.

Residential Streets and Parking Lots (Habitat for Cars) Continued

Principle 4. Culs-De-Sac

Minimize the number of residential street culs-de-sac and incorporate landscaped areas to reduce their impervious cover. The radius of a cul-de-sac should be the minimum required to accommodate emergency and maintenance vehicles. Alternative turnarounds should be considered.

Recommendations:

1. Landscaped areas should be maintained by homeowners association.

Principle 5. Vegetated Open Channels

Where density, topography, soils, and slope permit, vegetated open channels should be used in the street right-of-way to convey and treat storm-water runoff.

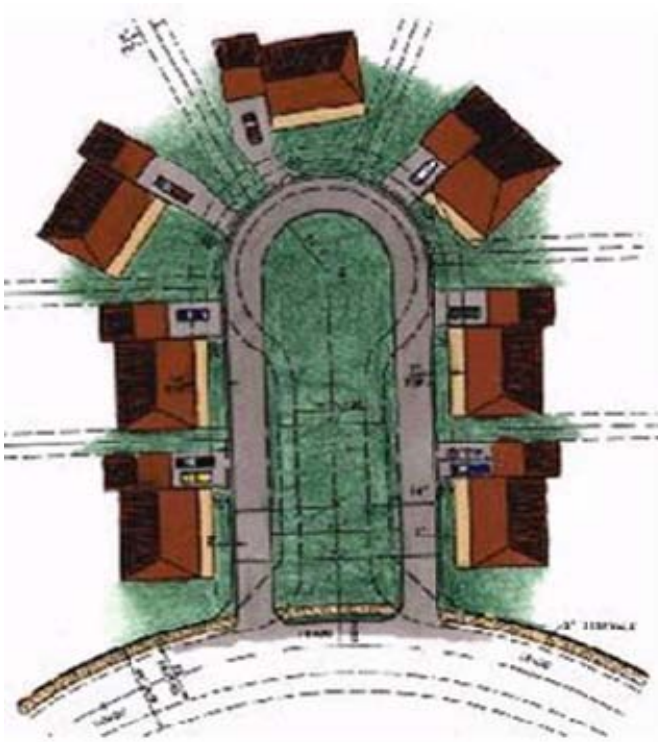
Recommendations:

1. Utilize with utilities in the roadway or outside of the right-of-way in a P.U.D.E.
2. Higher density developments should have curb and gutters – consider topography.

Principle 6. Parking Ratios

The required parking ratio governing a particular land use or activity should be enforced as both a maximum and a minimum in order to curb excess parking space construction. Existing parking ratios should be reviewed for conformance taking into account local and national experience to see if lower ratios are warranted and feasible.

See Figure 2 on pg. 12 for details.



Alternative cul-de-sac design reduces impervious surface
Center for Watershed Protection

Impervious surfaces like asphalt, cement and roofing prevent infiltration of rainfall into the soil, disrupting the water cycle and affecting both the quantity and quality of our water resources.

- NEMO (Nonpoint Education for Municipal Officials)

Residential Streets and Parking Lots (Habitat for Cars) Continued

**Principle 7.
Parking Codes**

Parking Codes should be revised to lower parking requirements where mass transit is available or enforceable shared parking arrangements are made.

Recommendations:
None, in agreement with principle.

**Principle 8.
Parking Lots**

Reduce the overall imperviousness associated with parking lots by providing compact car spaces, minimizing stall dimensions, incorporating efficient parking lanes, and using pervious materials in spill-over parking areas.

Recommendations:

1. Parking space requirements
 - 30% compact (7.5 ft. x 16 ft.)
 - 70% normal (8.5–9 ft. x 18 ft.)
2. Parking against a curb should have a stall depth of 16 ft for normal or compact.
3. Parking not against a curb should have a stall depth of 18 ft.
4. Allowances should be given to structurally designed soil parking or any variation of the intent.
5. All storm water should drain to interior parking landscape islands or detention ponds.
6. Distribute parking spaces of various size (compact /normal) throughout lot.

