

# Chapter 3:

## Open Space System Recommendations

Wake County defines open space as protected lands and waters that are owned and managed by the County, its public sector partners, the municipal governments of Wake County, State of North Carolina, the United States government, and the County's private sector partners, including non-profit land trusts. Open space consists of any parcel or area of land and water that is essentially unimproved and devoted to 1) the preservation of natural resources and habitat; 2) the managed production of resources (forest and farm land); 3) outdoor recreation; 4) preservation of historic and cultural property; 5) protection of scenic landscapes; and 6) protection of public health, safety and welfare.

Further, open space is a protected living system of natural and cultural resources provided and maintained for the benefit of residents, businesses, and visitors. This “green infrastructure” is essential in protecting our water supply, keeping people and property out of high risk flood hazard areas, providing places where residents can recreate for health and fitness, and protecting the biological diversity of irreplaceable landscapes.

The Wake County Open Space system is envisioned as a series of natural, interconnected landscapes that will protect vital natural resources and link city to countryside, suburb to urban center, and county residents to the landscapes they cherish. To achieve this vision the County will need to implement an open space program that focuses on four major components:

- 1) Identify key parcels of land and corridors that should be acquired and protected as open space;
- 2) Recommend new regulatory programs that improve the protection of resources that safeguard public health, safety and welfare;
- 3) Establish a new program of land stewardship program to manage open space resources;
- 4) Define recurring sources of revenue that support the conservation, protection and stewardship of open space.

The concept of the Open Space Plan is simple. Identify the most valued lands within watersheds of the County that can be protected and preserved, and link these lands together with corridors of multi-purpose greenways. Where appropriate, build pathways that people can travel by

### Open Space Defined

### Wake County Open Space System

foot, bicycle, rollerblade or on horseback. And make the corridors wide enough so that they will help to protect water courses, conserve habitat for wildlife, preserve historic landscapes, and beautify area roadways.

One goal of this Open Space Plan is to protect a minimum of 30 percent of the county's land area, or roughly 165,000 acres. Presently, the county has approximately 52,519 acres (9.5%) that has been protected through federal, state, county and municipal efforts. Therefore, an additional 113,000 acres is needed to meet the minimum 30% protected open space goal defined by this plan.

The value of open space is linked to the watershed management, growth management and transportation planning objectives of Wake County, as defined in companion planning reports. Implementation of this open space plan should be accomplished in a manner that makes the most efficient use of the key recommendations of each plan.

This Plan promotes the protection of at least 30% of Wake County's land and water as permanent open space. The goal of 30% is a minimum level of protection for open space. This goal does not represent an optimal condition for protected open space. It is intended to serve as a minimum target in order to promote conservation and protection strategies.

The 30% goal is not a product of a scientific formula, but rather, is based on layers of understanding related to two popular concepts – ecological carrying capacity and balance between developed and undeveloped land. The first concept relates to the county's need to sustain terrestrial and aquatic wildlife habitats, ensure good air quality, and allow groundwater aquifers to recharge. The second measure is more human related and deals with economic and political realities, values associated with aesthetics and sense of place, and maintaining sufficient recreational opportunities.

The issue of ecological sustainability was first defined in 1987 by the Georgia Institute of Ecology in a paper called "The Georgia Landscape: A Changing Ecology." This paper, authored by Dr. Eugene Odum, Chair of the Kellogg Physical Resources Task Force, examined 50-year trends in land use and resources throughout the State of Georgia. The report recommended, that as a minimum, Georgia should set aside 20% of its land as protected, by the year 2000. The report states "Accomplishing such a goal would reduce pollution and congestion, and thus go a long way toward improving the quality of life for all Georgians." This became the number one recommendation to emerge from the report, and was used by Georgia Governor Roy Barnes as the basis for establishing Georgia's statewide open space program launched in 2000.

## A 30% Goal for Protected Open Space

Combining ecological sustainability with growth and development to determine an appropriate conservation target is the state-of-the-practice land use planning philosophy emerging across the country from the American “Smart Growth” movement. Examples from other communities include New York City, which has protected nearly 30% of its land area as open space, the Bay Area of San Francisco which has protected approximately 25%, and Connecticut which established rules and programs promoting the protection of roughly 21% open space. Additionally, communities such as The Woodlands, Texas and Damascus, Oregon have set open space protection goals at a minimum of 30%. At the higher end of the spectrum of open space protection is nationally renowned conservation planner, Randall Arendt who suggests a standard of 50% open space in all new developments.

