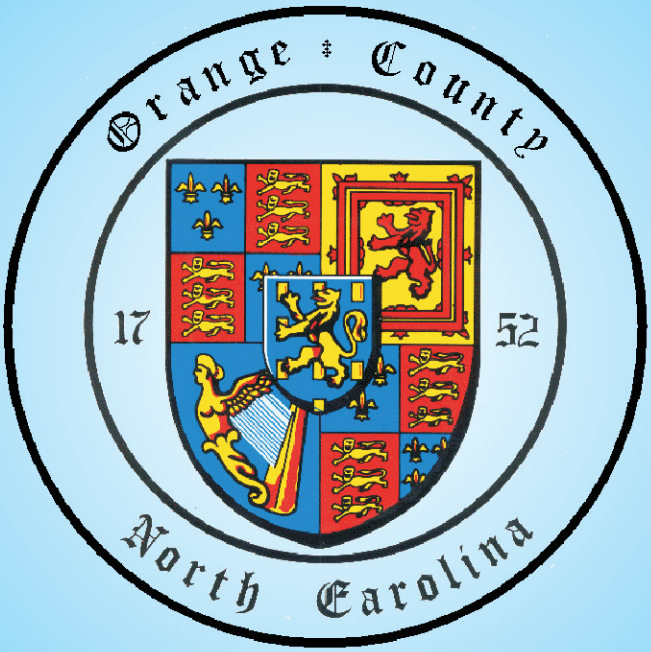
Orange County, North Carolina

2030 Comprehensive Plan



ADOPTED

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Chapter 1. Plan Overview

1.1. USER'S GUIDE (SUMMARY STATEMENT OF PLAN)

Welcome to the Orange County Comprehensive Plan. This Plan is a "blueprint" document to guide future policy decisions for the County through the year 2030. **Chapter 1: Plan Overview** provides a summary of the history and process by which this Comprehensive Plan came to be adopted, the contents of the Plan, an overview of ways the Plan seeks to address sustainability in its goals and objectives, and the process for implementing the Plan and monitoring its implementation over the long-term. **Chapter 2: Planning Principles** describes the principles adopted by the Orange County Board of Commissioners that have guided development of the Plan.

Unlike previous County plans that focused on one component of County planning, the Comprehensive Plan addresses a wide range of interrelated planning areas. Each of these areas is dealt with separately in an Element, or Plan chapter. Some chapters cover multiple substantive areas, as noted below:

- Economic Development (Chapter 3);
- Housing (Chapter 4);
- Land Use (Chapter 5);
- Natural and Cultural Systems (Chapter 6), including
    - Agriculture
    - Air and Energy Resources
    - Cultural and Historic Resources
    - Natural Areas, Wildlife Habitat and Prime Forests
    - Water Resources
- Parks and Recreation (Chapter 7);
- Services and Community Facilities (Chapter 8), including:
    - Water and Wastewater
    - Erosion Control and Stormwater Management
    - Solid Waste and Recycling
    - Public Safety and Telecommunications
    - Library Service
    - Education
- Transportation (Chapter 9).

Each Plan Element includes the following pieces of information:

- **Purpose** – The Purpose section describes the intent of each Element;
- **Overview** – This section provides an overview of the planning topic, background information that informs the planning context, and key issues of relevance to each Element;
- **Historic and Current Data and Evaluation of Trends** – This section provides statistical and geographical data that describe existing and future County conditions relevant to each Element. Much of the data provided in each of these sections are also referenced in *Appendix A: County Profile (Data) Element*. This County Profile Element is the primary reference point for basic information common to each of the Elements. Although the scope of the Comprehensive Plan is intended to guide the development and growth in the unincorporated area of Orange County, many data variables are only available for the County as a whole. Unless otherwise indicated, tables and charts for county-level data will pertain to both the incorporated and unincorporated areas. Population values for the extra-territorial jurisdictions will not be included within city or town totals, but rather within the unincorporated County totals;
- **Orange County Needs** - This section describes the data, informational, policy-related, programmatic, and infrastructure needs or gaps for each planning topic that need to be addressed through Plan implementation;
- **Goals** – This section lists the goals of each Element. A goal is defined as a "general direction-setter." Goals are written to express an ideal future end state related to the public health, safety, or general welfare that expresses community values. Plan goals set the stage for defining Plan implementation;
- **Objectives** – Following the goals, the objective section lists the objectives to be achieved through Plan implementation. An objective defines a specific end, condition, or state that is an intermediate step toward reaching a goal. Objectives should be achievable and, when possible, measurable and time-specific. An objective may pertain to one particular aspect of a goal or it may be one of several successive steps toward goal achievement. Consequently, there may be more than one objective for each goal;
- **Links to Other Elements** - This section describes the areas of overlap or linkage between Elements. Goals and objectives often address multiple planning areas that are addressed in separate Elements. This section helps to coordinate these efforts and ensures consistency among them;
- **Other Key Documents** – This section lists the documents, reports, and studies that were drawn from in developing each Element; and

- **Intergovernmental Coordination** – This section outlines areas where intergovernmental coordination should continue or is needed to achieve plan goals and objectives.

An underlying theme throughout the Plan is the County's vision of becoming a more sustainable community. *Section 1.3: Toward A Sustainable Future,* provides a summary of ways that the Plan works toward achieving that vision.

Subsequent to adoption of the plan, the County will enter into an implementation phase where specific action strategies for achieving plan goals and objectives will be identified. (See *Section 1.4: Administration and Implementation Guidelines*.) Looking long-term, the Plan provides a set of procedures for monitoring Plan implementation efforts, and a process for amending the Plan over time. (See *Section 1.5: Monitoring and Evaluation Procedures*.)

Several appendices are provided, giving Plan readers additional information not included in the Plan. A glossary of planning terms used in the Plan is provided in Appendix B.

1.2. DEVELOPING THE PLAN

1.2.1. WHAT IS THE ORANGE COUNTY COMPREHENSIVE PLAN?

The Orange County Comprehensive Plan is an official public document that provides the framework for long-range decision-making in the community. The Plan serves to guide the County's growth and development through the year 2030 by addressing the multitude of issues facing the County -- ranging from land use, to economic development, to housing, to public facilities, to environmental protection and beyond.

By setting goals and objectives, County officials can use the document to make policy decisions that effectively provide a coordinated approach to future growth. In addition, the adopted Plan serves as the statutory basis for many of Orange County's land use regulations, as well as the application of zoning districts. Through setting a course of action to guide the County's development over the next twenty years, the County and its residents are much more likely to realize desired outcomes.

1.2.2. AUTHORIZATION AND STATE GUIDELINES

Orange County's ability to adopt and implement a comprehensive plan is drawn from its state authorized general police power to "define, regulate, prohibit, or abate acts, omissions, or conditions detrimental to the health, safety, or welfare of its citizens" per North Carolina General Statute § 153A-121.

In North Carolina, county zoning enabling statutes have long required that zoning be "in accordance with a comprehensive plan." Neither the North Carolina statutes nor case law mandate preparation of comprehensive plans, define their elements, or set a mandatory procedure for their adoption. However, the state zoning statutes were amended in 2005 to strengthen the role of adopted plans where they do exist.

This new law requires that Planning Board review of proposed zoning amendments include written comments on the consistency of the proposed

amendment with the Comprehensive Plan and any other relevant plans (such as a small area plan, a corridor plan, or a transportation plan) that have been adopted by the Board of County Commissioners. The Board of County Commissioners is also required to adopt a statement on plan consistency before adopting or rejecting any zoning amendment. These written comments are required, but do not limit the board's discretionary power to adopt or not adopt zoning amendments.

The *Orange County Unified Development Ordinance* provides the authorization and legal framework for development and adoption of a comprehensive plan. The ordinance states that the plan "shall constitute an internally consistent and compatible statement of policies for the long-term physical development" of the County, and that the plan should include the following elements (or chapters):

- Land Use Element;
- Transportation Element;
- Housing Element;
- Natural and Cultural Systems Element;
- Parks and Recreation Element;
- Economic Development Element;
- Services and Facilities Element; and
- County Profile (Data) Element.

The Planning Board is given the express power to develop and recommend the Comprehensive Plan for adoption by the Board of County Commissioners. Before the board can adopt the plan, a public hearing must be held to provide an opportunity for the County's citizenry to comment on the plan. The Unified Development Ordinance also provides standards for amending the plan. *(See Section 1.5.3: Amendments.)*

1.2.3. GOVERNANCE STRUCTURE

Orange County is governed by a seven-member Board of Commissioners, elected in partisan countywide elections. The primary duties of the board include adopting an annual budget, establishing the annual property tax rate, appointing various officials, planning for County needs, adopting local plans, and enacting local ordinances. The board also has the authority to call for bond referenda, enter into contracts, and establish new programs and departments.

The board is advised by more than 40 different boards and commissions comprised of Orange County citizens that volunteer for their positions. Achieving the goals set by the County Commissioners is made possible because of this citizen input into programs, services, and general operations. Some of these boards have been established by state law and their authority is defined in the North Carolina General Statutes. Others have been created by the Orange County Board of County Commissioners to help them set policies for specific areas of service.

The Board of County Commissioners appoints an administrator, the Orange County Manager, to manage all County government departments and to assure that adequate levels of service are provided to residents as efficiently as possible. The manager implements the policies of the Board of County Commissioners and coordinates, monitors, and evaluates all County government activities.

1.2.4. PLAN PROCESS AND CITIZEN PARTICIPATION

To date, the County has achieved long range planning by developing separate plans for community issues, such as land use, economic development, historic preservation, etc. In 2006, the Board of County Commissioners initiated a process to develop a consolidated comprehensive plan that would address all these plans within one document.

The board approved a process for developing a plan that uses both community input through advisory boards and public outreach, and technical information provided in the many studies that have been prepared by advisory boards and staff over the years. Eight planning principles (see *Chapter 2: Board of County Commissioners' Planning Principles*) were adopted to guide development of the Plan. The complete process is provided in *Appendix C: 2030 Comprehensive Plan Update Process and Schedule*.

The Plan development process was overseen and managed by the County's Planning Board. Element Lead Advisory Boards, comprised of more than 80 citizen representatives, served as the lead advisors on relevant plan elements. Table 1-1 shows the citizen advisory boards that were tasked with the development of the various Plan Elements. In addition, advisory boards also served as liaisons on other Elements to ensure there was coordination among them.

TABLE 1-1: ELEMENT LEAD ADVISORY BOARDS

Plan Elements	Element Lead Advisory Boards	Advisory Board Liaisons
Economic Development	▪ Economic Development Commission	▪ Planning Board
Housing	▪ Affordable Housing Advisory Board ▪ Planning Board	

Plan Elements	Element Lead Advisory Boards	Advisory Board Liaisons
Land Use	▪ Planning Board	▪ Orange Unified Transportation ▪ Orange Public Transportation ▪ Commission for the Environment ▪ Agricultural Preservation Board ▪ Historic Preservation Commission ▪ Affordable Housing Advisory Board ▪ Economic Development Commission ▪ Parks and Recreation Advisory Council ▪ Board of Health
Natural and Cultural Systems	▪ Commission for the Environment ▪ Agricultural Preservation Board ▪ Historic Preservation Commission	▪ Planning Board ▪ Board of Health ▪ Parks and Recreation Advisory Council
Parks and Recreation	▪ Parks and Recreation Advisory Council	▪ Planning Board ▪ Commission for the Environment
Services and Community Facilities	▪ Planning Board	▪ Solid Waste Advisory Board ▪ Board of Health
Transportation	▪ Planning Board ▪ Orange Unified Transportation	▪ Orange Public Transportation

As mentioned previously, the Plan was developed from input from citizens who were engaged throughout the planning process. This public engagement included the following:

- All Plan related meetings were advertised and open to the public;
- Citizens served on the Element Lead Advisory Boards that oversaw development of plan elements and wrote previous studies and plans that were incorporated into the Comprehensive Plan;
- Information on the status of the planning process was regularly emailed to distribution lists, posted on the County's website, and written about in local newspapers; and
- Public information meetings and public hearings were advertised widely and held at key milestones in the process to engage the

community in discussion of Plan development and to update the County's citizenry on the status of the process.

1.2.5. WHERE TO LOOK FOR RELATED INFORMATION

Numerous reports, studies, plans, and other technical and policy-related documents were reviewed, referenced, and incorporated into this Orange County Comprehensive Plan. Each plan element references the reports and studies that were used to inform development of that particular Element. A comprehensive list of resources is located in Appendix P of this Plan. Many of these documents are provided on the County's website at http://www.co.orange.nc.us/. For information on obtaining copies of these documents, please contact the Orange County Planning and Inspections Department.

1.3. TOWARD A SUSTAINABLE FUTURE

An emerging point of consensus in Orange County is that we need to move toward becoming a sustainable community. What that means is that we must seek to develop a community that meets the needs of the present generation without compromising the ability of future generations to meet their needs. Current global trends have demonstrated the need for planning healthy and sustainable communities. One trend is the increasing impact of greenhouse gases on the world's climate and another is the decreasing supply of resources that support life.

FIGURE 1-1: THE THREE SPHERES OF SUSTAINABLE GROWTH



Often termed the "triple bottom line," sustainable growth can be achieved in Orange County by balancing environmental, social, and economic factors when setting County policies and

Sustainability is defined as aligning our built environment and socioeconomic activities with the natural systems that support life. In the long run, sustainability means adapting human activities to the constraints and opportunities of nature.

The figure below is a graphic representation of a sustainable community. Each ring represents one of the Three E's: the environment, the economy and social equity. Each of these rings is connected to, and dependent upon the others.

The design of a sustainable community in Orange County means that this Comprehensive Plan will strive, in its implementation, to link the economy, the environment and social equity to improve the vitality of all three of these domains.

The meaning of sustainability can be further understood by examining four basic principles regarding human needs, natural systems, and the relationships between them.

1. For a given natural resource, if the depletion rate exceeds the replacement rate, the resource will be available for only a finite time. **Thus, unchecked use of resources has implications for our future generations**.

2. Human activity produces harmful substances, which must be mediated to maintain balance in the natural systems. **Human-generated waste, such as plastics, sewage, and carbon monoxide, must be carefully managed to minimize and eliminate damage to the earth.**

3. **Earth's ecosystems, of which humans are a part along with other living beings, are interdependent and most stable when they include a diversity of species.** Overuse and pollution of the natural environment has implications for maintaining the earth's biodiversity.

4. **Human needs span physical, economic, environmental, cultural, social, and spiritual dimensions**. Human needs can be met equitably, justly, and with dignity without compromising the physical environment. Achieving greater fairness is essential for social stability and the cooperation needed for making large-scale changes within the framework laid out by the first three principles.

These global principles are locally relevant because our community is part of a region, part of a continent, and part of a world. Our individual and collective decisions and actions affect the quality of human life and the quality of our natural environment not only in the local community, but also in the world. By understanding these principles and the consequences of continuing to violate them, we establish a common basis for working toward becoming a sustainable community.

Sustainability is a theme that runs throughout this Comprehensive Plan. Orange County residents understand the linkages that support a sustainable future. Examples abound: To help preserve rural character, shop at a farmers market to help keep local farms in production. To help pay for schools and services, encourage growth of the non-residential tax base by locating residences close to business and retail centers. Reduce growth in carbon emissions by achieving compact development patterns. We need to use the resources that are available to us today in a manner that protects them for future generations. Following is a summary of the key ideas presented in this Comprehensive Plan that relate directly to the goal of achieving a sustainable future. Refer to each of these Plan Elements for more details.

1.3.1. ECONOMIC DEVELOPMENT

The County has established Economic Development Districts wherein public investment will be focused to stimulate and accommodate development in strategic locations that can be served by transportation systems and public infrastructure, and be convenient to housing opportunities.

The County's Economic Development Commission works with local, regional and state governments and agencies to attract and promote the types of businesses suited to Orange County. These efforts focus on recruiting appropriate businesses that will provide jobs to local residents and provide a

more balanced tax revenue structure that relies less on the generation of private property taxes.

The County and Economic Development Commission have identified Action Steps in the report: *"Investing in Innovation: Orange County Economic Development Commission Five-Year Strategic Plan*."

To meet the demand for locally grown products, the County is working with Alamance, Chatham, and Durham Counties to establish a value-added food processing center, where farmers and others could make value-added products, such as jams, pickles, or tamales.

1.3.2. HOUSING

The County supports an array of affordable and workforce housing initiatives, designed to support non-profit organizations, make use of state and federal funds, and provide housing opportunities for County residents. By providing additional affordable housing initiatives within the County, opportunities for living and working in proximity increase.

The County is actively pursuing options to provide residential opportunities for homeless individuals and families, contributing to the area's strong emphasis on social equity.

1.3.3. LAND USE

Mixed-use districts are being actively encouraged, and locations for new mixed-use centers are being identified, providing live-work-shop opportunities that minimize travel needs.

The County is exploring a Strategic Growth and Resource Conservation program (similar to TDR – Transfer of Development Rights) that will help to focus new development in areas that can best accommodate it, in proximity to jobs, housing, transportation, and services near transit corridors. Simultaneously this program will also help to preserve/conserve rural and agricultural land with compensation provisions for rural property owners.

The County's development of an interconnected system of pedestrian and bicycle trails will both provide recreation opportunities and also hold promise for increasing mobility choices available to Orange County residents.

High residential densities near transit corridors and along major thoroughfares may encourage more public transportation use by County residents.

1.3.4. NATURAL AND CULTURAL SYSTEMS

As of 2007, more than 22,000 acres of land in the County have been protected through various land conservation programs. These efforts support the goals of sustaining a balanced and healthy diversity of native plant and animal populations, providing a network of protection for natural, cultural, and agricultural lands, and achieving an adequate level of protection for important natural areas, prime forests, and wildlife habitat. Ideas for expanding conservation efforts include improved monitoring of critical natural lands and expanding the County's inventory of critical lands to include new areas not before assessed.

Preservation of working farms, forestry, and ancillary agricultural businesses is supported by the County. Voluntary agricultural districts (VADs), agricultural preservation through private conservation easements, and the use value taxation model are working to protect farmland and the farming industry in Orange County. More can be done, and County regulations are being reviewed to identify impediments to farming practices. The potential of the Strategic Growth and Rural Conservation program and enhanced VAD program could provide additional opportunities for farmland protection.

Developing a local food system that links local producers and consumers is of high importance. The number of farmers markets operating in the County has increased in recent years, exemplifying their success. Agri-tourism and farming events have also proven popular. One idea to expand on the success of our local agricultural industry is to identify suitable locations for agricultural facilities, such as processing centers, community kitchens, demonstration tracts, community gardens, and the like that can bring together producers and consumers and educate the next generation of farmers.

Orange County, Chapel Hill and Carrboro initiated a Greenhouse Gas Emissions Inventory and Reduction Action Plan project in 2006. More can be done to improve air quality and reduce the use of non-renewable fuels over the planning horizon. Ideas include the promotion of private and public use of alternative fuel sources and power generation options, such as harnessing and using landfill gas, and participating in green energy production programs.

Our historical character has been protected through the efforts of national and local level preservation programs. Cultural landscapes, historic structures, and even scenic roadways can be protected through existing preservation programs. Ways to advance preservation goals could include funding assistance to landowners needing additional resources to maintain historic properties.

1.3.5. PARKS AND RECREATION

By investigating new forms of recreation to meet new demands (seniors, changing demands for youth), the County is pro-actively planning for the range of needs and demands that will accompany residential growth.

By planning for joint use of facilities by multiple users and jurisdictions (e.g., the two school systems and recreation departments), the County is encouraging efficient use of land and wise use of public financial resources.

1.3.6. SERVICES AND FACILITIES

Water conservation efforts have been a critical piece in managing water supplies through recent droughts. County level coordination is needed to manage water resources that will serve future populations. Placing public water and sewer facilities near areas targeted for dense development can reinforce a more sustainable land use pattern.

Erosion control and stormwater management efforts in the County are paramount for protecting natural areas from the adverse effects of development. These efforts can be expanded by improving surface water

mapping and collecting additional water quality data to inform development management efforts.

The County has set an ambitious waste reduction goal of 61%[1]. Orange County has surpassed state mandates for waste reduction in 1996 and 2001. Continued effort to identify waste reduction opportunities is supported by the County. The identification of a future waste transfer site and landfill location are critical needs that will be addressed over the planning horizon.

Services and facilities should be provided in a manner that reflects the specific needs of the community, while taking into account its fiscal and environmental limitations. **Sustainable Government**, as it relates to the provision of County services and facilities, is discussed in Chapter 8.

1.3.7. TRANSPORTATION

The County is actively encouraging alternative modes of transportation and ride-sharing, expanding possibilities for mobility by means other than single-occupant automobiles. Examples of alternative modes of transportation include, but are not limited to:

- Interconnected pedestrian and bicycle trails;
- Transit lanes along major thoroughfares; and
- Considering the development of park-and-ride lots that would encourage use of public transportation to travel to and from work.

Increasing public transit by expanding public and special transportation services for seniors and individuals with disabilities increases choice and opportunity. Increasing bus service, designating public transportation nodes throughout the County with facilities to accommodate pedestrians, park and ride lots, and bicycle racks all contribute to mobility options.

These initiatives reinforce each other. Taken together, they form a platform of sustainable practices upon which current and future generations of Orange County residents can build productive lives.

1.4. ADMINISTRATION AND IMPLEMENTATION GUIDELINES

1.4.1. PURPOSE

Development of specific policies and implementation strategies will follow adoption of this Comprehensive Plan. A periodic review of plan goals and objectives and the development of specific policies and implementation strategies will keep attention focused on these ideas and help achieve implementation. This section sets out the procedures and timeline by which future Comprehensive Plan policies and implementation strategies will be developed.

[1] The 61% waste reduction goal refers to the current reduction in waste when compared to a benchmark year of 1991-1992.

1.4.2. DEVELOPMENT OF POLICY/STANDARDS AND IMPLEMENTATION STRATEGIES

Existing public policies, including the policies provided in the 1981 Orange County Land Use Element (*See Appendix D: 1981 Land Use Element Policies*), will remain in effect while additional specific policies, standards, and implementation strategies of this 2008 Comprehensive Plan are being developed and adopted.

Additional policies or revisions to existing policies may be added to the Comprehensive Plan Elements on an incremental and case-by-case basis as new programs are identified and authorized by the Board of County Commissioners.

1.4.3. RECOMMENDED PROCESS FOR SETTING PRIORITIES

Advisory boards and staff should review Comprehensive Plan goals and objectives on a regular basis and develop specific ideas on implementation strategies for presentation to the Board of County Commissioners. Setting priorities will be guided by the feasibility of accomplishing the strategies within a given year.

Implementation strategies that are presented to the Board of County Commissioners should identify the following:

- The corresponding Comprehensive Plan goal(s) and objective(s);
- Estimation of fiscal impacts and staff resources required to implement the strategy;
- Identification of responsible department and advisory board(s) and any contributing department(s) and advisory board(s) that will be engaged in strategy implementation; and
- A timeline for implementation of the strategy.

The Board of County Commissioners will consider implementation strategies submitted by advisory boards, consider fiscal constraints and opportunities, and provide guidance to the County Manager on priorities for implementation.

1.4.4. SUMMARY OF EXISTING IMPLEMENTATION TOOLS

The County has several implementation tools that may need to be revised as new implementation strategies come on line in the County. These implementation tools include the following:

- Orange County Unified Development Ordinance;
- Building, plumbing, electrical, mechanical, fire and housing codes;
- Capital Improvement Plan; and
- Public Funding of Initiatives and Programs.

Additional implementation tools may be identified during development of implementation strategies.

1.4.5. DECISIONS ON IMPLEMENTATION

The Board of County Commissioners will, as needed and appropriate, prepare a work plan for Comprehensive Plan implementation strategies that identifies strategies to be initiated in a given year, the human and financial resources allocated to implementation of the strategies, and the parties responsible for implementing the strategy.

1.5. MONITORING AND EVALUATION PROCEDURES

1.5.1. PURPOSE

The Comprehensive Plan is a "living" document. It should be revised and updated regularly to ensure its relevance as the guiding document for County decision-making. This chapter outlines procedures for ongoing monitoring and updating of the Comprehensive Plan.

1.5.2. PLAN REVIEW AND EVALUATION

The following Plan review and evaluation procedures should be conducted according to the timelines given:

1. A set of evaluation criteria, including a set of sustainability and community building indicators, or metrics, together with specific action statements will be developed for each Plan Element by each Element Advisory Board with assistance of County staff within the first year after plan adoption. The evaluation criteria may include short-term (1-2 years), medium-term (3-5 years), and long-term (more than 5 years) measurements. Combined, these evaluation criteria will be used to inform periodic updates of the Plan. The evaluation criteria will serve as a "Report Card" and will describe how and where the County is making progress on implementation of the plan and where additional attention may be needed.
2. Comprehensive Plan Element Status reports to the Board of County Commissioners will be developed by respective Advisory Boards and staff. Status reports will include a review and evaluation of Plan goals and objectives using the evaluation criteria discussed above. The report will be developed every other year beginning one year after adoption of the Plan and will be delivered to the Board for review at its annual retreat. A specific format for reporting will be developed to maintain consistency in reporting.
3. The County Profile Element will be updated after data from the 2010 U.S. Census are available. Regular updates to the County Profile Element should occur to reflect new U.S. Census data in subsequent years.
4. Following the incorporation of 2010 data, a survey of County departments will be undertaken by the Planning and Inspections Department to determine the usefulness of the County Profile Element, and if annual updates would be beneficial.
5. A full review and update of the Comprehensive Plan will occur within 10 years of adoption of the plan, with a preliminary target of 2015.

1.5.3. AMENDMENTS

Monitoring and reporting activities will identify opportunities for updating and revising the Plan. The Plan should be amended in a manner that maintains internal consistency between Elements and upholds the basic goals and objectives on which it was formulated.

Request for amendments can be brought forward by the general public, County staff, and Advisory Boards, as well as the Board of County Commissioners. Plan amendments should be evaluated through a public review process.

The specific procedure for initiating Plan Amendments is outlined in Section 2.3 of the *Orange County Unified Development Ordinance*. This procedure may need to be revised to reflect the new Comprehensive Plan model that incorporates the work of Advisory Boards and departments. In particular, the following issues should be considered for revision:

- Review and amendment of Section 2.3 of the Orange County Unified Development Ordinance to reflect the role of advisory boards, in addition to that of the Planning Board, in the amendment process.
- A process should be developed and adopted that guides the coordinated dialogue of the advisory boards when making recommendations on Plan amendments.

Chapter 2. Board of County Commissioners' Planning Principles

2.1. SUMMARY

In October, 2004, the Orange County Board of Commissioners adopted the following guiding principles to guide and direct development of the plan. These principles are representative of the board's values and have been the foundation for plan development.

2.2. PLANNING PRINCIPLES

1. Efficient And Fiscally Responsible Provision Of Public Facilities And Services

Orange County's public facilities and services should be delivered in a manner that efficiently uses existing capacity. Expansions of facilities and services should be made only after careful consideration of the costs and benefits of expansion.

2. Sustainable Growth And Development

Growth and development within the county should occur in a pattern, location, and density that is sustainable over the long-term.

3. a. Encouragement of Energy Efficiency, Lower Energy Consumption And The Use Of Non-Polluting Renewable Energy Resources

3. b. Promotion of Both Air Quality Protection And The Development Of An Effective Transportation System

Decreasing the use of non-renewable resources and lowering energy consumption are encouraged in both public and private activities. The county's transportation system should be enhanced to promote more energy efficient modes of travel and improve air quality.

4. Natural Area Resource Preservation

Protection of the County's natural areas, including forests, wildlife habitat, and other important open spaces should be a priority. The County should work with regional and local organizations, the towns, and private landowners to promote and achieve preservation of the County's important natural resources.

5. Preservation Of Rural Land Use Pattern

The County's rural areas are a cherished component of the County's character. Future development should preserve and enhance the county's rural landscape.

6. Water Resources Preservation

The County has finite water resources to provide to future populations. The protection and management of the County's water resources should be a high priority.

7. Promotion Of Economic Prosperity And Diversity

Development of a diversity of new businesses and expansion of existing businesses should occur in Orange County.

8. Preservation Of Community Character

Future growth and development should occur in a manner that preserves and enhances the existing character of the County, its townships, and rural crossroads communities.

Chapter 3. Economic Development Element

3.1. PURPOSE

This Economic Development Element provides guidance and direction regarding future economic efforts in Orange County. The goals and objectives identified within this Element serve as the foundation for establishing future economic development policies and action strategies undertaken by Orange County, its advisory boards, and staff. The specific process for developing an economic development implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines.*

3.2. OVERVIEW

Orange County has a vigorous economy, currently anchored by activity related to institutional uses, private employers, and the nearby Research Triangle Park. Demands for services outpace revenue sources, which are overly dependent on residential property taxes. The need is to encourage strategically targeted economic development opportunities.

BACKGROUND

Orange County's economic history is uniquely based in its natural and agricultural resources, the establishment of the first public university to accept students in the United States, The University of North Carolina at Chapel Hill, and medical facilities within its borders, its proximity to the Research Triangle Park, Duke University, and the high quality of life valued by its residents. These assets continue to this day to be the foundations for our community's economy. Historically, the shifting of Orange County's political boundaries have resulted in losses to its manufacturing base. Although difficult to quantify, the most significant loss may have occurred between the years 1849 and 1881 when portions of Orange County were taken to create Alamance and Durham Counties. Changes to Orange County's boundaries also occurred in 1771 when Guilford, Wake, and Chatham Counties were formed and again in 1777 with the formation of Caswell County.

Recent years have seen changes in our local agricultural economy. Farmers who once grew traditional crops, like tobacco, have had to respond to economic changes and find alternative products to grow. The demand for goods produced using sustainable practices has resulted in an increase in locally produced, environmentally sustainable items. The expansion of UNC-Chapel Hill's campus has provided construction and other forms of new employment. The State's decision to locate the new Carolina North campus in north Chapel Hill will mean a new northern campus that fosters public-private partnerships, public engagement and flexible new spaces for research and education. Advances in technology have changed the way companies do business and fostered development of new high tech industries in the region.

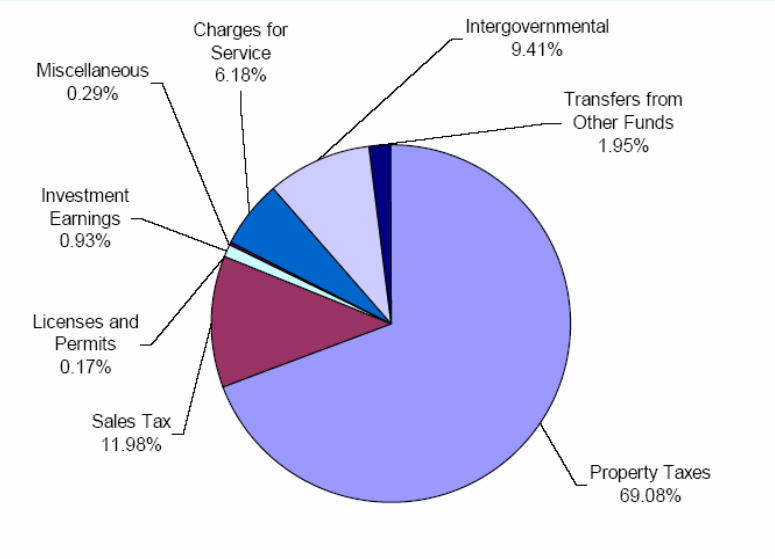
Strategic economic development efforts are needed in the County. Competition with neighboring jurisdictions to attract new businesses necessitates a strong economic development effort to ensure that future populations will have a full range of job opportunities in the County. Orange County is in a position to define its economic future.

KEY FACTS

The following snapshot of Orange County's fiscal situation provides a foundation for considering Economic Development issues.

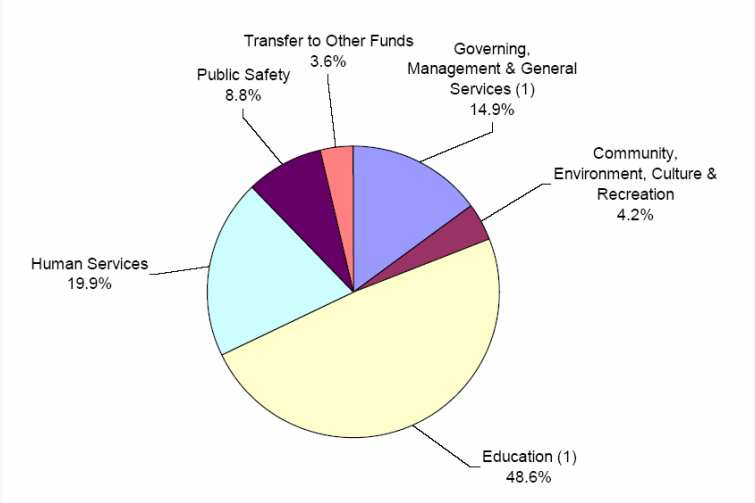
- Sources and uses of County Revenues:

FIGURE 3-1: GENERAL FUND REVENUES BY CATEGORY (FY2007-2008)



Source: Orange County FY2007-2008 Budget

FIGURE 3-2: GENERAL FUND EXPENDITURES BY FUNCTION (FY2007-2008)



Source: Orange County FY2007-2008 Budget

- 50% of property in Orange County is not taxed at full value (either because it is taxed at its use value or is a State-owned or tax-exempt property).
- 86% of the property tax base is residential property.
- The current annual population growth rate (2000-2005) is 1.09%.
- The current annual growth in County revenues (FY04/05-FY05/06) is 13%.
- The number of jobs per 100 workers in the County (2006) is 88.4. In other words, the ratio of Orange County's labor force to jobs is 1 : 0.884. There are fewer jobs than there are employees in Orange County, forcing some of the County's workforce to seek employment outside of the County.

RECENT ECONOMIC DEVELOPMENT EFFORTS AND STUDIES

Orange County has engaged in several economic planning and development efforts over recent years that were aimed at both regional and local scales. Summaries of these reports are provided here.

STAYING ON TOP: WINNING THE JOB WARS OF THE FUTURE (A COMPETITIVENESS PLAN FOR THE RESEARCH TRIANGLE REGION)

In 2004, economic realities such as the decline of traditional industries, layoffs from leading businesses, and the advent of global white-collar outsourcing sparked concerns for the future of the Research Triangle region and the need for a long-term plan. A consortium of business and higher education representatives, including representatives from Orange County and UNC-Chapel Hill, formed to address these changes in the regional economy through development of a regional economic strategy. Using the guidance of Dr. Michael Porter, Harvard University regional competitiveness expert, the group developed an economic plan to advance the foundation laid by the Research Triangle Park to build and attract emerging industry clusters to the region. A 37-member task force of business and higher education leaders, the Futures Clusters Competitiveness Task Force, developed an action blueprint for the region. The goals of the blueprint are to:

- Strengthen the region's existing clusters by improving collaboration among companies and organizations;
- Diversify the economy by recruiting a wider array of clusters and focusing on opportunities at the intersection of our strongest clusters;
- Spark creation of more homegrown businesses;
- Identify regional investments needed for competitive advantage;
- Invigorate the economy across a broader geographic area; and
- Develop the region's capacity to meet its goals.

The report identifies specific industry clusters, an action agenda, and specific roles and responsibilities to implement the plan.

INVESTING IN INNOVATION: THE ORANGE COUNTY ECONOMIC DEVELOPMENT COMMISSION'S FIVE YEAR STRATEGIC PLAN (2005-2010)

The Orange County Economic Development Commission commenced a strategic planning process in 2002 to guide future efforts of the organization. The result of this multi-year planning effort is a five year strategic plan with the overarching goal to "create 5,000 new private sector jobs in Orange County and add $125,000,000 in new commercial property by June 2010." Four key areas for improvement were identified:

- Improved Business Climate to enable businesses to create the needed jobs;
- Infrastructure to enable the businesses to flourish;
- Workforce Development to make sure workers have the skills needed to assume the new jobs; and
- Quality of Place to ensure that Orange County remains a great place to live and work.

Specific action steps were identified for each of these four areas of improvement. The objectives of this element were derived from the key goals identified in this plan.

2007 STATE OF THE LOCAL ECONOMY

The Orange County Economic Development Commission published a report entitled State of the Local Economy in March, 2007. The report provides key economic and demographic statistics for Orange County.

Key conclusions from the data analysis show improvement in some aspects of the County's economy, including decreasing commercial vacancy rates, increases in retail sales tax collections, maintenance of the lowest unemployment rate in the state, and increases in weekly wages. The report also highlights that the County's tax base continues to remain unbalanced at 86% residential and 14% non-residential, retail sales per capita were well below the state average, the cost of living in the area is still high, and the number of families on food stamps has increased since 2000.

ESTABLISHMENT OF ECONOMIC DEVELOPMENT DISTRICTS

Orange County has designated more than 2,450 acres in three strategically placed areas along Interstates 85 and 40 as Economic Development Districts. The purpose of these districts is to promote development of properties located along key transportation corridors and near urban areas for commercial or industrial development. These sites were selected because of their adjacency to the interstates, their proximity to rail facilities for the movement of goods and potential for future transit service, access to public water and sewer service, and the potential to divide large tracts in these districts into a range of building site sizes. Orange County's location, midway between the Piedmont Triad and Research Triangle metropolitan areas, makes these sites highly marketable.

The districts offer development potential for light industrial, warehouse/flex space, office, retail, and business service. The specific types of developments that can be constructed within these districts are explained in the Orange County Unified Development Ordinance. The Ordinance provides standards for each district that illustrate the desired balance of economic development and

environmental and neighborhood protection. The standards address three main areas: 1) primary development areas intended to accommodate the full range of light industrial, distribution, retail, office, and service uses; 2) secondary development areas that provide opportunities for less intense development including limited office and residential uses; and 3) open space areas that include environmental features such as steep slopes and floodplains that should not be developed.

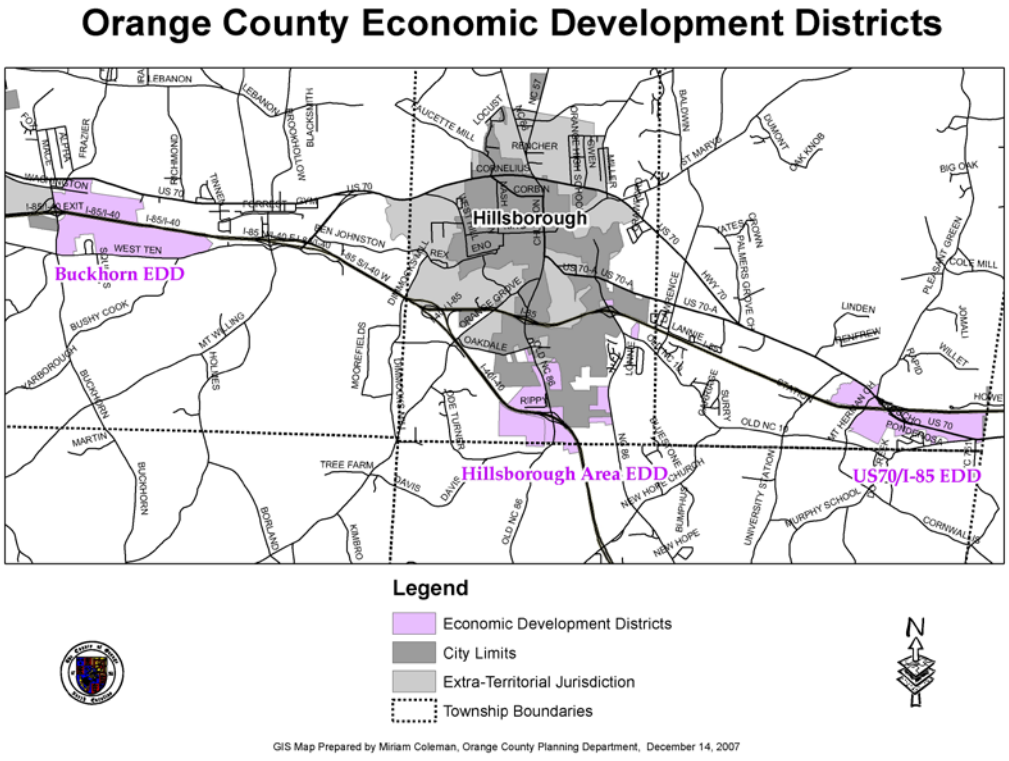
The three Economic Development Districts include:

- **Buckhorn District** – This district is comprised of 845 acres located on the northeast and southeast quadrants of an I-85 interchange at Buckhorn Road. Because the district is served by transportation and utility systems, the entire developable portion of the district has been designated as a primary development area;

- **Hillsborough District** – This district encompasses all four corners of a major interstate exchange south of Hillsborough. It includes 724 acres. This area includes a mix of residential land uses and will require design solutions to buffer neighborhoods from future development;

- **Eno District** - This district extends almost two miles along either side of I-85. The district includes many land uses, including single-family homes, Manufactured Housing District developments, and small-scale service and commercial operations. Almost half of the district is designated as a primary development area. Design solutions will be needed in this district to transition from residential uses to more intense commercial and industrial uses.

Map 3-1 below illustrates the locations of the Buckhorn, Hillsborough, and Eno Economic Development Districts.



MAP 3-1: ECONOMIC DEVELOPMENT DISTRICTS

KEY ISSUES

Previous economic development efforts and studies have identified several key economic development issues that Orange County now faces and will need to address to maintain its economic position. These issues include:

- The **need to diversify the County's tax base** from one primarily composed of residential property (86.4% in 2005) to a more balanced tax base that includes a diversity of businesses and services.
- **Defining the economic strategy** for Orange County, and specifically determining the types of businesses and employment that are preferable for Orange County.
- **Ensuring that land and public services are in place** to support desired economic development.
- **Overcoming the perception that Orange County is not a business friendly community.**

- **Working with and supporting the Town of Chapel Hill and the State of North Carolina as they move forward with development of Carolina North** to ensure that a balance between maximizing economic development potential and maintaining a high quality of life is achieved.
- **Providing employment opportunities for the underemployed, unemployed and the aging workforce.**

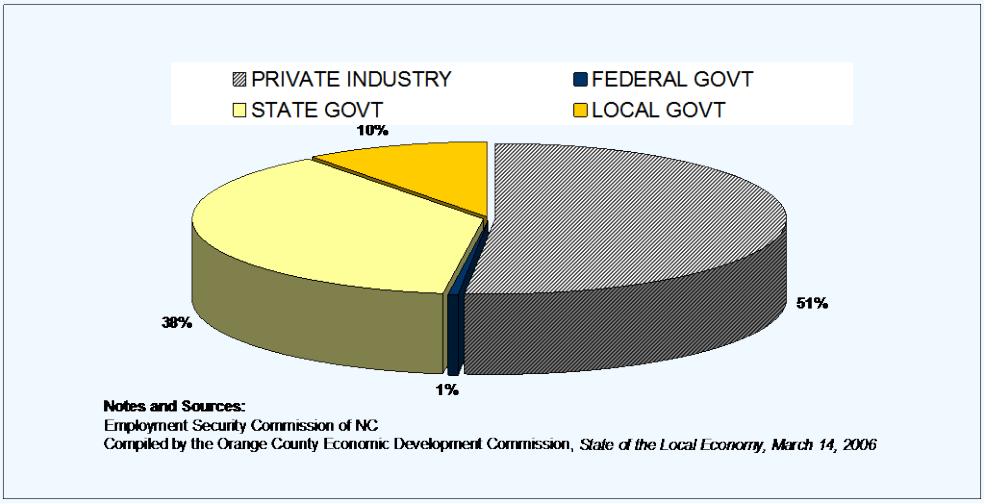
3.3. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following data provide background information on the historical and current economic conditions in Orange County. Additional data on this topic can be found in *Appendix A: County Profile (Data) Element*.