**Principle 9.
Structured Parking**

Provide meaningful incentives to encourage structured and shared parking to make it more economically viable.

Recommendations:

1. Structured parking should be utilized by governmental and multi-level office buildings as well as hospitals in urbanized areas. Shared parking should be encouraged with a formalized parking written agreement.

**Principle 10.
Parking Lot Runoff**

Wherever possible, provide stormwater treatment for parking lot runoff using bio-retention areas, filter strips, and/or other practices that can be integrated into required landscaping areas and traffic islands.

Recommendations:

None, in agreement with principle.

Because of impervious surfaces, a city block creates nine times more runoff than a woodland area of the same size.

- EPA, Office of Wetlands, Oceans & Watersheds



*Pervious surface is ideal for overflow parking
Center for Watershed Protection*

GROWTH READINESS RECOMMENDATIONS

Figure 2: Principle 6. Proposed Parking Ratios

Land Use	Minimum Parking Spaces
Medical Uses	
Assisted Care Living	1 space per 3 beds
Hospice	1 space per bedroom
Hospital	2 spaces per bed
Medical Appliance Sales	1 space per 200 sq. ft.
Medical Office	1 space per 200 sq. ft.
	UZO district: First 2,000 sq. ft.: exempt; 1 space per 400 sq. ft. for floor space in excess of 2,000 sq. ft.
Medical or Scientific Lab	1 space per 300 sq. ft.
	UZO district: 1 space per 500 sq. ft.
Nonresidential Drug Treatment Facility	1 space per 150 sq. ft.
Nursing Home	1 space per 3 beds
	UZO district: 1 space per 5 beds
Outpatient Clinic	1 space per 200 sq. ft.
Rehabilitation Services	1 space per 3 beds
Residence for the Handicapped	1 space per 3 beds
	UZO district: 1 space per 5 beds
Veterinarian	
	1 space per 200 sq. ft.
	UZO district: 1 space per 300 sq. ft.
School Day Care	
	Same as day care center
Monastery or Convent	
	1 space per bedroom
	UZO district: 1 space per 2 beds
Orphanage	
	1 space per employee
	UZO district: 1 space per 1,000 sq. ft.
Religious Institution	
	1 space per 4 seats in the sanctuary or equivalent work ship space
Educational Uses	
Business School	1 space per sq. ft.
College or University	Established by the traffic engineer (Section 17.20.0230F)
Community Education	1 space per staff member, plus 10 visitor spaces (elementary and middle schools); plus 1 space per each 2 students (high school)
Dormitory	1 space per each 2 rooming units
Fraternity/Sorority House	Same as multifamily; plus 1 space per 300 sq. ft. of meeting area
Personal Instruction	1 space per 200 sq. ft.
Vocational School	1 space per 200 sq. ft.
Office Uses	
Financial Institution	1 space per 200 sq. ft.
	UZO district: first 2,000 sq. ft.: exempt; 1 space per 500 sq. ft. for floor space in excess of 2,000 sq. ft.
General Office	1 space per 300 sq. ft.
	UZO district: first 2,000 sq. ft.: exempt; 1 space per 500 sq. ft. for floor space in excess of 2,000 sq. ft.
Sales/Leasing Office	1 space per 200 sq. ft.
Residential Housing	
Single Family	2 minimum-4 maximum
Convenience	250 minimum-200 maximum
Shopping Center	
	3 spaces per 1,000 GFA of asphalt
	Or 3 spaces per 1,000 GFA reinforced soil or pavement grids
	Or 1 space per 250 sq. ft. for less that 400,000 sq. ft.
	Or 1 space per 225 sq. ft. for 400,000 to 600,000 sq. ft.
	Or 1 space per 200 sq. ft. greater that 600,000 sq. ft.
Industrial	
	1 space per 1,000 sq. ft. (should not have a maximum)

Lot Development (Habitat for People)



Maury County Neighborhood

Our Zoning Ordinance, adopted October 20, 2006 after a three-year development effort, now has provisions in it for landscaping, tree preservation, screening, enhanced visual quality, open space requirements and “smart growth” techniques and amenities.