Wake County currently has about 10% of its land area in permanent protection – much of that in Federal, State, and local recreational areas, but while 10% is permanently protected another 50% of the County ( the remaining open space) is providing essential quality of life benefits without any permanent protection. This puts critical open space resources at very high risk.

Wake County has been developing approximately 19,000 acres a year over the last decade, if this trend is projected out to 2020, the County will be left with less than 22% of its land in an undeveloped state. At the same time, the population will have nearly doubled. The loss of such significant amount of open space is inconsistent with promoting a high quality of life and sustainable development practices.

Setting a goal of protecting 30% of the county’s land as open space helps check this undesirable scenario. The 30% goal is provided as a minimum target based on the ecological, social, economic, and political realities of Wake County. The goal is designed to help realize the vision of a 22<sup>nd</sup> century community that includes farming as a viable way of life, and is a flourishing community that delivers clean water to more than 2 million residents.

## Which Percentage Goal is Right for Wake County?

A higher target goal for open space protection could be safer, but while the benefits that could come from setting a target of 40% open space are certainly desirable, it is unclear whether permanent protection of that much property is necessary. Privately held open spaces can serve important open space functions and proper stewardship can occur on these lands without them being permanently protected through some legal mechanism. In addition, numbers greater than 30% can appear unrealistic or too aggressive and can destabilize the cooperative environment that will be needed to accelerate the rate of land protection in Wake County.

On the other hand, 20% permanent protection is clearly not enough. With 53,000 acres already protected, a 20% target does little more than set aside floodplain land. Over the long term, as the population doubles, the 20% goal does not provide for new parks and trails, it does not set aside significant non-riparian habitat, and it does not protect farming as a way of life. (see table right).

30% is the appropriate first step. It is a goal that is achievable and appropriate for the next 5 – 10 years. It respects political and economic realities but also acknowledges the need to do more. Reaching this goal will not be easy. It will require new recurring sources of revenue from Wake County and its municipal partners, it will involve more stringent land use planning, and it will create a greater stewardship responsibility for the County and its partners. However, it is also a number that has been received well across the country and is at the heart of the current experiment in balancing resource protection needs with land development needs. Thirty percent permanently protected open space will require Wake County to curb its rate of land development, and increase its rate of open space protection. It will serve as the first step towards a sustainable future for Wake County and achieving the vision that County residents have set for themselves.

	<b>Open Space Percentage Goals</b>		
	<b>20 Percent</b>	<b>30 Percent</b>	<b>40 Percent</b>
Flood Prone Land Protected	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Water Quality, recreation, wildlife	No	<b>Yes</b>	<b>Yes</b>
Conservation subdivision lands	No	<b>Yes</b>	<b>Yes</b>
Gamelands and other open space	No	No	<b>Yes</b>
Narrative Description	Protects all flood prone land and does little else	Protects all flood prone lands, targets ecologically sensitive land, greenway connectors, acquires land for parks, and protects farmland	Does the same as the 30% goal, but also adds land for county, municipal, state or federal lands, including gamelands, state and federal forests or parks.

# Protecting Land

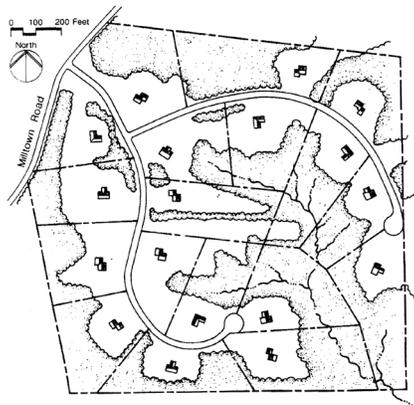
One of the continuing challenges for Wake County is balancing future growth and land development with conservation of the landscapes that benefit the public. This Open Space Plan is one tool that can be used to achieve this balance. Land can be protected by purchase through a targeted acquisition process (described in greater detail in Chapter 4 and Appendix F) and through regulation of the land development process. This plan supports both of these methods.

The plan strongly recommends that the county and all 12 municipal governments consider adopting land development practices that promote conservation during the land development process. This can take several forms, including educating agency and development organizations about the need for conservation, supporting local land trust organizations, utilizing state and federal programs that encourage the donation of land, and updating development regulations. The primary effort should be to foster growth that results in sustainable development that is walkable, bikeable and supports a diversity of land uses.