EMPLOYMENT TRENDS BY INDUSTRY

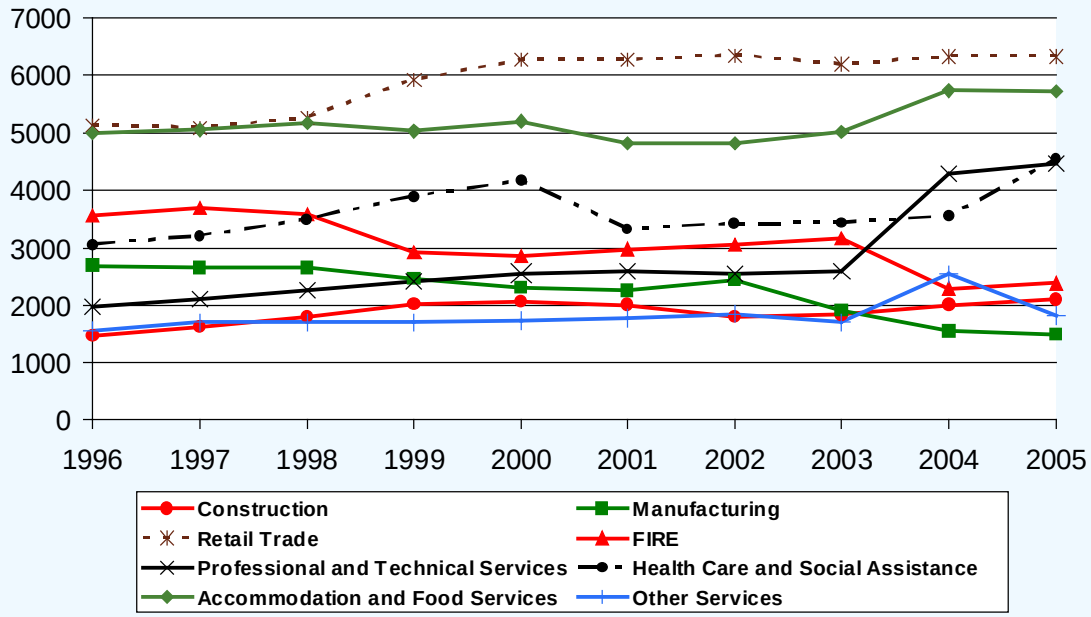
As shown in Figure 3-3, in 2005, approximately 51% of Orange County workers were employed in the private sector, followed by 38% in state government, 10% in local government, and 1% in federal government.

FIGURE 3-3: ORANGE COUNTY EMPLOYMENT BY SECTORS (2005)



There was fairly stable private sector employment across industries between 1996 and 2005. Industries that grew in employment included professional and technical services, health care and social assistance, and accommodation and food services. Finance, investment and real estate (FIRE) and manufacturing sectors lost jobs during this period. Construction, retail trade and other services maintained fairly stable employment levels between 1996 - 2005. See Figure 3-4.

FIGURE 3-4: PRIVATE SECTOR JOB TRENDS (1996-2005)



Source: Employment Security Commission of North Carolina

In the third quarter of 2006, there were 3,467 businesses in Orange County that employed 59,871 workers. Because of UNC-Chapel Hill, the education and health services sector was the largest employer, with an average of 30,241 employees. The trade, transportation, and utilities sector was the next largest employer with an average of 8,062 employees. Service employees (both professional and personal services) had a combined employment total of more than 10,000 jobs in the County. Manufacturing, information, and natural resources, and mining employed few workers in 2005. See Figure 3-5.

FIGURE 3-5: EMPLOYMENT BY INDUSTRY (3RD QUARTER, 2006)

Employment Sector	Number of Business Units	Average# of Employees
Total, All Industries	3,467	59,871
Education and Health Services	393	30,241
Trade, Transportation, and Utilities	558	8,062
Leisure and Hospitality	314	5,850
Professional and Business Services	740	4,921
Public Administration	39	2,558
Construction	357	2,140
Financial Activities	310	1,950
Construction	357	2,140
Other Services	399	1,650
Manufacturing	74	1,496
Information	63	578
Unclassified	196	239
Natural Resources and Mining	24	186

Source: NAICS Employment and Wages, Quarterly Census of Employment and Wages (QCEW) Unit, ESC/LMI Division

Even though the majority of jobs in 2005 were in the private sector, data show that six of the top ten employers, including the top three employers, were public agencies in 2007. The top three employers were UNC Chapel Hill, UNC Hospitals, and Chapel Hill-Carrboro City Schools, respectively. The largest private sector employer in Orange County is Blue Cross and Blue Shield with 1,612 employees, followed by General Electric and A Southern Season, each with 501 employees. See Figure 3-6.

FIGURE 3-6: TOP TEN EMPLOYERS (2007)

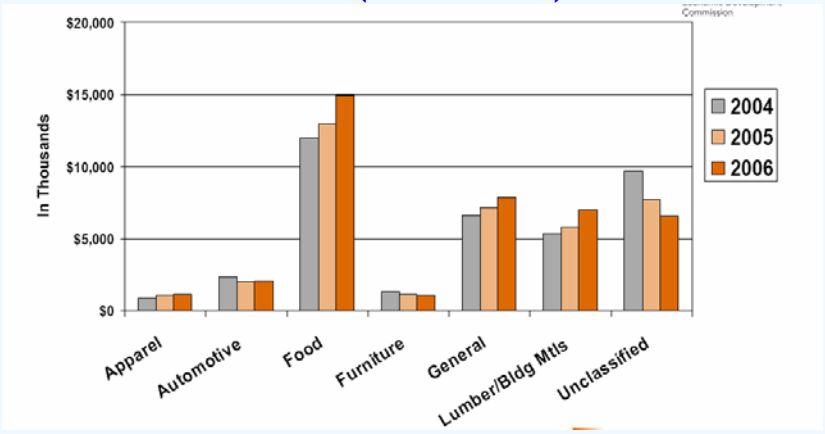
Top Ten Employers		Number of Employees
1.	UNC Chapel Hill	11,000
2.	UNC Hospitals	6956
3.	Chapel Hill-Carrboro City Schools	1573
4.	Blue Cross and Blue Shield	1612
5.	Orange County Schools	1031
6.	Orange County Government	963
7.	Town of Chapel Hill	678
8.	General Electric	501
9.	A Southern Season	501
10.	Sports Endeavors	387

Source: Orange County EDC, State of the Economy, 2007

RETAIL SALES TRENDS

The Orange County Economic Development Commission reported in 2007 that in FY2004-2006, retail sales taxes represented 14% of Orange County's general fund revenues, totaling $907.56 million. Figure 3-7 illustrates that a large portion of these sales are in retail food establishments. The remainder are either unclassified sales, general retail sales, or lumber/building material sales.

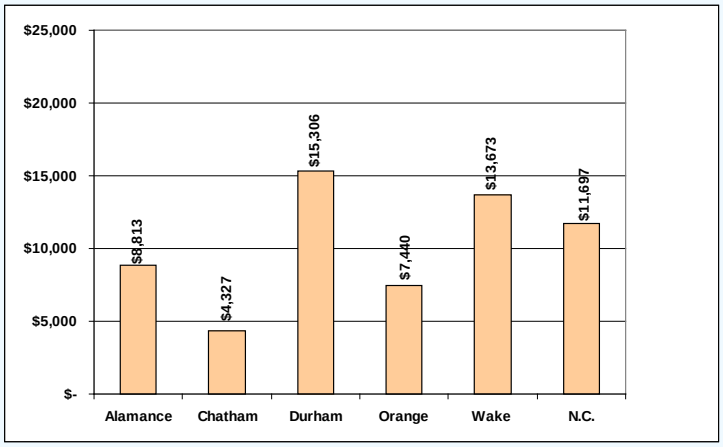
FIGURE 3-7: GROSS RETAIL COLLECTIONS BY CATEGORY (FY 2004-2006)



Source: 2007 State of the Economy Report, Economic Development Commission

In FY2006, Orange County experienced $7,440 in retail sales per capita. Per capita sales for the County were $4,257 lower than the state per capita average. The following chart shows that there was significant retail sales leakage to Durham, Wake, and Alamance Counties from Orange County in 2006. See Figure 3-8.

FIGURE 3-8: PER CAPITA RETAIL SALES (FY 2006)

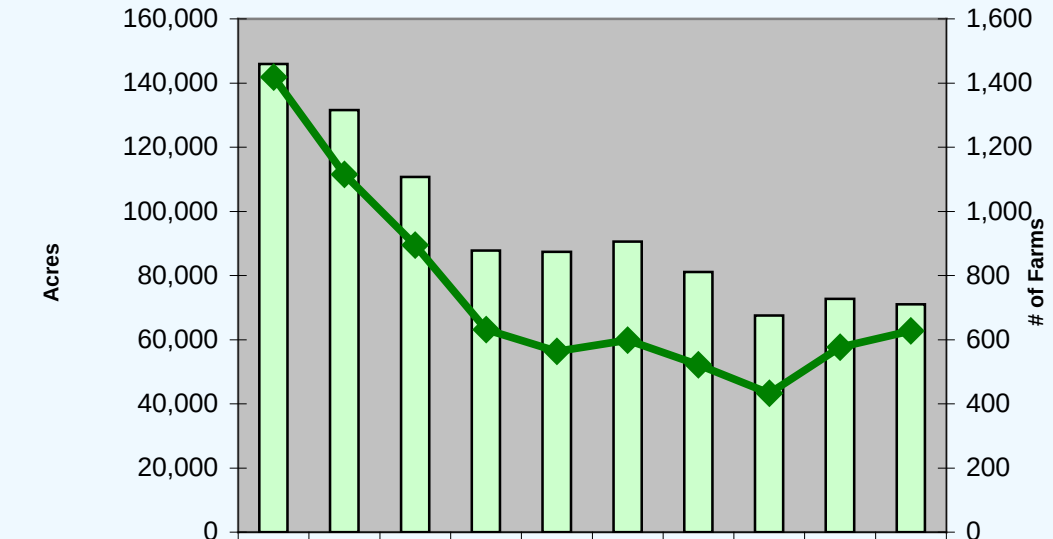


Source: 2007 State of the Economy Report, Economic Development

AGRICULTURAL TRENDS

Looking at the major trends from 1959-2002, farmland and the number of farms in Orange County decreased. However, between 1992 and 2002 the number of farms increased by 194, and acres in farm use were fairly stable. See Figure 3-9.

FIGURE 3-9: ORANGE COUNTY AGRICULTURE (1959-2002)



	1959	1964	1969	1974	1978	1982	1987	1992	1997	2002
Land In Farms	145,9	131,5	110,7	87,81	87,34	90,57	81,10	67,49	72,67	71,01
# of Farms	1,418	1,115	895	631	564	599	522	433	577	627

Source: 1959-2002 Census of Agriculture, US Department of Agriculture

Looking at 2002 Census of Agriculture data, Orange County had fewer farms than most other counties in the region (Alamance, Chatham, Durham and Wake Counties). Orange County's farms were slightly larger, on average, and took up a greater percentage of all County lands than farms in other counties. 27% of the land in Orange County farms is devoted to active crop production. See Figure 3-10.

FIGURE 3-9: AGRICULTURAL CENSUS COMPARISONS BY COUNTY (2002)

Location	Number of Farms	Total Land in Farms, Acres	Est % of County Acreage in Farms	Avg Farm Size, Acres	Harvested Cropland, Acres
Orange	627	71,010	27.8%	113	19,405
Alamance	831	97,793	35.5%	118	23,423
Chatham	1,128	118,752	27.2%	105	24,590
Durham	238	26,074	14.0%	110	4,510
Wake	846	92,803	17.4%	110	27,305
North Carolina	53,930	9,079,001	29.1%	168	4,308,209

Source: 2002 Census of Agriculture, US Department of Agriculture

Between 1996 and 2005, there were significant income changes for major agricultural products. Nursery and greenhouse income increased by 122% between 1996 and 2005, and 7% between 2004 and 2005. Livestock and Forestry also had major income increases between 1996 and 2005; however, forestry experienced a slight decline in 2005. The products with the largest drop in income were tobacco and field crops, losing 83% between 1996 and 2005 and 65% between 2004 and 2005. Milk and eggs also saw losses in income over these two periods. It is important to keep in mind that even though income has increased for some farm products, the scale of farming operations in Orange County requires most farmers to secure other sources of income to make a living. See Figure 3-11.

FIGURE 3-10: INCOME CHANGE FOR MAJOR AGRICULTURAL PRODUCTS (1996-2005)

	2005 vs 1996	2005 vs 2004
Milk	- 32%	- 5%
Tobacco & Field Crops	- 83%	- 65%
Eggs	- 5%	- 20%
Nursery & Greenhouse	+ 122%	+ 7%
Livestock	+ 93%	+ 24%
Fruits & Vegetables	na	+ 46%
Forestry	+ 62%	- 4%

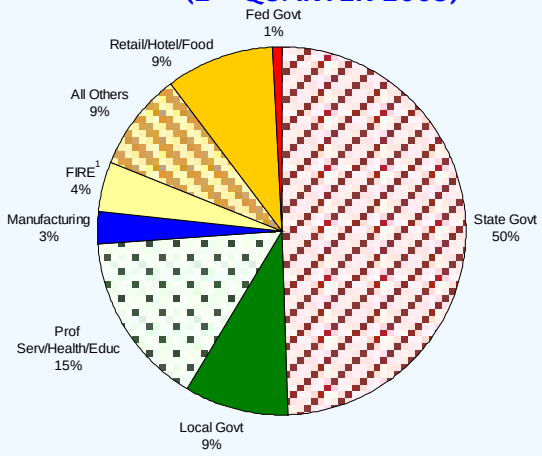
Source: 2007 State of the Economy Report, Economic Development Commission

WAGE AND UNEMPLOYMENT TRENDS

While state employees were only 38% of total employment in Orange County in 2005, 50% of the wages paid in the 2nd quarter of 2005 were paid to state employees. Professional services, health, and education employees received 15% of the total County wages earned; and local government, retail/hotel/food, and "all other" categories each earned 9%. Finance, investment, and real estate (FIRE),

manufacturing, and federal government employees comprise only a small percentage of total County wages earned. See Figure 3-12.

FIGURE 3-11: TOTAL ANNUAL WAGES PAID (2ND QUARTER 2005)



Notes and Sources
1 FIRE = Finance, Insurance and Real Estate
Source: Employment Security Commission of NC
Compiled by the Orange County Economic Development Commission
State of the Local Economy, March 14, 2006

In the 3rd quarter of 2006, Orange County's weekly wages were 112.2% of the average North Carolina weekly wage, and higher than Alamance, Chatham and Wake Counties. Only Durham County had a higher average weekly wage, largely due to the wages earned from employers located in the Research Triangle Park and Duke University. See Figure 3-13.

FIGURE 3-12: AVERAGE WEEKLY WAGES COMPARISON (3RD QUARTER, 2005)

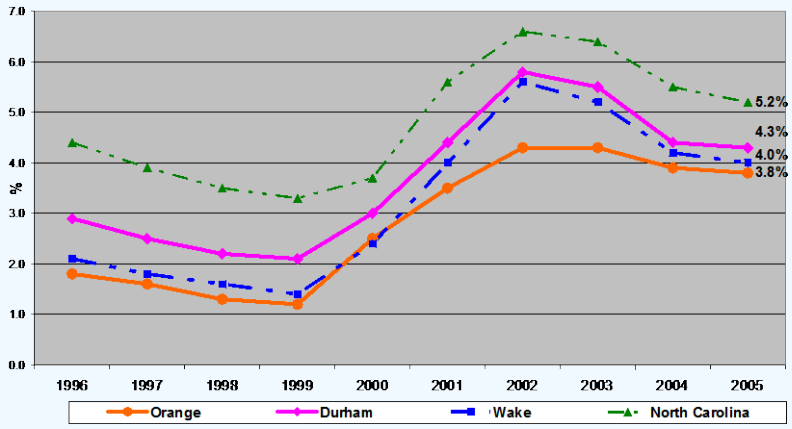
Location	Average Wkly Wage	% of NC Wages
Orange County	$781	112.2
Alamance County	$599	86.1
Chatham County	$555	79.7
Durham County	$1,039	149.3
Wake County	$781	112.2
North Carolina	$696	--

Notes and Sources:
NAICS Employment and Wages, ESC/LMI Division
Quarterly Census of Employment and Wages (QCEW) Unit

Orange County unemployment rates tracked consistently with state trends and

other Counties in the Triangle between 1996 and 2005. Among this group, Orange County had the lowest unemployment rates. See Figure 3-14.

FIGURE 3-13: UNEMPLOYMENT RATE COMPARISONS (1996-2005)



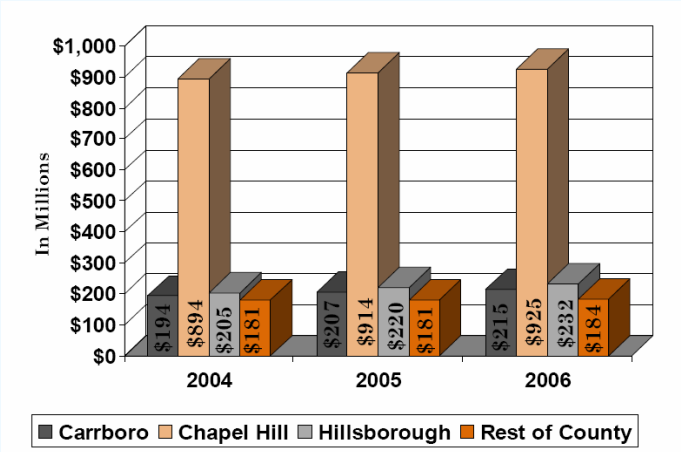
Source: Employment Security Commission of North Carolina

DEVELOPMENT AND TAX VALUE TRENDS

The Economic Development Commission reports that property taxes in FY2006 represented 66.03% of general fund revenues for the County. Approximately 50% of lands in the County are taxed at either a reduced rate or not taxed at all. This is because 41% of all land in Orange County (highest in the region) participates in the use value program that taxes lands used for agriculture and forestry purposes at a reduced rate. Another 9.6% of land in the County is exempt from ad valorem taxes because parcels are publicly owned properties or exempt from property taxes.

In terms of dollar value, the County's non-residential tax base is largely located in Chapel Hill, with Hillsborough, Carrboro, and the rest of the County following. The value of non-residential tax base for these communities was consistent between 2004 and 2006. See Figure 3-15.

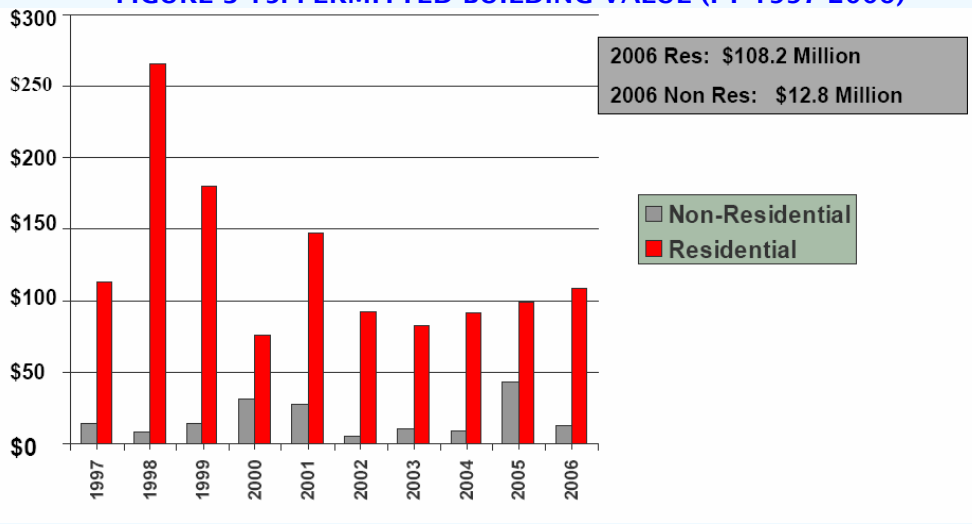
FIGURE 3-14: NON-RESIDENTIAL TAX BASE BY LOCALITY (2004-2006)



Source: 2007 State of the Economy Report, Economic Development Commission

Historically, permitted building value in Orange County is largely comprised of residential development. The 2006 permitted building value for residential construction was almost 10 times the value of non-residential construction. See Figure 3-16.

FIGURE 3-15: PERMITTED BUILDING VALUE (FY 1997-2006)



Source: 2007 State of the Economy Report, Economic Development Commission

3.4. ORANGE COUNTY ECONOMIC DEVELOPMENT NEEDS

Residents have found this a desirable place to live and prosper. Business, agriculture, and services have provided for the needs and employment of residents. The presence of the nation's first public university has been an engine for growth and vitality. Merchants, homebuilders, farmers, and entrepreneurs have all found success here.

The major influence over the last 50 years has been the emergence of the Research Triangle Park and its ability to replace disappearing tobacco and textile jobs with high technology employment. Although the majority of those technology-driven jobs have located in Durham and Wake Counties, many Orange County residents work in the Research Triangle Park.

Orange County is distinctive in that a substantial proportion of its citizens work in the Research Triangle, Durham and Duke University but prefer to live in the County because of the high quality of life. Public policies designed to increase jobs within Orange County should not reduce this appeal to commuters.

Another key trend has been a set of changes in the agricultural industry: first with the emergence of agri-business making it increasingly difficult for local farms to compete in national markets; and second, a growing interest in Orange County in consuming locally grown products that can offer strategic opportunities for local agriculture.

What's in store for the next 20 years? This Comprehensive Plan lays the groundwork for forward-looking strategies with population projections, employment projections, and articulation of a set of Guiding Principles for managing growth. **Here is a summary of the key community needs** regarding Economic Development:

1. There is a **need to seek a stable property tax rate that is balanced between residential and non-residential properties**, to sustain an affordable living environment. It is the task of Economic Development strategies to promote a vibrant and sustainable non-residential set of land uses to keep this balance intact.

2. There is a **need to provide employment opportunities close to the areas where people live in Orange County, to help achieve a sustainable transportation system and sense of community**. It is the task of Economic Development strategies to attract and keep those local job opportunities.

3. **Tourism is another significant component of Orange County's economy.** According to the 2006 Economic Impact of Travel on North Carolina, a study conducted by the Travel Industry Association of America, more than 1,710 jobs in Orange County were directly attributable to travel and tourism, creating $27.62 million payroll. This industry is continuing to flourish and increased 8.2 percent between 2004 and 2006, generating an economic impact of $127.6 million. Tax revenues the county receives from travel and tourism represents an $85 tax saving for each resident of the County.

4. There is a **need to achieve regular increases in local government revenues**. Demands continue to increase for services in Orange County, in amount of offerings, quality of offerings, and variety of

offerings. In order to sustain and improve the high quality of life that has been achieved here, every chapter of this Plan includes goals to continue to improve services. Maintaining this quality of life will require enhanced revenue streams to cover the costs of new or expanded services. It is the task of Economic Development strategies to enhance the County's economic well-being so that these higher levels of services can be provided.

5. There is a **need to support local agriculture and maintain the viability of local farms**, for reasons of sustainable living patterns and to help preserve this key component of Orange County's historical culture. It is the task of Economic Development strategies to include components that help support local farms.

6. There is a need to **conduct a cost-benefit analysis for economic development projects** to assess the potential benefits to the community and whether they outweigh the costs of the efforts.

7. With these needs in mind, and a set of community goals for the future in hand, objectives and strategies can be designed to meet those goals. Initial steps that would be helpful to take include:

    - The **development of criteria that would define the type of businesses that the County would prefer to attract**. Specific strategies to foster and encourage businesses to the local area require further definition of the types of business that are appropriate for Orange County.

    - **Evaluation of the job training, housing, childcare assistance, and commercial needs of future populations**. Depending upon the types of business that the County would like to attract in the future, workers will need to have adequate skill sets to compete for these jobs. Many of those employees will have childcare, housing, and other social service needs that will need to be met. Commercial and recreational needs of future populations should be determined to inform future decisions regarding approval and provision of these types of services.

3.5. GOALS

The following economic development goals will guide future policy and implementation strategies for the County.

Economic Development Overarching Goal: Viable and sustainable economic development that contributes to both property and sales tax revenues, and enhances high-quality employment opportunities for County residents.

Economic Development Goal 1:
Public-private sector partnerships that create a stronger business climate.

Economic Development Goal 2:
Infrastructure that supports desired development.

Economic Development Goal 3:
Effective systems to train and support residents and those who work in Orange County.

Economic Development Goal 4:
Partnerships that ensure the County remains a great place in which to live and work.

3.6. OBJECTIVES

The intent of this Plan is that the following list of objectives will help guide regular and ongoing decision-making by the County related to economic development initiatives.

Economic Development Goal 1: Public-private sector partnerships that create a stronger business climate.

Objective ED-1.1:
Focus public education efforts on sustainability issues, looking at the social, economic and environmental contributions of local businesses. (See also Agricultural Objective AG-6.)

Objective ED-1.2:
Form partnerships both within and outside the County to create a stronger business climate and market the changes to existing and potential employers.

Objective ED-1.3:
Develop clear criteria defining desirable businesses for the next five years.

Objective ED-1.4:
Achieve the objective of adding 5,000 new private sector jobs in the County and $125,000,000 in new commercial property by June 2010, with the goal of 75% of the new jobs being filled by County residents.

Objective ED-1.5:
Identify barriers to development of desirable businesses and local businesses, and mitigate these barriers.

Objective ED-1.6:
Provide outreach, recognition and/or expedited service to new and existing businesses that meet development criteria.

Objective ED-1.7:
Enhance Orange County's tourist industry. (See also Cultural Resources Objective CR-8.)

Objective ED-1.8:

Explore policies to use in attracting and encouraging development of companies and enterprises that will build and expand upon the County's economic base.

Economic Development Goal 2: Infrastructure that supports desired development.

Objective ED-2.1:
Encourage compact and higher density development in areas served by water and sewer. (See also Land Use Objective LU-1.1 and Water and Wastewater Objective WW-5.)

Objective ED-2.2:
Encourage mixed use projects that support walkable communities.

Objective ED-2.3:
Promote public transportation, alternative modes of transportation, and encourage carpooling and park-and-ride participation. (See also Land Use Objectives LU-1.1, LU-3.2 and Transportation Objective T-1.1.)

Objective ED-2.4:
Support the County's "Schools Adequate Public Facilities Ordinance."

Objective ED-2.5:
Identify lands suitable to accommodate the expansion and growth of commercial and industrial uses in the County.

Objective ED-2.6:
Identify areas that are desirable and attractive to major corporate users with access to public transportation networks and possibly rail.

Objective ED-2.7:
Select industrial sites in Economic Development Areas based on present and planned supporting systems, such as public water and sewer, access to adequate highway, rail, or public transportation infrastructures, and minimize detrimental environmental or negative social outcomes. (See also Water and Wastewater Objective WW-15.)

Objective ED-2.8:
Adjust ongoing designation and zoning of Economic Development Districts to avoid the area designated as the Rural Buffer. (See also Land Use Objectives LU-3.1 and LU-3.3.)

Objective ED-2.9:
Consider industrial sites in Agricultural-Residential areas along the U.S. 70/I-85 highway and rail corridor to take advantage of the corridor's locational attributes. A limited number of small scale Rural Industrial Nodes, not requiring urban type services, may be appropriate elsewhere in the County where good access exists. (See also Land Use Objective LU-3.5.)

Objective ED-2.10:
Extend public water and sewer into all three Economic Development Districts. (See also Land Use Objective LU-1.1 and Water and Wastewater Objective WW-2.)

Objective ED-2.11:

Establish adequate information networks throughout the towns and County.

Objective ED-2.12:
Work with all area universities to identify space needed for businesses created through university research, promote development of such space within the County, and encourage such businesses to stay in Orange County.

Economic Development Goal 3: Effective systems to train and support residents and those who work in Orange County.

Objective ED-3.1:
Develop and nurture partnerships that support workers and their families at all stages of their lives and provide opportunities for lifelong learning and retraining in response to changing economic conditions.

Objective ED-3.2:
Promote access to living wage jobs that offer benefits and career advancement potential.

Objective ED-3.3:
Form partnerships with Durham Technical Community College, UNC-Chapel Hill, Chapel Hill/Carrboro Schools, Orange County Schools, and others to provide adequate training and education to enable workers in Orange County to obtain high quality jobs.

Objective ED-3.4:
In coordination with the Business Climate working group, help communicate the types of jobs the County wants and expects to create so that workers can develop realistic career expectations and obtain appropriate training.

Objective ED-3.5:
Ensure that County workers and those preparing for the workforce have access to transportation, child care, elder care, and affordable housing. (See also Housing Objective H-1.5.)

Economic Development Goal 4: Partnerships that ensure the County remains a great place in which to live and work.

Objective ED-4.1:
Enhance historic character by supporting organizations' efforts to preserve, promote, and maintain historic structures, and identify Orange County policies that may be in conflict with these efforts. (See also Cultural Resources Objective CR-2, CR-3, and CR-5, and Housing Objective 3.6.)

Objective ED-4.2:
Provide lifelong learning opportunities, from early childhood through senior citizens.

Objective ED-4.3:
Welcome and promote greater inclusiveness and diversity.

Objective ED-4.4:

Enhance rural and agricultural community character by supporting local agriculture markets, supporting complementary conservation and management tools, and considering tools to make farming more profitable. (See also Agriculture Objective AG-2 and AG-3.)

Objective ED-4.5:
Enhance urban character by connecting and supporting existing plans for increasing the commercial tax base and for revitalizing the downtown areas of Carrboro, Chapel Hill, and Hillsborough.

TABLE 3-1: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES 1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Goal 1 and Objectives ED-1.1 – ED-1.8	√	√				√		√	
Goal 2 and Objectives ED-2.1 – ED-2.12	√	√	√	√				√	√
Goal 3 and Objectives ED-3.1 – ED-3.5	√	√						√	√
Goal 4 and Objectives ED-4.1 – ED-4.5	√	√	√					√	√

3.7. LINKS TO OTHER ELEMENTS

Planning for Orange County's economic development future involves more than just creating new jobs. The success of future economic efforts is linked to other community needs such as housing, transportation, and community services. Linkages between specific economic development goals and objectives have been identified in this element. The following summarizes the objectives from other Elements that are linked with Economic Development objectives.

HOUSING

Objective H-1.5:
Ensure that a variety of housing types can be developed throughout the County in a sustainable manner that locates housing near employment centers and commercial centers and that efficiently uses existing and planned public services.

Objective H-3.6:
Work within the Orange County government system to identify and resolve existing policies which may be at odds with historic preservation goals, green building approaches, and workforce and affordable housing efforts.

LAND USE

Objective LU-1.1:
Coordinate the location of higher intensity / high density residential and non-residential development with existing or planned locations of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer, high-speed internet access, streets, and sidewalks), while avoiding areas with protected natural and cultural resources. This could be achieved by increasing allowable densities and creating new mixed-use zoning districts where adequate public services are available.

Objective LU-3.1:
Discourage urban sprawl, encourage a separation of urban and rural land uses, and direct new development into areas where necessary community facilities and services exist through periodic updates to the Land Use Plan.

Objective LU-3.2:
Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation system.

Objective LU-3.3:
Discourage new intensive non-residential land uses, or the expansion of existing intensive uses, in the area designated Rural Buffer.

Objective LU-3.5:
Encourage energy and water use in an efficient manner by industries and encourage energy efficient industries to locate or expand in the County in Rural Industrial, Commercial/Industrial, and Economic Development Nodes.

NATURAL AND CULTURAL SYSTEMS

Objective AG-2:
Pursue new measures (some of which may require special legislation) to make farming more profitable, such as additional programs for tax assistance.

Objective AG-3:
Develop programs and associated infrastructure facilities to make local farms more economically viable, including local farm product

processing, development of a distribution center, and marketing initiatives.

Objective AG-6:
Develop a single-clearing house information source for current agricultural topics, agricultural programs, and events sponsored by Orange County and/or for local farmers in conjunction with the Orange County Farms website.

Objective CR-2:
Establish stronger partnerships with neighboring preservation organizations for the dissemination of information on current topics and to provide hands-on training, such as "how to" publications, examples of design guidelines, technical briefs, etc.

Objective CR-3:
Work within the Orange County government system to identify and resolve existing policies which may be in conflict with the preservation mission.

Objective CR-5:
Promote existing programs that offer financial incentives for preservation purposes and pursue new programs to encourage the purchase, preservation, maintenance or adaptive reuse of historic and soon to be historic structures.

Objective CR-8:
Determine the appropriate level of heritage tourism promotion in Orange County based on interests and concerns of residents and coordinate heritage tourism efforts with existing programs in the County.

SERVICES AND FACILITIES

Objective WW-2:
Coordinate the provision of potable water and sanitary sewer services with the County's Land Use Plan and Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, targeting these services to urban, transitional, and economic development districts in a manner that does not endanger environmental resources.

Objective WW-5:
Maintain a cooperative joint planning process among the County, the municipalities, and water and wastewater providers and guide the extension of service in accordance with the Comprehensive Plan, the Orange county-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities.

Objective ED-2.7:
Select industrial sites in Economic Development Areas on the basis of the capacity of supporting systems, such as water and sewer lines and good highway or rail access, and the absence of detrimental environmental or social impacts.

TRANSPORTATION

Objective T-1.1:
Increase the occupancy of automobiles through ridesharing and other means; and expand the use of public transit (including bus and rail), walking, and biking as primary modes of travel.

3.8. OTHER KEY DOCUMENTS

Key documents used to develop this element include the following:

- *Investing in Innovation: The Orange County Economic Development Commission's 2005-2010 Strategic Plan*
- *State of the Local Economy Report*, published by the Orange County Economic Development Commission in March 2007.
- *Staying on Top: Winning the Job Wars of the Future*, published by the Future Clusters Competitiveness Task Force in 2004.

3.9. INTERGOVERNMENTAL COORDINATION

Planning for the County's future economy requires coordination among the many jurisdictions in Orange County. The towns of Chapel Hill and Carrboro have hired economic development staff to assist in business recruitment and other needs. Hillsborough is undergoing major development in its downtown with the new County campus that will have spin-off economic effects. Chapel Hill has developed an aggressive plan for downtown redevelopment – the Downtown Economic Development Initiative – which will likely increase the non-residential tax base for the County. Expansion of the UNC-Chapel Hill main campus and development of the future Carolina North on the Horace Williams property are other key opportunities for the County. The town of Carrboro has been experiencing a wave of redevelopment in its downtown, and is currently planning for development in the new northern areas that were recently annexed. The County is working in partnership with the City of Durham to plan for an area along US-70 in the US-70/I-85 Eno Economic Development District. In 2004, Orange County and the City of Mebane agreed on provisions to extend water and sewer services to the Buckhorn Economic Development District and signed a Utility Service Agreement. The County will continue to pursue coordinated planning with Mebane.

Planning for the economic future of Orange County will require that there is sufficient coordination among the many jurisdictions involved in these efforts. Emphasis is needed in all implementation initiatives to share information with and involve all affected jurisdictions and organizations.

Chapter 4. Housing Element

4.1. PURPOSE

This Housing Element provides guidance and direction regarding future efforts to plan for housing needs in Orange County. The goals and objectives identified within this Element serve as the foundation for establishing future housing policies and action strategies undertaken by Orange County, its advisory boards, and staff. The specific process for developing a housing implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

4.2. OVERVIEW

The unique quality of life found in Orange County continues to draw more and more families and households to the area. The majority of homes are located in the urban areas (Hillsborough, Chapel Hill, Carrboro, and Mebane), but rural housing that offers life in a pastoral setting is also prominent in the County. Housing values have continued to rise over time, and the housing market continues to be healthy overall. Ensuring that all households are provided safe, adequate, and affordable housing that is proximate to needed services is an important issue that will need consideration and action over the planning horizon.

Background

Property values, particularly properties in Chapel Hill and Carrboro, continue to rise and are higher on average than all other counties in the Research Triangle region. The sales price gap continues to widen in this region, with housing prices increasing nearly twice as fast in Orange County as Durham and Wake Counties since 1995. These trends are expected to continue into the future.

While the trend of increasing property values is advantageous to existing homeowners, it limits housing options for first time buyers and prohibits others from buying completely. The downturn in the housing markets that began in 2007 nationwide has not had a significant effect on the County's market in terms of property values. However, the resulting changes in home lending practices have made it more difficult for prospective homeowners to enter the local market.

The County's rental housing supply is not adequate to meet rental housing needs, especially for those households earning 30% or less of the area median income. The majority of rental units are old and in need of rehabilitation and maintenance. The lack of housing for households earning very low incomes contributes to the County's problem of homelessness. This is further exacerbated by the fact that there are no affordable housing providers focusing on development of units for households earning less than 30% of the area median income.

As new households move to the County, it will be important to have a variety of housing options available to them. Future housing efforts within the County will need to balance the need to maintain and increase property values with the need to provide adequate housing opportunities for all residents of the County. New housing should be located proximate to needed services, shopping, and employment centers to ensure long-term sustainability of the housing stock. This will necessitate collaborative efforts between the County and towns to plan for and provide for future housing needs.

RECENT HOUSING STUDIES

Orange County and its municipalities have collaborated over the years to support initiatives to provide housing that meets the needs of all income groups and household needs. A summary of recent housing plans developed for Orange County is provided here.

2005-2010 HOUSING AND COMMUNITY DEVELOPMENT CONSOLIDATED PLAN

To be eligible for federal housing and community assistance funding for community projects, local governments are required to develop a "Housing and Community Development Consolidated Plan" every five years. These plans summarize local demographic and housing market conditions; provide a needs assessment on housing, the homeless population, and community development needs; and articulate a five-year action and funding plan to address the needs. A consortium of Orange County and the Towns of Chapel Hill, Carrboro, and Hillsborough worked collaboratively to develop the 2005-2010 Consolidated Plan for Orange County. This plan was adopted by the Board of County Commissioners in 2005.

The plan outlines an "anti-poverty" strategy to address the impoverished persons in the County (14.1% of the County was below poverty in 2000) that includes using federal funding to increase the quantity and quality of affordable housing, and help low-income families acquire needed information, knowledge, and skills to improve their employment opportunities. This strategy links housing, homelessness, public housing and community development strategies to reduce the number of families falling below the poverty level. The 2005-2006 budget includes more than $1.6 million in federal funds to achieve these goals

Specific Strategic Plan Goals Include:

- Provide decent and affordable housing for low-income households. Strategies include assisting low-income homeowner and low-income renter properties through rehabilitation, weatherization, and lead-based paint improvements; continuation of the County's Urgent Repair Program; constructing new rental housing; providing financial and educational assistance to qualified homebuyers[1]; providing education and advocacy regarding tenants rights; and providing financial assistance to homeowners wanting to install indoor plumbing and/or connect their properties to public water and sewer facilities.

- Provide housing and services for populations with special needs. Such special needs groups include the homeless, elderly, disabled, mentally ill, and persons with AIDS. Strategies to assist these groups include financial assistance to shelters and other services to special needs groups; strengthening partnerships with the local

[1] The Affordable Housing Bond Program uses bondfunds to create deferred and direct loans, which encourage homeownership. In 2001, Orange County voters approved a $4.0 million dollar Affordable Housing Bond referendum. A wide range of projects are eligible for bond funding including homeownership and rental housing projects as well as land acquisition projects. Mixed-tenant housing and production of non-traditional housing types -- such as duplexes and single room occupancy (SRO) units are also encouraged. Project proformas are reviewed to insure the financial feasibility of proposals and to recommend specific rates and terms to the Board of County Commissioners.

Continuum of Care; and assisting with the acquisition of funding to develop permanent housing for persons with special needs.

- Facilitate non-housing community development activities. Examples of community development activities include beautification programs and recreational opportunities for youth. The plan outlines several strategies for community development including strengthening partnerships with neighborhood associations; organizing neighborhood cleanups; improving dissemination of community information; and promoting local economic development.

ORANGE COUNTY, NORTH CAROLINA COMPREHENSIVE HOUSING STRATEGY

In 2006, Orange County conducted a thorough assessment of the County's housing market and demand for housing, and identified key strategies for alleviating unmet housing gaps. The study found that households earning less than 30% of the area median income have the most difficulty finding adequate and affordable housing. In addition, the study notes that there are no active developers (except for non-profits with limited capacity to meet market demand) building homes or condominiums that are affordable to families at or below 80 percent of median income. The draft report outlines three key strategies for future action:

- Non-profit strategies that include ending the duplication of services, coordinating the provision of affordable housing by focusing provider efforts to targeted market areas, and improving the professional capacity of non-profit staff;
- Rental unit strategy that accepts that older rental properties should be targeted for reinvestment and rehabilitation to provide needed housing for households earning 30% or below the area median income; and
- Single-family housing strategy that suggests expanding Chapel Hill's successful efforts to encourage developers to build affordable units as part of new developments to include the entire County.

ORANGE COUNTY MASTER AGING PLAN

In 2007, Orange County adopted the Orange County Master Aging Plan: Building-Aging Friendly Communities in Orange that sets goals and strategies for coordinating delivery of community services to older adults who have different levels of functional capacity throughout their life spans. The plan identifies several never seen before demographic conditions affecting communities across the nation:

1. An explosion in the numbers of older persons;
2. A dramatic increase in longer lives for older persons;
3. More residents living more of their advanced years in declining health and limited function; and
4. A large and growing number of older persons (retirees and non-retirees) who are a major human resource.

Four overarching goals provide the County with guidance in planning for our elderly population. Goal B is relevant to the provision of elderly housing in the County:

- **Goal B: Housing and Shelter** – Promote an adequate supply of safe, affordable, and suitable housing options for older residents to age in place.

Several of the housing objectives listed in this chapter were derived from the objectives of the Master Aging Plan. Key strategies are outlined in the Master Aging Plan that can inform future efforts for implementation of this element.

ORANGE COUNTY TEN YEAR PLAN TO END CHRONIC HOMELESSNESS: A BROAD PROPOSAL TO END HOMELESSNESS (2007)

In 2005, the Orange County Partnership to End Homelessness formed to meet the challenge of ending chronic homelessness in Orange County within the next 10 years. The partnership includes Orange County, the Towns of Hillsborough, Chapel Hill, and Carrboro; the Triangle United Way, Orange Congregations in Mission; Inter-Faith Council for Social Services; OPC Area Program; the Hillsborough Chamber of Commerce; and the University of North Carolina – Chapel Hill. The plan identifies four key reasons for chronic homelessness in the County:

1. Lack of affordable housing in the County;
2. Insufficient incomes to afford housing in the County;
3. Inadequate social services to meet local needs; and
4. Inadequate discharge planning from public systems of care.

The plan outlines a set of coordinated strategies to be undertaken by the partnership to end chronic homelessness by 2017. The strategies are designed to meet the following goals:

- Reduce chronic homelessness;
- Increase employment;
- Prevent homelessness;
- Increase access to needed social services; and
- Increase public participation in ending homelessness.

It includes a detailed strategy for implementation of these goals, including a timeframe for implementation, costs associated with the effort, additional partners to help implement the plan, leadership to oversee the process, and the staff needed to manage it. An Executive Team, comprised of members of the Orange County Partnership to End Homelessness will serve as the base community support for implementing the plan and is expected to meet quarterly to ensure the goals, objectives, and strategies laid out in the plan are met.

KEY ISSUES

Key housing planning issues to be addressed in this Element include:

- Provision of **a diversity of housing types and housing densities throughout the County** to provide for a range of housing needs of current and future populations;
- Location of **housing developments, including affordable housing units, in areas that are proximate to needed services, shopping, schools, transportation options, and employment centers**;
- Coordination of **the provision of public services, such as the extension of water and sanitary sewer lines**, with planned locations for higher density and mixed-use housing developments;
- Provision of **adequate housing for households earning low incomes**;
- Improvement of **opportunities for the County's elderly population** to age-in-place;
- Provision of **housing opportunities for citizens with physical disabilities;**
- Assessment of **workforce housing needs** in the County; and
- Coordination of **historic preservation and affordable housing initiatives to ensure that these efforts are not in conflict and are achieving mutual goals**.

4.3. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following data provide background information on the historical and current housing supply and demand conditions in Orange County. These statistics come from either *Appendix A: County Profile (Data) Element* or from the *2006 Orange County, North Carolina Comprehensive Housing Strategy Report.*

KEY FACTS

The following snapshot of Orange County's household income and housing statistics provides a foundation for considering housing issues.

- In 2000, there were 47,706 households Orange County, with an average of 2.6 persons per household.
- The elderly population will nearly triple during the next three decades (2000-2030), increasing from 9,931 in 2000 to 26,499 by the year 2030.
- According to the U.S. Department of Housing and Urban Development, in FY 2008, the median income for families in Orange County was $62,100.
- In 2000, married families (which includes married couples without children) had a median income of $59,874. Male single-parent

households had a median family income of $32,634, and female single-parent households had a median family income of $24,705.