- David Holderfield, City of Columbia

General Recommendations by Lot Design Committee

1. To encourage greater flexibility, variety and innovation in land development in order to provide a better living environment and the conservation of environmentally sensitive areas; and to provide common open space that capitalizes on the inherent natural features of the property and its surrounding area.
2. To promote the efficient use of the land by encouraging the total planning of land tracts consistent with adopted long-range plans; providing a harmonious blending with surrounding development and minimizing land use conflicts (Infrastructure? Fire protection?)
3. To promote open space development that incorporates smaller lot sizes, reduces total construction costs, provides community recreational space and promotes watershed protection.
4. To promote discussion between the county and municipalities in order to attain consistency regarding land use planning and subdivision regulations.
5. To promote these principles through the development of an information packet and additional education for developers, planners and elected officials; establishment of incentives to encourage the inclusion of these principles in new residential developments.

Lot Development (Habitat for People) Continued

**Principle 11.
Open Space Development**

Advocate open space development that incorporates smaller lot sizes to minimize total impervious area, reduce total construction costs, conserve natural areas, provide community recreational space, and promote watershed protection.

Recommendations:

1. Address open space and cluster development in subdivision regulations and allow (by-right?) in future changes.
2. Create incentives for preservation of open space in new developments consistent with the goals of creating desirable living environments, enhancing the natural environment and community features.
3. Common open space shall be included as an integral part of the overall development design and constitute a minimum percentage (20–30%) of the gross land area of the development.
4. The land designated as common open space shall be included in the final plat.
5. Common open space may be improved for active or passive recreation uses with space containing natural features worthy of preservation or environmentally sensitive areas left unimproved.
6. All land shown on the approved concept plan as common open space shall be conveyed to a property owner's association for ownership and maintenance in perpetuity.
7. Stormwater detention / retention areas not considered as open space.

**Principle 12.
Setbacks and Frontages**

Relax side yard setbacks and allow narrower frontages to reduce total road length in the community and overall site imperviousness. Relax front setback requirements to minimize driveway lengths and reduce overall lot imperviousness.

Recommendations:

1. Reduce setback and frontage requirements for smaller lot sizes in subdivision regulations.
2. Minimal fire flow must be present.

**Principle 13.
Sidewalks**

Promote more flexible design standards for residential subdivisions sidewalks. Where practical, consider locating sidewalks on only one side of the street and providing common walkways linking pedestrians.

Recommendations:

1. Promote sidewalks to encourage pedestrian circulation and provide access to common open space; limit sidewalks to one side of the street in order to reduce impervious surfaces and construction costs; buffer from street system to provide separation of pedestrian and vehicular movement.

Marshall County has passed a significant change in their Zoning Resolution to embrace Decentralized Sewer Systems, i.e. STEP Systems, which improve groundwater and our Planning Commission recently approved a Preliminary Plat for a subdivision of 335 acres, 99 of which are permanent greenspace.

- Don Nelson, Marshall County

Lot Development (Habitat for People) Continued

**Principle 14.
Driveways**

Reduce overall lot imperviousness by promoting alternative driveway surfaces and shared driveways that connect two or more homes together.

Recommendations:

1. Allow pervious materials for driveways; add empowering language to subdivision regulations to encourage improved driveway design.
 - Driveway ramp needs to be impervious to maintain integrity of drainage gutter.

**Principle 15.
Open Space Management**

Clearly specify how community open space will be managed and designate a sustainable legal entity responsible for managing both natural and recreational open space.

Recommendations:

1. Explore mechanisms for management of common open space within developments; promote establishment of homeowner associations.