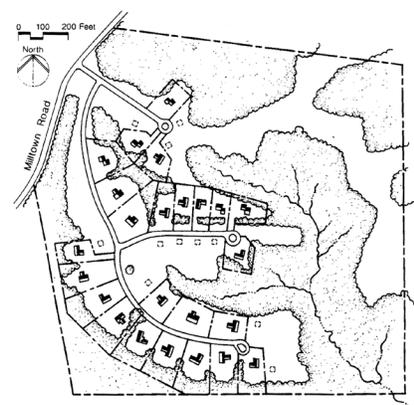
One land development practice that the county and municipalities should consider is Conservation Subdivision Design (CSD). Using CSD, the yield of a particular property slated for development would be similar to that of a conventional subdivision design (see below). However, instead of parceling out all of the land into private lots, conservation subdivision design arranges houses and buildings on a site so that natural landscape features remain open, undeveloped and in common ownership. Using CSD principles, it may be possible to conserve as much as 40,000 acres of open space during the land development process.

Additionally, the county and municipalities should encourage growth near existing urban centers, towns and villages. Building traditional neighborhoods, office parks, shopping centers and schools in close proximity to built landscapes will help to protect the rural character of Wake County.

Conservation subdivision design is an improved method for subdividing rural land and building neighborhoods. In short, it is the equivalent of building a "golf course" community without the golf course.



**Traditional**



**Conservation**

## Conservation Subdivision Design Concept

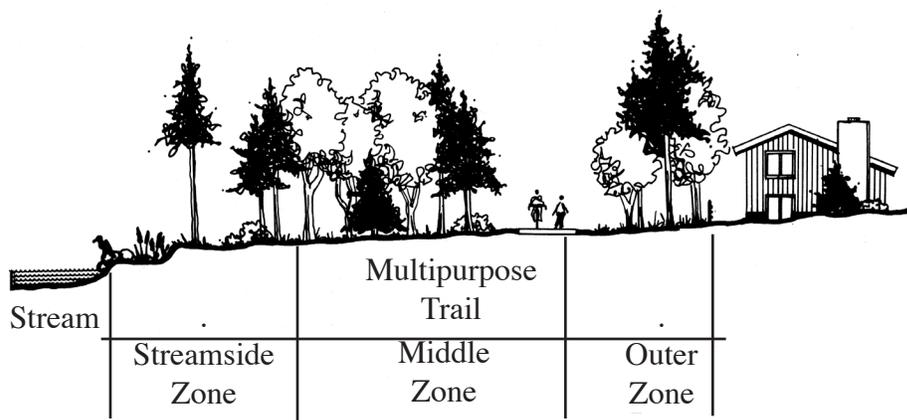
Source: Growing Greener, Randall Arendt

## Protecting Water Quality with Riparian Buffers

As defined in the Watershed Management Plan, one of the most important objectives of open space is the protection of water courses. This can be achieved by establishing riparian buffers along streams within the county. Riparian buffers are strips of trees, grass or shrubs along the banks of rivers and streams. They are used to protect stream bank integrity, minimize in stream temperature changes, provide pollutant removal for runoff and interflow, serve as a source of organic material for stream aquatic life, and provide necessary wildlife habitat and corridors for movement between areas of more substantial habitat. Buffers are often considered the last line of defense between water resources and pollution sources. This Open Space Plan recommends that local governments establish riparian buffers as defined within the Wake County Watershed Management Plan. Buffers should accommodate the possible development of greenway trails for recreation and transportation purposes (as depicted in graphic illustration below).

The Watershed Management Plan recommends that 100 foot buffers be applied to perennial streams within the priority watersheds in Wake County. Local governments should also consider the following items when adopting wider buffer ordinances for these watersheds:

- Grandfather agriculture and forestry uses
- Allow some flexibility for smaller buffers if the slope is less than 10 percent and the developer can show adequate water quality protection
- Compensate landowners if they have a loss of use
- Make the ordinance language flexible by allowing variance processes for situations where the buffers may be better applied in a different manner and to address hardship conditions
- Consider allowing existing homeowners (or platted lots) to comply with current requirements. This would enable them to use their land as they had planned when they purchased their home or lot.
- Consider density bonuses if larger buffers are required



**One Concept for Riparian Buffers**

## Floodplains as Open Space

Floodplains are the low lying areas next to a stream or river that become covered with water when a significant amount of rain falls. Floodplains are defined by the National Flood Insurance Program as comprised of two distinct zones: the flood fringe and the floodway. For the purposes of this Open Space Plan, it is recommended that the entire floodplain be protected as permanent open space. Maintaining floodplains as open space allows them to be used for their highest and best function – the storage of floodwaters. Recent hurricanes and their associated flood events have demonstrated the importance of keeping land development out of flood hazard lands.