- The average price of homes sold (re-sale and new) in 2005 was $320,489.
- Only 18% of homes on the market in 2005 were considered affordable for families of four making median income or less.
- Since 2000, the availability of homes with sales prices in the $120,000 and less range has dropped more than 40% while the number of homes available in the $250,000+ range has increased 32%.
- The majority of rental apartments are in Chapel Hill (56.7%). Housing demand for university students has a considerable impact on the Orange County rental housing market, constituting somewhere between 50%-65% of the overall rental market in the County.
- A survey of persons experiencing homelessness across the state identified that on January 26, 2005, there were 237 individuals in Orange County experiencing homelessness. A second survey conducted in 2007 identified 224 persons experiencing homelessness in the County.

SNAPSHOT OF HOUSING MARKET

In comparison with Durham and Wake Counties and the State of North Carolina, Orange County has historically had the highest median home values. In 2000, a higher percentage of households owned homes in Orange County than in Durham, but less than in Wake County and the State of North Carolina. Median rents for apartments were lower than rents paid in Wake County, but significantly higher than median rents in North Carolina overall. The County also had a much higher number of manufactured housing units than Durham County, but far fewer than Wake County. See Figure 4-1.

FIGURE 4-1: REGIONAL HOUSING PROFILE, 2000

Housing Attribute	Orange County [3]	Durham County	Wake County	North Carolina
# Housing Units	47,706	95,452	258,953	3,523,944
Vacant Units	7%	7%	7%	11%
Renter Occ[1] Units	39%	43%	32%	27%
Owner Occ[1] Units	54%	51%	62%	62%
Mobile Homes	5,124	1,547	14,210	577,323
Med[2] Contract Rent	$591	$561	$631	$431
Med[2] Value Owner Unit	$179,000	$129,000	$162,900	$108,300
Occ Units >10yr old	72.6%	70.9%	58.8%	65.0%
Occ Units >20yr old	50.8%	51.5%	35.2%	47.7%
Occ Units >30yr old	30.3%	34.3%	20.4%	31.5%

Notes and Sources:

[1] Occ=Occupied. Indicates whether the owner lives in the unit or if it is rental property.

[2] Med=Median. See Appendix for further explanation.

[3] Corrected totals for Orange County. Figures include municipalities + unincorporated areas.

Source: US Census Bureau, 2000

In 2000, the majority of homes in Orange County were located in municipalities: most in Chapel Hill (18,976 units), with other concentrations in Carrboro (8,207 units) and Hillsborough (2,329 units). Carrboro had a higher percentage of rental units and Hillsborough had the highest percentage of owner-occupied units. This is largely due to the fact that students of the University of North Carolina-Chapel Hill comprise a significant amount of the County rental housing market, renting primarily in Carrboro and Chapel Hill. See Figure 4-2.

FIGURE 4-2: COUNTY HOUSING PROFILE, 2000

Housing Attribute	Carrboro	Chapel Hill	Hillsborough	Total Orange Co.
People Per Hshld	2.2	2.2	2.5	2.6
# Housing Units	8,207	18,976	2,329	47,706
Vacant House Units	8%	6%	10%	7%
Renter Occ [1] Units	63%	54%	36%	39%
Owner Occ [1] Units	29%	40%	55%	54%
Mobile Homes	107	234	170	5,124
Med [2] Contract Rent	$607	$607	$485	$591
Med [2] Value Owner Unit	$172,800	$229,100	$117,100	$179,000
Occ Units >10yr old	68.8%	77.9%	74.1%	70.3%
Occ Units >20yr old	42.9%	58.0%	57.0%	49.2%
Occ Units >30yr old	22.4%	37.2%	41.7%	29.3%

Notes and Sources:

[1] Occ=Occupied. Indicates whether the owner lives in the unit or if it is rental property.
[2] Med=Median. See Appendix for further explanation.
Source: US Census Bureau (2000, corrected)

HOUSING PRICES

Housing prices in Orange County were consistently higher than Wake and Durham Counties, and the state average. From 1995 to 2005, housing prices increased by 87% in Orange County. This is almost double the rate of increase for housing prices in Wake and Durham Counties. See Figure 4-3.

FIGURE 4-3: AVERAGE REGIONAL HOUSING SALES PRICES (1995-2005)

Year	Orange	Durham	Wake	Total Avg. Price
1995	$171,038	$123,266	$158,431	$150,912
1996	$192,144	$130,749	$162,474	$161,789
1997	$197,071	$138,876	$170,170	$168,706
1998	$209,208	$143,529	$175,039	$175,925
1999	$218,875	$146,795	$187,217	$184,296
2000	$235,633	$156,568	$199,362	$197,188
2001	$249,226	$162,913	$204,374	$205,504
2002	$261,895	$163,462	$212,567	$212,641
2003	$280,592	$173,844	$212,382	$222,273
2004	$298,883	$171,071	$221,903	$230,619
2005	$320,489	$181,162	$235,615	$245,756
%Change 1995-2005	87.4%	47.0%	48.7%	62.8%

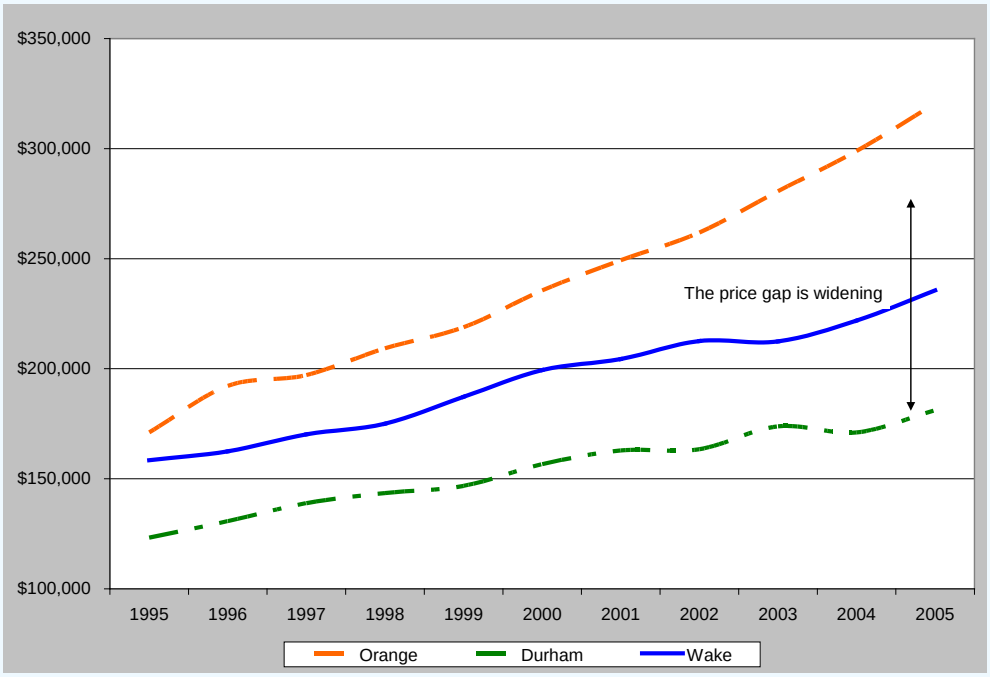
Notes and Sources:

Source: Triangle MLS

Data compiled by Chapel Hill Planning Department

The price gap between housing in Orange County and neighboring counties has widened over time. See Figure 4-4.

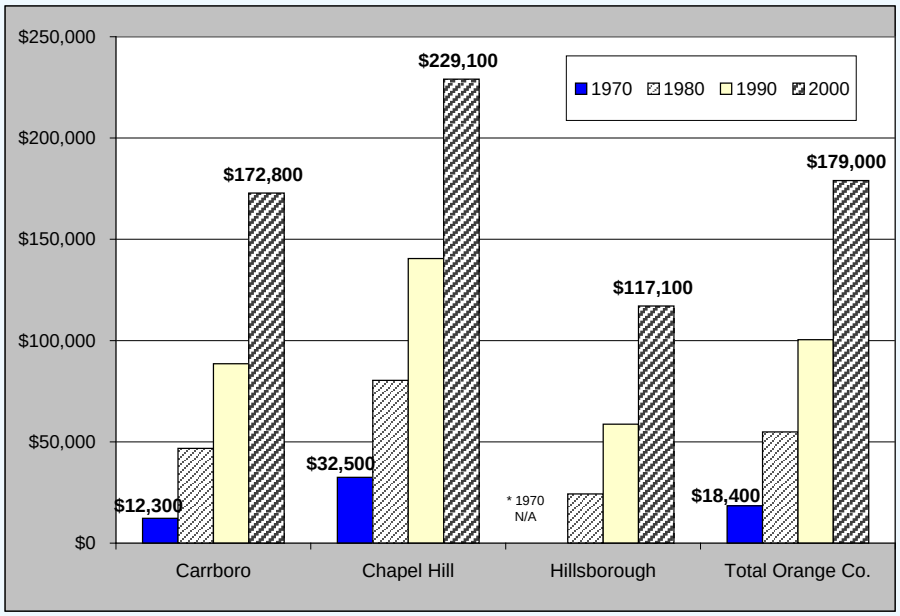
FIGURE 4-4: AVERAGE REGIONAL HOUSING SALES PRICE TRENDS (1995-2005)



Source: Triangle Multiple Listing Service

Median home prices in Orange County varied significantly by market area. Over the past 30 years, Chapel Hill has consistently had the highest median home prices in Orange County ($229,100 in 2000). Carrboro's median sales price was approximately $50,000 less than Chapel Hill's ($172,800 in 2000) and Hillsborough's median housing prices was $100,000 less than Chapel Hill's. In all markets, median sales prices have continued to rise over time, with a significant increase in value over the last decade. See Figure 4-5.

FIGURE 4-5: MEDIAN HOME VALUES IN ORANGE COUNTY (1970-2000)



Source: Appendix A: County Profile (Data) Element

Between 2000 and 2005 housing prices for new and re-sale homes rose significantly. The percent of homes available for sale at $200,000 and below dropped during this period, and the percent of homes available for sale at $250,000 and greater increased by 32%. The average price for all homes in Orange County increased by 36% over this five-year period. See Figure 4-6.

FIGURE 4-6: DISTRIBUTION OF HOUSING SALES PRICES IN ORANGE COUNTY (2000-2005)

Price Distribution [1]	2000	2001	2002	2003	2004	2005	Change 2000-2005
< $79,000	5.2%	4.0%	3.3%	2.3%	4.6%	2.9%	-44%
$80,000 - $119,999	13.1%	12.4%	11.6%	10.9%	8.9%	7.5%	-43%
$120,000 - $159,000	15.1%	16.0%	15.3%	14.3%	12.6%	14.0%	-7%
$160,000 - $199,000	14.2%	13.9%	14.7%	13.1%	11.4%	11.5%	-19%
$200,000 - $249,999	13.7%	12.1%	12.1%	14.4%	14.8%	14.0%	2%
$250,000+	38.6%	41.6%	43.7%	45.2%	47.8%	51.0%	32%
Avg Price	$235,633	$249,226	$261,895	$280,592	$298,883	$320,489	36%

Notes and Sources:
[1] For new and re-sale residences.
Data compiled by Chapel Hill Planning Department
Source: Triangle MLS

HOUSING SUPPLY AND DEMAND BY TYPE

- **Single-Family Units**. Between 1996 and 2004, a total of 4,473 new single family units were permitted in unincorporated Orange County, 3,414 in Chapel Hill, and 1,076 in Carrboro. The 2006 Comprehensive Housing Strategy estimates that three person families at or below 95% of the area median income and four person families at or below 85% of the area median income could not afford the typical home in Orange County.

- **Multi-Family Rental Units**. Between 1996 and 2004, total rental production for Orange County was 2,160 units, or an average of 216 units annually. Multi-family permits constituted 17.1 percent of all permits in the County during the period. The vast majority of new multi-family units produced in the County (89.4%) were in multi-family structures with more than five units. The majority of these units are in Chapel Hill. In 2006, except for two-person families at or below 30 percent of median income, there were a significant number of rental units available at all income levels.

- **Manufactured Homes**. The total number of manufactured housing in 2000 was 5,114 units, or 6.9% of the housing market. The majority of these units (3,558) were owner-occupied. Manufactured housing represents a small but growing segment of the overall housing market. Due to rising land values, it is expected that Chapel Hill and Carrboro will have fewer Manufactured Housing Districts and units in future years. These displaced homeowners may have difficulty finding other sources of affordable housing. There is also a recent trend of placing recreational vehicles in manufactured housing parks illegally. These vehicles do not meet basic building codes addressing healthy, safety, and welfare.

- **Public Housing.** The Chapel Hill Department of Housing is the only local public housing authority in Orange County. The department currently operates 337 units of public housing in three locations, and had a waiting list of 220 families in 2006, 98% of which were at or below 30% of the local area median income.

4.4. AFFORDABLE HOUSING

It is evident that Orange County faces an affordable housing challenge. The combination of rising land values, the lack of housing providers producing units in the moderate to lower end housing range, and the selling off of Manufactured Housing Districts in the towns are contributing to this challenge.

A network of non-profit housing providers and housing assistance organizations in Orange County are working to fill in the housing "gaps" by providing a broad array or educational, financial, and technical services to households in need. These organizations include:

- The Orange County Community Housing and Land Trust provides a wide range of affordable homeownership opportunities for first-time homebuyers who earn less than 80% of the Area Median Income. The Community Land Trust develops affordable homes and keeps them affordable by retaining ownership of the land while conveying all the rights and responsibilities of homeownership to qualified buyers.

- Orange County Habitat for Humanity offers homeownership to working families who may otherwise be unable to purchase a home of their own. Habitat homeowners purchase their home directly from Habitat through a zero-interest, 20-year loan, and provide sweat-equity by participating in the construction of homes.

- EmPOWERment, Incorporated works to increase affordable housing and preserve working-class neighborhoods for families in the Chapel Hill area. The non-profit purchases and renovates existing homes and builds new homes for sale and rent to low-income families.

- Chrysalis Foundation for Mental Health supports the development of affordable housing for people with disabilities and mental illness through property acquisition, rehabilitation and development in Orange, Person and Chatham Counties.

- InterFaith Council for Social Service provides shelter, food, direct services, advocacy and information to the County's homeless and other people in need.

4.5. ORANGE COUNTY HOUSING NEEDS

Orange County's housing market has benefited from the exceptional quality of life found in its communities. The housing market has been very strong, even during economic downturns, and property values have continued to be higher in the County than in neighboring jurisdictions. The result of the healthy housing market is an increased need for lower and moderate income housing options.

As the County's population increases in future years, more housing units will be needed. The location, density, and pattern of these new housing developments will have a large impact on the County's community character, as well as its economic, social, and environmental sustainability over the long-term.

The Comprehensive Plan provides the County with direction through guiding principles, goals, and objectives aimed at the future housing needs identified. A summary of the key community needs for housing includes:

- By 2010, estimates show that an additional **1,064 new housing units will be needed in the County**. It is expected that the County's population will continue to grow through 2030, and will demand additional housing. Appropriate areas for future development to provide new housing that are proximate to schools, employment centers, and needed commercial and social services, will need to be identified;
- The **current supply of rental housing stock is aging** and in need of rehabilitation and upgrading. Upgrading these units is needed to ensure the efficient use of existing rental housing and maintenance of the existing supply of affordable units in to the future;
- Housing analyses have shown that there is a **significant unmet demand for affordable housing for households earning 30% or less of the area median income**. New affordable housing options are needed for these households;
- Because private manufactured housing parks in the County's municipal jurisdictions are being converted to other uses, **households are being displaced** and the supply of affordable housing units is being reduced. Other affordable housing alternatives are needed for displaced manufactured housing owners;
- **Homeownership opportunities for households earning 80% of the area median income and below are limited** and not meeting existing demands. Homeownership opportunities need to be expanded to maintain an appropriate rate of homeownership in the County;
- Local **non-profit housing providers are in need of financial assistance** to develop needed affordable housing and to provide homebuyer assistance. New dedicated funding sources need to be identified to fill this gap;
- An **assessment of workforce housing** (households of employed persons that earn low to moderate incomes and have difficulty affording local housing) supply and demand in the County is needed to determine the extent to which a gap between supply and demand exists; and
- **Land use planning efforts need to provide opportunities for the joint location of housing and employment centers** and provide additional mixed use opportunities that can reduce commuting

times, reduce traffic congestion on roadways, reduce air emissions, and generally improve quality of life.

4.6. GOALS

The following housing goals will guide future policy and implementation strategies for the County.

Housing Overarching Goal: Opportunity for all citizens of Orange County to rent or purchase safe, decent, accessible, and affordable housing.

Housing Goal 1:
A wide range of types and densities of quality housing affordable to all in all parts of the County.

Housing Goal 2:
Housing that is useable by as many people as possible regardless of age, ability or circumstance.

Housing Goal 3:
The preservation, repair, and replacement of existing housing supply.

Housing Goal 4:
Development ordinances and incentives that promote inclusionary practices and housing options for all income levels.

4.7. OBJECTIVES

The intent of this Plan is that the following list of objectives will help guide regular and ongoing decision-making by the County related to housing initiatives. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines.)*

Housing Goal 1: A wide range of types and densities of quality housing affordable to all in all parts of the County.

Objective H-1.1:
Assist in the rehabilitation and development of affordable housing and promotion of community development programs in the County using multiple strategies including implementation of the Countywide Housing and Community Development Consolidated Plan.

Objective H-1.2:
Concentrate the Orange County Community Development Block Grant Program efforts and resources in those areas of the County occupied by low and moderate-income households and having the most severe housing and community development needs.

Objective H-1.3:
Increase the provision of housing assistance for households in need and coordinate with public and non-profit organizations responsible for providing community services and housing in the County.

Objective H-1.4:
Coordinate with the municipalities to maintain an adequate supply of residentially designated land to accommodate sustainable levels of population growth and a diversity of housing types countywide.

Objective H-1.5:
Ensure that a variety of housing types can be developed throughout the County in a sustainable manner that locates housing near employment centers and commercial centers and that efficiently uses existing and planned public services. (See also Land Use Objectives LU-1.1 and LU-6.2, Economic Development Objective ED-3.5, and Water and Wastewater Objective WW-2.)

Objective H-1.6:
Promote innovative approaches to housing that are responsive to the needs of Orange County, maintain quality and human scale, increase energy efficiency, and reduce construction and maintenance costs.

Housing Goal 2: Housing that is useable by as many people as possible regardless of age, ability or circumstance.

Objective H-2.1:
Accommodate the development of group homes, foster care facilities, transitional housing facilities and other housing types in appropriate locations to provide increased opportunities for social interaction, a de-institutionalized lifestyle, and gainful employment.

Objective H-2.2:
Continue to address issues of chronic homelessness in Orange County.

Objective H-2.3:
Increase the number of affordable multi-family housing units which are designed to support the needs of the elderly, especially those with limited incomes.

Housing Goal 3: The preservation, repair, and replacement of existing housing supply.

Objective H-3.1:
Achieve residential neighborhoods that are attractive and well-maintained. (See also Land Use Objective LU-2.10.)

Objective H-3.2:
Require that all new housing built or located in Orange County meet the minimum standards specified in the State of North Carolina Building Code, as well as standards of the Department of Housing and Urban Development and the Farmer's Home Administration, when appropriate.

Objective H-3.3:
Expand assistance in the retrofitting, repair, and maintenance of existing homes owned by financially challenged households, particularly those that are senior citizens.

Objective H-3.4:
Provide additional housing and rehabilitation assistance that targets and prevents the physical decline of stable neighborhoods.

Objective H-3.5:
Review and consider the Environmental Protection Agency's (EPA) Energy Star and Water Sense standards for use as an integral part of the County's housing rehabilitation program.

Objective H-3.6:
Work within the Orange County government system to identify and resolve existing policies which may be at odds with historic preservation goals, green building approaches, and workforce and affordable housing efforts. (See also Cultural Resources Objective CR-3 and Economic Development Objective ED-4.1.)

Housing Goal 4: Development ordinances and incentives that promote inclusionary practices and housing options for all income levels.

Objective H-4.1:
Continue to permit HUD code-compliant manufactured housing as a form of affordable housing in the County. (See also Land Use Objective LU-4.1.)

Objective H-4.2:
Expand assistance for elderly households that have difficulty affording their home property tax.

Objective H-4.3:
Evaluate the feasibility of development incentives to stimulate the production of needed affordable low income housing. (See also Land Use Objective LU-4.4.)

Objective H-4.4:
Working collaboratively with the towns, identify regulatory barriers to be removed and opportunities for development incentives to encourage the construction of a diverse range of housing types countywide. (See also Land Use Objective LU-4.2.)

TABLE 4-1: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Goal 1 and Objectives H-1.1 – H-1.6		√	√	√				√	√
Goal 2 and Objectives H-2.1 – H-2.3									√
Goal 3 and Objectives H-3.1 – H-3.6		√	√			√		√	√
Goal 4 and Objectives H-4.1 – H-4.4		√	√					√	√

4.8. LINKS TO OTHER ELEMENTS

Planning for Orange County's housing needs is linked to other community needs, such as economic development, transportation, and community services. Linkages between specific housing goals and objectives have been identified in this element. The following summarizes the objectives from other Elements that are linked with Housing objectives.

ECONOMIC DEVELOPMENT

Objective ED-3.5:
Ensure that County workers and those preparing for the workforce have access to transportation, child care, elder care, and affordable housing.

Objective ED-4.1:
Enhance historic character by supporting organizations' efforts to preserve, promote, and maintain historic structures, and identify Orange County policies that may be in conflict with these efforts. (See also Cultural Resources Objective CR-2, CR-3, and CR-5.)

LAND USE

Objective LU-1.1:
Coordinate the location of higher intensity / high density residential and non-residential development with existing or planned locations of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer, high-speed internet access, streets, and sidewalks), while avoiding areas with protected natural and cultural resources. This could be achieved by increasing allowable densities and creating new mixed-use zoning districts where adequate public services are available.

Objective LU-2.10:
Develop design standards or guidelines that address scale, density, and aesthetic considerations for residential, mixed-use, industrial, and commercial land uses to promote community aesthetics and the protection of the visual and cultural environment of the County.

Objective LU-4.1:
Support the use of individual manufactured housing units as a useful housing resource in the County by increasing the opportunities where these units can locate by-right.

Objective LU-4.2:
Review and amend the Orange County Unified Development Ordinance to identify and eliminate existing regulatory impediments to objectives identified in the Comprehensive Plan. Such objectives include the development of energy efficient buildings within the County, and development of affordable housing.

Objective LU-4.4:
Encourage the provision of a range of affordable and suitable low and moderate income housing by means of development incentives in order to provide a balanced housing stock for the residents of Orange County.

NATURAL AND CULTURAL SYSTEMS

Objective CR-3:
Work within the Orange County government system to identify and resolve existing policies, which may be in conflict with the preservation mission.

SERVICES AND FACILITIES

Objective WW-2:
Coordinate the provision of potable water and sanitary sewer services with the County's Land Use Plan and Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, targeting these services to urban, transitional, and economic development districts in a manner that does not endanger environmental resources.

4.9. OTHER KEY DOCUMENTS

Key documents used to develop this element include the following:

- *2005-2010 Housing and Community Development Consolidated Plan.*
- *2006 Draft of the Orange County, North Carolina Comprehensive Housing Strategy.*
- *2007 Orange County Master Aging Plan: Building Aging Friendly Communities in Orange.*
- *Orange County Ten Year Plan To End Chronic Homelessness: A Broad Proposal to End Homelessness* (2007).

4.10. INTERGOVERNMENTAL COORDINATION

The provision of housing in Orange County will be a multi-jurisdictional effort over the coming years. Many of the municipalities are already working to expand affordable housing and homeownership opportunities, including Chapel Hill and Carrboro. The County and Towns currently do joint assessment and planning to obtain federal funding sources for assistance to those households earning lower incomes. This collaboration has increased information exchange and opportunities for joint efforts between the jurisdictions. Building on these relationships, the County and Towns will need to continue this coordination to ensure that future housing meets the needs of our communities, that these needs are met in the most efficient, effective, and equitable manner, and that new developments enhance the County's unique quality of life and community character.

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Chapter 5. Land Use Element

5.1. PURPOSE

The Land Use Element provides guidance and direction regarding land use planning efforts in Orange County. The goals and objectives identified within this element serve as the foundation for establishing future land use policies and action strategies undertaken by Orange County, its advisory boards, and staff. The specific process for developing a land use implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

Critical to the success of land use planning efforts in Orange County is the consideration of not only the goals and objectives contained within the Land Use Element, but also those contained within each of the Elements of this Comprehensive Plan. Achieving sustainable growth and maintaining the quality of life, community, and health for its citizens, is fundamentally linked to the County's commitment to a coordinated land use plan that is responsive to the County's Planning Principles shown to the right and discussed in *Chapter 2: Board of County Commissioners' Planning Principles*.

How land is being used and developed in Orange County is a direct reflection of the County's land use policies, plans, regulations, and ordinances, all of which are guided by the community's values, goals, and objectives expressed in this Comprehensive Plan.

As described later in this Chapter, land use ordinances and regulations helped to form the foundation for development of Orange County's Comprehensive Plan. Likewise, it is this Comprehensive Plan, and implementation of its objectives, that will guide the development of Orange County's future land use ordinances, regulations, and a coordinated land use plan that is based on community values.

ORANGE COUNTY BOARD OF COMMISSIONERS' PLANNING PRINCIPLES

1. Efficient and Fiscally Responsible Provision of Public Facilities and Services
2. Sustainable Growth and Development
3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources

   B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System
4. Natural Area Resource Preservation
5. Preservation of Rural Land Use Pattern
6. Water Resources Preservation
7. Promotion of Economic Prosperity and Diversity
8. Preservation of Community Character

5.2. OVERVIEW

BACKGROUND

A fundamental and repeated concept expressed throughout each of the Elements of the Comprehensive Plan is the need to plan for sustainable growth. A definition of sustainable growth is growth that "*meets the needs of the present generation without compromising the ability of future generations to meet their own needs.*"

Sustainable growth and coordinated, community-based land use planning are inherently connected to the ongoing quality of life and health in a community, and a sustainable balance between the economic, social, and environmental systems that make up the community.

Environmental conservation, natural resource preservation, energy efficiency, affordable housing, social equity, a healthy economy, regional and local agricultural production, are all representative of sustainability issues expressed throughout each of the Elements and linking them with the Land Use Element of this Plan.

PLANNING WITHIN ORANGE COUNTY

Planning for sustainable development within the greater Orange County community can be more effectively achieved with the cooperation of, and integrated planning efforts between, the County and it municipalities.

ORANGE COUNTY'S PLANNING AND ZONING JURISDICTIONS

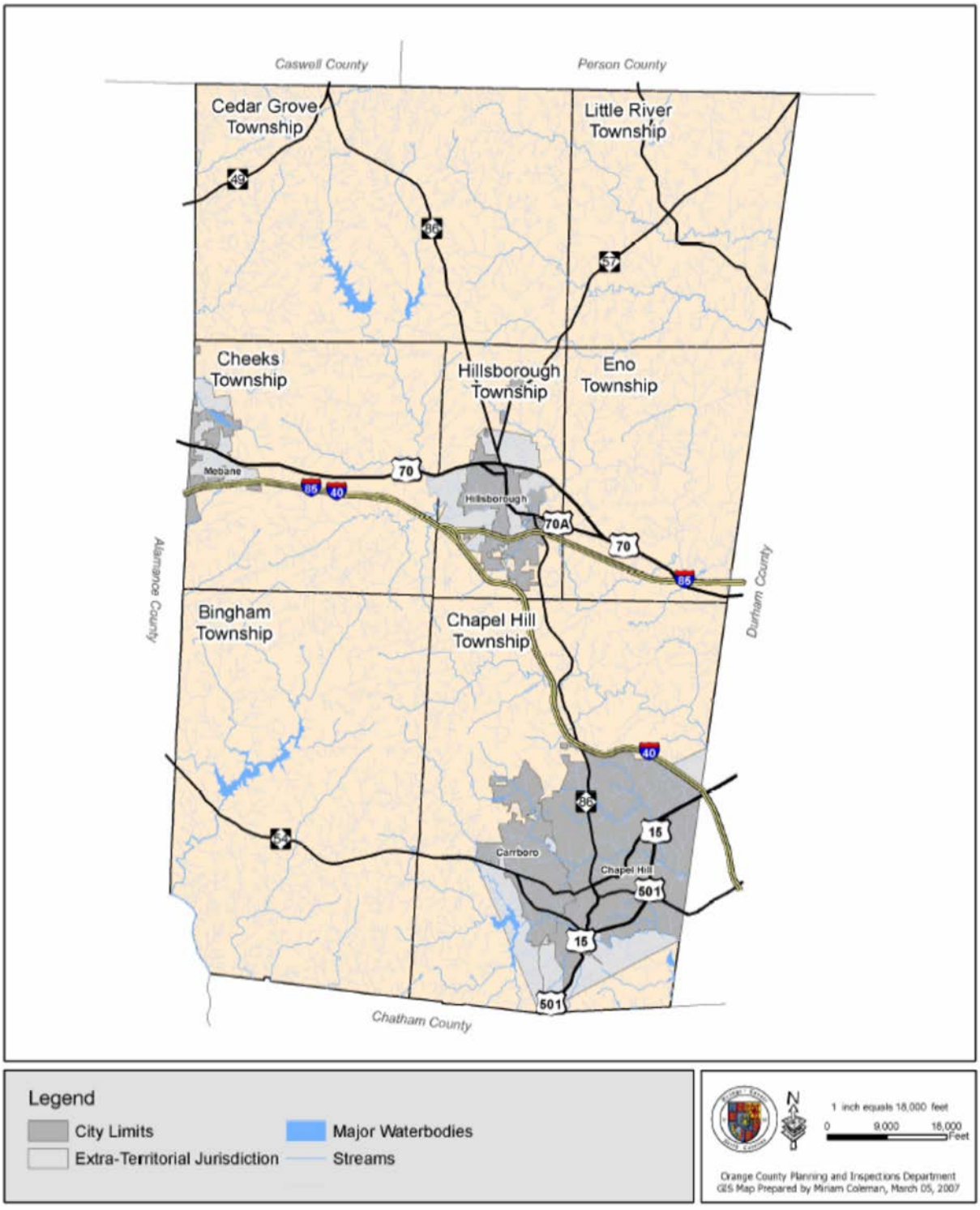
Land use planning within the County is governed by multiple jurisdictions working in coordination to plan for future development. Orange County has sole planning and zoning jurisdiction in the unincorporated areas of the County. The Towns of Chapel Hill, Carrboro, Hillsborough, and Mebane, on the other hand, have planning and zoning jurisdiction within their corporate boundaries and Extra-Territorial Jurisdictions (ETJ's).

Map 5-1: Orange County Planning and Zoning Jurisdictions illustrates the planning and zoning jurisdiction boundaries of the municipalities in gray and the County's jurisdiction in tan.

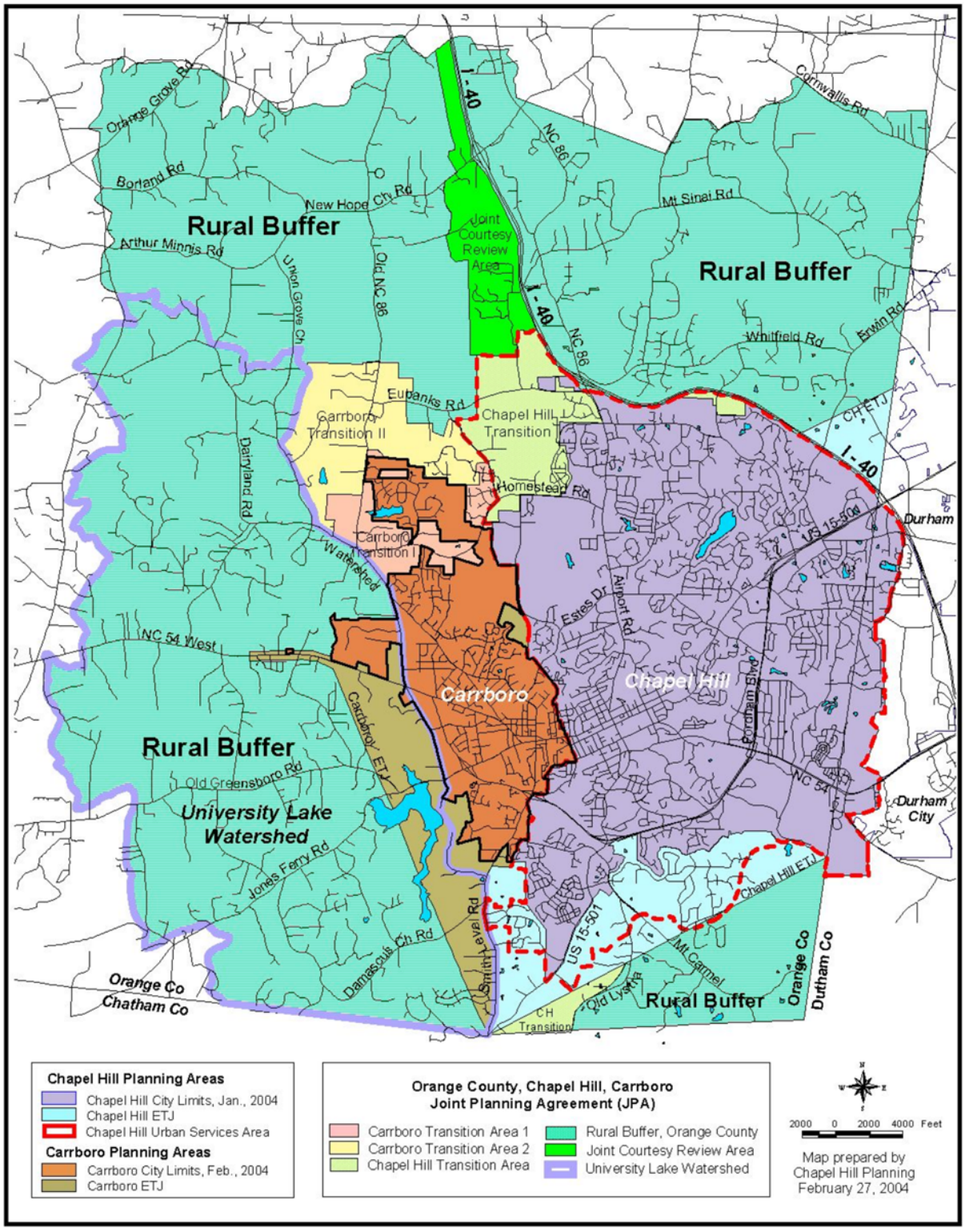
ORANGE COUNTY - CHAPEL HILL - CARRBORO JOINT PLANNING AGREEMENT AND LAND USE PLAN

As defined in the Orange County-Chapel Hill Carrboro Joint Planning Agreement and Land Use Plan, the County and the Towns of Chapel Hill and Carrboro share review approval of land development projects in designated Joint Planning Areas and resource planning activities that cross jurisdictional boundaries (i.e. water resources and transportation planning). Orange County has sole planning and zoning jurisdiction outside of municipal planning jurisdictions and Joint Planning Areas. A description of the Orange County - Chapel Hill – Carrboro Joint Planning Agreement and Land Use Plan can be found later in section 5.2 in a subsection entitled INTER-GOVERNMENTAL PLANNING HISTORY AND CONTEXT.

Map 5-2: Joint Land Use Planning Areas identifies the areas for joint planning and zoning review by the County and Chapel Hill or Carrboro.



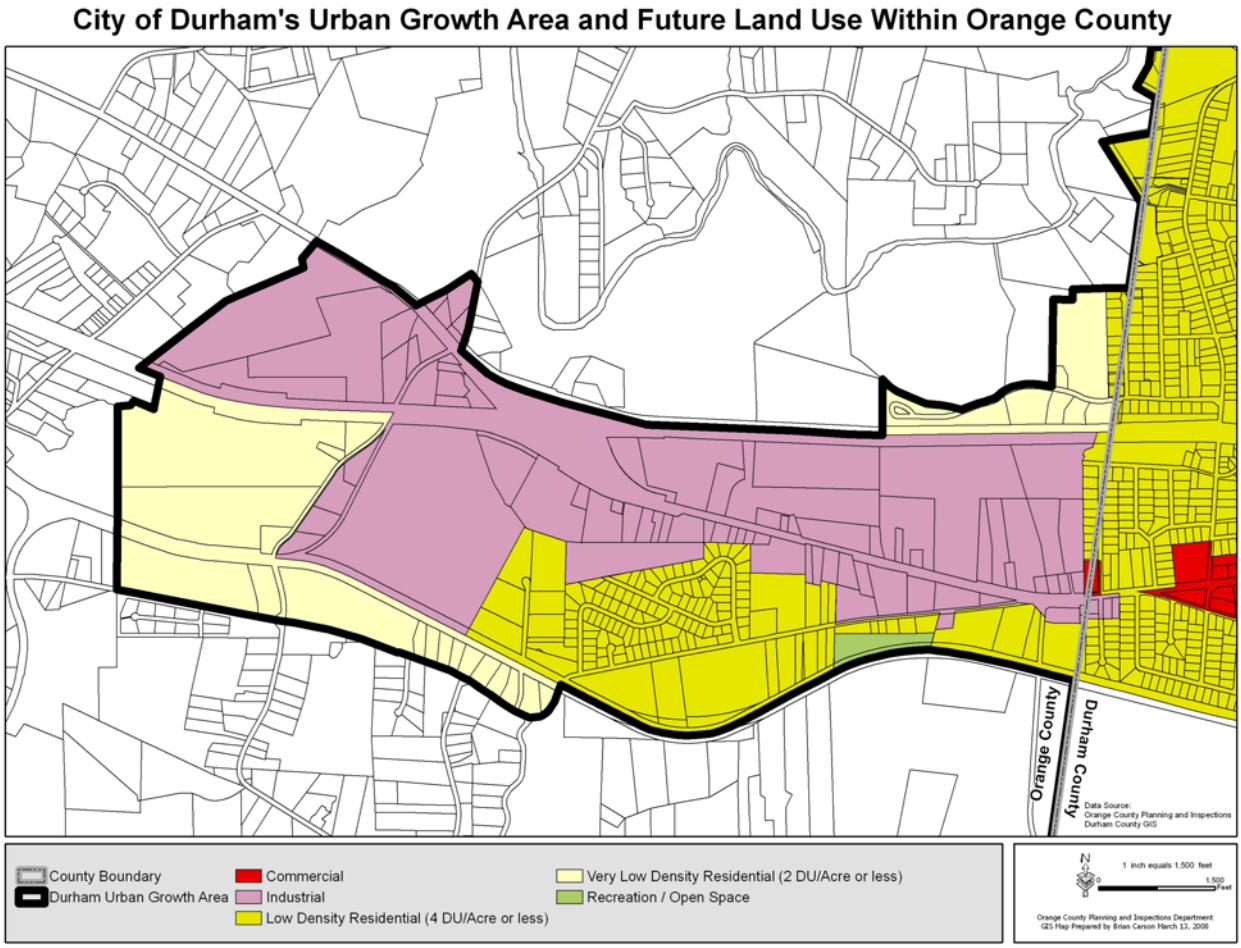
MAP 5-1: ORANGE COUNTY PLANNING AND ZONING JURISDICTIONS



MAP 5-2: JOINT LAND USE PLANNING AREAS

CITY OF DURHAM'S URBAN GROWTH AREA WITHIN ORANGE COUNTY

Although the City of Durham has only a small area of land within Orange County's borders (17 acres), the City's long range plan includes an Urban Growth Area that extends into Orange County and includes the Eno Economic Development District and a few surrounding properties. (See Map 5-3, below.)



MAP 5-3: CITY OF DURHAM'S URBAN GROWTH AREA WITHIN ORANGE COUNTY

ADVISORY BOARDS

The basic concept of planning for sustainable growth in Orange County is not a new challenge or goal. As described in *Chapter 1: Plan Overview*, the Board of County Commissioners has established a number of volunteer citizen Advisory Boards and Commissions to provide recommendations on many aspects of land use planning in the County.

Beginning with the adoption of the County's first zoning ordinance in the mid-1960's, over the last 40 years the County has continued to evolve its economic,

social and environmental systems, relying on the work of many community and volunteer based planning activities and commissioned studies.

REGULATORY HISTORY AND CONTEXT

In the mid 1960s and continuing through the early 1980s, Orange County implemented a series of land use and zoning regulations that helped to establish the framework for the development of the 1981 Land Use Plan and subsequent implementation of the goals and objectives of the Plan.

- 1967: Chapel Hill Township adopted a zoning ordinance and subdivision regulations.
- 1970: Zoning ordinance and subdivision regulations became effective in Eno Township.
- 1974: Orange County began to enforce the North Carolina State Building Code in all townships and Hillsborough.
- 1975: Orange County Planning and Inspections Department was established. Within a year, the department produced a report that included a land classification system for the County, and a sketch plan and policies for Chapel Hill Township.
- 1977: Township Advisory Councils were organized to involve citizens in the development of a countywide land use plan, and to develop sketch land use plans for each township.
- 1978: Subdivision Regulation authority extended to Bingham, Cedar Grove, Cheeks, Hillsborough, and Little River Townships.
- 1981: Orange County became the first county in North Carolina to adopt watershed protection zoning. See also section 6.4.5.
- 1981: Zoning Ordinance text and Zoning Atlas adopted for Hillsborough, Chapel Hill, Eno and Bingham Townships.
- 1984: Zoning extended to Cheeks Township.
- 1986: Joint Planning Land Use Plan adopted by Orange County and Chapel Hill.
- 1987: The Joint Planning Agreement (JPA) among Orange County, Chapel Hill, and Carrboro was enacted.
- 1987: Erosion Control and Stormwater Ordinances adopted.
- 1988: Joint Planning Land Use Plan amended to address the addition of Carrboro to the JPA.
- 1994: Zoning authority extended to Cedar Grove and Little River Townships.

COMPREHENSIVE PLANNING HISTORY AND CONTEXT

Orange County has engaged in numerous land use planning efforts over the last 25 years. The development of the 1981 Orange County Land Use Element and the

products of the Shaping Orange County's Future planning initiative have played a large role in County planning and provide a foundation for development of the *2030 Comprehensive Plan*.

1981 ORANGE COUNTY COMPREHENSIVE PLAN LAND USE ELEMENT

In 1981, Orange County adopted its first Comprehensive Land Use Element or Land Use Plan providing a policy framework to guide future development within the County's jurisdiction. A corresponding Land Use Plan Map (described at the end of this section) was included as a key component to the Plan, which designated the types of development that would occur in specified areas of the County. The Element was amended numerous times over more than 20 years to address emerging land use planning issues. This current Comprehensive Plan is a continuation of this planning effort, and serves as the updated version of the 1981 Land Use Element.

In 1988 the Land Use Plan began to evolve into a new format with an extended scope. The Land Use Plan was renamed to the Land Use Element, and under separate cover, additional topical Elements of the emerging Comprehensive Plan were added. These Elements included:

- The Economic Development Element (adopted in 1989);
- The Recreation Element (adopted in 1988 and updated in May 1999);
- The Housing Element (1989);
- The Transportation Element (1990 - combined with the Land Use Element);
- Services and Facilities Element (initiated in 1992, not completed);
- Historic Preservation Element (adopted in April 1996);
- In 2001, a process to update the Land Use Element was initiated but stopped in March of 2006 to reevaluate the process and overall format for the Comprehensive Plan; and
- In February 2005, work on the Natural and Cultural Systems Element was initiated.

SHAPING ORANGE COUNTY'S FUTURE.

Beginning in 1993, a landmark County planning initiative called *Shaping Orange County's Future* (SOCF) began an intensive public process to create a vision for the County's future.

This initiative began shortly after a conference on quality growth planning for Orange County. The SOCF process involved more than 400 hours of meetings, community forums, and outreach activities to identify and communicate the community values and a vision for future development that "reflects the values and visions of the people."

In April 2000, the SOCF task force produced a report describing: a vision statement for Orange County as a community in the year 2030; the overarching sustainability and community building themes within this vision; and a series of

goals, objectives, and action strategies to encourage a movement toward becoming a sustainable community.

As the following list indicates, some of the SOCF goal statements and values are reflected in the eight current Board of County Commissioners' (BOCC) Planning Principles and also to some degree within the goals and objectives of this Comprehensive Plan.