**Principle 16.
Rooftop Runoff**

Direct rooftop runoff to pervious areas such as yards, open channels, or vegetated areas and avoid routing rooftop runoff to the roadway and the storm water conveyance system.

Recommendations:

1. Incentives and/or education about alternative methods of handling rooftop runoff are needed in regard to subdivision development: demonstrations of alternative methods need to be put in place (i.e. rain barrels, green roofs).
 - Route gutters to French drain systems to use as irrigation within individual yards.



Bedford County Cluster Development

Owners of small companies ranked recreation, parks, and open space as the highest priority in choosing a new location for their business.

- Journal of Parks and Recreation Administration, 1997

Conservation of Natural Areas (Habitat for Nature)

**Principle 17.
Buffer Systems**

Create a variable width, naturally vegetated buffer system along all perennial streams that also encompasses critical environment features such as the 100-year floodplain, steep slopes and freshwater wetlands.

Recommendations:

1. Maintain a minimum 35 ft. buffer with additional 1 ft for every % slope.
2. Designate floodway on plat maps and development designs—buffer created / maintained in addition to floodway.
3. In public or common areas of developments where topography allows, a 3-zone buffer system is recommended.
4. Encourage flexibility such as buffer averaging.
5. Consider alternatives such as BMP's recommended by NRCS and other agencies to achieve purposes of stream buffers.

**Principle 18.
Buffer Maintenance**

The riparian stream buffer should be preserved or restored with native vegetation that can be maintained throughout the plan review, delineation, construction, and occupancy stages of development.

Recommendations:

1. Delineate buffer on all clearing plans, grading plans and site plans.
2. Temporarily mark buffer on site prior to work.
3. Prohibit construction within 50 ft of the stream.
4. Preserve or restore buffer with vegetation that is effective, native vegetation preferred but non-native also acceptable if it is not invasive.
5. Develop a county approved vegetation list.

**Principle 19.
Clearing and Grading**

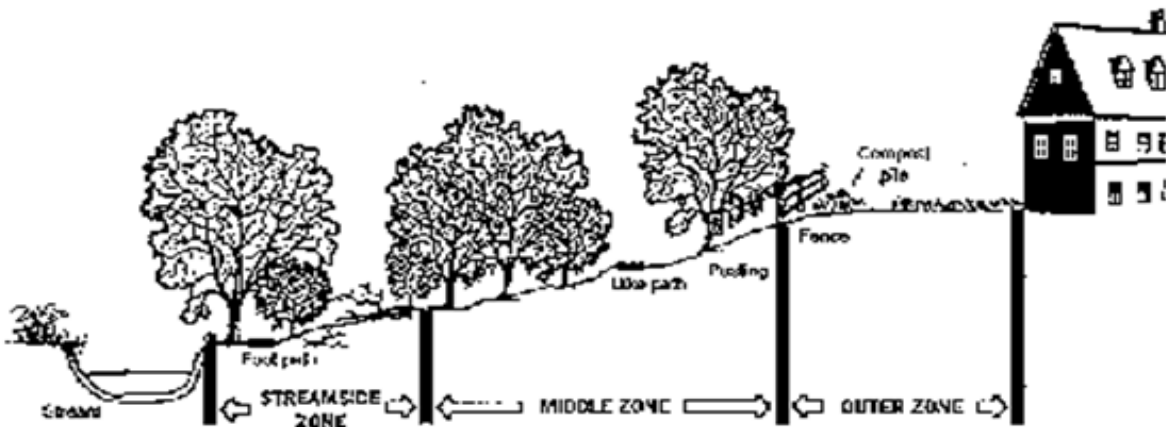
Clearing and grading of forests and native vegetation at a site should be limited to the minimum amount needed to build lots, allow access, and provide fire protection. A fixed portion of any community open space should be managed as a protected green space in a consolidated manner.

Recommendations:

None, in agreement with principle.