Protecting floodplains also helps protect property and human life during storm events in urbanized areas. As land development increases within a watershed, many characteristics of streams change, including the location and elevation of the floodplain. As development occurs and impervious surfaces increase, there is more runoff during storms, and the water



*Source of Photo: The News and Observer*

The flooding of Crabtree Valley Mall during Hurricane Floyd in 1999 is a constant reminder of the need to protect floodplain landscapes as open space

levels within urban streams rise quickly. Floodplain remapping studies in Charlotte, NC show an average increase in the flood elevation of 1.9 feet from previous maps to maps based on 1999 land use. When the maps were further modified to examine impacts under build out conditions, the flood elevations increased an average of 4.3 feet from the existing maps. The floodway width increased from an average of 290 feet to 454 feet, and the floodplain width increased from an average of 429 feet to 611 feet. Thus structures previously built in the floodplain as allowed by FEMA might now be located in the floodway, and would not be permitted if in

a FEMA area if the structure was being built today. Wake County is currently working with the Federal Emergency Management Agency (FEMA) to remap some of the floodplains within the County based on built-out conditions.

Protecting the floodplain also helps protect the riparian corridors and can provide the same functions as riparian buffers in terms of protecting water quality. Protecting floodplains provides the ecological functions of open space, such as protecting habitat for wildlife.

This Open Space Plan supports the recommendations of the Watershed Management Plan, which includes the following:

There should be no development or filling in the 100-year floodplain with the exception of what would be needed for utilities and infrastructure. The Task Force recognized that road and utility crossings would be necessary

within the floodplain, and those uses should be allowed. Roads should be elevated to the 100-year flood elevation in order to ensure access to residences and to protect human safety. In addition, it was recognized that within the County's jurisdiction, it may be necessary to allow septic systems within the flood fringe (assuming presence of suitable soils and outside restricted riparian buffer areas) in order to protect the use of property.

Using this approach to floodplain protection, it may be possible to protect an estimated 60,000 acres of land within Wake County as open space.

Wake County, the State of North Carolina and municipal governments should work together to strengthen the site plan review process and enforcement of existing sediment and erosion control laws. The goal of the program should be to use open space to reduce the amount of sediment flowing into county streams, thereby improving water quality. Open space, in the form of buffers, can absorb sediment in the event an erosion and sediment control device should fail. Preserving open space on slopes and other erodible soils also minimizes the risk of sediment flowing into county streams.



## Limiting Sediment in Streams

*The photo to the left illustrates how open space can be used in riparian corridors to buffer adjacent land uses and absorb sediment and pollution.*

# Connecting People to the Land

With all of this additional publicly owned open space, it will be important to carefully manage and protect the land so that it serves a public purpose. One public purpose would be the ability to access and use portions of the open space. Connections to the land are one of the most tangible products of this Open Space Plan. The physical framework of the Wake County Open Space Plan is based on a popular national concept known as "Hubs and Spokes." Under this concept, residential, commercial and business landscapes are linked to parks, preserves and open spaces via greenway corridors. For residents of the county, this will mean improved access to the outdoors for recreation, non-automobile transportation, and participation in activities that can improve health, fitness and quality of life.

Each municipal government has designated a future "central park" for its community. These can become important hubs in the system. As one element of the County transportation system, greenway trails can be aligned along roadways with ample rights-of-way that can accommodate bicycle/pedestrian trails. Greenways would also be built along the edges of streams and within existing utility or railroad rights-of-way. The greenway corridors identified in this plan can be used to form a county trail system to accommodate bicyclists, in-line skaters, joggers, pedestrians, equestrians, and mountain bikers. In addition to the county greenway corridors, municipal greenways and private trails provide connections to the county system, offering a web of interconnected landscapes that would allow residents to travel on off-road corridors throughout the County.



**Hubs and Spokes Concept**