SOCF Goal Statements and Applicable BOCC Planning Principles:

1. Putting community building first. (See BOCC Planning Principle #8.)
2. Address citizen concerns about representation in government. (See BOCC Planning Principle #8.)
3. Create and maintain a centralized information base for decision-making.
4. Improve government efficiency and effectiveness.
5. Adopt policies to move the community toward sustainability. (See Planning Principle #2.)
6. Promote land use patterns that meet people's needs while protecting natural resources. (See BOCC Planning Principle #4, #5, and #6.)
7. Conserve natural areas, farmland, and other important open spaces. (See BOCC Planning Principle #5.)
8. Create environmentally sustainable transportation systems that meet people's needs. (See BOCC Planning Principle #2 and #3.)
9. Pollution prevention and waste reduction. (See BOCC Planning Principle #3.)
10. Supporting a diverse economy that meets local needs. (See BOCC Planning Principle #7.)
11. Protect our water supply. (See Planning Principle #6.)
12. Ensure availability of affordable, quality housing.
13. Address human services and education priorities. (See BOCC Planning Principle #1.)

The SOCF's report was accepted by the County Commissioners as well as the Town Boards for Chapel Hill and Carrboro. Although its recommendations were never officially adopted by the County or the Towns, progress has been made toward realizing these goals.

THE NEED TO UPDATE THE COMPREHENSIVE PLAN

The County's individual Plan Elements have provided guidance for setting County policies for the last two decades, but they are now in need of updating. Our community has changed and continues to change, requiring a new plan for the future. Population projections show that between 160,000 and 215,000 people will live in Orange County by 2030 -- increasing our current population by more than 40,000 people. These new people will need housing, jobs, and places to

shop and recreate. Public services will need to be expanded to serve these new households. The transportation system will need to accommodate the future travel needs of these people. New parks and recreational facilities will need to be provided. Protection of natural areas and water resources from inappropriate development will be paramount for ensuring a high quality of life over the long-term. The County is now in a strategic position to plan for these changes.

The County has many choices to make in the future. It will need to balance future development with the need to protect rural character, preserve important natural areas and water resources, provide a range of housing opportunities, and provide an efficient level of public services. The Land Use Element alone can not balance all of these issues. A plan that integrates and coordinates the goals and objectives of the many Plan Elements is a necessary framework for balancing these goals.

FIGURE 5-1:
COORDINATED PLANNING



The 2030 Comprehensive Plan coordinates the various planning Elements to connect goals and objectives and identify inconsistencies among

Recognizing the need for a plan that addresses the comprehensive needs of the community, in October 2006, the Board of County Commissioners adopted a new process for updating and integrating the *1981 Comprehensive Plan*. The Orange County Planning Board was responsible for developing the process and schedule for this update, and over the next two years, Orange County staff, advisory boards and commissions, Orange County citizens and community organizations, worked together to create the content, goals and objectives of this Plan (See *Appendix C: 2030 Comprehensive Plan Update Schedule*.)

Part of this process was an evaluation of the *1981 Comprehensive Plan.* This evaluation identified key areas to address through the new 2030 Plan. These include:

- Sustainability indicator data shows that three major challenges facing the County in progressing toward sustainability are: loss of natural habitats; dependence on automobiles; and housing affordability. These are large and complex issues and planning for them requires a coordinated approach.
- The guidelines for Plan review and evaluation that were contained within the 1981 Plan were not followed. Guidelines for Plan

evaluation and update are included in the updated 2030 Plan in *Section 1.5: Monitoring and Evaluation Procedures.*

- The format of the original 1981 Land Use Element/Plan, which contained all components of the Comprehensive Plan under one cover, was good, and has been incorporated into the updated Plan.

- The key structural components of the 1981 Land Use Element/Plan were successful in limiting development in inappropriate areas and preventing undesirable land use patterns from occurring. The 2030 Plan builds on these established goals and policies and provides fresh ideas and goals for improving land management in the County.

- The County has had mixed success realizing development in appropriate areas as denoted on the Land Use Plan Map (i.e., 10 and 20-year Transition Areas, Rural Activity Nodes, and Economic Development Districts). This Plan includes objectives to address this issue and coordinate land planning, economic development, and public infrastructure efforts to encourage development in targeted locations.

- In general, completed Small Area Plans in the County have revealed the need to pursue additional interlocal agreements; add new partners to the Water and Sewer Management Planning and Boundary Agreement; amend the County's Land Use Map (contained within the Land Use Element); and amend the County's Zoning Ordinance text and map. The Plan identifies these needs and sets out an implementation strategy for setting priorities among them.

- More emphasis is needed on Objectives and Policies that further address the following 1981 Plan Goals:

  - The promotion of economic development which emphasizes employment meeting local needs while preserving the character of communities and protecting the natural environment;

  - The continued use of agricultural land and the maintenance of the farming way of life in rural areas as a viable part of the County's economy;

  - Adequate, reasonably priced safe housing in an appropriate variety of types in proximity to jobs and daily activities for all citizens; and

  - The provision of water and sewer lines in those areas, delineated in the land use plan, which can be practically and efficiently served by these facilities. These goals are incorporated herein and should be considered when setting priorities for implementation.

- The need to establish and implement a set of sustainability indicators should be addressed. *Chapter 1: Plan Overview* sets the framework for developing sustainable indicators.

In addition, there are other key issues identified that were addressed during the 2030 Plan update process. These include:

- Coordinating and reconciling land use plans with the plans for future public facilities and services to achieve long-term sustainability;
- Preserving the County's rural landscape and natural and cultural features;
- Promoting the sustainable use of the County's natural resources; and
- Compiling, evaluating, and working to set priorities among the stated goals and objectives of the Plan that are related to and guide future land use, as a foundation for updating the Land Use Plan Map and Comprehensive Plan implementation activities.

INTER-GOVERNMENTAL PLANNING HISTORY AND CONTEXT

The County has a history of working closely to coordinate planning efforts with the four Towns, particularly in the areas along the edges of the Towns' and County's planning and zoning jurisdictions. These successes have helped shape the County into what it is today. Continued coordination between the County and Towns is necessary to ensure that future growth and development occurs in a sustainable manner.

ORANGE COUNTY-CHAPEL HILL-CARRBORO JOINT PLANNING AGREEMENT (JPA) AND LAND USE PLAN.

In response to urban growth pressures occurring on the fringes of Chapel Hill and Carrboro's planning jurisdictions, Orange County and the Towns of Chapel Hill and Carrboro developed and adopted a Joint Planning Agreement (JPA). It was initially approved in 1984 by Orange County and Chapel Hill, and later amended in 1987 to include Carrboro. The 1984 agreement called for the preparation of a Land Use Plan for the transition areas between the Towns and County jurisdictions, and joint planning procedures for the approval of land development projects.

A Joint Planning Area Land Use Plan was adopted in 1986 which designated land uses as urban, transition, rural buffer, or watershed. These land use categories are used in the County's Land Use Plan discussed in Section 5.3. A process for joint development approval within transition areas was developed and adopted by the three jurisdictions, and continues today.

Of key importance was the designation of the rural buffer around the Chapel Hill and Carrboro planning areas. The establishment and maintenance of the Chapel Hill-Carrboro Urban Growth Boundary has influenced the development patterns in this area. The rural buffer serves as a low density, primarily residential area, surrounding the urban boundaries of Chapel Hill and Carrboro. It contains approximately 38,000 acres and is defined generally by the New Hope Creek drainage basin to the north and the University Lake watershed to the west. This area is intended to remain rural in character, not require urban services (i.e. public water and sewer), and annexation within this area is prohibited. (See Map 5-2 for an illustration of the joint planning areas.)

The Orange County-Chapel Hill-Carrboro Joint Planning Agreement is included as *Appendix E.*

RURAL CHARACTER STUDY.

In response to the establishment of the Rural Buffer around Chapel Hill and Carrboro, Orange County initiated a process to identify ways to protect open space within the Rural Buffer with an appropriate balance between the rights of private property owners and the protection of the environment for the common good. This effort began in 1987 and continued for several years, producing a series of reports, including Phase 1 and Phase 2 Rural Character Study Committee Reports, and the Conceptual Guidelines for Rural Orange. These reports contained citizen-generated ideas for further study and analysis, and identified strategies for preserving the County's rural character.

ORANGE COUNTY/TOWN OF HILLSBOROUGH URBAN TRANSITION AREA TASK FORCE REPORT & THE ORANGE COUNTY/TOWN OF HILLSBOROUGH STRATEGIC GROWTH PLAN.

In 2004, Orange County and the Town of Hillsborough began planning discussions for Transition Areas on the edges of Hillsborough's planning jurisdiction, specifically focusing on recommendations for the locations of these Transition Areas and the provision of public services to these lands. A Joint Orange County/Town of Hillsborough Urban Transition Area Task Force was formed, and in January 2005 the task force completed a report that included:

- Principles of Agreement and a conceptual map that would serve as the basis for future planning efforts in these areas;
- Recommended implementation strategies for the Principles of Agreement; and
- A scope of work for developing a Joint Strategic Growth Plan.

In 2006, the County and Town initiated the process for development of a Strategic Growth Plan, and Phase 1 of the Plan was completed in 2007. The Orange County Board of County Commissioners and the Hillsborough Board of Commissioners are now engaged in Phase 2, implementing the Plan by preparing a planning agreement that would accomplish recommendations identified during Phase I. Completion is targeted for the end of 2008.

ORANGE COUNTY STRATEGIC GROWTH AND RESOURCE CONSERVATION PROGRAM.

In 2004, Orange County began a process to study the possible use of a Transfer of Development Rights (TDR) strategy for the County. This effort was subsequently renamed a Strategic Growth and Resource Conservation Program. This study has examined the provision of alternative ways for landowners to retain the development value on rural properties and to be able to transfer that value to areas suitable for urban-scale development.

Phases 1 and 2 of the study were completed in June 2006. Phase 1 of the study included background research and data gathering, and Phase 2 included development of a feasibility and concept plan for the program. Phase 3, which includes a final written report and potential implementation measures, has been extended to follow the completion of the 2008 Comprehensive Plan update.

CONTINUED INTERGOVERNMENTAL COORDINATION

The County will continue to work with the municipalities to achieve the goals and objectives set in this plan. Through this planning process, several cross-jurisdictional issues have arisen that will be addressed through the implementation of this plan such as adding new partners to the Water and Sewer Boundary Agreement, planning for future water resource needs countywide, encouraging appropriate development in transition areas, and establishing interlocal agreements with Mebane and Hillsborough and neighboring counties regarding land use plans for the edges of the jurisdictions. To guide these efforts, each Plan Element provides an *Intergovernmental Coordination* section that discusses the key areas for coordination.

SMALL AREA PLANNING HISTORY AND CONTEXT

Since the adoption of the 1981 Land Use Element/Plan, several Small Area Plans (SAP) have been completed for various parts of the County. The number of small area plans that have been completed in the last 10 years emphasizes the need for regular updates to the Comprehensive Plan. Changes in population, land use, and availability of public services and community needs, have all provided the impetus for the completion of the following SAPs in Orange County.

1991 EFLAND AREA STUDY

The purpose of the 1991 Efland Area Study was to "examine the greater issues affecting the comprehensive long-range plans for the Efland area, the location of non-residential development, and the protection of the community's character." The study was created in response to the community's expressed interest in maintaining the community character of Efland and was completed with a great deal of citizen support. The study included an informal citizen survey, a citizen-appointed Steering Committee, and seven community meetings. The result of the study were recommendations that the "community as a whole felt were important to the future of Efland." This plan was approved by the County Commissioners in April 1991.

STONEY CREEK BASIN SMALL AREA PLAN.

In 1994, Orange County initiated a process to develop a small area plan for the Stoney Creek Basin, a 4,700-acre area southeast of the Town of Hillsborough. A 22-member Planning Group prepared a plan to achieve two goals:

1. Preserving landowners' rights to get fair value for their property, and
2. Protecting the area's rural character. The plan recommended implementation of voluntary flexible development options as an alternative to conventional subdivision development.

Although the Stoney Creek Plan was approved by the County Commissioners in 1996, it has not been implemented through Land Use Element or Zoning amendments.

EFLAND-MEBANE SMALL AREA PLAN.

In 2004, the Board of County Commissioners appointed a citizen task force to develop a Small Area Plan for the Efland-Mebane area. The plan included an assessment of the existing Small Area Plans for the area and analysis of existing infrastructure, land uses, community issues, and economic conditions. The

Efland-Mebane Small Area Plan was adopted in June 2006 and includes implementation recommendations for water and sewer, land use, transportation, housing, parks, recreation and open space, communications, inter-governmental agreements with Mebane, and design overlays for the US 70 Corridor and Efland town core.

NC HIGHWAY 57 SPEEDWAY AREA SMALL AREA PLAN.

In 2007, Orange and Durham County completed a Small Area Plan for the 930-acre North Carolina Highway 57 Speedway Area. This area is located in the northeast corner of Orange County near the border with Durham County. The area was selected as an opportunity for further long-range planning because of multiple factors 1) existing businesses of non-conforming status, 2) the area's location within a protected watershed, and 3) Orange County's desire to encourage compatible non-residential development that protects the existing rural character of the area. The planning process included an identification of issues and concerns for the area, public feedback through scheduled meetings, and drafting of the plan for public review and consideration. The plan includes nine goals for guiding future planning efforts in the area, as well as objectives and policies for implementing the goals.

The NC Highway 57 Speedway Area Small Area Plan was adopted by the County Commissioners in August 2007. The implementation of recommendations included in the Plan is forthcoming.

PANTRY STUDY

The Pantry Study was to ensure that subsequent developments were in accordance with municipal and County land use objectives and included participation from the Town of Hillsborough. The plan established development standards for transition areas and additional protection for environmentally sensitive areas. The plan was approved by the BOCC in July, 1986.

HOW SMALL AREA PLANS INFORM UPDATES TO THE COMPREHENSIVE PLAN

Development of Small Area Plans has allowed the County to take a more detailed look at targeted areas in the County. The goals and objectives of these Plans provide a foundation for improving the County's Comprehensive Plan to effect needed change in these locations. In general, these Small Area Plans have highlighted the need for the County to: 1) Pursue additional interlocal agreements; 2) add additional partners to the Water and Sewer Management Planning and Boundary Agreement; 3) amend the County's Future Land Use Map (contained within the Land Use Element); and 4) amend the County's Unified Development Ordinance text and map for consistency and to implement the recommendations that have been included in the adopted Small Area Plans.

5.3. THE LAND USE PLAN

One of the fundamental planning tools used to achieve the stated goals and objectives of the Comprehensive Plan in Orange County is the design and application of a Land Use Plan and Map. Land Use Element implementation is accomplished primarily through the application of zoning, although a variety of land use ordinances are available for various aspects of implementation. A key feature of land use planning in Orange County is the requirement for consistency between the Future Land Use Map and the application of zoning. The Land Use and Zoning Matrix matches each of the Land Use Plan classifications with

compatible zoning districts. If a zoning district is not listed as compatible with a land use classification in the Matrix, re-zoning cannot take place unless the Future Land Use Map is amended. (See *Appendix F: Relationships Between Land Use Classifications and Zoning Districts*)

The Future Land Use Map defines the location of coordinated and appropriate land use classes and is designed to accommodate a particular combination of land uses that would achieve a desired pattern of development. The linkage between the 1981 Plan and zoning has helped to guide new development to appropriate locations in the County. As a result of the County's strong commitment to the Future Land Use Map, it can be and is used as a primary tool by staff, the Planning Board, and elected officials during review of re-zonings. The Map also provides the development community and staff with clear guidance to the locations in the County where re-zonings may be appropriate and where they are not.

There are three basic land use categories (Developed, Transition, and Rural) and a series of overlays used on the Map. All have been refined into a more detailed classification system to meet the specific development needs of the County. The land use categories and overlays consist of the following:

DEVELOPED LAND USE CLASSIFICATIONS

Urban
Land that is within the corporate limits or Extra-Territorial Jurisdiction (ETJ) of a town and, therefore, under the planning and zoning jurisdiction of the town.

TRANSITION LAND USE CLASSIFICATIONS

10-Year Transition
Land located in areas that are in the process of changing from rural to urban densities and/or intensities, that are suitable for higher densities and/or intensities and could be provided with public utilities and services within the first 10-year phase of the Plan update or where such utilities and services are already present or planned. Non-residential uses implemented in accordance with small area plans and/or overlay districts may be appropriate.

20-Year Transition
Land located in areas that are in the process of changing from rural to urban, that are suitable for urban-type densities and should be provided with public utilities and services within the second 10-year phase of the plan.

Commercial Transition Activity Node
Land located at major road intersections or near major transportation routes that could be provided with public water and wastewater services and is appropriate for retail and other commercial uses.

Commercial-Industrial Transition Activity Node
Land near major transportation routes that could be provided with public water and wastewater services and is appropriate for retail and other commercial uses; manufacturing and other industrial uses; office and limited (not to exceed 25% of any Node) higher density residential uses.

Economic Development Transition Activity Node
Land in areas of the County which has been specifically targeted for economic development activity consisting of light industrial, distribution, office, service/retail uses, and flex space (typically one-story buildings designed, constructed, and marketed as suitable for use as offices but able to accommodate other uses such as a warehouse, showroom, manufacturing assembly, or similar operations.) Such areas are located adjacent to interstate and major arterial highways, and subject to special design criteria and performance standards.

RURAL LAND USE CLASSIFICATIONS

Rural Buffer
Land adjacent to an urban or transition area which is rural in character and which should remain rural, contain very low-density residential uses, and not require urban services during the plan period.

Rural Residential
Land in the rural areas of the County which is appropriate for low intensity and low-density residential development and which would not be dependent on urban services during the plan period.

Agricultural-Residential
Land in the rural areas where the prevailing land use activities are related to the land (agriculture, forestry) and which is an appropriate location for the continuation of these uses.

Rural Community Activity Node
Land focused on designated road intersections which serve as nodal crossroads for the surrounding rural community and is an appropriate location for any of the following uses: church, fire station, small post office, school, or other similar institutional uses and one or more commercial uses.

Rural Neighborhood Activity Node
Land focused on designated road intersections within the rural area that is appropriate for small-scale commercial uses characteristic of "Mom and Pop" convenience stores and gas stations.

Rural Industrial Activity Node
Land focused on designated road intersections within the rural area that is appropriate for small scale industrial uses which do not require urban type services.

OVERLAYS

Public Interest Area
Land which contains public or quasi-public uses such as publicly owned land, research forests or known archaeological or historical sites.

Water Supply Watershed
Land draining to existing reservoirs which serve as public water supplies, or to potential reservoir sites or stream intakes for drinking water withdrawal which have been designated for protection against

threats to the water quality of future water supplies, in accordance with County watershed protection programs and the North Carolina Water Supply Watershed Protection Act of 1989.

Watershed Critical Area, County Designated
The land area within one-half mile of the normal pool elevation (or designated elevation) of an existing Class II water supply reservoir, or the ridgeline of the watershed, whichever is less; and the land area within one-half mile of the normal pool elevation (or designated elevation) of a proposed water supply reservoir, or the ridgeline of the watershed, whichever is less; and the area within one-half mile on each side of streams flowing into Class I reservoirs, as designated for protection within the Zoning Ordinance.

Watershed Critical Area, State Required
The land area within one-half mile of the normal pool elevation of public water supply reservoirs in which an intake is located (i.e., Class I reservoirs), or the ridge line of the watershed, whichever is closest to the normal pool elevation of the reservoir.

Reservoir, Class I
A body of water, such as a pond or lake, confined by a dam or other barrier to be used for public water supply from which water flows by gravity or is pumped directly to a treatment plant or to a small intervening storage basin and thence to a treatment plant.

Reservoir, Class II
A body of water, such as a pond or lake, confined by a dam or other barrier to be used for public water supply from which water flows by gravity or is pumped to a Class I reservoir prior to final entrance to a water treatment plant.

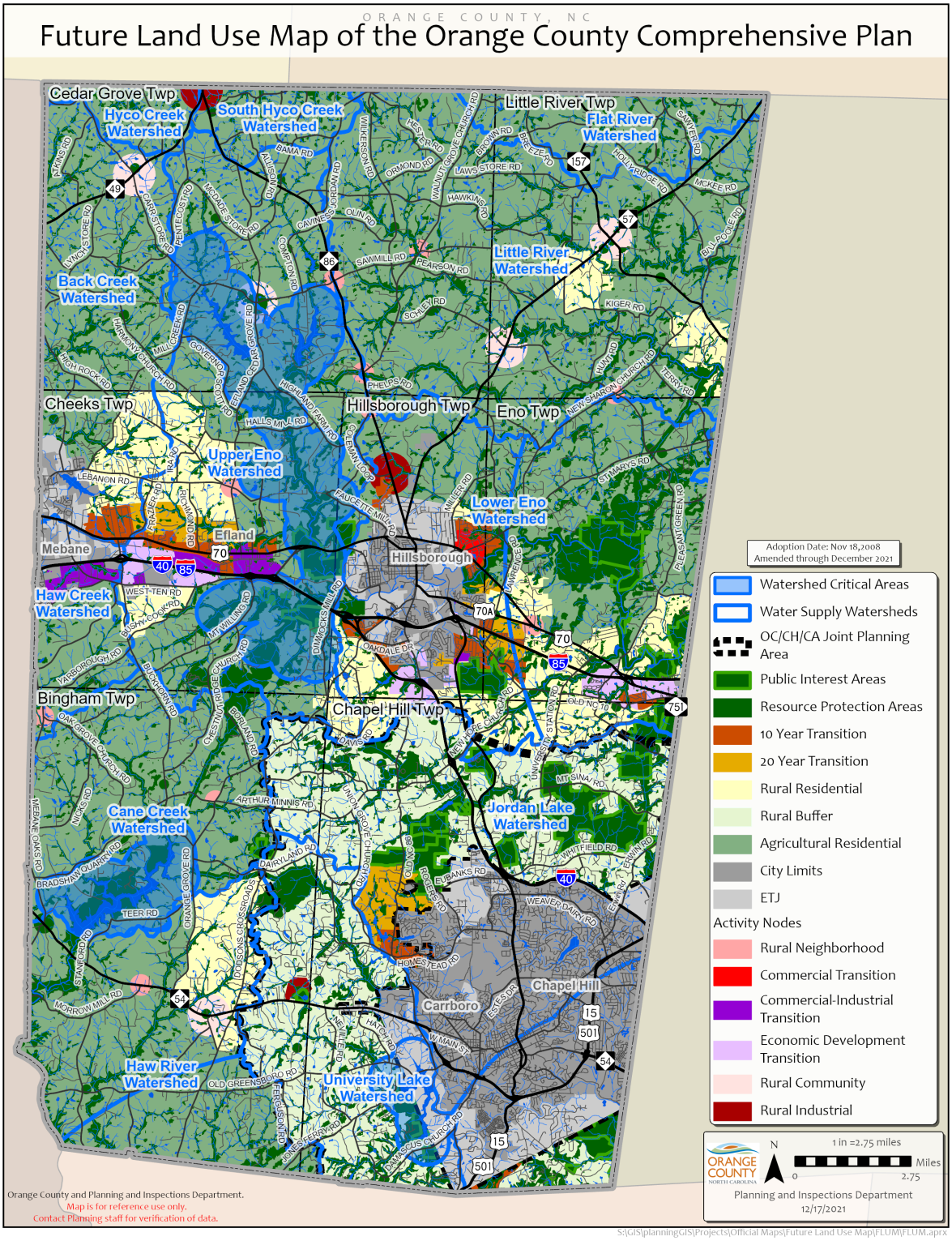
Resource Protection Area
Land designated as Primary Conservation Area which contains sensitive environmental resources, historically significant sites, and features considered unbuildable because of their limitations or unsuitability for development. This includes wetlands and floodplains along drainage tributaries, steep slope areas, (15% or greater), natural areas, wildlife habitats and corridors, and significant historic and archaeological sites. These areas form the basis for a conservation network within which other land uses are situated.

New Hope Creek Corridor Open Space
Some of the land in the Resource Protection Areas and a portion of the Public Interest Area designated as significant and worthy of protection according to the New Hope Corridor Open Space Master Plan completed in April of 1991. This classification is part of a system of open space in Durham and Orange Counties along New Hope Creek and its tributaries between Eno River State Park and U.S. Army Corps of Engineers land north of Jordan Lake. The New Hope Corridor Open Space is made up of critical environmental areas such as stream beds, floodplains, steep slopes, and larger tracts of historic, educational, or recreational value.

Stoney Creek Basin
Land within the boundaries of the 4,696 acre Stoney Creek Drainage Basin southeast of the Town of Hillsborough in portions of Hillsborough, Eno, and Chapel Hill Townships. The area is triangular in shape and is bound generally by I-85 to the north, the University Spur of Southern Railroad to the east, and NC Highway 86 to the west.

For each land use classification and overlay, sets of criteria have been developed that describe the physical and environmental context, the projected population change, and resulting land requirements. (See *Appendix G: Land Use Classification and Overlay Locational Criteria*.)

Map 5-4: Future Land Use Map, designates the areas where these classifications are applied.



MAP 5-4: FUTURE LAND USE MAP

Although minor amendments have been made since the Plan was originally adopted in 1981, the most significant amendment last occurred in 1994 when the County's three Economic Development Districts were created. As the County works to implement the goals and objectives of this Plan and of the adopted Small Area Plans, the Land Use Plan categories and map will need to be reviewed and revised.

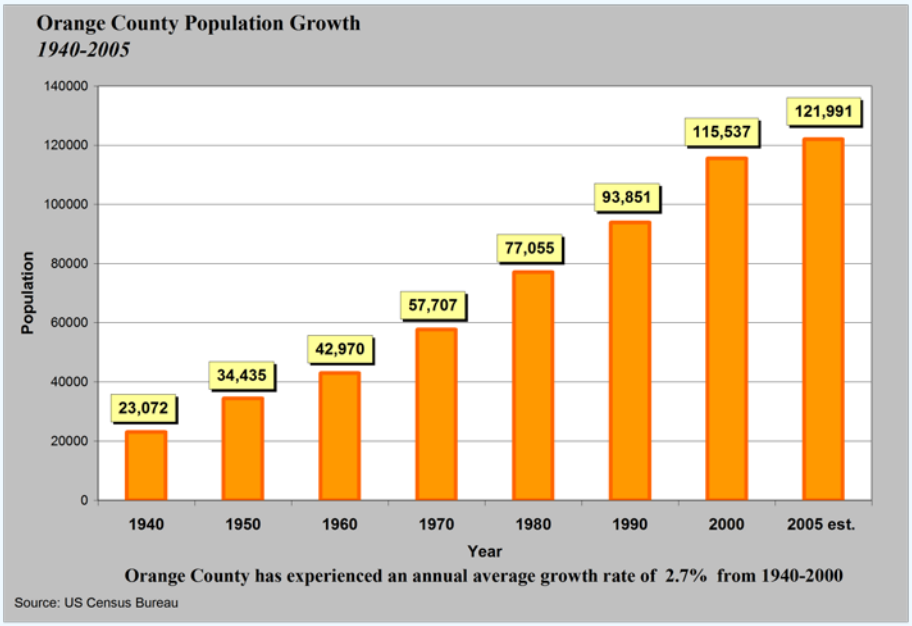
5.4. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

Data analysis is a critical component to any planning effort. The following information provides a snapshot in time and illustration of trends for population, housing, economic development, environmental features, and land development in Orange County. This information provides an informational basis to support the land use goals and objectives described in this Element, and can inform decisions regarding future implementation strategies. Additional data can be found in *Appendix A: County Profile (Data) Element.*

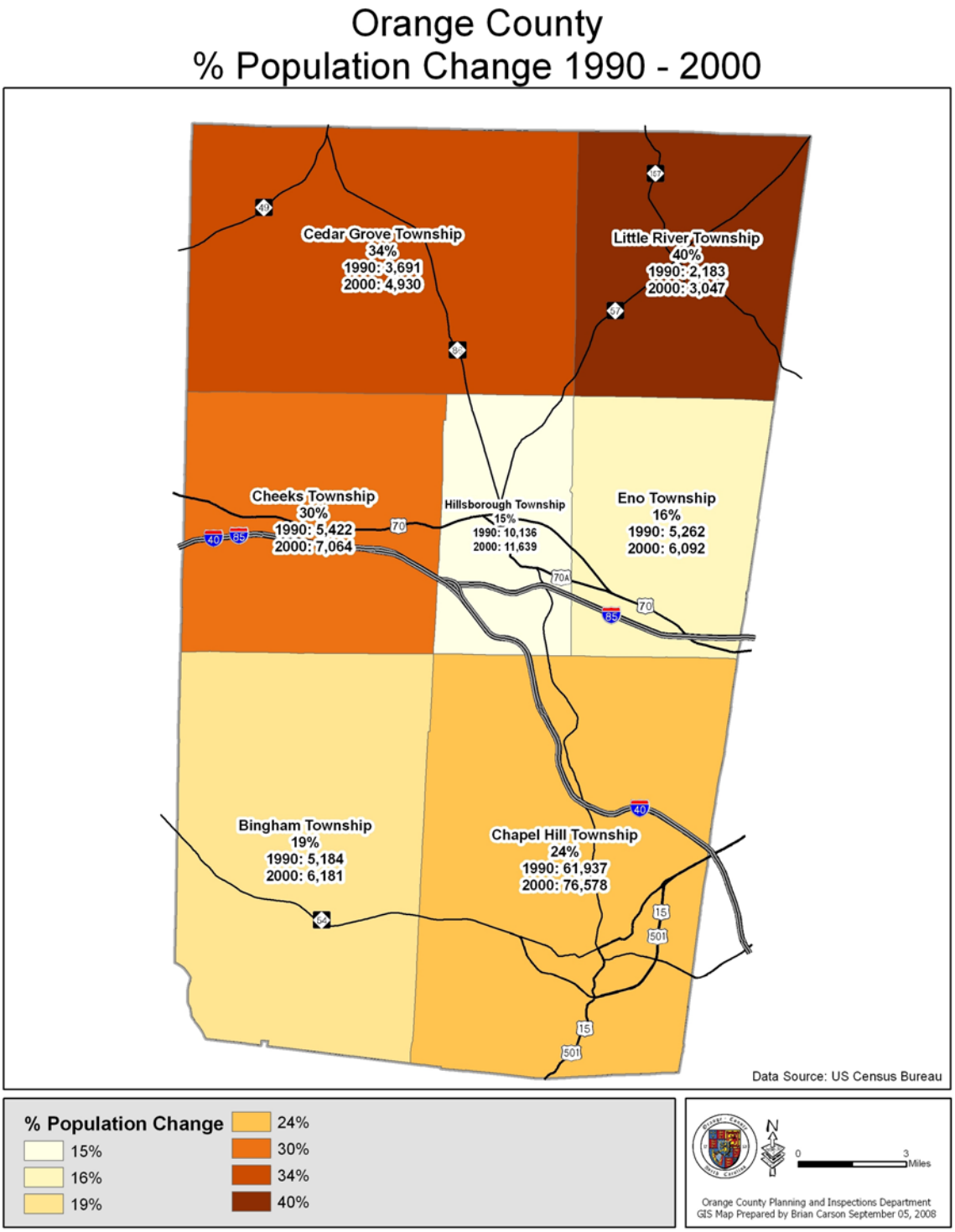
POPULATION

Orange County's growth rate is ranked in the top 25% for the state and it is the 3rd fastest growing County in the region at 2.1%. As an integral part of the Triangle, Orange County has experienced dramatic increases in population during the past few decades, increasing nearly fifty percent since 1980 to its estimated population of 121,991 in 2005. That means that since the adoption of the 1981 Plan, the County's population has increased by almost 45,000 people. Between 1990 and 2000, the majority of Orange County's growth (75%) was attributed to the in-migration of new residents (19,000). (See Figure 5-2.)

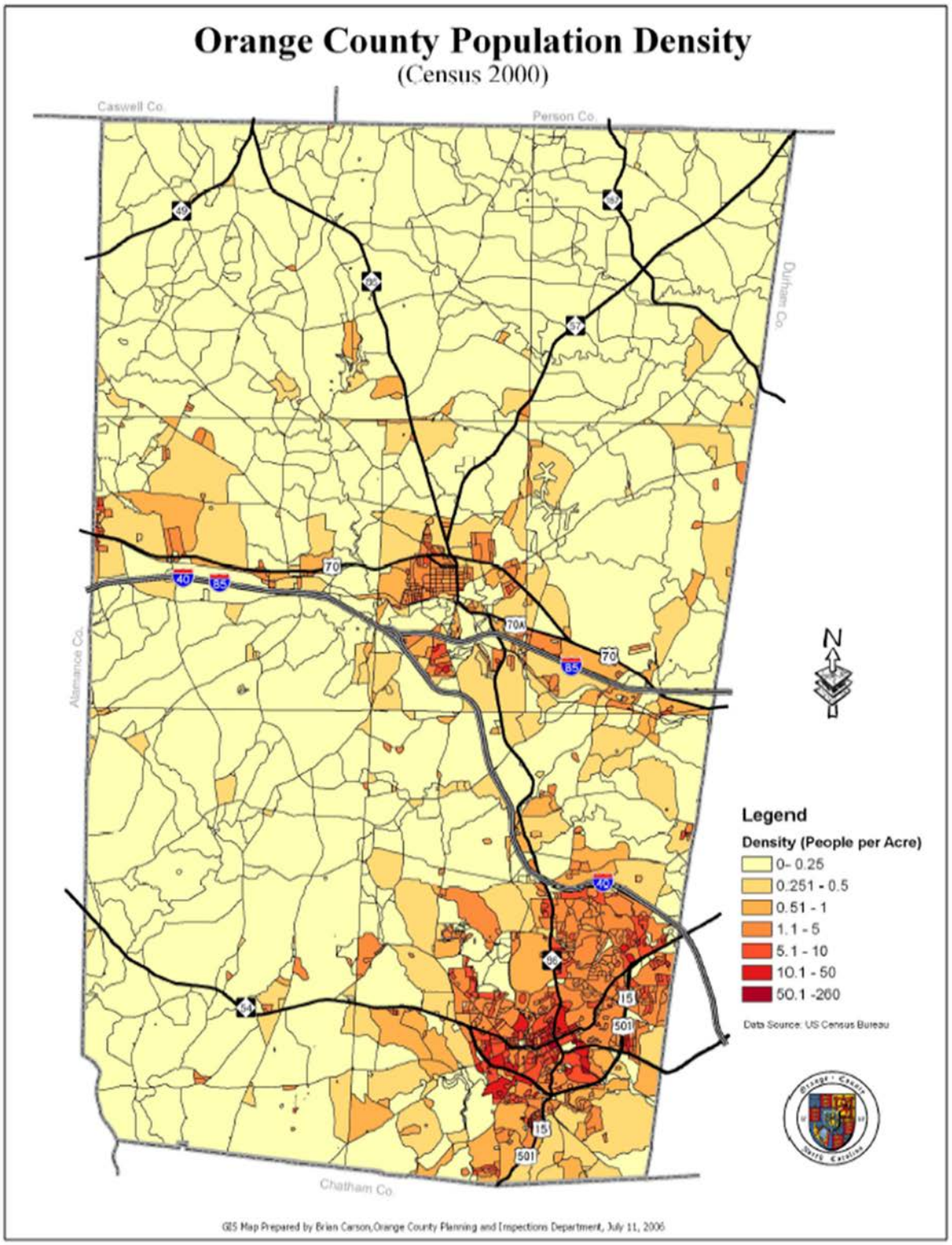
FIGURE 5-2: COUNTY POPULATION GROWTH (1940-2005)



With a total land area of 254,720 acres or 399 square miles, Orange County had an overall population density of 305 persons per square mile in 2005. However, population is not evenly distributed throughout the County. Density is focused in the southern section of the County with fifty-seven percent of the population residing within the Towns of Chapel Hill and Carrboro. While the majority of people are located in the southern sections of the County, other parts of the County experienced the highest percentage of growth between 1990 and 2000. The Little River Township grew by 40%, Cedar Grove Township by 34%, and Cheeks Township by 30%. In comparison, Chapel Hill and Bingham Townships grew by 24% and 19%, respectively. While the Towns continue to grow, other areas of the County have also experienced significant growth. (See Maps 5-5 and 5-6.)



MAP 5-5: PERCENT OF POPULATION CHANGE (1990-2000)



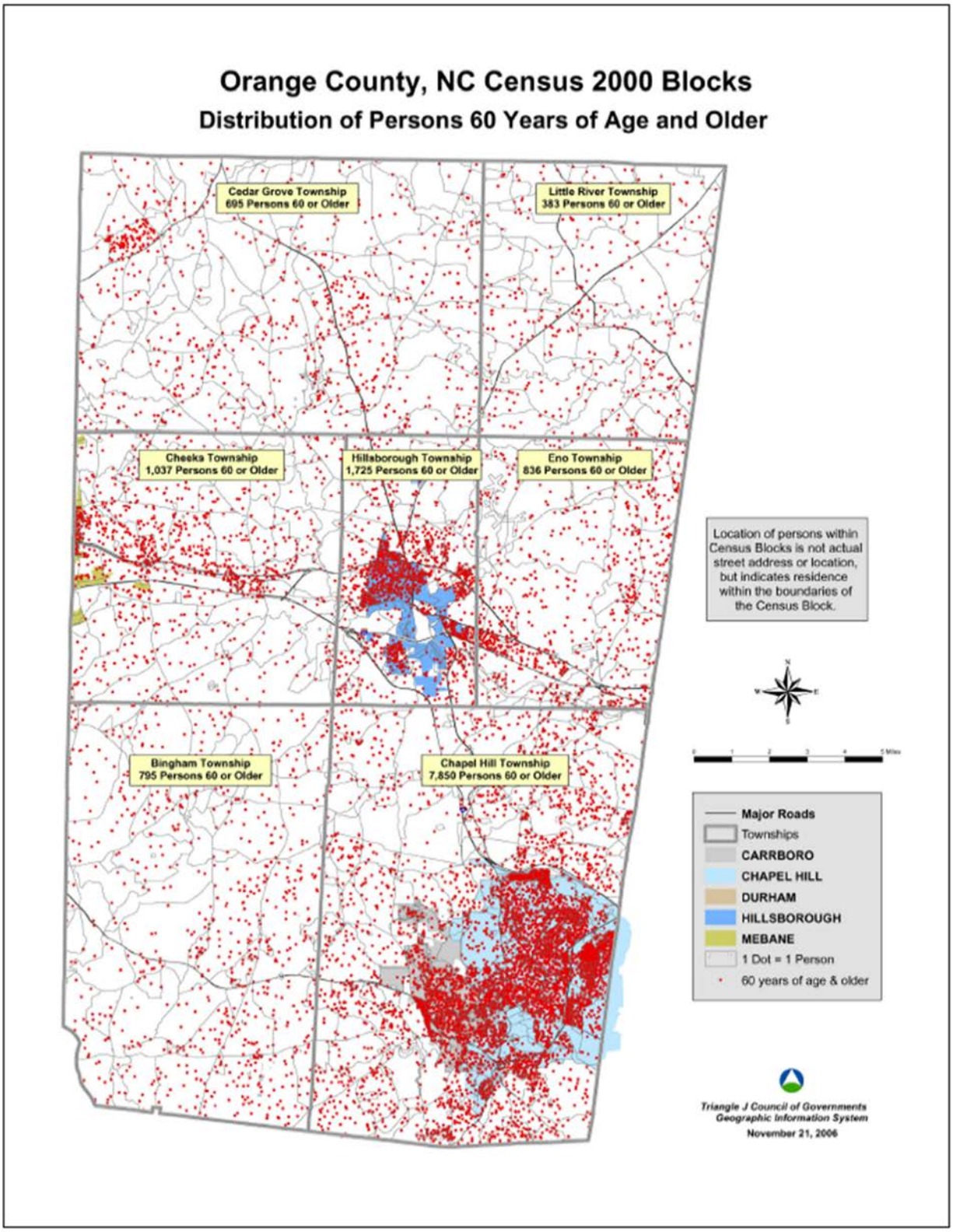
MAP 5-6: ORANGE COUNTY POPULATION DENSITY

DEMOGRAPHICS

The Hispanic/Latino community is the fastest growing segment increasing from 1% in 1980 to 4.5% in 2000. It should be noted that minority populations are often undercounted during Census periods. Since these data were drawn from the 2000 Census, there are even more Hispanic/Latino individuals who now call Orange County home.

The median age for Orange County has increased from 25.7 in 1980 to 30.4 in 2000. This trend is expected to continue in the future with the "graying" of America. In absolute terms, population growth for the 65(+) age group has doubled since 1980 from 5,783 to 10,639. Primarily, the County's older population lives in the Towns. However, seniors also live in other parts of the County where needed services are not as proximate. (See Map: 5-7.)

The school age population (5-18) has grown by 8,000 since 1980. Orange County's population is slightly younger in comparison to the State, with age spikes in the 15-19 and 20-24 age groups, due to the presence of UNC-Chapel Hill and other universities in the area.

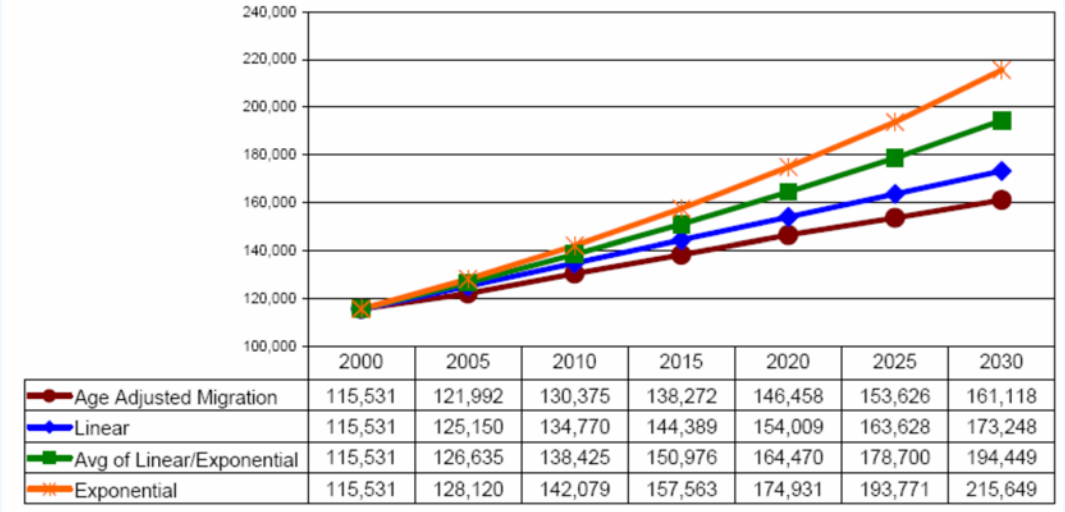


MAP 5-7: DISTRIBUTION OF PERSONS 60 YEARS AND OLDER BY CENSUS BLOCK

POPULATION PROJECTIONS

Population Projections are professional estimates for future population based on sets of assumptions about potential growth. Projections provide an important framework for estimating the extent of future impacts on human, economic and environmental conditions resulting from the increased demand for the use of land and resources. To maintain objectivity and provide different scenarios for future growth trends, alternative methods have been used for the County Profile Element, yielding a low, medium, and high projection of future population growth. (See *Appendix A County Profile (Data) Element* for details on the three population projection methodologies.)

FIGURE 5-3: COMPARISON OF POPULATION PROJECTIONS (2000-2030)



	2000	2005	2010	2015	2020	2025	2030
Age Adjusted Migration	115,531	121,992	130,375	138,272	146,458	153,626	161,118
Linear	115,531	125,150	134,770	144,389	154,009	163,628	173,248
Avg of Linear/Exponential	115,531	126,635	138,425	150,976	164,470	178,700	194,449
Exponential	115,531	128,120	142,079	157,563	174,931	193,771	215,649

Source: Appendix A: County Profile (Data) Element

These population projections reveal the following:

- **Projected Total Growth.** The range of projected population growth for Orange County through 2030 is between 161,118 and 215,649. Even under the conservative estimate, the County's population is expected to increase by 40,000.
- **Monthly Growth,** On average, Orange County can expect to add between 127-279 people per month through 2030.
- **Growth in the Unincorporated Areas.** The population in the unincorporated portions of the County is projected to decrease from 42 percent of the population in 2000 to between 36-40%. This, however, does not mean that growth will not continue to occur in these areas.

- **Growth of Elderly Population.** During the decades (2000-2030) the elderly population will be growing both in absolute numbers as well as a percent of total population. In 2000, this group represented 8.6 percent of the total population, but is expected to increase its share to 16.8 percent by the year 2030. The elderly population will nearly triple during these three decades (2000-2030), increasing from 9,931 in 2000 to 26,499 by the year 2030. The very old population (85 and over) will more than double during this time period, increasing from 1,174 in 2000 to 2,909 in the year 2030.