Property values of homes with trees in the landscape are 5 - 20% higher than equivalent properties without trees.

- Trees Atlanta



Three Zone Buffer System, Center for Watershed Protection

Conservation of Natural Areas (Habitat for Nature) *Continued*

Principle 20.

Tree Conservation

Conserve trees and other vegetation at each site by planting additional vegetation, clustering tree areas, and promoting the use of native plants. Wherever practical, manage community open space, street rights-of-way, parking lot islands, and other landscaped areas to promote natural vegetation.

Recommendations:

1. Create a tree conservation ordinance to guide tree conservation on development sites.
2. Delineate tree conservation areas on all clearing, grading, and site plans (proposals should include sketches, drawings or photographs that depict the pre-development condition as well as the developed condition).
3. Manage community open space to maximize the planting of trees appropriate to the location while also removing "nuisance" trees.
4. Plant parking lot islands with appropriate vegetation including trees.

Principle 21.

Land Conservation Incentives

Incentives and flexibility in the form of density compensation, buffer averaging, property tax reduction, stormwater credits, and by-right open space development should be encouraged to promote conservation of stream buffers, forests, meadows and other areas of environmental value. In addition, off-site mitigation consistent with locally adopted watershed plans should be encouraged.

Recommendations:

1. Encourage environmentally sensitive variances. Include language in either the preamble of the ordinance or create a variance section of the ordinance that will make it easier to receive variances.
2. Special consideration should be given to requests for variances or proposed alternatives that implement BMP's or regulations applying to similar situations established by such organizations as NRCS, TWRA, U.S. Forest Service, TDEC and others.
3. Research and develop conservation incentives as new ordinances are created.
4. Consider conservation alternatives either on-site or off-site in the watershed that increase the conservation benefit over the specified requirement.
5. While native plants may generally be preferred, other non-native plants, that are not invasive are frequently better in terms of conservation effectiveness and cost and should be accepted.

Principle 22.

Storm Water Outfalls

New storm water outfalls should not discharge unmanaged storm water into jurisdictional wetlands, sole-source aquifers, or other water bodies.

Recommendations:

1. Storm water should not be discharged directly to streams, rivers, wetlands, sole-source aquifers, or other sensitive areas. Storm water should be treated with appropriate BMP's before being discharged into streams, wetlands, sole-source aquifers or other sensitive areas.

Project Sponsors

Duck River	www.duckriveragency.org
The Nature Conservancy	www.nature.org
South Central Tennessee Development District	www.sctdd.org
Southeast Watershed Forum	www.southeastwaterforum.org
Tennessee Valley Authority	www.tva.gov
Tennessee Department of Economic and Community Development	www.tnecd.gov
University of Tennessee Water Resources Research Center	eerc.ra.utk.edu/WRRC.html

Communities in the Duck River Watershed

Bedford County	www.bedfordcountyttn.org
Coffee County	www.coffeecountyttn.org
Marshall County	www.tngenweb.org/marshall
Maury County	www.maurycounty-tn.gov

Watershed / Water Quality

Center for Watershed Protection	www.cwp.org
River Network	www.rivernetwork.org
Southeast Watershed Assistance Network (SWAN)	www.watershed-assistance.net
Southeast Aquatic Resources Partnership	www.sarpaquatic.org
Tennessee Department of Environment & Conservation Water Pollution Control Programs	tennessee.gov/environment/wpc/programs
U.S. EPA Office of Wetlands, Oceans & Watersheds	www.epa.gov/owow

Quality Growth and Sustainable Development

Congress for the New Urbanism	www.cnu.org
New Urbanism	www.newurbanism.org
Smart Communities Network	www.smartcommunities.ncat.org
Smart Growth America	www.smartgrowthamerica.org
Smart Growth Online	www.smartgrowth.org
Sprawl Watch	www.sprawlwatch.org
U.S. EPA Smart Growth	www.epa.gov/smartgrowth/index.htm