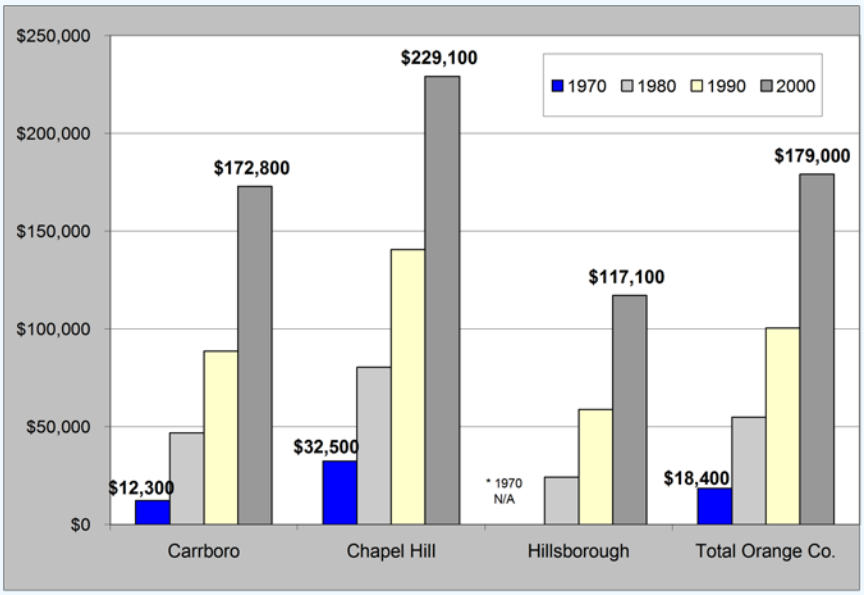
- **Growth of School Age Children.** The growth rate of school-age children is expected to track overall population growth rates. The school-age population of students ages 5-18 years old will remain steady around 15% of the total population between these decades. Growth rates for teens 15-18 will decline by almost two-thirds between 2010 and 2030. Likewise, growth rates for the very young 0-4 will drop by half. However, in terms of real numbers, this growth will likely require the development of more schools and student facilities for these new residents.

Continued population growth is one of the primary reasons for updating the Plan. These new populations will require expanded services and new development to meet their needs. Planning ahead for the projected growth gives the County the ability to direct growth to identified areas and to make sure that infrastructure improvements keep pace with new development.

HOUSING TRENDS

Orange County has a highly valued housing stock, with the highest sales prices in the region. Prices have continued to increase over the last decades, at rates faster than neighboring counties. The number of housing units affordable to those earning low and even moderate-incomes has been decreasing and will likely continue to decrease. These housing value trends are illustrated in Figure 5-4.

FIGURE 5-4: MEDIAN HOUSING VALUE TRENDS FOR OWNER-OCCUPIED UNITS (1970-2000)



Source: US Census Bureau, 2000

A review of Orange County's housing data shows the following:

- **Regional Housing Price Comparison** - Of the Triangle counties, Orange County has the highest housing sales price. The sales price gap continues to widen among these counties, with housing prices increasing nearly twice as fast in Orange as in Durham and Wake counties since 1995.
- **Housing Units and Average Household Size** - According to the 2000 Census, there were 47,706 housing units in Orange County with an average household size of 2.6 people. With the graying of the population, it is likely that the average households size will be smaller in the future.
- **Median Housing Value** - Median house values for owner occupied housing in all of Orange County has increased by more than $160,000 (a nine-fold increase) since 1970.
- **Home Sales Values** - Orange County's re-sale and new housing sales prices (for homes on the real estate market) have increased 87% from 1995-2005 to an average price of $320,489 for homes sold in 2005.
- **Distribution of Price** - Availability of homes with sales prices in the $120,000 and less range has dropped more than 40% while the number of homes available in the $250,000+ range has increased 32% since 2000.

- **Percent Deemed Affordable** - Only 18% of homes on the market in 2005 were considered affordable for families of four making median income or less.

- **Rental Units** - Renters occupy more than 50% of available housing units in Chapel Hill. Likewise, the majority of large complex rental apartments are in Chapel Hill, accounting for 56.7% of all large complex apartments in Orange County for 2005. Unincorporated Orange County only contains 1.8% of available apartment housing. Average monthly rents in Orange County were $708 in 2005. Median contract rent prices have nearly tripled since 1980.

- **Lack of Affordable Rental Housing** - Based on information by the Orange County Department of Housing & Community Development, in 2005, there were a significant number of three bedroom apartment units available at all income levels except for those at the incomes less than 30% of median.

There is a clear need to expand housing options in the County. Real estate values in Orange County have held, even during the downturn in the national housing market. Given that fact, future residents seeking affordable housing options may be forced to go to outer areas of the County where land is less expensive, to relocate to another county altogether, or be forced to live in inadequate housing conditions to afford shelter. (See *Chapter 4: Housing Element* and *Appendix A: County Profile (Data) Element* for further discussion of housing conditions and needs.)

ECONOMIC TRENDS

Orange County is fortunate to be located within an economically vibrant region that includes the Research Triangle Park. Economic conditions and employment opportunities are often the catalyst for changes in population trends, land use, and resource consumption. Further discussion of the economy is covered in *Chapter 3: Economic Development Element* and *Appendix A: County Profile (Data) Element.* Key economic trends facts for Orange County include:

- **Median Family Income** - Median family incomes at $59,874 in 2000 for Orange County are 23% higher than the US and 35% higher than the North Carolina average. Incomes have been steadily rising over the past 10 years.

- **Poverty Rate** - In the year 2000, 14.1% of Orange County residents, which includes college students, were considered to be in poverty compared to 12.3% of the State of North Carolina.

- **Unemployment** - In the Triangle Area, Orange County has the lowest unemployment.

- **Educational Attainment** - Orange County has two-times the percent of college graduates as the state of North Carolina and the United States.

- **Private Industry Employment** - Private Industry employs slightly more than one-half of the Orange County population. Within the private sector, retail trade has the greatest number of employees, at slightly more than 6,000; however, its growth has leveled off

since the late 1990's. Manufacturing jobs have decreased nearly 40% since 2002 in part due to factory closings and relocations.

- **Agriculture** - According to the 2002 Census of Agriculture, Orange County contains 19,405 acres in harvested cropland, with an average farm size of 113 acres. Agriculture generated $42 million dollars in income in 2005, which is comparable to the average income generated during the time period of 1997-2005.
- **State Employment** - The State government generates nearly half of annual wages paid in Orange County, owing to the number of people employed by the County's largest employer, UNC – Chapel Hill, with approximately 11,000 employees.
- **Commercial Development** - In 2005, fifty-five commercial occupancy permits with a total value of more than $40 million dollars were issued by the Orange County Planning and Inspections Department for establishments located within their jurisdiction.

While the economic climate in Orange County is good, there is concern regarding the need to diversify the County's tax base from one primarily composed of residential property (86.4% in 2005) to a more balanced tax base that includes a diversity of businesses and services. Making that change will require a countywide economic development strategy that recruits desired businesses to the area. The County has identified three Economic Development Districts that are targeted for future development, and the provision of infrastructure to these areas will need to be considered if development is to be realized.

ENVIRONMENTAL TRENDS

According to the *2004 Orange County State of the Environment Report*, over the last two decades, the County may have lost as much as 25% of its prime forestland to development. This does not include additional lands that may have been converted from active agricultural use. The report also states that at least four of the County's 64 significant natural areas identified in 1988 have been lost or modified substantially from their former condition. County lands have been converted from agricultural or natural uses to developed lands that provide County residents with housing, commercial and employment opportunities, and needed public facilities.

Residential development has fragmented the natural landscape, decreasing the ecological integrity of natural areas that support wildlife. For example, since 2002 the North Carolina Natural Heritage Program has changed the designation of three species from "Current" status to "Historic" status, meaning that they have not been observed in the County in the last 20 years because they no longer had appropriate habitat.

Protecting finite water resources is vital to insuring a thriving and sustainable community. Because Orange County contains the upper reaches of three of the State's major river basins – the Neuse, the Cape Fear, and the Roanoke, many rivers begin here, but few flow into the County. Overall, about one third of Orange County residents rely on ground water resources; however, rural areas outside of public sewer service areas rely almost exclusively on groundwater. Recent droughts have required water providers and local governments to reassess water usage in the County and to look at long-term potable water needs for future residents.

There are, however, positive signs of community commitment to land and watershed preservation with Orange County establishing a Lands Legacy Program and the Triangle Land Conservancy increasing the acreage it owns in the County. In addition, private land owners have taken positive steps towards protecting environmental resources through the provision of conservation easements. By the end of 2007, a total of 20,400 acres (8% of the County) were protected through various public and private means. One of the goals of the Plan is to protect 10% of lands in the County by 2010. Even if this goal is achieved, more will need to be done to protect the integrity of the natural landscape in Orange County. Given the forecasts for continued growth in development in the County, land planning efforts will need to direct growth to designated areas and away from prime natural areas.

TRANSPORTATION TRENDS

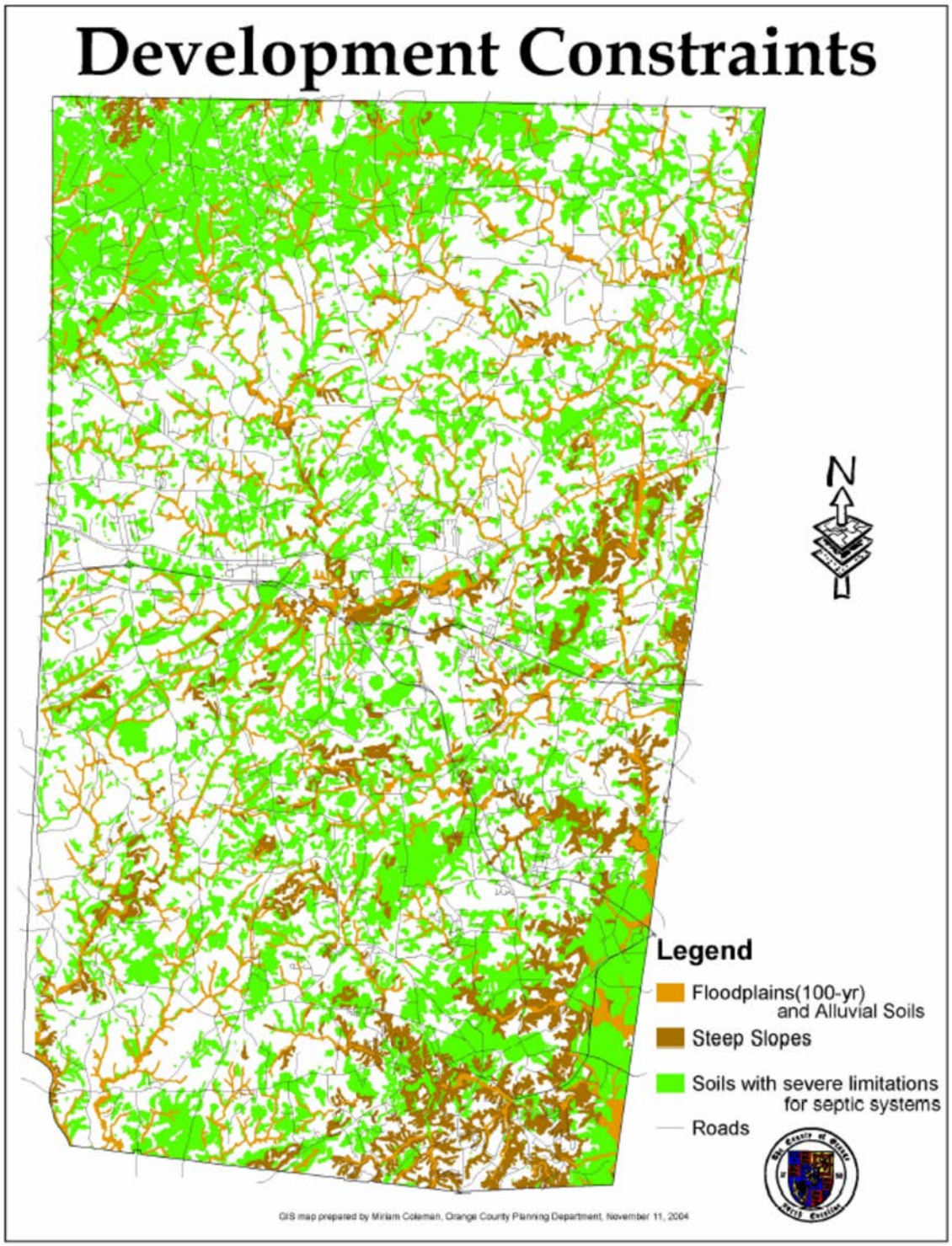
The County's population has become increasingly dependent on the automobile for transportation. Since 1990, approximately 70% of the County's workforce has driven alone to work each day, with an average 22 minute commute. Looking at travel data, the North Carolina Department of Transportation expects that the total daily vehicle miles traveled will increase from 2000 to 2015 by 51%. County vehicle registrations increased by 33% between 1990 and 2005, showing that more and more cars are driving on County roads. This increased travel has, in turn, increased vehicle emissions in the County. In 2004, Orange County was declared part of a "non-attainment" area by the U.S. Environmental Protection Agency for violating federal ozone standards. In late 2007, however, the EPA approved a request from the State to redesignate the Raleigh-Durham-Chapel Hill area to "attainment" and it is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017.

The increase in vehicle use has contributed to impaired local air quality and increased traffic congestion. Changing these trends will require coordinated planning efforts, both locally and regionally, to provide alternative means of transportation.

DEVELOPMENT CONSTRAINTS

In addition to regulatory constraints to development, such as zoning regulations that limit densities and use types in certain zoning districts, Orange County's physical features, including topography, suitability of soils, and drainage areas or floodplains serve as constraints on future development in some areas of the County. Map 5-8 illustrates the locations of these development constraints. Some of these areas are also identified on the Future Land Use Map 5-4, shown previously, as Resource Protection Areas.

The construction and engineering industries have seen great improvements in building technologies over the last few decades. Natural development constraints that would once prohibit development from occurring can now be overcome through new building materials and engineering designs. In response, the County has been very successful at regulating development to reduce soil erosion, sedimentation, and stormwater flows from new developments, and is seen as a leader in the state in terms of watershed protection. These efforts should be continued into the future.



MAP 5-8: DEVELOPMENT CONSTRAINTS

DEVELOPMENT ACTIVITY IN THE COUNTY

Although 8% of Orange County's land area is within municipal borders, 61.5% of the population resides in the Towns. However, there has been significant development in the unincorporated areas.

Data needed to evaluate countywide land development trends over time, and future development potential are not currently available. However, subdivision permit data can provide some insight into land development trends over recent years. Between 1999 and 2006, more than 1100 lots were developed as part of the major subdivision process (i.e., division of land into more than five lots) in Orange County, and more than 600 lots were created as part of the minor subdivision process (i.e., division of land into five or fewer lots). It is likely that development in the unincorporated areas of the County will continue into the future. (See Tables 5-1, 5-2, and 5-3.)

TABLE 5-1: MAJOR SUBDIVISION DATA FOR ORANGE COUNTY (1999-2006)

Major Subdivisions	1999	2000	2001	2002	2003	2004	2005	2006	Total 1999-2006
Number of Major Subdivisions	12	12	12	5	6	4	2	3	56
Total Number of Lots Created	192	155	294	102	102	92	91	73	1101
Total Gross Acreage of Lots Created*	617.2	211.18	684.56	153.52	265.22	236.15	81.87	73.4	2323.1
Average Gross Lot Size of Lots Created (ac)*	3.21	1.82	2.07	1.56	2.6	2.57	0.9	1.01	2.0
Average Gross Lot Size – Rural Areas***	3.21	2.85	2.93	2.18	2.6	2.57	1.96	1.6	2.5
Average Gross Lot Size – Urbanizing Areas****	0	.079	1.2	0.93	0	0	0.6	0.6	0.5
Average Net Lot Size of Lots Created (ac)**	1.77	1.5	1.24	1.3	2.15	1.33	1.16	1.01	1.4
Average Net Lot Size – Rural Areas***	1.77	1.73	1.97	1.91	2.15	1.33	1.8	1.6	1.8
Average Net Lot Size – Urbanizing Areas****	0	.62	0.5	0.69	0	0	0.53	0.6	0.4
Average # of Lots Created per Subdivision	16	12.91	24.5	20.4	17	23	45.5	24.3	23.0

** Includes any acreage in deeded open space required to meet Flexible Subdivision open space standards. Although Flexible Subdivision provisions were created in 1996, they were rarely chosen until 2001. The Planning and Inspections Department began tracking flexible subdivisions in 1999.*

*** Excludes any acreage in deeded open space and roadways*

**** Rural areas are areas with private well and septic systems*

*****Urbanizing areas are areas with public water and sewer services*

Source: Orange County Planning and Inspections Department

Key conclusions from reviewing the county's major subdivision activity between 1999 and 2006 include:

- There were nearly three times the number of Major Subdivisions created between 1999-2002 than between 2003-2006

- The number of lots created has significantly decreased since 1999. There were more than twice as many lots created between 1999-2002 than between 2003-2006
- The number of lots created has significantly decreased since 1999. There were more than twice as many lots created between 1999-2002 than between 2003-2006
- Average net lot size, which excludes any acreage in deeded open space and roadways, is decreasing

Note: Gross lot size includes acreage in deeded open space and roadways, and net lot size excludes acreage in deeded open space and roadways

TABLE 5-2: MINOR SUBDIVISION DATA FOR ORANGE COUNTY (1999-2006)

Minor Subdivisions	1999	2000	2001	2002	2003	2004	2005	2006	Total 1999-2006
Number of Minor Subdivisions	58	42	24	39	25	25	44	25	282
Total Number of Lots Created*	106	95	54	79	66	51	114	61	626
Total Gross Acreage of Platted (new) Lots*	341	323	168	259	199	198	437	247	2172
Average Lot Size of Platted (new) Lots (ac)*	3.2	3.1	3.1	3.3	3	3.9	3.8	4	3.5
Average # of (new) Lots per Subdivision	1.8	2.3	2.3	2	2.6	2	2.6	2.4	2.3

** Excludes residual lots and associated acreage. A residual lot may be defined as the parent parcel from which the subdivision was created.*

Source: Orange County Planning and Inspections Department

Key conclusions from reviewing the county's minor subdivision activity between 1999 and 2006 include:

- Between 1999 and 2002 there were slightly more Minor Subdivisions per year and more lots created than during the period 2003-2006. The year 2005 is a notable exception with 114 lots created.
- Average lot sizes and number of lots created per subdivision remained fairly consistent for the years 1999-2006.

According to State law, subdivision of lots that are 10 or more acres in size are considered "Exempt Subdivisions." Table 5-3 shows the statistics on exempt subdivision in the county from 1999-2006.

TABLE 5-3: EXEMPT SUBDIVISION DATA FOR ORANGE COUNTY (1999-2006)

Exempt Subdivisions	1999	2000	2001	2002	2003	2004	2005	2006	Total 1999-2006
Number of 10+ acre Exempt Subdivisions	44	48	43	35	23	35	42	25	295
Total Number of Lots Created*	103	103	90	107	67	65	109	57	701
Total Acreage of Subdivisions*	1198	1206	1138	1211	774	923	1299	749	8498
Average Lot Size of Lots Created*	12	12	13	11	12	14	12	13	12.4
Average # of Lots Created per Subdivision*	2	2	2	3	3	2	2	2	2.3

** Excludes residual lots and associated acreage. Residual lots are defined as parent parcels twenty (20) acres or more from which the subdivision was created*
1999-2002 figures obtained using Orange County Land Records Dept. data
2003-2006 figures obtained using Planning and Inspections Department data

Source: Orange County Planning and Inspections Department

Key conclusions from reviewing the county's exempt subdivision activity between 1999 and 2006 include:

- Since 1999, there has been a noticeable decrease in the number of Exempt Subdivisions and lots created, with 2005 as a notable exception
- Average lot size, excluding residual acreage, has remained consistent, averaging approximately 12 acres
- Most Exempt Subdivisions contain only two (2) or three (3) lots

Sustainable use of the land in Orange County has required that portions of the County's undeveloped lands are reserved as critical areas for maintaining adequate reservoirs and clean water supplies, current and future parkland provisions, agricultural use, habitat and natural resource protection, County schools and government facilities, and riparian buffers and stream protection to name a few. As the population of the County increases there will be increasing demands on the existing land reserves due to the direct conversion of undeveloped land for residential and commercial development and to satisfy the population's indirect needs for supporting services and resources. Long-range land planning efforts are needed to identify the future land development needs for public infrastructure and for future development that will service projected populations.

5.5. ORANGE COUNTY LAND USE NEEDS

As stated in the Introduction to this Chapter: The manner in which land is being used and developed in Orange County is a direct reflection of the County's land use policies, plans, regulations and ordinances. And it is this Comprehensive Plan and implementation of its objectives that will guide the development of Orange County's future land use ordinances, regulations, and a coordinated land use plan that is based on community values.

Much has been accomplished in planning for future land use patterns in Orange County, but more needs to be done. Specific needs follow:

- The **County's Future Land Use Map needs to be updated and re-drawn to reflect current policies and plans**, to provide guidance and information to residents and property owners. The revised Future Land Use Map needs to be drawn to include the following:
  - Chapel Hill-Carrboro Joint Planning Area Land Use Plan;
  - Hillsborough-Orange County Strategic Plan;
  - Most Current Economic Development Districts;
  - Most Current Rural Activity Nodes and other growth opportunity areas;
  - Most Current Inventory of Natural and Cultural Resources; and
  - Identification of Preservation Areas.
- **Inter-local Agreements are needed between the County and the Towns of Hillsborough and Mebane**, similar to the agreements with Chapel Hill and Carrboro, to jointly plan for and regulate development on the edges of those municipalities.
- Following updates to the Future Land Use Map, **the County's Unified Development Ordinance will need to be assessed for necessary adjustments**. These zoning changes should encourage meeting the objectives that promote sustainability including mixed-use development patterns, transportation linkages, economic development, and diversity in housing opportunities.
- **Adjust zoning regulations and apply zoning categories in preservation areas** to discourage intensive and unsustainable development.
- Continue to **study mechanisms for transfer of development rights** from preservation areas to areas targeted for growth.
- The County needs to **refine policies to encourage green building practices** for public and private construction projects. This may entail an assessment of current building codes and development ordinances to identify barriers to using green construction practices, and/or creating incentives for private developers to use more environmentally friendly construction and demolition

techniques. Deconstruction for the purpose of reuse is preferred over demolition.

- The County needs to work in partnership with the towns to **assess the countywide workforce housing need**, and, if needed, identify strategies for increasing the supply of workforce housing in the county.
- **A County database that tracks the location, density, and land use of developed lands and the location of undeveloped lands** is needed**.** This data can be used over time to illustrate land development trends and will provide great benefit to future County planning efforts.

5.6. GOALS

The Orange County Planning Board, in collaboration with Orange County Staff, advisory boards and commissions, citizens, and community organizations have reviewed and revised the goals of the 1981 Comprehensive Plan, and as needed, have created new goals to express current community values and needs.

The following land use goals will be used as a foundation for future policy decisions and implementation strategies related to land use planning for the County. They represent the first step in the process to translate statements expressed as community values into land use planning strategies and activities.

Land Use Overarching Goal: Coordination of the amount, location, pattern and designation of future land uses, with availability of County services and facilities sufficient to meet the needs of Orange County's population and economy consistent with other Comprehensive Plan element goals and objectives.

Land Use Goal 1:
Fiscally and environmentally responsible, sustainable growth, consistent with the provision of adequate services and facilities and a high quality of life.

Land Use Goal 2:
Land uses that are appropriate to on-site environmental conditions and features, and that protect natural resources, cultural resources, and community character.

Land Use Goal 3:
A variety of land uses that are coordinated within a program and pattern that limits sprawl, preserves community and rural character, minimizes land use conflicts, supported by an efficient and balanced transportation system.

Land Use Goal 4:
Land development regulations, guidelines, techniques and/or incentives that promote the integrated achievement of all Comprehensive Plan goals.

Land Use Goal 5:
Life, health, and property safe from hazards.

Land Use Goal 6:
A land use planning process that is transparent, fair, open, efficient, and responsive.

5.7. OBJECTIVES

The intent of this Plan is that the following list of objectives will help guide regular and ongoing decision-making by the County related to land use initiatives. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Land Use Goal 1: Fiscally and environmentally responsible, sustainable growth, consistent with the provision of adequate services and facilities and a high quality of life.

Objective LU-1.1:
Coordinate the location of higher intensity / high density residential and non-residential development with existing or planned locations of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer, high-speed internet access, streets, and sidewalks), while avoiding areas with protected natural and cultural resources. This could be achieved by increasing allowable densities and creating new mixed-use zoning districts where adequate public services are available. (See also Economic Development Objectives ED-2.1, ED-2.3, ED-2.10, and Water and Wastewater Objective WW-2.)

Objective LU-1.2:
Evaluate and report on whether existing and approved locations for future residential and non-residential developments are coordinated with the location of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer services, high-speed internet access, streets and sidewalks).

Objective LU-1.3:
Create a "sustainable development checklist" to be included as part of the development review process that would evaluate and report on whether proposed developments are appropriate considering existing on-site environmental conditions and features, whether they are compatible with existing natural and cultural resources, whether adequate provision of public services exist for the proposed land use, and whether the proposed development will enhance community character.

Land Use Goal 2: Land uses that are appropriate to on-site environmental conditions and features, and that protect natural resources, cultural resources, and community character.

Objective LU-2.1:
Maintain the rural, low-density land surrounding Chapel Hill and Carrboro Transition Areas as Rural Buffer land, as designated on the Future Land Use Map. Future consideration should be given to designating Rural Buffer areas around other municipalities where such interest exists.

Objective LU-2.2:
Continue to protect valuable resource land such as productive agricultural areas, natural areas, historic sites and properties, and potential reservoir sites through the County's Lands Legacy Program, and by directing incompatible development away from these areas through land use and zoning policies and regulations. (See also Natural Areas Objectives NA-5 and NA-17, and Water and Wastewater Objective WW-14.)

Objective LU-2.3:
Require non-residential and higher-density residential developments within Transition Areas to use Best Management Practices (BMP's) for stormwater control, as outlined within the Orange County Unified Development Ordinance, to ensure that potential adverse impacts on the water quality of existing and proposed reservoir sites are avoided. (See also Erosion Control EC-1 and Natural Areas Objective NA-4.)

Objective LU-2.4:
Evaluate the development potential in rural crossroads communities to identify whether current regulations permit appropriate development that is in character with these communities, and whether potential development in these areas would require significant expansions or cause depletions of public services.

Objective LU-2.5:
Adopt and implement policies that specify appropriate land uses and intensities of development in Protected and Critical Water Resource Areas that will not have potential adverse impacts on water resources. (See also Water and Wastewater Objective WW-15.)

Objective LU-2.6:
Protect prime reservoir sites from adverse development impacts and ensure that regulations for these areas are appropriate.

Objective LU-2.7:
Refine green building standards to guide the design, siting, construction, and management of publicly owned and managed buildings in a manner that conserves energy and/or uses non-polluting renewable energy sources. Explore the development of green

building standards for private development. (See also Air and Energy Objective AE-11.)

Objective LU-2.8:
Develop performance standards for development on lands with non-renewable resources to ensure a sufficient level of environmental protection for these resources.

Objective LU-2.9:
Evaluate the carrying capacity of groundwater and surface water resources of the 15 watersheds in Orange County. (See also Water Resources Objective WR-7.)

Objective LU-2.10:
Develop design standards or guidelines that address scale, density, and aesthetic considerations for residential, mixed-use, industrial, and commercial land uses to promote community aesthetics and the protection of the visual and cultural environment of the County. (See also Housing Objective H-3.1.)

Land Use Goal 3: A variety of land uses that are coordinated within a program and pattern that limits sprawl, preserves community and rural character, minimizes land use conflicts, supported by an efficient and balanced transportation system.

Objective LU-3.1:
Discourage urban sprawl, encourage a separation of urban and rural land uses, and direct new development into areas where necessary community facilities and services exist through periodic updates to the Land Use Plan. (See also Economic Development Objective ED-2.8.)

Objective LU-3.2:
Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation system. (See also Transportation Objective T-1.1, Economic Development Objective ED-2.3, and Air and Energy Resources Objective AE-8.)

Objective LU-3.3:
Discourage new intensive non-residential land uses, or the expansion of existing intensive uses, in the area designated Rural Buffer. (See also Economic Development Objective ED-2.8.)

Objective LU-3.4:
Recognize the right to farm and discourage the location of new non-farm development, particularly more intensive residential development, within farming areas to minimize the incidence of complaints and nuisance suits against farm operations. (See also Agriculture Objectives AG-1 and AG-3.)

Objective LU-3.5:
Encourage energy and water use in an efficient manner by industries and encourage energy efficient industries to locate or expand in the

County in Rural Industrial, Commercial/Industrial, and Economic Development Nodes. (See also Economic Development Objective ED-2.9.)

Objective LU-3.6:
Establish consistency between the Land Use Plan and the Water and Sewer Management Planning and Boundary Agreement and Map. (See also Water and Wastewater Objective WW-3.)

Objective LU-3.7:
Ensure that new development patterns in non-residential nodes encourage a clustered, walkable development pattern and discourage strip development.

Objective LU-3.8:
Develop a process for implementing small area plan recommendations through the revision of County policies and regulations.

Objective LU-3.9:
Create new zoning district(s) which allow for a mixing of commercial and residential uses, a mixing of housing types, and creates a more pedestrian friendly development pattern. New districts should be applied in areas where public services exist or are planned for in the future, in areas that promote higher intensity and high density uses on the Future Land Use map.

Objective LU-3.10:
Identify prime viewsheds along major transportation corridors and other areas, and amend County land use ordinances to ensure long-term protection of viewsheds. (See also Natural Areas Objective NA-16, Parks and Recreation Objective PR-5.4, and Transportation Objective T-1.5.)

Objective LU-3.11
In response to development plans at Carolina North, including the possible relocation of Horace Williams Airport, review County land use ordinances and amend if needed to protect the interests of Orange County's residents.

Land Use Goal 4: Land development regulations, guidelines, techniques and/or incentives that promote the integrated achievement of all Comprehensive Plan goals.

Objective LU-4.1:
Support the use of individual manufactured housing units as a useful housing resource in the County by increasing the opportunities where these units can locate by-right. (See also Housing Objective H-4.1.)

Objective LU-4.2:
Review and amend the Orange County Unified Development Ordinance to identify and eliminate existing regulatory impediments to objectives identified in the Comprehensive Plan. Such objectives include but are not limited to the development of energy efficient buildings within the County, water efficiency standards for new development, and

development of affordable housing. (See also Housing Objective H-4.4 and Solid Waste Objective SW-4.)

Objective LU-4.3:
Determine how private developments can best accommodate or provide public and private commercial recreational facilities to serve Orange County's residents. (See also Parks and Recreation Objective PR-1.3 and Natural Areas Objective NA-10.)

Objective LU-4.4:
Encourage the provision of a range of affordable and suitable low and moderate income housing by means of development incentives in order to provide a balanced housing stock for the residents of Orange County. (See also Housing Element Objective H-4.3.)

Objective LU-4.5:
Work within the Orange County government system to identify and resolve existing land development policies that may be in conflict with historic preservation goals. (See also Cultural Resources Objective CR-3.)

Objective LU-4.6:
Prepare an analysis of subdivision trends in the County, providing pros and cons of Minor, Major, and Exempt Subdivisions, and recommendations on any ordinance amendments that may be appropriate.

Land Use Goal 5: Life, health, and property safe from hazards.

Objective LU-5-1:
Prohibit new development in special flood hazard areas as defined by the Federal Emergency Management Flood Insurance Rate Map, effective February 2, 2007.

Objective LU-5-2:
Continue to implement the Orange County Hazard Mitigation Plan.

Objective LU-5-3:
Develop and coordinate an emergency disaster plan and community education program to increase awareness of the dangers of natural and human-made emergency events and understand how best to prepare.

Land Use Goal 6: A land use planning process that is transparent, fair, open, efficient, and responsive.

Objective LU-6.1:
Undertake a comprehensive effort to inform and involve the citizens of Orange County in the land use planning process.

Objective LU-6.2:
Maintain a cooperative joint planning process among the County municipalities and those organizations responsible for the provision of

water and sewer services to guide the extension of service in accordance with the Comprehensive Plan, the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities. (See also Water and Wastewater Objective WW-4.)

Objective LU-6.3:
Develop internal process audits and customer surveys to ensure customer satisfaction of the development review and approval process.

Objective LU-6.4:
Develop educational and public information programs to increase awareness of the potential for the design, construction and rehabilitation of commercial and residential structures that are energy efficient and/or use non-polluting renewable energy sources.

Objective LU-6.5
Establish a "one-stop" County central permitting office.

Objective LU-6.6
Evaluate and consider the "Community Building" recommendations of the Shaping Orange County's Future's Task Force.

Objective LU-6.7
Add an index to the adopted Comprehensive Plan and develop an executive summary of its contents.

TABLE 5-4: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Overarching Goal	√	√	√	√	√	√	√	√	√
Goal 1 and Objectives LU-1.1 – H-1.3	√	√	√	√		√	√	√	√
Goal 2 and Objectives LU-2.1 – LU-2.10	√	√	√	√	√	√	√		√
Goal 3 and Objectives LU-3.1 – LU-3.11	√	√	√	√	√	√	√		√
Goal 4 and Objectives LU-4.1 – LU-4.6	√	√	√	√	√	√	√	√	√
Goal 5 and Objectives LU-5.1 – LU-5.3		√	√	√	√				√
Goal 6 and Objectives LU-6.1 – LU-6.7	√	√				√		√	

5.8. LINKS TO OTHER ELEMENTS

Land use planning coordinates the efforts of economic development, housing, transportation, park and recreation facilities, and community services into one consolidated strategy for future growth and development. Linkages between specific land use goals and objectives have been identified in this element. The following summarizes the objectives from other Elements that are linked with Land Use objectives.

ECONOMIC DEVELOPMENT

Objective ED-2.1:
Encourage compact and higher density development in areas served by water and sewer.

Objective ED-2.3:
Promote public transportation, alternative modes of transportation, and encourage carpooling and park-and-ride participation.

Objective ED-2.8:
Adjust ongoing designation and zoning of Economic Development Districts to avoid the area designated as the Rural Buffer.

Objective ED-2.9:
Consider industrial sites in Agricultural-Residential areas along the U.S. 70/I-85 highway and rail corridor to take advantage of the corridor's locational attributes. A limited number of small scale Rural Industrial Nodes, not requiring urban type services, may be appropriate elsewhere in the County where good access exists.

Objective ED-2.10:
Extend public water and sewer into all three Economic Development Districts.

HOUSING

Objective H-3.1:
Achieve residential neighborhoods that are attractive and well-maintained.

Objective H-4.1:
Continue to permit HUD code-compliant manufactured housing as a form of affordable housing in the County.

Objective H-4.3:
Evaluate the feasibility of development incentives to stimulate the production of needed affordable low income housing.

Objective H-4.4:
Working collaboratively with the towns, identify regulatory barriers to be removed and opportunities for development incentives to encourage the construction of a diverse range of housing types countywide.

NATURAL AND CULTURAL SYSTEMS

Objective AG-1:
Recognize and support the right to farm. Protect farm operations from incompatible adjacent land uses or activities that will adversely affect the long-term agricultural investment in land and improvements.

Objective AG-3:
Develop programs and associated infrastructure facilities to make local farms more economically viable, including local farm product

processing, development of a distribution center, and marketing initiatives.

Objective AE-8:
Improve transportation efficiency: promote more public transportation, ride sharing, and alternative transportation such as bicycling and walking.

Objective AE-11:
Improve the energy efficiency of buildings through several action steps: 1) upgrade existing buildings, including County and school buildings; 2) educate planning and building inspection officials about the technologies and techniques of energy efficient construction; and 3) encourage the use of LEED "Gold" (or equivalent) as a standard in new construction.

Objective CR-3:
Work within the Orange County government system to identify and resolve existing policies, which may be in conflict with the County's historic preservation mission.

Objective NA-4:
Encourage adequate stormwater runoff controls in existing developed areas and require these controls for new subdivisions to protect sensitive downstream aquatic habitats.

Objective NA-5:
Prohibit development that would cause adverse impacts on highly significant natural areas and wildlife habitat.

Objective NA-10:
Require that all major subdivisions (defined as having more than 5 lots according to the Orange County Unified Development Ordinance) include within their boundaries open space suitable for low-impact recreation and wildlife habitat.

Objective NA-16:
Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of the Orange County landscape.

Objective NA-17:
Maintain and protect land that contains valuable productive resources, such as prime farmland and prime forestland, by directing incompatible development away from these areas.

Objective WR-7:
Promote land use patterns that preserve the natural hydrologic system and maintain a sustainable "carrying capacity" balance for the future between ground water and surface water resources.

PARKS AND RECREATION

Objective PR-1.3:
Develop a land use planning mechanism for securing new parks through the development approval process.

Objective PR-5.4:
Encourage development of a system of private open space and conservation areas, including nature preserves, parks, linear parks, and scenic vistas compatible with the character of Orange County.

SERVICES AND FACILITIES

Objective WW-2:
Coordinate the provision of potable water and sanitary sewer services with the County's Land Use Plan and Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, targeting these services to urban, transitional, and economic development districts in a manner that does not endanger environmental resources.

Objective WW-3:
Maintain and add new partners to the existing Water and Sewer Management Planning and Boundary Agreements with the Towns of Chapel Hill, Carrboro, and Hillsborough and OWASA. Work to establish similar agreements with the Cities of Mebane and Durham and Orange-Alamance Water System.

Objective WW-5:
Maintain a cooperative joint planning process among the County, the municipalities, and water and wastewater providers and guide the extension of service in accordance with the Comprehensive Plan, the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities.

Objective WW-14:
Designate prime reservoir sites in the County, and protect those sites from adverse development.

Objective EC-1:
Continue to use Best Management Practices (BMP's) for stormwater control, as outlined within the Orange County Unified Development Ordinance, to minimize potential adverse impacts on the water quality.

Objective SW-4:
Use land use planning, zoning regulations, and the process of development approvals to enable the appropriate environmental controls and oversight of necessary solid waste facilities.

TRANSPORTATION

Objective T-1.1:
Increase the occupancy of automobiles through ridesharing and other means; and expand the use of public transit (including bus and rail), walking, and biking as primary modes of travel.

Objective T-1.5:
Identify prime viewsheds along major transportation corridors and protect these areas for their scenic and natural resource values.

5.9. OTHER KEY DOCUMENTS

Several documents were used as resources in the development of this Element and are listed below. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.)

- *1981 Orange County Land Use Element* (September, 1981)
- *Joint Planning Area Land Use Plan* (1986)
- *Planning Board Evaluation of 1981 Plan* (May, 2007)
- *Shaping Orange County's Future* (2003)
- *Rural Character Study Committee (RCSC) Phase I & II* Report (1990)
- *Rural Character Study Commission Conceptual Guidelines for Rural Orange* (1993)
- *2004 Orange County State of the Environment Report.*
- *Hillsborough Strategic Growth Plan* (2006)
- *Draft Land Use Element Update* (2006)
- *Efland/Mebane Small Area Plan* (2006)
- *Orange County Transfer of Development Rights Feasibility Study, Phase II Report* (2006)
- *NC Highway 57 Speedway Area Small Area Plan* (2007)
- *Proposed 2007 Amendments to Land Use Element* (August, 2007)

5.10. INTERGOVERNMENTAL COORDINATION

Coordination of land use planning is critical for creating a sustainable land use pattern in Orange County. Courtesy Review Agreements with Durham County and the Towns of Hillsborough, Chapel Hill and Carrboro are key institutionalized tools for ensuring information regarding future development is discussed among jurisdictions. As development occurs in the transitional areas around the urban centers, the County will need to continue an active dialogue with the towns.

Chapter 6. Natural and Cultural Systems Element

6.1. PURPOSE

The Natural and Cultural Systems Element is several elements combined into one. This chapter addresses the following components of natural and cultural resources (or systems):

- Agriculture;
- Air and Energy Resources;
- Cultural and Historic Resources;
- Natural Areas, Wildlife Habitat and Prime Forests; and
- Water Resources.

In many comprehensive plans, topical areas such as these are individual elements. The rationale for combining them here into one document is explained in part by the very name of the Element – Natural and Cultural Systems. The word "systems" is selected to reflect the fact that natural resources and cultural resources are inextricably interwoven components of Orange County's corner of the world. There are direct and important relationships between air quality and natural areas – between water resources and agriculture – between cultural resources and all of the others. Issues that threaten Orange County's biodiversity (such as the effect of non-native species on our aquatic habitat) also pose concerns for agriculture and water.

Our natural and cultural resources function as systems – systems that interact with each other on a frequent basis. By addressing them together in one document, we may create opportunities for better coordination and synergy among policies that address the different resources.

The background data, trends, needs, and goals and objectives within this element serve as the basis for future policies, programs and action strategies that may be undertaken by Orange County elected officials, its advisory boards, and staff. The manner in which these implementation mechanisms are created and established is addressed in *Section 1.4: Administration and Implementation Guidelines*.

6.2. OVERVIEW

The Orange County that we see and experience today is based in large part on its natural setting and the cultural development patterns that have evolved in response to that setting. The following is an overview of the County's natural and cultural landscape.

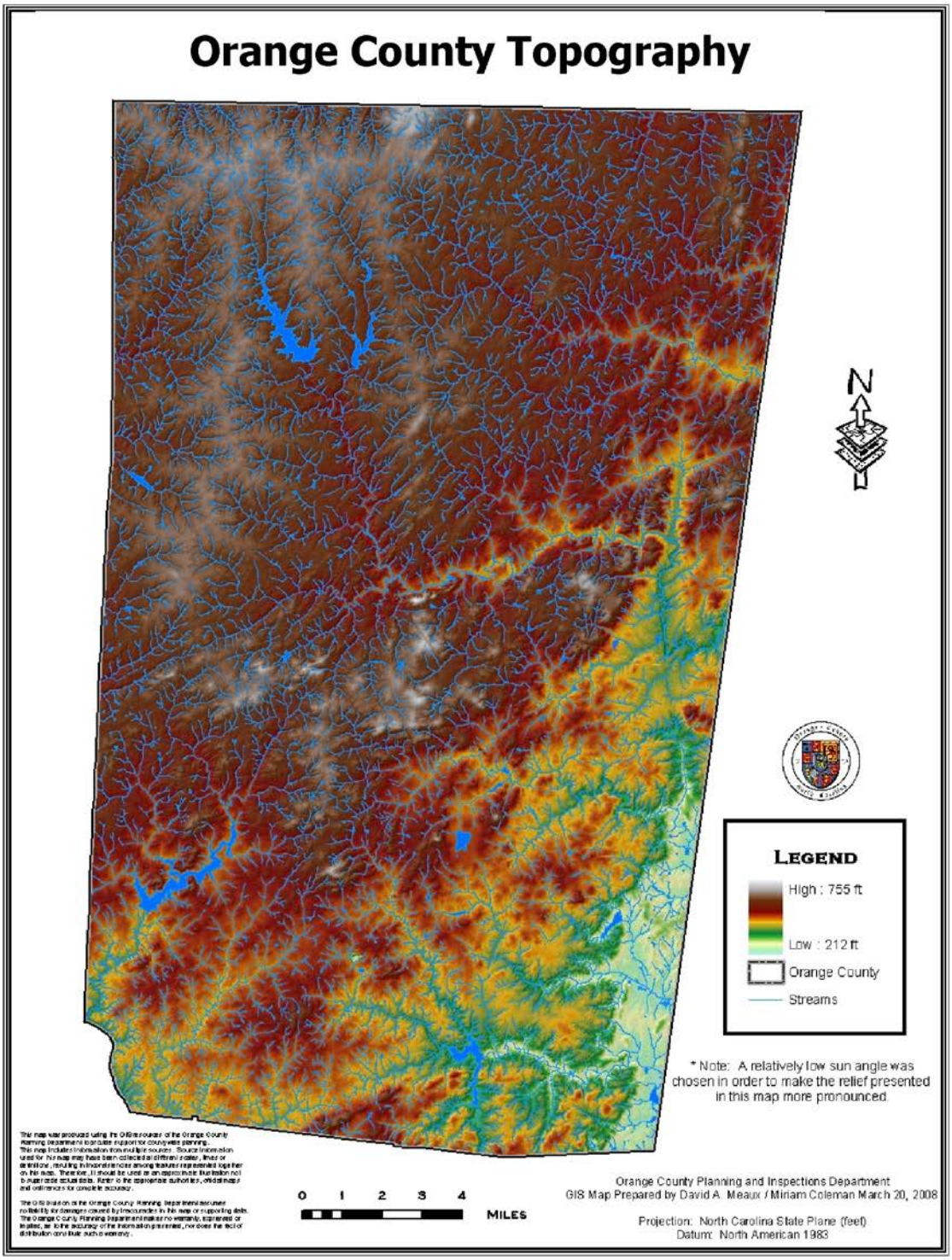
NATURAL SETTING

Orange County is located near the eastern edge of the Piedmont physiographic province in North Carolina. Geologically, much of the County's 399 square miles (254,720 acres) is within the Carolina Terrane, which is land composed of diverse, generally metamorphosed volcanic rocks. The southeastern corner of the County is in the Triassic Basin, which is an area of sedimentary, easily eroded rock.

Most of the County's landscape features broad, upland ridges with small streams and narrow floodplains. No large streams that originate in other counties flow into Orange; rather, the County serves as the upper watershed (headwaters) for three of the major river systems in North Carolina. New Hope Creek, Morgan Creek, Cane Creek, and Back Creek flow into the Cape Fear River system via the Haw River that forms the County's southwestern boundary. In the north, Eno River and Little River (north and south forks) flow into the Neuse River system. And near the County's northwestern boundary, South Hyco Creek and Lynch Creek, flow north into the Roanoke River system.

Elevations in Orange County range from a high of 867 feet at the summit of Occoneechee Mountain near Hillsborough down to 240 feet in the southeastern corner of the County. (See Map 6-1.) There are no natural lakes in Orange County—only small marshy wetlands that have been created with the help of beaver dams, and human impoundments such as University Lake and other reservoirs.

Occoneechee Mountain is one in a linear series of inselbergs (hills of highly resistant rock) that are prominent in southwestern Orange County. Other inselbergs include Bald, Blackwood, and Crawford mountains. Apart from those inselbergs, there are a very few areas of high relief in the County. Along Morgan Creek, New Hope Creek, and the Eno River, steep slopes have been cut by water action, but these rarely exceed 150 feet in relief. Many of the most distinctive natural areas of the County, such as the rhododendron communities, pine-oak bluffs, and dry, rocky slopes are restricted to those steep, stream-cut slopes.



MAP 6-1: ORANGE COUNTY TOPOGRAPHY

SOILS, AGRICULTURAL POTENTIAL AND IMPACT ON SETTLEMENT PATTERNS

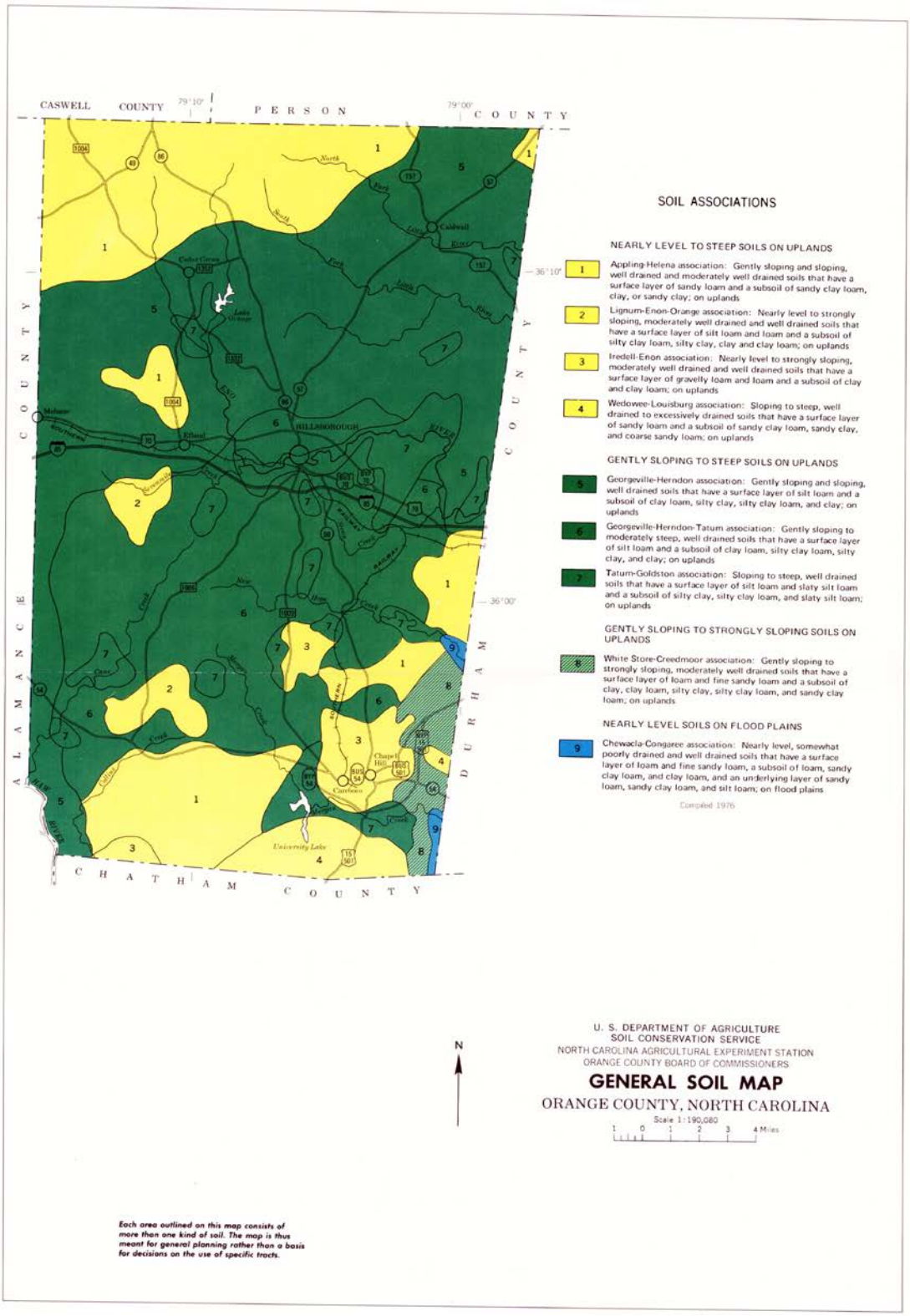
Almost three quarters of the County's land area consists of soils productive for agricultural and forestry uses, including 140,630 acres of prime farmland and 58,650 acres of state and locally important farmland.[1] The majority of these quality soils extend across the County in a diagonal pattern southwest to northeast as shown in the dark green areas on the General Soils Map (6-2) Soils from three main associations – Georgeville-Herndon, Georgeville-Herndon-Tatum and Tatum-Goldston – are prevalent in this area. These gently sloping and well-drained soils contain layers of silt loam and clay that make them suitable for most agricultural uses. Other soil types are located throughout the County in small areas, along drainageways or ridges.[2]

The County's natural setting, both physical and physiographic, determine its mild (warm and humid) climate, its long growing season, and its soil composition.[3] These elements--the climate, length of the growing season and the types of local soils--significantly affect the agricultural potential of the land as well as historic and prehistoric settlement patterns (i.e., the placement of historic and prehistoric settlements and transportation networks).

[1] *Important Farmlands Orange County, North Carolina.* Supplement to Soil Survey Report of Orange County, 1972.

[2] Orange County also contains significant areas of Appling-Helena soils, in the northwest corner of Cedar Grove Township, the southern section of Bingham Township and in scattered pockets throughout the county. The Appling-Helena soil type contains layers of sandy loam and sandy clay. It has good potential for woodland, hay and pasture cover, less for tobacco, row crops, and truck crops (vegetables.)

[3] The growing season (i.e., the typical frost-free period in Orange County) lasts for about 200 days from the last frost in mid April to the first front in late October.



MAP 6-2: ORANGE COUNTY GENERAL SOIL MAP

CULTURAL SETTING

Though not formed until 1752, Orange County has a long settlement history. Early Spanish and European explorers in the sixteenth and seventeenth centuries traveling through the area likely encountered large populations of Native Americans that settled along the area's rivers and streams. These populations were most likely an amalgamation of several Siouan speaking tribes, which would include the Occaneechi, Eno, Saponi, Shakori and the Sissipahaw. Although no written record of these cultures exists prior to European contact, archaeological evidence suggests that the area has been occupied to some degree since at least 10,000 BC.

The combination of European-introduced diseases, conflict with settlers, and increased European desire for land and deerskin marked the beginning of the depopulation of most native groups in Orange County. Settlements became less centralized, and tribes either dissolved or merged as settlers moved further into the Piedmont. By the early 1700s, much of the area had been abandoned by the native tribes.

Orange County was formally created from parts of Granville, Johnston and Bladen counties in 1752, and by 1767 it was the most populous County in North Carolina. Its immense original boundaries encompassed present Orange, Person, Caswell, Alamance, Chatham and Durham counties, and portions of Guilford, Randolph, Rockingham, and Wake – approximately 3,500 square miles in all. Opportunities for inexpensive and well-advertised l and attracted a variety of ethnic and religious groups, particularly Scotch-Irish Presbyterians, German Lutherans and English Anglicans (from Eastern North Carolina and Virginia) and English Quakers. Members of these groups often migrated from Europe together, settling first in the middle colonies such as Pennsylvania and Virginia and traveling down the Great (Philadelphia) Wagon road to North Carolina. They established communities such as Hawfields, New Hope and Cane Creek.

These early settlers were mainly subsistence farmers who built modest farmsteads, grew crops, and raised livestock for family consumption. Gradually a small planter class emerged, one that depended on a large labor force to prepare land for agricultural use and to tend crops.[4] As successful landowners began to import Africans for this purpose the once distinct ethnic communities began to blend into a more homogenous white population.

Orange County escaped the physical destruction of the Civil War but, like so much of the south, experienced substantial financial loss as well as social upheaval. The total value of farms fell by half between 1860 and 1870, and the average size of farms dropped from 285 acres to 198 acres. Agricultural production suffered from the absence of much of the male workforce during the war, and from emancipation afterward. Many emancipated blacks left rural Orange for opportunities elsewhere but others stayed and acquired property and prospered.[5]

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[4] Although large plantations were rare in what is now Orange County, a few residents such as John Cabe, William Cabe, James Pratt, and William Kirkland (Ayr Mount) achieved planter status. Each had substantial holdings along the Eno River, comprising fertile bottomlands for cultivation and adjacent tracts cleared for pastures.

[5] Several African-American families, such as the Corbetts, purchased large tracts of land in the Carr community in Cedar Grove Township and prospered. In addition, some African

Plantations and large farms were subdivided and sharecropping and tenant farming became more widespread.[6] The nineteenth century also saw a rise in small industry and manufactured goods. The mill industry grew throughout the late nineteenth century, with several flour and gristmills located along the Eno River and smaller creeks throughout the County.

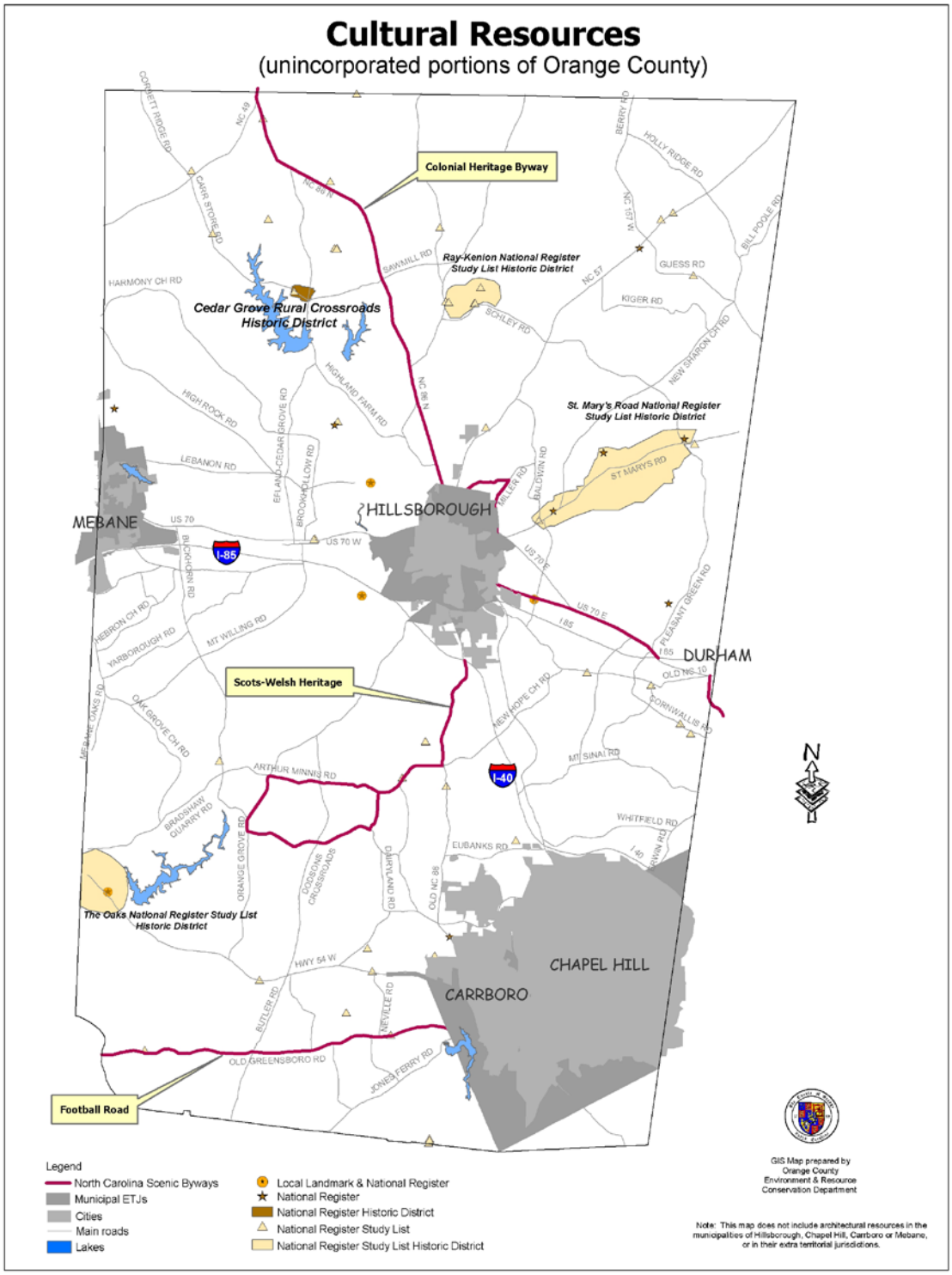
Post-Civil War economic expansion was fueled, in part, by the extension of railroad lines through the County. This increased access to outside markets for Orange County farmers, who continued to increase tobacco production. As nearby tobacco factories and other industry in surrounding areas expanded, the population grew accordingly. During the 1920s, North Carolina's "Good Roads" program lead to the hard surfacing of many roads in the County, thus increasing access to rural areas and facilitating modernization.

Economic development continues to increase throughout Orange County and in Chapel Hill, in particular. The expansion of the University of North Carolina at Chapel Hill, founded in 1789, and Research Triangle Park, developed in 1959, has contributed greatly to population growth in the area, although many areas throughout Orange County have remained relatively rural.

Map 6.3 identifies the current inventory of cultural resources in the County, such as local and national historic landmarks and districts that preserve historically important cultural sites and areas in the County.

Americans, such as Robert Fitzgerald, migrated to the south, as part of efforts of the Freedmen's Bureau and Quaker missionary groups, to teach in schools.

[6] In 1890, 58 percent of the county's farmers were either renters, croppers, or laborers. By the turn of the century, nearly 40 percent of all farmers in Orange County were sharecroppers and worked on average 20 to 60 acres.



MAP 6-3: CULTURAL RESOURCES

6.3. GOALS

The following natural and cultural systems goals will guide future policy and implementation strategies for the county.

Natural and Cultural Systems Overarching Goal: A sustainable balance and appreciation of natural, cultural and agricultural resources.

Natural and Cultural Systems Goal 1:
Energy conservation, sustainable use of non-polluting renewable energy resources, efficient use of non-renewable energy resources, and clean air.

Natural and Cultural Systems Goal 2:
Economic viability of agriculture, forestry, and horticulture and their respective lands.

Natural and Cultural Systems Goal 3:
Infrastructure and support systems for local and regional agriculture.

Natural and Cultural Systems Goal 4:
Preservation of historic, cultural, architectural and archaeological resources, and their associated landscapes.

Natural and Cultural Systems Goal 5:
Awareness and appreciation of the diverse cultural history and heritage of Orange County and its residents.

Natural and Cultural Systems Goal 6:
Sustainable quality and quantity of ground and surface water resources.

Natural and Cultural Systems Goal 7:
A balanced and healthy diversity of native plant and animal populations.

Natural and Cultural Systems Goal 8:
Networks of protected natural, cultural, and agricultural lands.

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6.4. COMPONENT ELEMENTS

6.4.1. AGRICULTURE

All county residents enjoy some gain from local farms. Farmland is an irreplaceable physical, cultural, and economic asset in Orange County. Everyone who eats can benefit from the quality, health benefits, environmental benefits, and convenience associated with locally grown products. Everyone who travels along county roads can enjoy the scenic vistas retained through tilled fields, pastures, and forestlands.

The perception that farmers will always farm and maintain the rural parts of Orange County may be tested vigorously in the coming years as the cost of this stewardship continues to rise. Once farmland is converted to other uses it is probably lost to agriculture forever.[7] Recognizing the finite nature of productive soils, Orange County residents and elected officials have sought to preserve agricultural lands dating back to initial countywide planning efforts of the late 1960s. The changing nature of federal, state, and local regulations have presented new challenges, and traditional commodity programs are being phased out. The global market is impacting prices, both for selling products and for buying products (seeds, feed, fuel, etc). Land costs continue to escalate due to the attractiveness of the County and the greater Triangle Region as a place to live and work. With careful planning this growing population can contribute to the future of local agriculture as new consumers for locally grown and value-added[8] farm products and as visitors for agri-tourism.[9]

The Agricultural section of the Natural and Cultural Systems Element is designed to provide an overview of the state of agriculture in Orange County. It is not intended to be the single unabridged source of information for farmers; rather, as part of the 2030 Comprehensive Plan it is a policy guide for future County decisions. It includes brief descriptions of popular County programs to conserve and protect farming resources. This section also includes a discussion of current trends in the farming community, an assessment of needs related to local agriculture, and a series of goals and objectives to advance agricultural (including forestry) efforts countywide. The long-term survival of agriculture in Orange County requires a three-tiered approach:

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[7] Since 2002, the State of North Carolina has lost more than 300,000 acres of farmland. The State is one of the top states in the nation for incurring farmland loss.

[8] "Value-added" refers to the process of adding financial value to a product. For example a new production process or a new marketing strategy can add more financial value to a product. Minor processing or packaging can "add value" to a raw product; farmers may make a greater profit selling apple cider or apple pies than selling apples.

[9] Agri-Tourism describes a new tourist business opportunity for farmers, and the like. Tourists are more and more interested in touring local farms and attending events. Tours and events, like the annual Piedmont Farm Tour organized by the Carolina Farm Stewardship Association, are becoming more popular every year.

1. The County must continue efforts to protect productive farmland soils so that they remain available for agricultural and forestry use;

2. Farming must become a more profitable venture; and

3. New and younger residents must cultivate interest and knowledge in farming to take over as the next generation.

6.4.1.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

HISTORIC DATA

During the first half of the nineteenth century, Orange County developed into a landscape of small- and medium-sized farms. By 1850, three-quarters of the County's farms contained less than 100 acres, while just a handful comprised more than 500.[10] Some planters were successful growing cash crops, such as burley tobacco (air dried) and cotton for profit, but for the most part, these early settlers were primarily subsistence farmers who raised livestock and grew grains and vegetables for their own use.

During the first half of the twentieth century, technological improvements – the mechanization of farm equipment and the introduction of modern conveniences such as rural electrification – had a substantial impact on local residents. Farmers could cultivate larger areas of land and work longer hours. The introduction of bright leaf tobacco (flue-cured) provided new profits for many family farms, particularly in Cedar Grove Township in the northwest part of the county.[11] The North Carolina Cooperative Extension Service encouraged Orange County farmers to develop dairy operations and provided construction plans for a new type of farm building, the grambrel-roof dairy barn, which has become an icon for farming throughout the nation. Many prospered from this new commodity. Farmers also continued to grow traditional row crops such as corn and grains, to raise livestock, and to grow vegetables for family consumption. Those who were able to grow more than they needed often drove to neighboring markets to "peddle" their wares, particularly value-added products such as butter and baked goods. As transportation networks improved, commercial agriculture began to replace the small subsistence-based farms.

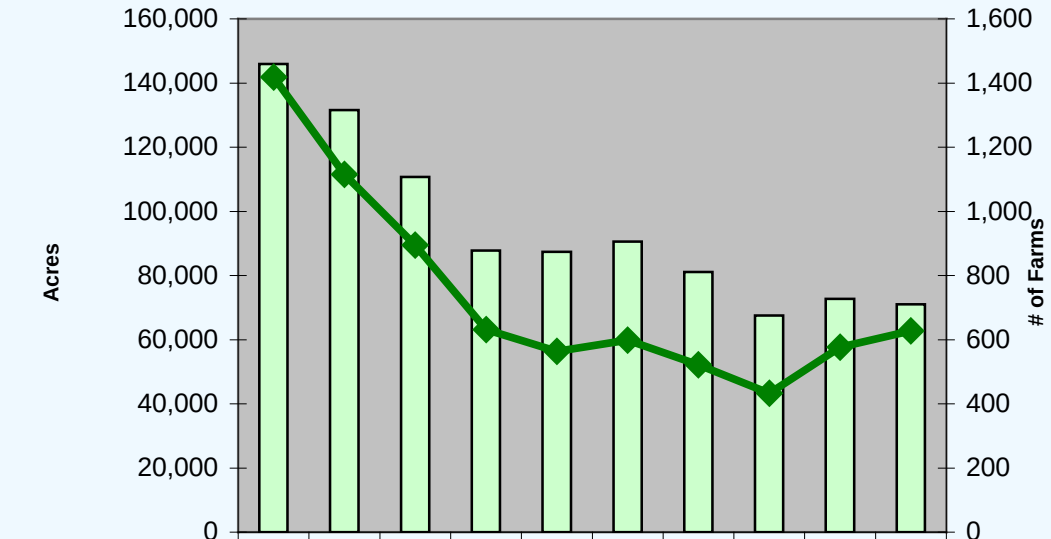
By the late 1960s and 1970s rural Orange began to change as a result of accelerating population growth. As new residents moved into the

[10] U.S. Bureau of the Census, *Population of the United States in 1860; Agriculture in the United States in 1860.*

[11] Since the late 19th century, bright leaf tobacco has been the primary crop in northern Orange County and remains the third largest component of the County's agricultural economy, after nursery-greenhouse and dairy (grade A milk). Approximately 15 farmers still grow tobacco; all are located in the northern part of the County. Sorghum was also raised and processed in the Carr community, in the extreme northwest part of Cedar Grove Township during the turn of the twentieth century.

rural parts of the County, farmland was converted to other uses. The amount of land devoted to agriculture decreased from 70 percent in 1950 to 28 percent in 2002, and the number of farms decreased from a post-World War II high of more than 2000 in 1950 to 631 in 1974.[12] Since the 1970s, however, the number of farms has remained relatively constant. See Figure 6-1.

FIGURE 6-1: ORANGE COUNTY AGRICULTURE (1959-2002)



	1959	1964	1969	1974	1978	1982	1987	1992	1997	2002
Land In Farms	145,9	131,5	110,7	87,81	87,34	90,57	81,10	67,49	72,67	71,01
# of Farms	1,418	1,115	895	631	564	599	522	433	577	627

Source: 1959-2002 Census of Agriculture, US Department of Agriculture

CURRENT DATA

Agriculture remains a significant component of Orange County's economy. The County had $32.7 million gross sales in agriculture in 1996, and the number of local farms grew by 8 percent from 1997 to 2002. The average farm size dropped from 156 to 113 acres, but this pattern is consistent with the emergence of organic farming, which often requires less land and can be a more compatible neighbor to residential uses.

TRENDS

[12] The amount of land in production dropped from 145,968 acres in 1959, to 81,100 acres in 1987, to 67,500 acres in 1992 before leveling off at 71,000 acres in 2002. This fifty year decline in farming activity is an almost 75,000 acre (74,968) decrease of land in some form of farm use. Source: North Carolina Department of Agriculture and Consumer Services – *2002 Census of Agriculture.*

Revenues from commodities that traditionally formed the basis of the agricultural economy such as tobacco, grains, dairy and beef cattle are on the decline. But revenues from specialized sectors such as commercial horticulture, fruits and vegetables (including organics), and equestrian activities are increasing.[13] Other sources of future farm income will likely come from timber harvesting, forestry, and from the conversion of former dairy and tobacco operations to feed-based hay production.[14] See Figure 6-2.

FIGURE 6.2: INCOME CHANGE FOR MAJOR AGRICULTURAL PRODUCTS (1996-2005)

	2005 vs 1996	2005 vs 2004
Milk	- 32%	- 5%
Tobacco & Field Crops	- 83%	- 65%
Eggs	- 5%	- 20%
Nursery & Greenhouse	+ 122%	+ 7%
Livestock	+ 93%	+ 24%
Fruits & Vegetables	na	+ 46%
Forestry	+ 62%	- 4%

Source: 2007 State of the Economy Report, Economic Development

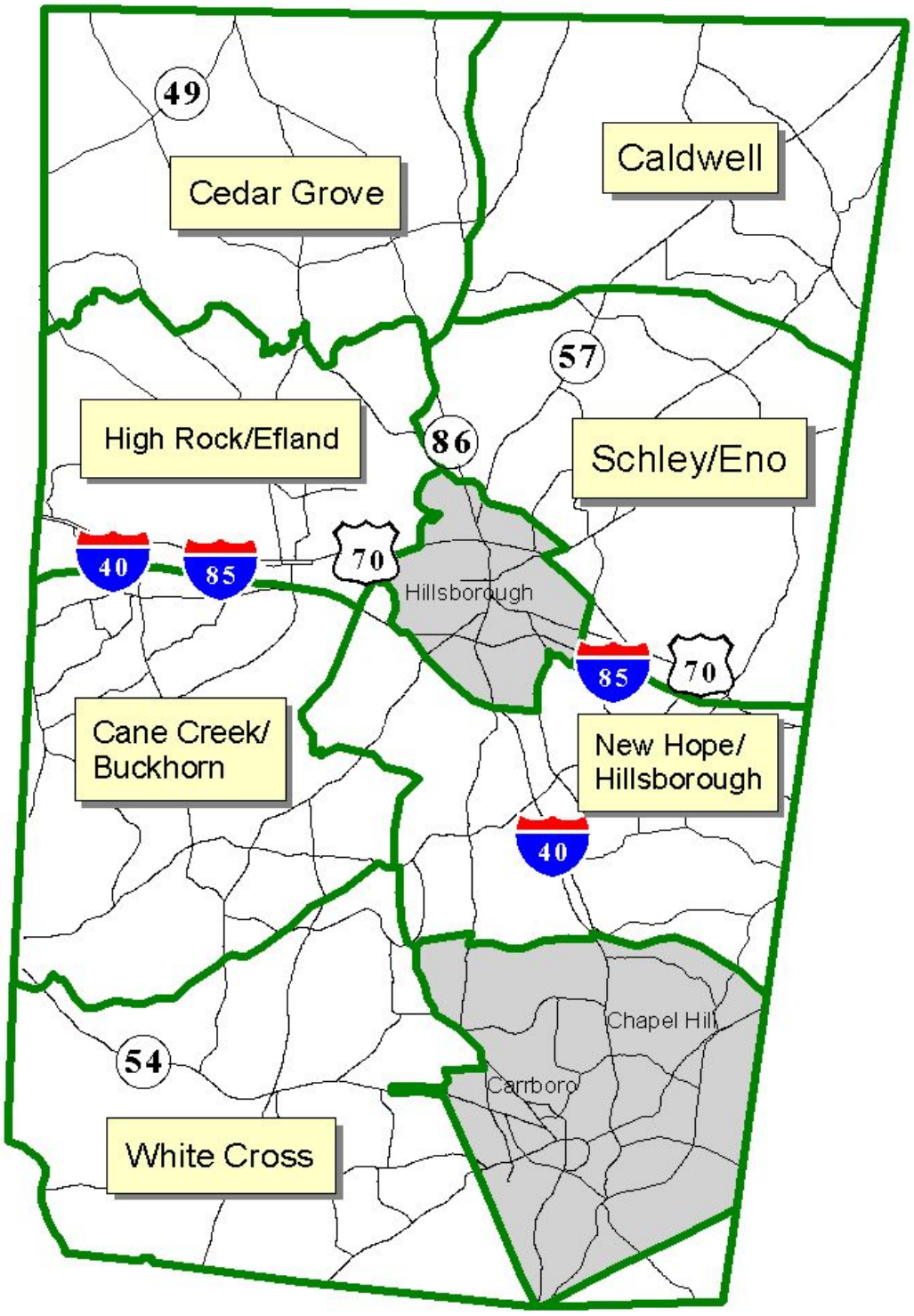
This transition from traditional commodity operations to more diverse organic and small-scale sustainable farming is occurring nationwide, and in many ways Orange County is ahead of the curve. In 1992 Orange was one of the first counties in North Carolina to adopt a Voluntary Farmland Preservation Plan that established a voluntary agricultural district (VAD) program and created the Agricultural District Advisory Board (later renamed the Agricultural Preservation Board). By January of 2009, almost 2,270 acres on eleven farms will be enrolled in the VAD program. In 2000, Orange County established the first comprehensive county land acquisition program in North Carolina, the Lands Legacy Program. By 2007 the Lands Legacy program had acquired more than 1,200 acres of farm conservation easements--

[13] This also includes new efforts to market products directly to consumers, such as community supported agriculture, roadside farm stands, pick your own operations, and farmers markets.

[14] Drought conditions over the last few years have brought new challenges to the farming community, particularly finding sources for hay for beef cattle farmers, who traditionally grow their own. Many farmers have had to sell cattle ahead of schedule in order to limit their losses.

limiting the development potential on those lands in perpetuity.[15] Both of these successful programs preserve farmland voluntarily. See Map 6-4.

[15] With a conservation easement, the County or other conservation agency purchases the development rights, while the farmer retains ownership of the land and is compensated for agreeing to convey rights in the property, including some or all of the development rights.



MAP 6-4: ORANGE COUNTY VOLUNTARY AGRICULTURAL DISTRICTS

The County has promoted local agriculture in other ways too. In 2002, through a collaborative effort with the Economic Development Commission and Cooperative Extension Service, Orange County created a new position – Agricultural Economic Development Coordinator – to assist farmers with business planning, marketing, and brokering agricultural goods and services. Information on local farmers is now published in a directory, *LOCAL HARVEST*, and available online at www.orangecountyfarms.org. The agricultural economic development coordinator has been involved with the creation of a farm incubator program, the development of a value-added processing center, the enhancement of local farmers markets and related infrastructure, and continues to collaborate with other farm agencies for special programs.

February 2008 marked the tenth anniversary of the annual Orange County Agricultural Summit. For the last few years, summits have included presentations from grocery stores and restaurant managers seeking locally grown products for their businesses. Orange County is uniquely positioned to pursue opportunities for agriculture created by an affluent, highly educated populace, interested in high-quality farm produce and services. Residents desire locally grown goods for a variety of reasons. Some prefer the nutritional benefits of fresh food.[16] Others feel a personal commitment toward broader issues of reducing dependency on foreign markets and contributing to the local economy often summarized in the slogan "think globally, act locally." Still others are looking for a farm connection, a way to teach children where food comes from and an opportunity to experience the sense of community often associated with farming.

The long-term viability of this service-oriented agriculture is by no means assured, but it may present the best new market for traditional farmers looking for ways to diversify and supplement their income. Many farmers are already taking advantage of these new consumers, pursuing new and innovative ways to market their goods through community supported agriculture (CSA) programs, farmers markets, individual farm stands, and pick-your-own operations. Local institutions remain another, relatively untapped, market for local products. The County is continuing its efforts to encourage the public school system, the University of North Carolina at Chapel Hill, and the UNC-hospital to purchase local food products whenever possible and is working to develop the infrastructure needed to help facilitate this exchange.

Existing programs such as Future Farmers of America (FFA) and 4-H are teaching young people about different aspects of agriculture. North Carolina State University in Raleigh offers several programs for

[16] Studies have shown that practical experience with fresh food (growing and harvesting, eating seasonally, preserving and cooking) has a positive impact on dietary habits. The 5-10 day transportation and storage lag between production and consumption leads to losses of 30-50% in some nutritional constituents. Source: *Health Benefits of Urban Agriculture,* a paper from the Community Food Security Coalition's North American Initiative on Urban Agriculture, authored by Anne C. Bellows, PhD Rutgers, The State University of New Jersey, Katherine Brown, PhD Southside Community Land Trust, Jac Smit, MCP The Urban Agriculture Network.

students interested in farming and soil conservation. In late 2007, the southeast regional office of the American Farmland Trust relocated to Orange County, where it shares a new office with the North Carolina Farm Transition Network (NCFTN). NCFTN provides services to farmers wishing to plan for the future such as estate planning and developing a "land link."[17] As farmers continue to age, land links may become an invaluable way to keep active farms in operation.[18]

Farming is an economic activity, driven by individual investment decisions based on the productive and viable use of land. The changing character of agriculture in Orange County is inevitable. Whether the changes are positive – enhancing the role of agriculture in the local economy, or negative – resulting in the loss of rural character and a traditional way of life, remains a question. But, with a growing population to feed in the coming years, productive farmland should be viewed as an important resource worthy of protection.

Many of the challenges that local farmers face are not unique to Orange County. The American Farmland Trust and other conservation organizations have spent more than twenty years researching different strategies to preserve productive farmland nationwide. Some of these tools require special legislation not available in North Carolina, but many are available and are already in use in Orange County. The following provides a sample of some key county programs in place or in progress.

EXISTING PROGRAMS & STUDIES

VOLUNTARY AGRICULTURAL DISTRICTS

In 1985, the North Carolina General Assembly passed the Farmland Preservation Enabling Act authorizing counties to establish farmland preservation programs including voluntary agricultural districts (VAD). Farmers who qualify for the program enjoy recognition and protection against nuisance suits in exchange for agreeing to sustain agriculture in their district for a period of ten years.[19] The Act also created the North Carolina Farmland Preservation Fund and enabled counties to

[17] A land link partners a young prospective farmer with an experienced farmer. The experienced farmer provides hands-on training and may eventually sell the farm to the apprentice once he or she is ready to retire.

[18] The average age of an Orange County farmer in 1997 was 56. Source: N.C. Department of Agriculture and Consumer Services, *1997 Census of Agriculture.*

[19] Participants sign an agreement with the County, filed with the Orange County Tax office and the local office of Natural Resources Conservation Service of the USDA. A landowner may withdraw from the program, however, by submitting written notice to the Board of County Commissioners. In 2005, the County reduced the minimum farm size for participation in the VAD program from 80 acres to 20 acres and divided the County into seven districts: Cedar Grove, High Rock/Efland, Cane Creek/Buckhorn, White Cross, New Hope, Schley/Eno and Caldwell. (See Map 6-4.) Instead of designating each farm as its own individual district, participating farms are now assigned to a district based on location.

develop purchase of agricultural conservation easements programs.[20] Orange County adopted its Voluntary Farmland Preservation Program Ordinance (VFPPO) in 1992, creating the framework for the local VAD program.

LANDS LEGACY PROGRAM

The Lands Legacy Program provides the mechanism for the County to acquire or otherwise protect prime or threatened farmland or forestland before it is damaged or lost to incompatible development activities. Using the program, the County can purchase or acquire through donation agricultural conservation easements to keep farmland in production.[21] In 2002, the County acquired its first farmland conservation easement for the Walters property in Cedar Grove Township, using funds from the (then) North Carolina Farmland Preservation Fund. Many of these projects have been in partnership with Orange Soil and Water Conservation District and other conservation entities.

The Voluntary Agricultural District and the Purchase of Development Rights (PDR) components of the Lands Legacy Program are two successful programs for preserving agricultural lands. The County is also considering a Transfer of Development Rights (TDR) program. In a transfer of development rights program the development rights are reduced or extinguished for one parcel and transferred to another parcel, which can serve to direct development away from important agricultural areas to areas more suitable for growth.

FLEXIBLE DEVELOPMENT

Sometimes farmers strategically sell a section or sections of land in order to retain their larger complex. Flexible development standards were adopted in 1996 to preserve important natural and cultural features, including scenic views and active farmland, while still providing an opportunity for farmers to sell or develop sections of their property. Prime farmland and prime forestland must be identified as part of concept plan submittal, and at least 33 percent of such resources must be set aside as conservation areas. County staff and some local developers are exploring the possibility of leasing some or all of the 33 percent of open space for farm use. In 2006 the County adopted amendments to reduce density and increase lot sizes in the rural sections of the County to ease development pressures and nuisance related issues between existing farmers and new residents.

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[20] In a later amendment, the General Assembly created a matching mechanism for distribution of Farmland Preservation Trust Fund monies, with preference to counties with a countywide farmland action plan.

[21] A conservation easement is a voluntary legal agreement between a landowner and a land management agency that limits some of the owner's uses of the property in order to achieve conservation purposes. It is an individually tailored legal agreement by which a property owner typically conveys development rights in return for tax credits or compensation, while still holding ownership of the land.

PRESENT USE VALUE TAXATION

The present use value taxation program is a State program designed to tax land based on its use rather than its market value. Agricultural designation is based on the North Carolina State Use Value Law, which requires ten acres of cropland and average gross sales of $1,000 per year for the preceding three years. (Some smaller tracts of five acres may get use value with certain horticultural crops; forestry use requires twenty acres and a plan on file with the Natural Resources Conservation Service or North Carolina Forest Service.) The County Tax Assessors Office defines "qualifying" farmland based on certain criteria such as acreage, soil type and use. For many farmers enrollment in the present use program is the difference between staying in farming and selling out.

COST OF COMMUNITY SERVICES

To understand the fiscal impact of programs such as present use-value taxation, the American Farmland Trust (AFT) has studied the cost of public service needs (water/sewer, schools, fire and police) for residential development compared to farmland. In 2006, the AFT conducted a Cost of Community Services Study for Orange County, and determined that on average, for every $1 in revenue raised by residential development, the County must spend $1.24 on services. For each dollar of revenue raised by farm, forest, or open space, Orange County only spends $0.72 cents on services. Based on this study, which is consistent with nationwide trends, most residential development does not pay for itself; the exception is typically very high-end housing or housing served by public water and sewer systems.

POTENTIAL PROGRAMS AND INITIATIVES

ENHANCED VOLUNTARY AGRICULTURAL DISTRICTS

In 2005 the General Assembly amended the Farmland Enabling Act to include an economic development component. Renamed the Agricultural Development and Farmland Preservation Enabling Act and the Agricultural Development and Farmland Trust Fund, this new legislation established a new category of districts called Enhanced Voluntary Agricultural Districts (EVAD). The new districts offer additional benefits for farmers, who sign an irrevocable conservation agreement for at least ten years.[22] The revised trust fund supports agricultural development projects as well as traditional farmland preservation programs such as agricultural easements.

TRANSFER OF DEVELOPMENT RIGHTS (STRATEGIC GROWTH & RESOURCE CONSERVATION)

While TDR programs have been successful components to farmland preservation efforts in some states, legislative limits have prevented

[22] Orange County is reviewing the additional benefits linked to the EVAD program and will likely pursue another amendment to its ordinance in the future, to provide for this new type of district.

them from becoming fully realized in North Carolina. Local farm boards first considered the program as an option for Orange County in, "To Preserve Our Farms Final Report of the Orange County Agricultural Task Force," prepared in the 1980s. In 2007, the County began to consider voluntary TDRs again and hired a consultant to evaluate the feasibility of such a program as part of a potential farmland protection and growth management strategy.[23]

AGRICULTURAL SUPPORT ENTERPRISES

The Planning Department, Economic Development Commission, Cooperative Extension Service, Soil and Water Conservation District, and the Environment and Resource Conservation Department staffs have been working together to examine County regulations regarding farm related uses that are outdated or unnecessarily onerous. Proposed is a series of amendments to the Zoning Ordinance that better accommodates the needs of farmers looking for ways to diversify and generate more income. The amendments target uses that provide farmers with supplemental revenue from agricultural products, businesses that are logical extensions of the farm use, and services related to agriculture. A new agricultural support enterprises manual (users guide) is also being proposed to make the application process more user-friendly.

FARM AGENCIES & ADVISORY BOARDS

There are too many agencies at the local, state, and federal level that offer services and programs for farmers to list in this chapter. The Agricultural Preservation Board (APB) is a County-staffed board that provides recommendations to the Board of County Commissioners, which appoints its members.[24] The other boards are made up of elected and appointed members, who serve their particular constituency. The commodity organizations, such as the Orange-Durham Cattlemen's Association (ODCA), the North Carolina State Beekeepers Association, Inc., and the Orange County Landscapers Association also hold regular meetings and support local farmers. The four main agricultural boards for Orange County are listed in the table below. While the farm agencies and their boards have worked somewhat independently from one another in the past they will need to work together in the future, to engage the farming community to develop a long-term vision for farming and to see it come to fruition.

[23] TDRs may offer an alternative less expensive option to PDRs but determining the most suitable sending and receiving areas can be challenging.

[24] The Economic Development Commission, Planning Board, Historic Preservation Board and the Commission for the Environment, may also collaborate with the APB for specific projects.

TABLE 6-1: FARM AGENCIES AND ADVISORY BOARDS

NAME/AFFILIATION	MISSION STATEMENT
Agricultural Preservation Board (APB) / Orange County Environment & Resource Conservation Department	A twelve-member commission that advises the Orange County Board of Commissioners on matters pertaining to local agriculture. Offers recommendations for Voluntary Agricultural District applications and changes to Voluntary Agricultural Protection Ordinance.
Orange Soil & Water Board of Supervisors / Orange County Soil & Water Conservation District/NRCS	A five-member board that establishes and implements programs to protect and conserve soil, water, prime and unique farmland, rangeland, woodland, wildlife, energy and other renewable natural resources on local, non-federal lands. The Board of Supervisors administers the district; raises and budgets districts funds, and reports to the public; and coordinates assistance and funding from federal, state and local government district associations.
Farm Service Agency County Committee (for Durham & Orange Counties / Orange-Durham Counties FSA	The five-member committee that provides oversight to staff regarding federal programs for local farmers. Committee members offer their experience and judgment and are involved with FSA decisions on producer appeals, commodity price support loans and payments, yields, conservation programs, and farm disaster assistance.
Cooperative Extension Advisory Council / Orange County Cooperative Extension Service	The twelve-member board that provides oversight to the local Extension Service office and offers ideas on new objectives and programs. The membership represents a cross-section of the extension service programs, including the farming community, landscapers/horticultural farmers, 4-H programs, extension and community association programs, and local school systems.

6.4.1.2. ORANGE COUNTY'S AGRICULTURAL NEEDS

The introductory section of this chapter identified three components vital to the long-term survival of agriculture in Orange County: 1) keeping productive soils in operation; 2) making farming more profitable; and 3) producing new farmers. The preceding section provided a sample of some of the more popular programs and initiatives already available, or in progress. Since farmers typically prefer voluntary and incentive-based options to regulatory mandates, the role for Orange County government in the future of local agriculture is still being determined. Future efforts to support agriculture and forestry should consider the following needs.

1. Productive soils need to be conserved and protected from development.

- Agricultural priority areas should be identified, and areas of contiguous prime and active agricultural and forestlands should be protected as "communities." The conservation of "critical mass" bolsters the likelihood of success for farm-oriented communities and enhances the opportunities for inter-farm collaborative marketing.

- The County needs to continue, and improve existing programs to preserve farmland through voluntary means such as conservation easements and voluntary agricultural districts.

- The County should explore ways to make farmland available and affordable for new farmers (young and new to farming.)

2. Additional tax benefits at the County and State level may be needed to help keep farming viable. Some of these benefits may require pursuing special legislation, or statewide legislation.

   - The County should pursue a farmer-to-farmer transfer program that would exempt the buyer from the rollback if the property stays in farm use.

   - The County should explore property tax deductions on farm buildings and machinery.

   - The County should pursue property tax deductions on land in donated easements and on land enrolled in voluntary agricultural districts.

   - Farmers should also be encouraged to seek out special programs that provide innovative financial and technical assistance for farm buildings such as the Orange County Local Landmark Program[25] or the National Trust's Barn Again! Program. The County may also wish to follow New York's example and pursue a state rehabilitation tax benefit for barns.

3. Mechanisms and local government program offerings that address profitability and augment agricultural infrastructure should be pursued adopted, and promoted. Local farmers need access to business planning. This type of assistance can also help verify if the crops they are spending the most money on are really bringing in the highest return.

   - Orange County Government should continue to examine and modify regulations that may be unnecessarily onerous. The County may wish to review state regulations as part of this effort and consider requesting special legislation, as appropriate.

[25] This program provides a potential property tax deferral for historic structures, including houses and farm structures.

- Orange County should continue to identify suitable locations for agricultural facilities--processing centers, community kitchens, demonstration tracts, community gardens and the like.
- The county needs a better link between producers and consumers, particularly for potentially large-scale buyers such as restaurants, institutions, and grocery store chains. This is an area where government can help through brokering programs, the dissemination of information, and the creation and management of websites and directories.
- The County should also encourage small-scale farmers to pursue more cooperative ventures and seek more regional programs to compete with corporate operations.

4. There is a need for more inter- and intra-governmental cooperation with regard to agricultural and forestry programs.
   - The County needs to include the municipalities in a countywide vision for agriculture to better accommodate farms located in the towns' extra territorial jurisdictions.
   - County departments should develop more cooperation among each other and among the various agricultural agencies that serve local farmers. Farm programs often remain isolated from county regulatory programs administered through the Planning Department and Environmental Heath.
5. The County needs to teach the next generation about farming and encourage some to pursue farming as an occupation.
   - All local residents should have an appreciation of the farming community, an understanding of where their food and other agricultural products come from, and the nutritional benefits of eating local foodstuffs.
   - Farm-related education should go beyond the classroom and provide hands-on training.
   - One current example of inter-governmental cooperation is the prohibition of open burning on ozone alert days. Other opportunities may exist for the County and Division of Forest Resources to coordinate, such as in the promotion of forest management plans and best management practices, and notification to adjoining property owners on controlled burns.
6. County residents should develop a more holistic view of agriculture and a better understanding of the global implications of their lifestyle decisions, particularly as consumers.
   - In 1929, Governor O. Max Gardner launched the Live-At-Home Program "for its main purpose the encouraging of all of us engaged in farming to grow for ourselves and to supply ourselves with all the food and feed-stuffs and livestock products necessary for family and farm consumption the year

round. It would also encourage us to grow enough surplus to supply the small towns and the cities which are our logical markets; and it would encourage the city folks of this state to give a preference to the North Carolina farmer in their purchase of the supplies which he grows."[26] Today the Goodness Grows in North Carolina program promotes this same concept of buying locally grown products.

- In an effort to address increasing petroleum demands and increasing oil prices, farmers and non-farmers should reconsider their energy usage—building and vehicle needs (cars and farm machinery). Local farmers should also explore the potential for growing crops suitable for the production of alternative fuels.

6.4.1.3. OBJECTIVES

Objectives are intermediate steps toward reaching a goal. The following objectives are intended to help achieve Orange County goals pertaining to agricultural resources—specifically Goals 2, 3 and 8, which are restated below. The timeframes for the objectives conform to the guidelines discussed in *Section 1.4: Administration and Implementation Guidelines.*

Natural & Cultural Systems Goal 2: Economic viability of agriculture, forestry, and horticulture and their respective lands.

Objective AG-1:
Recognize and support the right to farm. Protect farm operations from incompatible adjacent land uses or activities that will adversely affect the long-term agricultural investment in land and improvements. (See also Land Use Objective LU-3.4.)

Objective AG-2:
Pursue new measures (some of which may require special legislation) to make farming more profitable, such as additional programs for tax assistance. (See also Economic Development Objective ED-4.4.)

Objective AG-3:
Develop programs and associated infrastructure facilities to make local farms more economically viable, including local farm product processing, development of a distribution center, and marketing initiatives. (See also Land Use Element Objective LU-3.4 and Economic Development Objective ED-4.4.)

Objective AG-4:
Minimize the negative impacts of future public projects (such as roads, utility lines, etc) on farming operations and productive farmland. Conduct public review of projects proposed by entities

[26] *Emergency Relief in North Carolina. A Record of the Development and the Activities of the North Carolina Emergency Relief Administration, 1932-1935.* North Carolina Emergency Relief Commission, State Administrator, Mrs. Thomas O'Berry. Edited by J.S. Kirk, Walter A. Cutter and Thomas W. Morse. Raleigh: Edwards and Broughton.

that have the power of eminent domain, and consider the impact of such actions on agricultural activity.

Natural & Cultural Systems Goal 3: Infrastructure and support systems for local and regional agriculture.

Objective AG-5:
Teach the next generation about farming, support apprentice options, and promote the pursuit of farming as an occupation. Develop community awareness of farming.

Objective AG-6:
Develop a single clearing-house information source for current agricultural topics, agricultural programs, and events sponsored by Orange County and/or for local farmers in conjunction with the Orange County Farms website. (See also Economic Development Element Objective ED-1.1.)

Objective AG-7:
Complete an examination of the local food system, and create a regional sustainable food network, whereby local residents consume 10% locally grown and produced products in five years.

Objective AG –8:
Encourage the use and production of natural fuel alternatives to petroleum-based products and pursue new types energy sources.

Natural & Cultural Systems Goal 8: Networks of protected natural, cultural, and agricultural lands.

Objective AG-9:
Encourage farmers to continue to be model environmental stewards and promote good forest stewardship management practices using state and federal programs that provide financial assistance. (See also Natural Areas, Wildlife Habitat, and Prime Forests Objective NA-8.)

CONCLUSION

Ultimately, the success of economically viable agriculture in Orange County is dependent upon education and understanding between farmers, citizens, and government. The rights and interests of each should be respected and nurtured. Particularly, it requires the realization that prime farmland is a finite resource, and that farmers must be able to make a living off the land. Without economically viable agriculture, much of our rural character and its associated benefits to the community will be lost.

6.4.2. AIR AND ENERGY RESOURCES

In Orange County, air quality and energy consumption stand out as pressing environmental issues, as County and regional populations continue to expand.

Awareness and concern about air quality and climate change in Orange County is a fairly recent environmental issue when compared to water resources and natural areas. The rapid population growth of the Research Triangle area in the last three decades and the transportation increases associated with this growth are the primary factors that have raised consciousness about air and climate issues. Over the last decade, this has manifested itself in exceedances in local ground-level ozone. This has led to an increase in knowledge and awareness about the local implications of global climate change. With this new knowledge, ground-level ozone and the local contribution to greenhouse gas emissions and global climate change have become significant local issues. Localities like Orange County have begun to assess and evaluate their own role in creating more local and regional ozone pollution and attributing to global climate change.

By far the most significant component of air quality concern in Orange County is the pollution generated from transportation sources. The number of vehicle miles traveled has increased significantly in the last decade, and a countywide greenhouse gas emissions inventory has found that half of the County's greenhouse gas emissions are from the transportation sector. Orange County has the potential for use of alternative energy sources including solar, biodiesel, grain-based fuels and waste-derived fuels.

6.4.2.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

ATMOSPHERE, CLIMATE AND AIR QUALITY

Declining air quality can contribute to respiratory illnesses such as asthma, aggravate existing heart and lung diseases, impair visibility, contribute to global warming, and pollute aquatic systems.

The North Carolina Division of Air Quality (NCDAQ) currently produces the only local inventory of air emissions, dividing sources into five major categories based on how they are released into the atmosphere:

- **Area** sources are small stationary sources such as gas stations, dry cleaners, and repair shops that alone are not very large, but combined can be significant sources. NCDAQ typically estimates these emissions from per capita or per employee emissions information.
- **Biogenic emission** sources are living organisms such as trees, plants, and cattle. In air quality modeling, emissions from biogenic sources are viewed as relatively constant from year to year.
- **Mobile** sources include automobiles and trucks. The NCDAQ's estimates are based on estimated vehicle miles traveled within Orange County.

- **Nonroad mobile** sources come from equipment such as lawn mowers, outboard engines, airplane emissions, agricultural equipment and construction machines.
- **Point** sources are largely stationary sources like factories and electric power plants. Currently, there are only a few point sources of emissions in Orange County.

The NCDAQ collects information on the kinds of pollutants released into the air. These pollutants can be assigned to the following six categories:

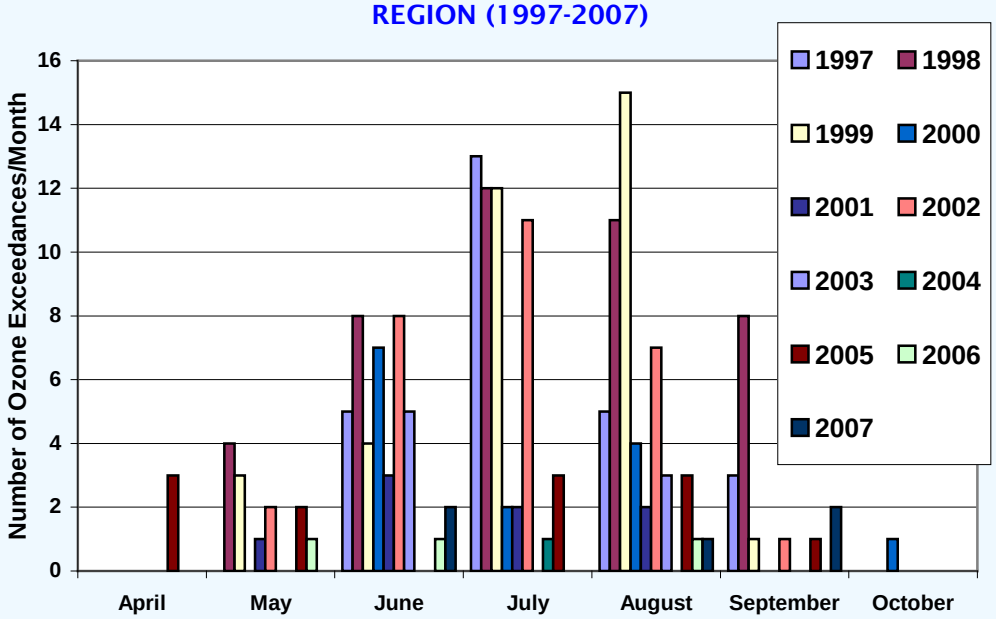
- **Carbon Monoxide** (CO): A colorless, odorless gas that forms when carbon in fuel does not burn completely.
- **Hazardous Pollutants**: A wide range of hazardous compounds like arsenic, chlorine, and mercury.
- **Nitrogen Oxides** (NOx): A gas formed when fuel is burned at high temperatures in vehicles and industry. NOx is the primary contribution to ground-level ozone production in North Carolina.
- **Particulate Matter** (PM): A term for particles such as dust, dirt, soot, smoke and liquid droplets. PM is defined by the size of its diameter: PM10 is less than or equal to 10 micrometers, PM2.5 is less than or equal to 2.5 micrometers, and all sizes are included in the total amount of suspended particulate matter (TSP). There has been greater concern about PM2.5 recently, because these fine particles penetrate deeper into the lungs.
- **Sulfur Dioxide** (SO2): A gas that is released when fuels such as coal and oil are burned.
- **Volatile Organic Compounds** (VOC) and Reactive Organic Gases (ROG): Hydrocarbon compounds such as volatile fuels and solvents that contribute to ground-level ozone production. VOCs include many of the same compounds as ROGs, but ROGs are only those compounds active in atmospheric photochemical reactions.

HOW CLEAN IS THE AIR IN ORANGE COUNTY?

In 2004, the U.S. Environmental Protection Agency (EPA) designated Orange County and several other neighboring counties as "nonattainment areas" under the EPA's revised ambient air quality standard for ozone, meaning that the region's air quality did not attain the federal standard for ozone. In late 2007, however, the EPA approved a request from the State to redesignate the Raleigh-Durham-Chapel Hill area to "attainment" and it is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017.

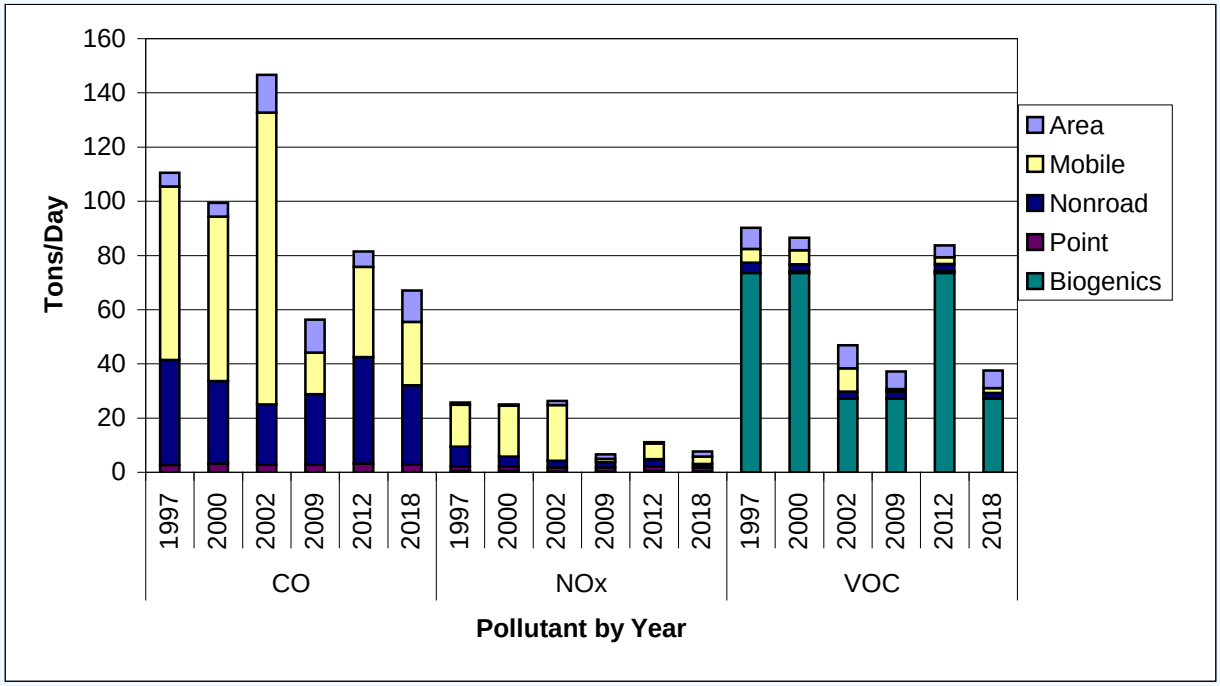
The environmental indicators listed below and shown in the following graphics characterize air quality in Orange County.

FIGURE 6-3: MONTHLY TRENDS IN OZONE EXCEEDANCE DAYS IN THE TRIANGLE REGION (1997-2007)



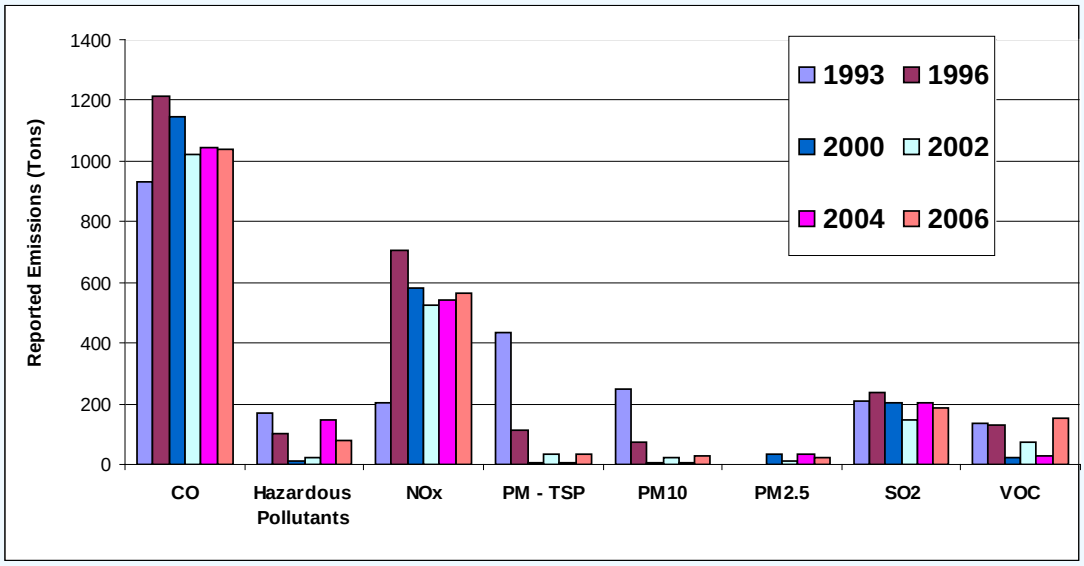
Source: North Carolina Department of Air Quality (NC DAQ)

FIGURE 6-4: ESTIMATED AND PROJECTED EMISSIONS BY SOURCE (1997-2018)



Source: North Carolina Department of Air Quality (NC DAQ)

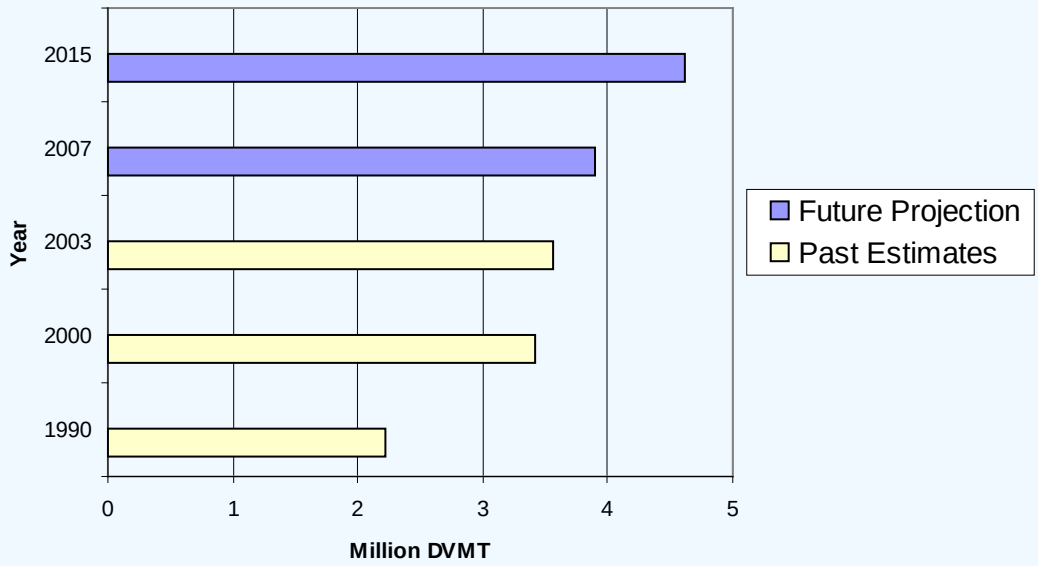
FIGURE 6-5: TRENDS IN POINT SOURCE AIR POLLUTANTS (1993-2006)



Source: North Carolina Department of Air Quality (NC DAQ)

Additionally, the following transportation-related indicator impacts air quality in Orange County:

FIGURE 6-6: CHANGE IN DAILY VEHICLE MILES TRAVELED (1990-2015)



Source: North Carolina Department of Transportation (NC DOT)

CLIMATE CHANGE AND ENERGY RESOURCES

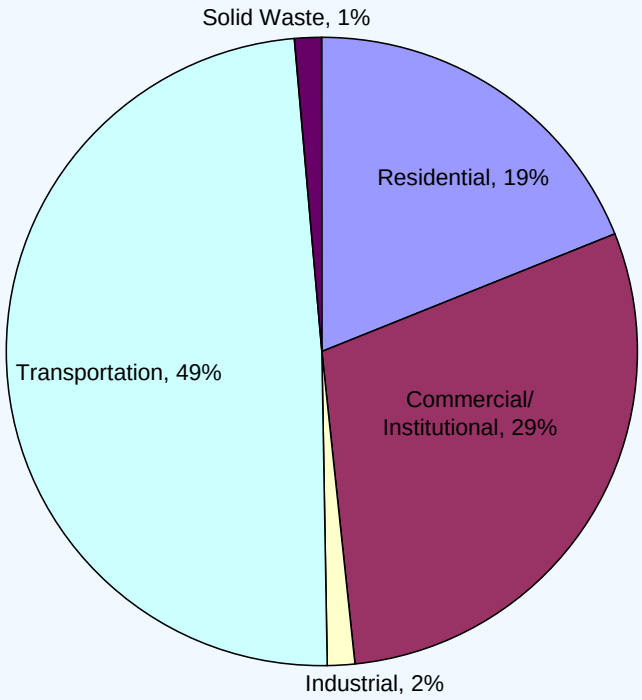
Orange County recognizes that greenhouse gases contribute to global warming. Fortunately, local governments can play a meaningful role in addressing climate change by adopting measures and programs that work to ameliorate impacts on the County's ecosystem. These programs and measures will also serve to address many of the air quality issues listed in the previous section – and advance toward the goal of becoming a sustainable community.

There are good local examples of air quality and emissions planning and implementation efforts. The City of Durham is a participant in the International Council for Local Environmental Initiatives (ICLEI)[27] Cities for Climate Protection (CCP) campaign. The CCP campaign enlists cities to adopt policies and adopt measures to reduce greenhouse gas emissions. Durham County developed a greenhouse gas plan that will help the City and County fulfill their commitments to climate change mitigation. The International Council for Local Environmental Initiatives used a special assessment tool to quantify the link between green house gas emissions in the area and Durham's air emissions planning. The assessment identified additional strategies for improving local air quality to be added to the plan.

Orange County, Chapel Hill and Carrboro initiated a Greenhouse Gas Emissions Inventory and Reduction Action Plan project in 2006. As a part of this project, which is currently underway, a 2005 baseline inventory of greenhouse gas emissions in Orange County was conducted. The inventory found that 49%, or nearly half of the community emissions, come from the transportation sector. The commercial/institutional and residential sectors contribute 29% and 19% respectively. The following figure summarizes the community emissions inventory for the county as of 2005:

[27] ICLEI is an organization of local governments committed to sustainability. For more information on this organization, refer to their website www.iclei.org .

FIGURE 6-7: 2005 COMMUNITY GREENHOUSE GAS EMISSIONS BY SECTOR



This project will eventually evaluate potential green house gas reduction measures, set a reduction target for the communities, and offer actions steps that can be taken to achieve the desired reduction.

TRENDS

- Orange County (as part of the Triangle region) was **designated "non-attainment" for ground-level ozone** in 2004. In late 2007 the area was redesignated "attainment" and it is now in an attainment maintenance program to follow a State plan for maintaining the ozone standard through 2017. However, it should be noted that ozone trends are greatly affected by summer weather and climate. There has been an improvement in ground-level ozone, due to multi-state agreements to reduce NOx emissions from power plants. On the other hand, if the U.S. Environmental Protection Agency pushes for more stringent ozone levels in coming years, ozone levels may again become a pressing issue.

- **Greenhouse gas emissions and air quality** are being impacted by local and global actions, and especially the impacts of increasing transportation on air quality.

- There is a growing interest in **locally-generated alternative energy resources**, whether at an individual or community level. Through local initiatives and new state programs, alternative electricity generation from air, solar, and water sources are being used and/or explored by County citizens, local advocates, and some builders.

- Orange County, its municipalities, and some employers (such as UNC) have taken actions in the last decade to improve fuel efficiency and reduce emissions by acquiring **alternative fuel or low-emission vehicles** for their fleets. County citizens have also shown interest in alternative fuels, as witnessed by the growing trend of electric hybrid and other vehicles now registered.

- Awareness of the rising cost of energy has led many local governments, institutions and businesses to begin taking actions to **improve energy and water efficiency and reduce waste**, especially in new structures.

- Orange County has aggressively worked to **reduce landfill waste**, with a current reduction of approximately 42% of waste diverted from the waste stream through recycling and other measures. The County is also planning for the possible use of methane from the County landfill for energy production.

6.4.2.2. ORANGE COUNTY'S AIR AND ENERGY NEEDS

1. There is increased need and interest at the state and local level to **promote alternative and sustainable fuels and power generation options**. Programs to better link citizens, businesses and possible alternative energy providers are needed.

2. The county will **need to comply with stricter air requirements** that will likely be coming in future years, and maintain necessary reductions while still encouraging economic growth. (See also Economic Development Element.)

3. The county should continue taking local actions, and be part of appropriate regional initiatives to meet or perform better than **Federal ozone standards.**

4. With no local measure of ozone levels, **installation of an ozone monitor in Orange County is needed**.

5. A plan is needed to first **assess and then implement the ongoing countywide greenhouse gas emissions inventory and action plan target reductions** (working individually and collectively toward the target reductions).

6. With transportation the single major air quality and climate issue, **identification of new bus lines** and implementation of additional public transportation is needed.

7. An **accounting of Orange County agricultural resources** is needed, to help assess 1) the potential for heat and power generation, 2) the potential for distribution, and 3) potential customers for power generated and ancillary products.

8. An **accounting and assessment of air (and water) pollution impacts** in Orange County (both increases and decreases) is needed. (Please see also Water Resources chapter).

9. The **management and reuse of landfill gas** from the Orange County landfill is needed.

10. The County needs to determine how to **foster participation in green energy programs**, such as installation incentives for solar generation/solar tempering in residential construction, use of demand side management, and energy efficiency upgrades to schools and older buildings.

11. Finally, the County needs an **inventory of funding opportunities, programs, credits**, etc., that can be used to improve energy efficiency and generate sustainable power. The County needs to identify ways to facilitate the use of these options by County businesses, institutions, and residents.

6.4.2.3. OBJECTIVES

Objectives are intermediate steps toward reaching a goal. The following objectives are intended to help achieve Orange County goals pertaining to air and energy resources—specifically Goal 1, which is restated below. The timeframes for the objectives conform to the guidelines discussed in *Section 1.4: Administration and Implementation Guidelines.*

Natural and Cultural Systems Goal 1: Energy conservation, sustainable use of non-polluting renewable energy resources, efficient use of non-renewable energy resources and clean air.

GREENHOUSE GASES

Objective AE-1:
Assess and implement the current countywide greenhouse gas emissions inventory and action plan target reductions.

Objective AE-2:
Adopt a carbon reduction plan to reduce County green house gas emissions by a target to be determined by the ongoing Greenhouse Gas Emissions Study by the year 2020.

OZONE

Objective AE-3:
In addition to local actions, the County should continue to join appropriate regional initiatives meet or perform better then Federal ozone standards.

Objective AE-4:
Work towards the installation of an ozone monitor in Orange County.

Objective AE-5:
Develop an accounting and assessment of air and water pollution impacts in Orange County (both increases and decreases). (See also Water Resources Objective WR-15.)

Objective AE-6 :
Minimize ozone exceedances by a percentage to be determined from future data by the year 2015.

AIR POLLUTION SOURCES - TRANSPORTATION

Objective AE-7:
Expand and enhance Orange County's public transportation system (See also Transportation Objective T-1.6.)

Objective AE-8:
Improve transportation efficiency: promote more public transportation, ride sharing, and alternative transportation such as bicycling and walking. (See also Transportation Objective T-1.1 and Land Use Objective LU-3.2.)

Objective AE-9:
Promote the use of more fuel-efficient vehicles, and vehicles that use sustainable alternative fuels such as biofuel and electricity.

Objective AE-10:
Convert the County's vehicle fleet to fuel efficient and low-emissions vehicles.

AIR POLLUTION SOURCES – BUILDING ENERGY USE

Objective AE-11:
Improve the energy efficiency of buildings through several action steps: 1) upgrade existing buildings, including County and school buildings; 2) educate planning and building inspection officials about the technologies and techniques of energy efficient construction; and 3) encourage the use of LEED "Gold" (or equivalent) as a standard in new construction. (See also Land Use Objective LU-2.7.)

Objective AE-12:
Provide a system for builders, owners, lenders, appraisers, and buyers of buildings to assess the energy efficiency of structures.

ALTERNATIVE ENERGY

Objective AE-13:
Develop an inventory of funding opportunities, programs, credits, etc., that can be used to improve energy efficiency and to generate sustainable power. Identify ways for the County to facilitate the use of these options by County businesses, institutions, and residents.

Objective AE-14:
Develop an accounting of Orange County agricultural and animal-related resources in order to assess: 1) the potential for heat and power generation; 2) the potential for distribution; and 3) the potential customers that could purchase the power generated and ancillary products.

Objective AE-15:
Foster participation in green energy programs such as installation incentives for solar hot water/solar generation/solar tempering in residential or commercial construction. The County should develop programs that will link citizens and businesses with options for alternative and sustainable energy sources.

Objective AE-16:
Develop the use of alternative fuels and waste-derived fuels that will convert landfill, water treatment, agricultural, and wood wastes into heat and electricity.

CONCLUSION

Orange County is on its way to becoming a 21st century sustainable community. This element sets out a strategy for the county to expand on recent successes and identifies goals and objectives to increase energy efficiency, increase the use of non-polluting renewable resources, and improving air quality for Orange County and the larger region. It incorporates a broad approach to attacking the problems of green house gas emissions and global climate change from a local standpoint. Achieving these goals will require coordination and action from the County, the local governments, businesses, and private citizens.

6.4.3. CULTURAL AND HISTORIC RESOURCES

The purpose of the Cultural Resources component of the Natural and Cultural Systems Element is to cultivate a better understanding of local resources, what they are, what makes them significant or valuable, and how to protect them from losing that significance or value. A *Cultural Resource* is a site, building, landscape, or object significant in history or prehistory, architecture, archaeology or culture. *Historic Preservation* is the process of recognizing, recording, or protecting cultural resources ranging from prehistoric archaeological sites to historic structures.[28]

Orange County officials demonstrated their support for preserving cultural resources in 1991 by adopting *An Ordinance Creating the Historic Preservation Commission of Orange County*.[29] This important document established the historic preservation commission and the local landmark program—the mechanism to designate important historic sites and districts with local honorary status. In 1996 the County adopted the *Historic Preservation Element* of the Comprehensive Plan, which outlined a vision for the long-term protection and management of local resources. The 1996 Element also included a lengthy section devoted toward conservation subdivision designs that has been relocated to the *Land Use Element* as part of the 2030 Comprehensive Plan update.

The current Cultural Resources component chapter supersedes the 1996 Element. It provides updated information on different types of cultural resources and available programs to conserve and protect these resources; it also includes a discussion of current trends in the preservation community, an assessment of needs related to local preservation, and a series of goals and objectives to advance preservation efforts countywide.

The formal historic preservation movement in the United States has come a long way since its inception in the mid nineteenth century with the efforts of Ann Pamela Cunningham and the Mount Vernon Ladies' Association to save Mount Vernon. Historians have gradually become more inclusive, recognizing the importance of telling the whole "story." What started as a movement designed to save the best of the best--the oldest house, the most architecturally significant building, the estate associated with a particularly important historical figure--has gradually widened its scope to include the buildings, landscapes, and archaeological sites associated with more diverse communities.

Preservationists and curators have likewise debated (and continue to debate) the best way use cultural resources to interpret the past. What happens to the value of a historic building if it loses its context? Is a farmhouse still significant if the fields are subdivided and developed? Can the field patterns, farm roads, vistas, the shade trees that once surrounded the house, provide information in and of themselves? Should an addition look

[28] The threshold for "historic" is fifty (50) years or older, unless the resource is of exceptional importance.

[29] The provisions of the preservation ordinance are authorized by North Carolina General Statute 160A-400.1-400.14.

new or should it look like part of the original (old) building? These questions reflect the broader vision that is historic preservation today.

Much of this Cultural Resources section is devoted to descriptions of existing programs for historic structures: honorary designations, rehabilitation tax credits, and survey and documentation programs have served as the "bread and butter" of local preservation efforts for roughly forty years. The underlying theme, however, speaks to the protection and management of all types of cultural resources in Orange County--historic structures and their associated landscapes, archaeological resources and other forms of material culture, cemeteries, historic roadbeds and trading paths, and scenic vistas. It also speaks to the County's heritage and history: both in written and unwritten forms. The key to any successful preservation program, however, is and will always be stewardship, and in the case of private property this duty falls into the hands of the owners. This section is intended to provide the tools and inspiration to handle this challenge today and into the future.

6.4.3.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

TOOLS FOR IDENTIFYING, DOCUMENTING, AND PROTECTING CULTURAL RESOURCES

NATIONAL REGISTER OF HISTORIC PLACES

The National Register of Historic Places was created through the National Historic Preservation Act of 1966 as part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archeological resources. The program offers honorary status to historic properties through a formal designation process.

For a cultural resource (historic building, archaeological site, cultural landscape, etc.) to be listed in the National Register, it must meet at least one of four criteria based on its historic context. The criteria describe how properties are significant for their association with:

A. important events;

B. persons;

C. for their importance in design or construction; or

D. for their information potential.

The criteria provide a systematic approach to evaluate the significance of cultural resources of all populations nationwide. The National Register program and its associated criteria system have served, and continue to serve, as the model for almost all preservation programs.[30]

[30] See complete list of National Register criteria in *Appendix H.*

The other key component to significance is integrity. Common building types and designs gain significance as they get older if they retain their original features, particularly as fewer examples survive.[31]

Cultural resources may be listed in the National Register as individual sites or as part of historic districts. A historic district is a cluster of properties within a defined geographic area associated with a specific theme or period of construction. Rural historic districts may focus on a mill, a certain landscape feature such as a river, or a neighborhood store and crossroads. In order for district boundaries to follow practical landmarks some properties may be included that do not add to the overall theme; these properties are referred to as "non-contributing." Individual properties must meet a higher threshold of significance than contributing properties in a district. A district may contain properties that have less significance than an individually listed site but still contribute to the overall theme of the district.

The two main benefits of National Register listing are 1) consideration in the planning process for federal, federally licensed, and federally assisted projects (such as the location of highways and widening projects and the location of cellular communication towers as well as state projects) and 2) eligibility for tax credits for certified rehabilitation projects. Properties which have been deemed eligible for the National Register through an initial review by the State Historic Preservation Office (SHPO) are placed on the "Study List." Study list properties enjoy the same consideration during the federal and state planning process as sites placed in the National Register. The listing of a cultural resource in the National Register does not obligate or restrict a private owner in any way unless the owner seeks a federal benefit such as a grant or tax credit. National Register property owners do not have to participate in a review process or obtain a Certificate of Appropriateness. Properties may be removed from National Register listing, however, if their historic character is compromised.

There are currently twelve properties listed in the National Register of Historic Places within Orange County's planning jurisdiction. These include: Ayr Mount, Moorefields, the Bingham School Inn, Saint Mary's Chapel, the Paisley-Rice Log House, Faucette Mill and House (Chatwood), Rigsbee's Rock House, Maple Hill (Jacob Jackson Farm), the Dr. Arch C. Jordan House, the Cabe-Pratt-Harris House, the Maude Faucette House (The Elms), and the Holden-Roberts House. One additional property is listed as an archaeological site.[32] The Cedar Grove Rural Crossroads Historic District is listed as a rural historic district. Thirty-six properties are listed on the North Carolina study list

[31] For example, a turn of the twentieth century rural farmhouse may become more significant over time if it retains its original features—windows, siding, porch posts, chimneys on the exterior, and mantels, stair trim, beadboard on the interior. A high-style 1850s house constructed with a two-story porch, may lose significance if it is updated—covered with synthetic siding, new windows, modified porch, stuccoed chimney, etc.

[32] The locations of specific archeological sites are not shown on county maps due to the sensitive nature of these resources.

as appearing eligible for the National Register.[33] Three historic districts have been placed on the study list; these include the Ray-Kenion Historic District, the Oaks Rural Historic District and St. Mary's Road Historic District. (See Map 6-3 in the *Summary* section of this Element.)

CULTURAL LANDSCAPES AND HISTORIC FARMS

In the early 1980s, the preservation community began to develop a better understanding of the relationship between important structures and their surrounding landscapes, or context, and a new category was added to the National Register program called, Cultural Landscapes.[34] Nominations to the National Register are reviewed under different categories based on the type of resource; for example, a property may be nominated as an example of a house, a farm or an archaeological site. In the case of a farm, the significance is linked to the whole complex rather than just the house. A property which retains its main house and a number of outbuildings may be eligible for the National Register as a farm or cultural landscape even if the house has been updated with synthetic siding or other character-altering treatments.

REHABILITATION TAX CREDITS & NC REHABILITATION CODE

One financial benefit to National Register listing, as an individual property or as a contributing property in a historic district, is the potential for rehabilitation tax credits.[35] Since 1976, the Internal Revenue Code has included a 20 percent investment tax credit for "income-producing" properties--commercial, industrial, and rental residential buildings--listed in the National Register. In North Carolina, new historic preservation tax credits took effect on January 1, 1998. The new law increased the state credit for certified rehabilitations of income-producing historic property from 5 percent to 20 percent, and for the first time provided a 30 percent credit for certified rehabilitations of non income-producing historic structures, including private (owner-occupied) residences. There is no equivalent federal credit for non income-producing properties.

Owners who choose to participate in the preservation tax incentive program must follow the Secretary of the Interior's Standards for Rehabilitation and receive approval prior to beginning the actual work. The credit is claimed against the cost of a certified rehabilitation.[36]

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[33] A few of these properties have been modified since they were identified in the early 1990s and may no longer be eligible for the National Register.

[34] The NPS defines cultural landscapes in *Cultural Resource Management Guideline* as "a geographic area, including both cultural and natural resources and the wildlife or domestic animals therein, associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values."

[35] An income tax deduction lowers the amount of income subject to taxation. A tax credit lowers the amount of tax owed.

[36] Property owners interesting in pursuing state or federal rehabilitation tax credits should contact the Restoration Branch of the State Historic Preservation Office (SHPO) prior to

Historic property owners pursuing building permits may also wish to request to have their project reviewed under the Rehabilitation Code or under the Existing Buildings Section of the standard State Building Code.[37]

EASEMENT DONATION TAX DEDUCTIONS

The Federal Internal Revenue Code provides for federal income, estate, and gift tax deductions for charitable contributions of partial interests in real property (land and buildings). Taxpayers' gifts of qualified interests must be "exclusively for conservation purposes." One of these purposes is defined as "the preservation of an historically important land area or certified historic structure."

CERTIFIED LOCAL GOVERNMENT PROGRAM

The Orange County Historic Preservation Commission is a member of the Certified Local Government (CLG) Program, a federal program, which provides a framework for historic preservation activities at the local level, including requirements for annual training. The program also includes additional funding opportunities for state and federal grant monies.

HISTORIC RESOURCES SURVEYS

One of the key requirements for Certified Local Governments is to complete and maintain an inventory of historic properties. In the early 1990s, the Historic Preservation Commission hired two consulting firms to survey historic properties in the unincorporated portions of the county.[38] These efforts produced an inventory of more than 600 architectural resources, and a substantial report outlining the County's overall history and development. In 2007 the County hired a third consultant in an internship capacity to update the survey. This update focused on three main components:

1. Adding properties to the inventory that were inadvertently omitted or less than fifty years old in 1991-1992;

2. Identifying properties that have since been destroyed or relocated; and

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beginning any work. Information on tax credits can be found online at www2.cr.nps.gov/tps/tax/ or http://www.hpo.dcr.state.nc.us/tchome.htm.

[37] In January 2007, the 2006 North Carolina Rehabilitation Code was adopted as part of the North Carolina State Building Code. Work is classified into six categories (repair, renovation, alteration, reconstruction, change of use and additions), each with its own specific criteria and requirements for that category of work. See also http://www.ncrehabcode.com/look/lookhm.html or contact the Restoration Branch of the SHPO or the Orange County Inspections Division of the Planning and Inspections Department.

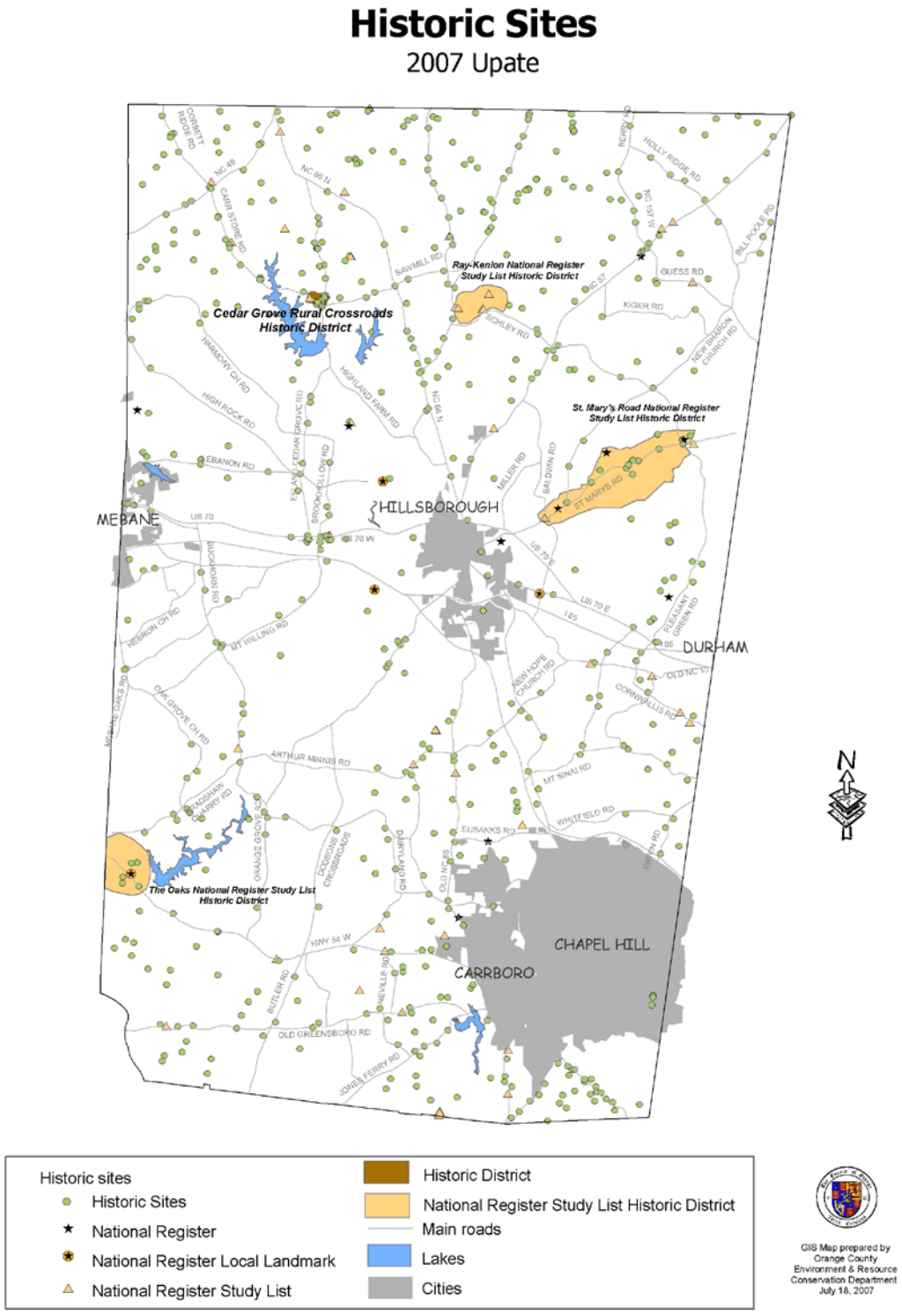
[38] Countywide surveys area conducted in partnership with the SHPO. Consultants use USGS maps to locate resources and may survey a few properties outside of the project area when jurisdictional lines are not clear in the field.

3. Verifying each structure's location on USGS maps and on GIS layers.

The County maintains a file on each property recorded in the inventory that consists of a written data sheet, a brief architectural and social description and a series of photos. As of the 2007 update, the countywide survey includes 634 properties according to the following breakdown. (See Table 6-2 and Map 6-5.)

TABLE 6-2: COUNTYWIDE SURVEY OF HISTORIC SITES

Township	Survey Sites	National Register Properties	Study List Properties	Local Landmarks
Bingham	78	1	4; HD	1
Cedar Grove	199	HD	10; HD	0
Chapel Hill	160	0	13	0
Cheeks	63	3	2	2
Eno	43	5	3; HD	1
Hillsborough	19	1	1	0
Little River	72	1	3	0



MAP 6-5: HISTORIC SITES MAP

LOCAL LANDMARK PROGRAM

Another important component of the Historic Preservation Commission's duties is to recommend properties with special historic or architectural significance for designation in the County's Local Landmark Program.[39] Properties may be designated as individual landmarks or as part of districts. The owners of individually designated Local Landmarks are eligible for an annual 50 percent property tax deferral as long as the property's important historic features are maintained.[40] As of 2007, four individual Orange County properties have been designated into the Local Landmark Program: Chatwood, Moorefields, the Bingham School Inn, and Rigsbee's Rock House. There are currently no local historic districts in the County's jurisdiction.

The Local Landmark program is a form of overlay zoning. Significant properties must be located in the County's planning jurisdiction to be eligible for the program.[41] Local landmark and local district property owners (for contributing and non-contributing buildings) wishing to make changes to building exteriors and site features must apply for a Certificate of Appropriateness (COA). Following a quasi-judicial process, the Historic Preservation Commission reviews applications for proposed changes and determines the appropriateness based on design standards.[42] Minor changes can be approved administratively--without going through the formal COA process.

The context for Orange County's historic resources is very different than for its urban counterparts. County resources are typically located in rural settings with the main house set away from the public road. Many are historic farmsteads and some are still part of active farms. This situation provides a different set of opportunities and challenges than that of urban preservation programs. Design standards must take into account the distance between the house and the road when considering appropriate changes such as additions. Farmers may

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[39] In 1997, per the recommendation of the HPC, the BOCC adopted a new program called *Preserving the Orange Tradition: A Landmark Designation Program for Orange County*.

[40] The property tax deferral program does not extend to properties in local historic districts. Recapture penalties, three years back taxes, may apply if the owner destroys the property or damages its historic value.

[41] All three of the towns in Orange County: Carrboro, Chapel Hill and Hillsborough have downtown historic districts listed in the National Register of Historic Places. The City of Mebane also has a number of historic properties in its jurisdiction that are listed in the National Register including a handful of rural historic districts. Chapel Hill and Hillsborough have locally designated historic districts. As of January 2008, however, none of the municipalities have adopted provisions to designate individual landmarks.

[42] The Local Landmark Program was adopted, in 1997, before the HPC finished developing design standards. The Secretary of the Interior's Standards for Rehabilitation were adopted for use evaluating COA applications until the new standards based on Orange County's rural architectural legacy are finished and adopted. See *Appendix I* for the Secretary of the Interior's Standards for Rehabilitation.

remove farm buildings that have outlived their original purpose. Metal replacement buildings may be considered visibly incongruous but may serve the practical use needed to keep the farm profitable. Older homes and associated outbuildings are most likely to survive when in use. The Historic Preservation Commission remains cognizant of the need to balance historic integrity with modern-day functionality.

The Local Landmark Program and the National Register of Historic Places are *two entirely distinct and separate programs*. Both offer honorary status to historic properties through a formal designation process. The specific benefits of each program, however, are quite different. The Local Landmark Program is a local program administered by local government; properties are designated by the adoption of an ordinance by the Board of County Commissioners. The National Register of Historic Places is a federal program administered by the National Park Service in partnership with state historic preservation offices (SHPO).[43]

THE CENTURY FARM PROGRAM

The Century Farm program provides yet another honorary program for North Carolina farmers. This special program was initiated in 1970 when the North Carolina State Fair chose to highlight its theme "Salute to Agriculture" by searching for North Carolina families who had maintained active farms for more than 100 years. Today almost 1,600 farms are listed in the program including fifteen from Orange County. [44]



Agriculture and preservation work hand-in-hand to preserve and conserve cultural landscapes. Honorary programs such as the Local Landmark Program, the National Register of Historic Places, and the Century Farm Program provide opportunities for recognition, awareness, and preservation of Orange County's rich agricultural history. Participation can offer financial incentives in the form of rehabilitation tax credits and/or property tax deferments. Preservation programs can dovetail with agricultural programs such as Voluntary Agricultural Districts and agricultural conservation easements to increase

[43] Local governments do not participate in the administration of the National Register program except to offer recommendations for new listings.

[44] The Orange County farmers include: Elbert H. Allison; N. K. Andrews; Elizabeth N. Blalock, Thomas N. Blalock, James M. Blalock; J. Fred Bowman, Betty Bowman; Jane M. Branscome, L. M. Merritt, E. Mangum; Flora Dick Dellinger, Edna Dellinger, Cothran Dellinger, Gene Dellinger; Estelle Haley, Frances H. Griffin, Wade E. Griffin; Katherine L. Kirkpatrick; Floyd Fox Miller; A. Gordon Neville; Ralph Neville (Heirs): Anne Neville Williams, Jane Neville Hatley, Bryant Neville, Claude Neville; Shelton L. Ray; Richard Roberts, Ollie Roberts; Bryant J. Walker; and L. Phillip Walker.

awareness for agri-tourism and direct marketing purposes, and to minimize nuisance-related concerns.[45]

ARCHAEOLOGICAL RESOURCES

Orange County has sponsored numerous archaeological surveys, particularly in the last five years. Information from these projects is shared with the Office of State Archaeology but is not made public due to salvage concerns. Since the design of Little River Park and Natural Area in 1999, the County has conducted cultural resources surveys as part of the master plan design process for new parks. In October of 2006, the Board of County Commissioners adopted a new policy requiring cultural and archaeological surveys for all County development projects. Surveys are conducted by archaeological consultants, who meet federal standards and typically include: background research, systematic surface and subsurface investigation (digging based on a grid system), field reconnaissance, and a reporting of the results. Information from these surveys can be used to assist in the siting of future facilities and/or for identifying areas of historic and cultural interest for possible interpretation.

In addition to archaeological surveys conducted in advance of new County development projects, local residents can also ensure the documentation and preservation of valuable historic and prehistoric archaeological resources. The value of an artifact is in its context (original location), its relationship with other artifacts, its structural elements, or its relationship to natural features. Once removed from their context many artifacts lose their value.[46] Residents are encouraged to use the Office of State Archaeology (OSA) to determine the appropriate course of action regarding archaeological finds, particularly those that may involve old cemetery sites. The OSA can help residents record, map, and catalog sites, thus preserving valuable locations information on the future.

HISTORIC CEMETERIES

Historic cemeteries offer an invaluable link to the past. Often, smaller family cemeteries are subject to abandonment and neglect over time, resulting in the loss of valuable genealogical and historical information. Increasing development in the region further jeopardizes these cultural resources. The OSA can provide information on the State Cemetery

[45] See also information on *Barn Again*! in the Trends Section of this chapter and in the Agricultural Chapter of this Element.

[46] Archaeological research in the late 1970s and early 1980s led to the creation of an "Archaeological Potential Map," which reflected the likelihood of finding resources based on topographic features such as ridges and drainageways. The map lacks the precision to replace site specific-fieldwork for predicting the location of archaeological resources and should only be used as a general guide.

Survey and the state statutes (N.C.G.S. Chapter 70, Article 3), regarding the handling of human skeletal remains.[47]

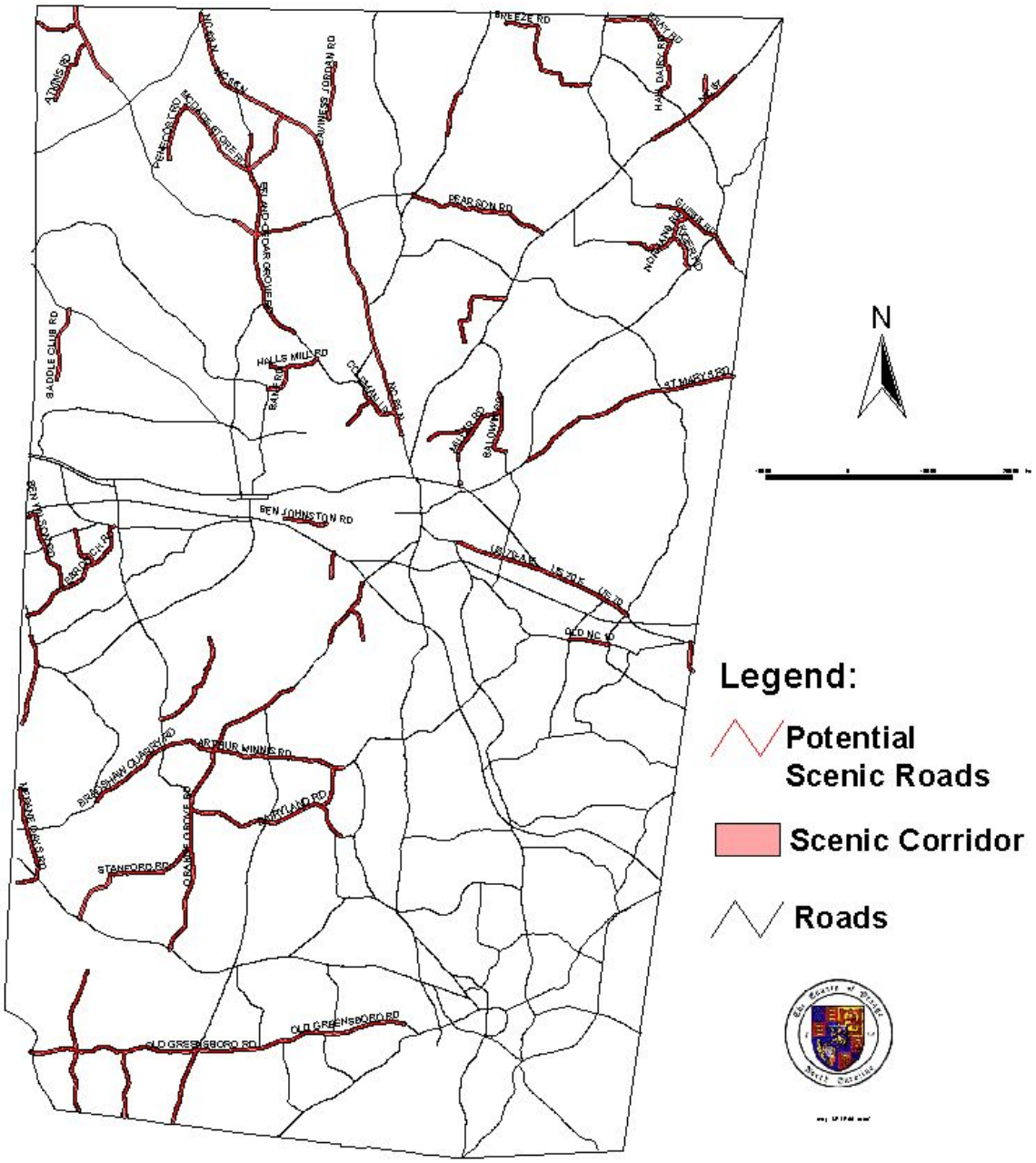
SCENIC RESOURCES

During the late 1980s to mid 1990s, Orange County Planning staff, working in conjunction with the Planning Board's Transportation Advisory Subcommittee (TAS), researched scenic road programs in other states and localities, and developed a proposal for Orange County. The Scenic, Rustic, and Rural Roads Program separated potential corridors into three categories based on the focus of their designation – natural natural features, historic or cultural resources, or rural or agricultural context. The group systematically ranked roads based on criteria and produced a Scenic Corridors Map, which included segments from fifty (50) local roads. (See Map 6-6: Orange County Scenic Corridors Map.) While, the initial proposal was voluntary, the map was included in the Land Use Element of the Comprehensive Plan and referenced in the Flexible Development option of the Subdivision Regulations. Views from the identified corridors are considered conservation areas in the Flexible Development standards.

The HPC is currently evaluating the corridors shown on the 1981 map to determine which road segments still merit scenic designation. The HPC has also been working to develop a new heritage/scenic corridor program. As development continues to occur, rural roads and their associated agricultural vistas may become compromised unless additional measures are adopted.

The North Carolina Scenic Byways Program offers another form of recognition to special road corridors that contribute to the visual character of a community. Honorary in nature; there is no regulatory component to the program, nor any preemptive development restrictions. Three North Carolina Scenic Byways pass through Orange County – the Colonial Heritage Byway, the Football Road, and the Scots-Welsh Byway. (See Map 6-3 in the Summary section of this Element.)

[47] ERCD works with the Durham-Orange Genealogical Society of North Carolina (D-OGS) to inventory cemeteries in Orange County; information on their cemetery census is available online.



MAP 6-6: ORANGE COUNTY SCENIC CORRIDORS MAP

HIGHWAY MARKER PROGRAM

The North Carolina Highway Historical Marker Program was established in 1935, based on the marker program in Virginia established in 1926. The Department of Cultural Resources' Research Branch and the Department of Transportation's Traffic Engineering Branch, Division of Highways administer the program jointly. Eligibility is subject to specific criteria based on state significance. Unlike the recognition of historic structures or archaeological sites, the markers typically commemorate important individuals who have been dead for twenty-five or more years. Today there are more than 1,400 state markers throughout North Carolina, at least one in every county. Orange County currently has twenty-five markers, including those within the towns of Chapel Hill and Hillsborough.[48]

HERITAGE DOCUMENTATION PROGRAMS

Since it is inevitable that some resources will be lost over time documentation is important. The Historic American Buildings Survey (HABS) was established in 1936 to record a sampling of different types of buildings throughout the United States. Each property is documented with measured drawings, photographs and written descriptions in accordance with very specific standards. Original materials are permanently housed in the Library of Congress; however, copies are made available to the public and can be viewed online or purchased.

Over the years, three companion programs have been created that greatly expand the scope of the original survey: the Historic American Engineering Record (HAER; 1969); the Cultural Resources Geographical Information Systems Facility (CRGIS;1989); and the Historic American Landscapes Survey (HALS;2000). Today all four programs fall under the umbrella of the Heritage Documentation Programs, administered by the National Park Service. The documentation materials can provide invaluable information when researching a particular property to prepare a National Register nomination, or when trying to restore a property.

DEMOLITION BY NEGLECT AND THE QUICK RESPONSE TEAM

Another area where rural preservation efforts must differ from their urban counterparts is addressing the problem of demolition by neglect. Demolition by neglect is when a property owner neglects to maintain a building, for whatever reason, to the point the building is deemed

[48] The twenty-five North Carolina State Highway Historical Markers located in Orange County include: G-3 Thomas Burke; G-4 William Hooper 1742-1790; G-9 Archibald Debow Murphey; G-10 Francis Nash; G-11 Thomas Ruffin; G-16 Thomas Burke; G-19 Edmund Fanning; F-23 Regulators Hanged; G-26 Thomas H. Benton; G-33 Occaneechi; G-37, G-38, G-39 Bingham School; G-40 William A. Graham; G-48 Paper Mill; G-64 Moses A. Curtis; G-66 Hughes Academy; G-84 Old Eno Church and Cemetery; G-88 North Carolina Society of the Cincinnati; G-90 St. Mary's Chapel; G-92 University of N.C. at Chapel Hill; G-100 Harriet M. Berry 1877-1940; G-103 J. G. de Roulhac Hamilton; G-108 James Hogg 1972-1804; G-115 Elizabeth Keckly ca. 1820-1907; G-122 Hart's Mill; G-125 Billy Strayhorn 1915-1967.

unsalvageable.[49] Enforcing a demolition by neglect ordinance in a county jurisdiction can be challenging. Rural buildings are typically less publicly visible and likely do not present the same types of safety concerns as urban structures (except perhaps for children and trespassers.) Older farm structures, no longer in use, may suffer neglect or intentional destruction – leading to the substantial loss of valuable historical information.

To address this situation, the Historic Preservation Commission established a new program in partnership with the Inspections Division, in 2006, called the Quick Response Team (QRT). The purpose of the QRT is to provide information regarding preservation or salvage options to the applicant as well as to document the structure prior to its demolition. When the County receives an application for a demolition permit for a building fifty (50) years or older within Orange County's planning jurisdiction the QRT is notified. The QRT visits the site within three business days of the application date to evaluate the significance of the building. In most cases, demolition proceeds without further delay. In those cases where the building is particularly significant the QRT is granted two additional business days to provide the applicant with information on salvage companies and/or preservation firms to pursue options other than demolition. The QRT records and documents the structure; releasing the demolition permit within the five-day (maximum) period, if not sooner. The QRT has photographed approximately ten buildings using this program. Documentation has been particularly useful in those cases where the property was not recorded in the countywide inventory.

TRENDS IN THE PRESERVATION COMMUNITY

Preservation philosophies are continually evolving. As conservationists uncover new information about historic structures, historians and curators are faced with new decisions on how to convey this new information. At the private level, individual homeowners make choices regarding their lifestyles—do they wish to live in a house that is "authentic" or one that has all of the latest conveniences. Most choose something in between.

During the next several years, the preservation community will likely see the greatest potential for change in five key areas: 1) accepting the next phase of buildings (fifty years and older) as historic; 2) developing a greater appreciation for cultural landscapes as part of local heritage; 3) establishing the role for government in local preservation efforts; 4) understanding the decline of the house museum movement and the need to seek new or different uses for these types of facilities; and 5) conveying accurate information regarding the compatibility of historic preservation to the green building and affordable housing movements.

[49] In urban settings historic buildings that are in jeopardy of collapse are often condemned for public safety reasons; condemnation often leads to demolition. Many municipal preservation programs are pursuing demolition by neglect ordinances to minimize this problem. (The Town of Hillsborough recently adopted such an ordinance.)

- The National Register criteria apply to **properties fifty years and older**. Houses constructed in the 1950s are now eligible for this special designation. For some residents, recognizing post World War II houses, particularly modest brick ranch homes and innovative modernist houses, as "historic" may take some getting used to. These buildings represent the next phase of resources that will be nominated to the National Register.

- Residents will likewise have to develop a better appreciation for the **relationship between historic properties and their surrounding context**. Long-term efforts to protect Orange County's rural character will have to take into account the role of historic farmsteads--houses, outbuildings, fields and farm roads. Tearing down an older farmhouse to construct a new house clearly changes the visual character of the property; the loss of the outbuildings, even modest outbuildings destroys character as well. The 1987 National Trust for Historic Preservation program Barn Again! awards successful barn restoration projects and provides information, including costs, for common repairs and retrofit options. While the QRT program is a success story for local preservation efforts, the fact that property owners continue to demolish buildings through neglect or intention reveals a lack of understanding of the value of historic buildings individually and as part of a farm building complex.

- As **governmental entities** (the County and the State) continue to purchase easements and property for parkland and other uses, attention is needed to decide the future of existing buildings. Decisions will require accurate assessments of building conditions and costs for stabilization, reuse and long-term maintenance. Identifying new uses for buildings that have out-lived their original purpose may have to be discussed. Decision makers should also consider their role as a model of the type of preservation stewardship that they advocate for the private sector.

- **House museums** are losing attendance, nationwide. Some future park sites retain farm complexes, which may lend themselves to potential museum use. Local residents and elected officials should consider the special issues associated with museums before pursuing new facilities—the need for a higher threshold of authenticity in buildings and furnishings, the level of wear-and-tear that public access has on historic structures, circulation needs for the general public and for the handicapped, insurance, and perhaps most important the story. What is the museum's mission or purpose? What is it designed to convey? What is the best way to communicate that message to the public to make history engaging?

- Preservation works hand-in-hand with the ideals of the **green building** movement. Many older buildings were oriented to take advantage of topography--natural light and wind, and

vegetation such as shade trees – and incorporated design features such as high ceilings, wide, hallways, and front and back porches to make them more comfortable and energy efficient. Local preservationists must partner with green building enthusiasts to determine the best ways to accommodate green principles without compromising historic character.[50]

- Some of the same principles apply to **affordable housing**. Efforts to make existing buildings "maintenance free" can create new problems in the long run. The application of synthetic siding over existing wood siding can trap moisture inside the wall and lead to rot. Underpinning houses without providing sufficient ventilation can lead to excessive moisture under the house. It can be more difficult to repair a new window than an older unit; instead of replacing an individual pane of glass the whole unit may need to be replaced. In addition, once these character-defining elements are removed the house may lose eligibility for grants or tax credit programs based on historic integrity. It is important to convey the value of original materials—historic value and economic value. Stripping a historic building to a shell and rebuilding it with lower quality components simply produces a lower quality product, which is not necessarily affordable housing.

6.4.3.2. ORANGE COUNTY'S CULTURAL AND HISTORICAL RESOURCES NEEDS

EDUCATION AND OUTREACH

A large portion of the needs associated with successful countywide cultural resource protection is linked to education and outreach.[51] There are a lot of misconceptions about historic preservation programs. In a nutshell:

- Inclusion in the countywide survey is for information purposes only; there are no regulatory implications.
- Likewise there are no restrictions associated with listing a property in the National Register, unless the owners wish to pursue rehabilitation tax credits.
- Local landmark and local historic district property owners need to apply for a certificate of appropriateness before

[50] Window replacements, for example, have significant and character-altering impact with limited improvements to energy efficiency. Good quality storm windows, a less expensive option, may provide the same energy benefits and have a longer life cycle than replacement windows (typically 10 to 20 years).

[51] Historic property owners should take advantage of the information and technical support available from the HPC, county preservation staff and the SHPO staff.

applying for a building permit. The Historic Preservation Commission will evaluate the application based on specific design standards. The owner can appeal the Historic Preservation Commission's decision.

GAPS IN COVERAGE

Orange County's Historic Preservation Commission serves the County's planning jurisdiction. Hillsborough and Chapel Hill have historic district commissions that review changes to properties inside their local historic districts. Neither the town of Carrboro nor the City of Mebane have locally designated historic districts.[52] The remaining sections of the towns' jurisdictions – the areas in the town limits that are not part of local historic districts and the areas in the towns' extra-territorial jurisdictions – do not have appointed preservation advocates. In addition, only the county's preservation ordinance includes provisions for designating individual local landmarks. The potential for a 50-percent property tax deferral could become an effective incentive for rehabilitating and redeveloping significant resources within town jurisdictions, particularly those which require substantial work and which will have higher assessment value once the work is completed.

INTERNAL POLICY CONFLICTS

Some Orange County policies may inadvertently conflict with preservation missions. For example, zoning regulations place a limit of one primary dwelling per lot. Historic buildings are traditionally located on the best building site on the tract, the best view, the best drainage, and the most suitable soils. In order to construct a new house on an existing historic property, older buildings must lose their "residential status" by being disconnected from septic services, demolished or abandoned, thus leading to their eventual demise.

When the County adopted zoning countywide, commercial operations in the rural areas were zoned Existing Commercial (EC-5). Many of these small operations were housed in older store buildings or former gas stations. Once scattered throughout the county at various crossroads, many of these turn of the century buildings are gone or at risk unless a new use for them can be identified.

Clustering additional growth around existing crossroads communities may compromise their character, and in some cases compromise National Register or Local Landmark eligibility. New residential buildings tend to be much larger than their historic counterparts and may negatively impact the visual landscape. As part of the growing New Urbanism movement, village-type community designs attempt to emulate the proportions of historic communities and structural elements, which can create a false sense of history along with disproportional and oddly detailed houses. Zoning ordinances can prescribe building setback dimensions, footprint size, and heights, but cannot (without design guidelines) prohibit incongruous new buildings.

[52] The Appearance Commission serves as the Town of Carrboro's Historic District Commission. The City of Mebane does not have an appointed Historic District/Preservation Commission.

Affordable housing programs may save the physical structure but can also lead to the inadvertent destruction of historic character-defining elements. Efforts to make buildings "maintenance-free" with the application of synthetic siding, new windows, and "upgraded" interiors can lead to "cookie cutter" units that are devoid of original character. These improvements may appear to make the building look new in the short-term, but in the long-term they can be more difficult to maintain and may lead to a more disposable property.

FUNDING FOR MAINTENANCE, RESTORATION AND PURCHASE

Historic resources are often lost or compromised for lack of funding. Interested buyers may face special challenges with lending agencies or have difficulty obtaining insurance. Delayed maintenance such as roof upkeep or exterior paint can lead to more expensive repairs in the long run. A maintenance fund for small projects could balance the rehabilitation tax credit programs that require a threshold of expenditure.

DOCUMENTATION

Even with the most successful preservation program, some historic buildings will eventually be lost over time. This is why documentation is so important. In addition to systematic survey updates, the County must remain vigilant with its documentation efforts through the QRT and regular drive-by schedules. Buildings that move into or out of the County should be documented. Important buildings and building complexes that appear threatened should be documented, in addition to efforts for renovation and reuse.

6.4.3.3. OBJECTIVES

Objectives are intermediate steps toward reaching a goal. The following objectives are intended to help achieve Orange County goals pertaining to cultural resources—specifically Goals 4, 5 and 8, which are restated below. The timeframes for the objectives conform to the guidelines discussed in *Section 1.4: Administration and Implementation Guidelines.*

Natural & Cultural Systems Goal 4: Preservation of historic, cultural, architectural and archaeological resources, and their associated landscapes.

Objective CR-1:
Provide for the systematic identification of historic buildings, objects, districts, sites, structures and archaeological sites. Update and improve these inventories at regular intervals.

Objective CR-2:
Establish stronger partnerships with preservation organizations for the dissemination of information on current topics and to provide hands-on training, such as "how to" publications, examples of design guidelines, technical briefs, etc. (See also Economic Development Objective ED-4.1.)

Objective CR-3:
Work within the Orange County government system to identify and resolve existing policies which may be in conflict with the County's historic preservation mission. (See also Economic Development Objective ED-4.1, Housing Objective H-3.6 and Land Use Objective LU-4.5.)

Objective CR-4:
Strive to make the community more aware of the activities of the Historic Preservation Commission and its place in County government. (See also Economic Development Objective ED-4.1.)

Objective CR-5:
Promote existing programs that offer financial incentives for preservation purposes and pursue new programs to encourage the purchase, preservation, maintenance or adaptive reuse of historic landscapes, and historic and soon to be historic structures. (See also Economic Development Objective ED-4.1.)

Natural & Cultural Systems Goal 5: Awareness and appreciation of the diverse cultural history and heritage of Orange County and its residents.

Objective CR-6:
Develop and strengthen educational programs to make history engaging to the public.

Objective CR-7:
Encourage publication of material relating to the County's heritage.

Objective CR-8:
Determine the appropriate level of heritage tourism promotion in Orange County based on interests and concerns of residents and coordinate heritage tourism efforts with existing programs in the county. (See also Economic Development Objective ED-1.7.)

Objective CR-9:
Explore ways to inform the public about archaeology, how archaeologists conduct investigations and what they do with the findings. Consider "virtual" archaeological display options to share information from County-sponsored cultural resources surveys without risking salvage concerns.

Natural & Cultural Systems Goal 8: Networks of protected natural, cultural and agricultural lands.

Objective CR-10:
Establish a dialogue with the other jurisdictions in and adjacent to Orange County to address cultural resources in areas with or without designated Historic Preservation/District Commissions.

Objective CR-11:
Increase public information/awareness endeavors to promote land and cultural resource stewardship – for individual homes, historic

farmsteads and their associated landscapes – as well as alternative means of private property dedication and preservation.

Objective CR-12:
Provide for a user-friendly public input process for systematic acquisition of and contribution to information about cultural resources.

CONCLUSION

Efforts to protect and preserve cultural resources in Orange County will require a multifaceted approach. The loss of these resources permanently removes part of our heritage and changes the visual character of rural areas. It can also reduce affordable housing options and diminish tourism opportunities such as driving tours and other special events. It is critical that the County use the 2030 Comprehensive Plan process and the greater green building movement to upgrade the dialogue among residents on the importance of cultural resources and to develop a win-win attitude toward their protection.

6.4.4. NATURAL AREAS, WILDLIFE HABITAT, AND PRIME FORESTS

The purpose of the Natural Areas, Wildlife Habitat, and Prime Forests component chapter of the Natural and Cultural Systems Element is to provide direction and guidance for future land protection efforts in the County through a set of goals and objectives. Development activities and other forms of habitat destruction in the County put the habitats of plant and animal species at risk of being removed or destroyed. Further habitat fragmentation and habitat destruction will likely result in a loss of biodiversity in the County and change the County's character and naturally functioning systems. In response to this threat, this component sets an objective to protect 10% of county by 2010. It also provides an inventory of natural sites located within Orange County, a listing of programs and organizations that are working to protect the County's important natural lands, and an assessment of information, programmatic, and policy needs required to meet goals to protect important natural areas.

BIOGEOGRAPHIC SETTING

Orange County is located within the Piedmont Ecoregion. The landscape consists typically of gently rolling hills, draining generally towards the southeast. The major plant and animal community of the region is the Eastern Deciduous Forest, which is typically dominated by oak and hickory trees. The characteristic successional stages of this vegetation range from old fields, to pine woods, to hardwood forests.

The many types of natural communities that exist in Orange County are strongly associated with the variety of topographic, geologic, soil, and hydrologic conditions found throughout our landscape. The two most common natural communities in the County are the Mesic Mixed Hardwood Forest (located on slopes above streams) and the Dry-Mesic Oak – Hickory Forest (common on upland areas). There are also several types of wetland communities, especially in stream valleys.

There are no natural lakes in Orange County. There are many hundreds of farm ponds, however, which have both positive and negative affects on stream ecology. Natural springs create wetlands in both uplands and floodplains. Other, marshier, wetlands are created by the impoundment of streams by beavers and for reservoirs, such as University Lake.

Two features of the County's landscape play a significant role in determining the location and composition of its plant and animal communities. The first are inselbergs (also known as monadnocks), which are isolated hills capped with rock that is more resistant to erosion than the surrounding countryside. Orange County has a series of inselbergs running generally southwest from Hillsborough toward the Haw River. The most notable example is Occoneechee Mountain, which has the highest elevation (867 feet) and is host to plants and animals characteristic of mountain communities. Other examples are Blackwood Mountain, and Bald, Pickards, and Crawford mountains. The nearest area of inselbergs to Orange County is the Uwharrie Mountains, which have a similar biota. The great distance separating our "mountains" from the Uwharries has resulted in a reduced diversity of

species and a lower likelihood of their replacement if they were removed or destroyed.

The second important feature is the Durham Triassic Basin. Located on the southeastern edge of the County, it is a unique part of the landscape with elevations that range down to 240 feet – the lowest in the County. This is the only part of the county with true swamp forests. Many of the animals living there are normally found in the Coastal Plain.

Other local factors that affect the distribution of Orange County's flora and fauna are the restricted soil formations, north-facing slopes, vernal pools, and springs. Each of these provides restricted habitat to plant and animal communities that are often widely separated from related communities by miles of inhospitable terrain.

ENVIRONMENTAL HERITAGE

The environment and natural resources of Orange County have played an important role in its development. Three centuries ago, the County's hills and river bottoms were covered with extensive forests, largely comprised of mature hardwood (deciduous) trees. Those forests provided habitats for most of the County's native species of wildlife. The native people hunted game in those forests and in open prairie-like areas, which were often burned to drive game animals across the land.

Early European settlers eliminated the region's large mammals both for food and for the safety of their community. Some were predators, like the gray wolf, black bear and mountain lion. Settlers also hunted wild turkey, white-tailed deer and smaller mammals. Beaver were eliminated from NC before the 1900s, but were later reintroduced. North America's only native parrot – the Carolina parakeet – was considered an orchard pest and was hunted to extinction.

The vast majority of the land in Orange County (and throughout the entire Piedmont) has at some time been cleared and farmed. Throughout the 1700 and 1800s settlers cut trees and farmed the land until the reduced soil fertility and emergence of new urban industries resulted in widespread abandonment of farmland. Much of that farmland has since regenerated back into woodlands.

Today more of Orange County is forested than it has been over the past 200 years. Forests have grown up on abandoned farm fields, steep slopes, rocky outcrops and bottomlands. Most of those areas, however, are early succession woodlands dominated by pine and mixed pine-hardwood communities. It generally takes from 75 to 100 years for hardwood trees to begin replacing the pines that become established on abandoned fields. It takes much longer for woodlands to transform into an oak-hickory forest, or in moist lowland areas, a forest community often dominated by sweet gum and yellow poplar.

PLANTS AND ANIMALS

Despite the widespread changes to the landscape over the past 300 years, Orange County still has some relatively intact areas that are home to significant plant and animal communities. Most native

animals still depend on large areas of continuous undisturbed hardwood forests to survive.

Orange County hosts a variety of animals, but few species are endemic (found here and nowhere else) to the Piedmont and none is confined only to this county. Most animals range widely over the Eastern Deciduous Forest Biome, from the Mississippi Valley to the Coastal Plain. A list of significant animal species in the County is provided as *Appendix J*.

Typical woodland animals in Orange County include mammals such as the white-tailed deer, raccoon, gray fox, eastern gray squirrel, white-footed mouse, short-tailed shrew, and red bat. Common woodland birds include the downy and red-bellied woodpeckers, barred owls, Carolina chickadees, tufted titmice, Carolina wrens, ovenbirds, wood thrushes, red-eyed vireos, and northern cardinals. Reptiles and amphibians include the eastern fence lizard, five-lined skink, eastern box turtle, brown snake, worm snake, black rat snake, copperhead, American toad, gray treefrog, and slimy salamander.

Orange County has an unusually high degree of diversity in its aquatic species due to the presence of three different river basins (Cape Fear, Neuse, and Roanoke) within its limits. Several species of mollusks and fish live in the rivers and streams, although many are considered as rare, threatened or endangered.

Some animal species in the County require large tracts of undisturbed land for their existence. Those same animals are often the most sensitive to forest fragmentation and urbanization. Finding healthy populations of bobcat, wild turkeys, or pileated woodpeckers is one of the best indicators of a relatively undisturbed "natural" area. The absence of species such as ovenbirds, hooded warblers, or eastern hognose snakes indicates that a site has lost most of its wild qualities, even if large trees or unusual plant species are present.

Orange County is home to more than one thousand different plant species. Plants show more regional differentiation than animals due to their restricted ability to disperse and their narrower habitat requirements, but few are considered endemic to the Piedmont. Two exceptions are Lewis' heartleaf and southern shagbark hickory—both present in Orange County. A list of significant plant species in the County is provided as *Appendix J*.

Many of the County's forests and open lands have been invaded by exotic plants that can spread over large areas and harm native plants. Invasive plants are a problem throughout the Piedmont. They spread rapidly and cause a significant loss of biodiversity. Prime culprits are Japanese stilt grass, Japanese honeysuckle, multiflora rose, and Chinese privet. Efforts to eradicate these plants are difficult and costly.

6.4.4.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

PREVIOUS INVENTORIES OF THE COUNTY'S NATURAL RESOURCES

Orange County has made concerted efforts to identify all of the significant natural resource lands located within its jurisdiction. In 1986 the Planning Department produced an initial inventory of sites having biological and geological significance in the unincorporated areas of the County. That effort was followed up in 1988 by the *Inventory of Natural Areas and Wildlife Habitat for Orange County, NC* (Sather and Hall) with assistance from the Triangle Land Conservancy.

Orange County's inventory of natural areas (updated 2004) identifies 53 natural areas (or "natural heritage sites") that are either unique to Orange County or are exemplary of the natural ecosystems found in the County and the surrounding region. The areas total more than 10,000 acres and individual sites range in size from four acres to 892 acres. Many sites provide habitats for rare or unusual plant and animal species. Collectively, they represent the natural diversity of the County, from dry upland ridges to river bluffs and bottomland forests.

Three of Orange County's natural heritage sites are considered to be of national significance because of the presence of federally listed threatened or endangered species. They are the Eno River aquatic habitat, University Lake aquatic habitat, and an area known as Meadow Flats. Ten other sites are considered to be of state significance. The other sites are significant at a regional or county level. In addition to the 53 individual sites, the inventory identifies seven larger areas of significance referred to as macrosites. A map of the natural heritage sites and macrosites in the county is provided in *Appendix K*.

A plan for protecting key segments of the New Hope Creek corridor was developed in 1991 for the governing boards of Durham, Chapel Hill, Durham County and Orange County. The *New Hope Corridor Open Space Master Plan* recommended the permanent protection of the river corridor for wildlife habitat and low-impact recreation. The Orange County part of the plan extends from Erwin Road northwest to Mt. Sinai Road near Blackwood Station, and is comprised largely of Duke Forest lands. The plan also recognized the importance of protecting New Hope Creek headwaters upstream of the plan limits.

The *Landscape with Wildlife* reports (1997 & 1999) identified the remaining prime forests in Orange County. Prime forests were defined as large areas (>40 acres) comprised of hardwood and mixed hardwood-pine forests. The project used a GIS-based rating system to identify those areas of a size and character most suitable for habitat used by native wildlife, and showed changes in forest cover over time.

In 2002 the *Triangle GreenPrint* identified important resource lands across the six-county Triangle region. The GreenPrint presents the "essential green infrastructure" (e.g., natural areas, prime farm and forestland, and important watershed lands), suggests ways to protect those lands by various means, and tracks ongoing land protection efforts throughout the region. Orange County was a participant in the

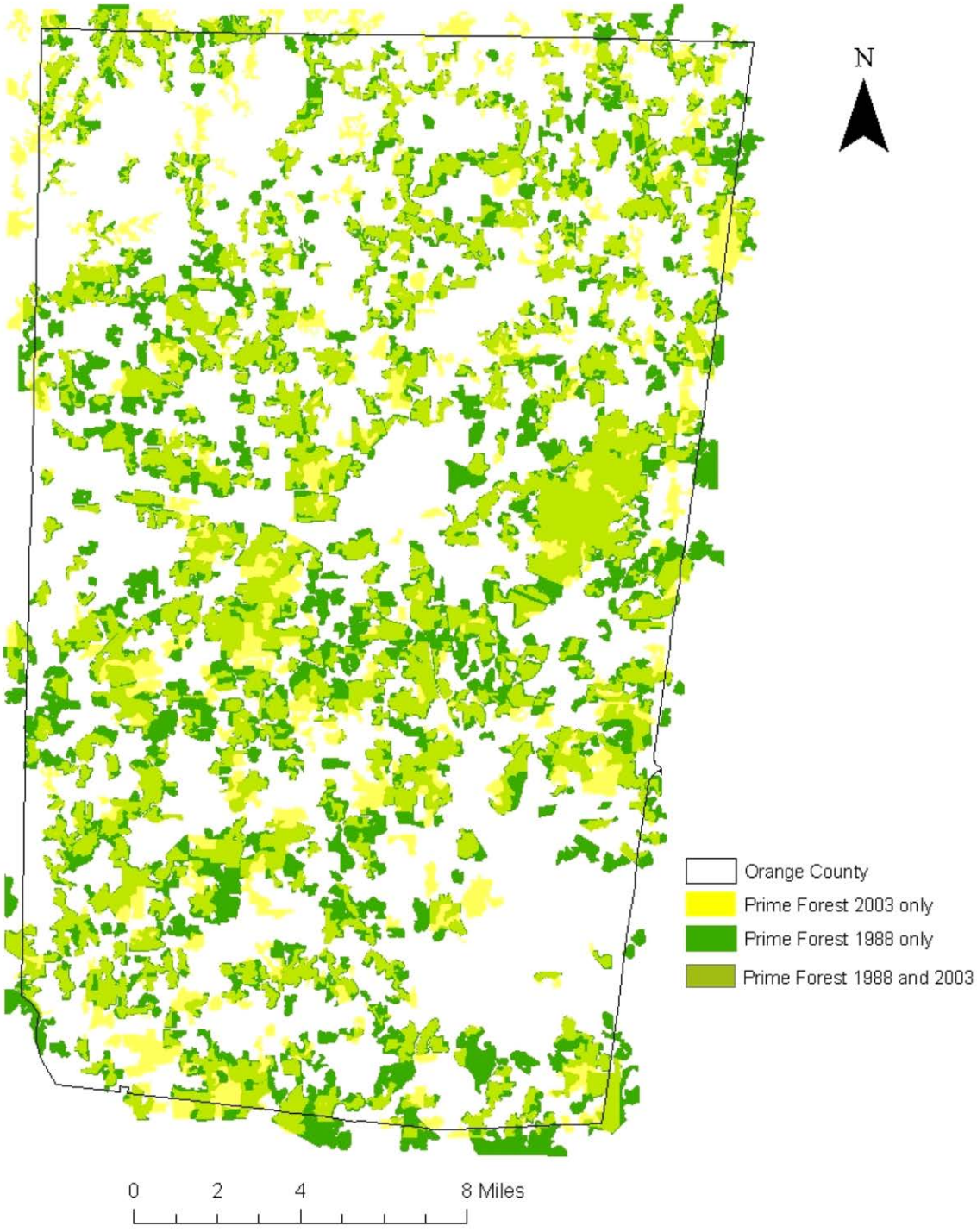
development of that regional plan, and has incorporated it into the Lands Legacy program.

CHANGE IN PRIME FOREST COVER

Prime forests (i.e., hardwood and mixed hardwood pine forests) were prominent in the pre-European settlement landscape of Orange County. They provide habitat for many indigenous plant and animal species that are restricted to hardwood forest habitats. Those forests also help the people of Orange County by improving air quality and water quality, and by helping to control flooding.

The *Landscape with Wildlife* report (1997) found that the county may have lost as much as 25% of its prime forestland since the 1970s. Over that same period many other prime forests were fragmented to the point where they can no longer accommodate diverse species.

In 1988 Orange County had about 71,000 acres of prime forest (28% of Orange County). An update was completed in 2004 that illustrated the change in area of prime forest between 1988 and 2003, but the information was not sufficiently accurate to compare differences in actual acreage over that time period (*State of the Environment*, 2004). (See Map 6-7.)



MAP 6-7: CHANGES IN FOREST COVER (1998-2003)

STATUS OF RARE PLANTS AND ANIMALS

The conversion of natural lands to urban or suburban uses results in habitat loss for native plants and animals, and can result in loss of native species. The North Carolina Natural Heritage Program maintains a list of rare plant and animal species and classifies them as endangered, threatened or species of concern. The status of Orange County's rare plant and animal species is provided in *Appendix L*.

Since 2002 three species (Carolina darter, sharp-shinned hawk, small whorled pogonia) were changed from the "Current" to the "Historic" category, meaning that they have not been observed in Orange County during the past 20 years. The 2004 update of the *Inventory of Natural Areas and Wildlife Habitat for Orange County, North Carolina* confirmed the previous documentation of several rare species within the county's natural areas and added one new species, the Carolina Ladle Crayfish.

LAND PROTECTION EFFORTS

Early efforts to conserve land in Orange County include Duke University's purchase of large tracts of land (including abandoned farmland) in the 1920s and 30s. The land was managed for forestry research and education, and later for timber production. Duke Forest continued to grow and many sections were recognized for their conservation value. In 2004, Duke University registered 1,220 acres for voluntary protection with the North Carolina Natural Heritage Program. Today, Duke is the largest landowner in the County, owning more than 5,000 acres of land. Duke Forest provides an excellent model of sustainable land management.

The State of North Carolina began purchasing lands for the new Eno River State Park beginning in the 1970s. The linear park was established around large natural areas associated with the river. Acquisition of land along the Eno from Durham to Hillsborough continues today pursuant to the state park master plan. Now more than two-thirds of the state park (3,160 acres) is in Orange County. The State has also acquired 160 acres along the Eno near Hillsborough for Occoneechee Mountain State Natural Area.

In the 1980s the Orange Water and Sewer Authority (OWASA) started acquiring lands in Bingham Township for the Cane Creek Reservoir and later acquired more land in the watershed to protect drinking water supplies. In 1984 the University of North Carolina dedicated 367 acres as the Mason Farm Biological Reserve.

During the 1980s and 1990s the Triangle Land Conservancy, the Eno River Association, and others used the aforementioned inventories and plans to protect critical resource lands along important river corridors.

Significant natural resource lands are also protected as part of the development approval process administered by the Orange County Planning Department. The Unified Development Ordinance requires that important natural resources be identified and avoided. Some of those areas are set aside as private open space or are dedicated to the County for open space and low-impact recreation purposes. The

County encourages private preservation of open space areas through education and outreach.

LANDS LEGACY PROGRAM

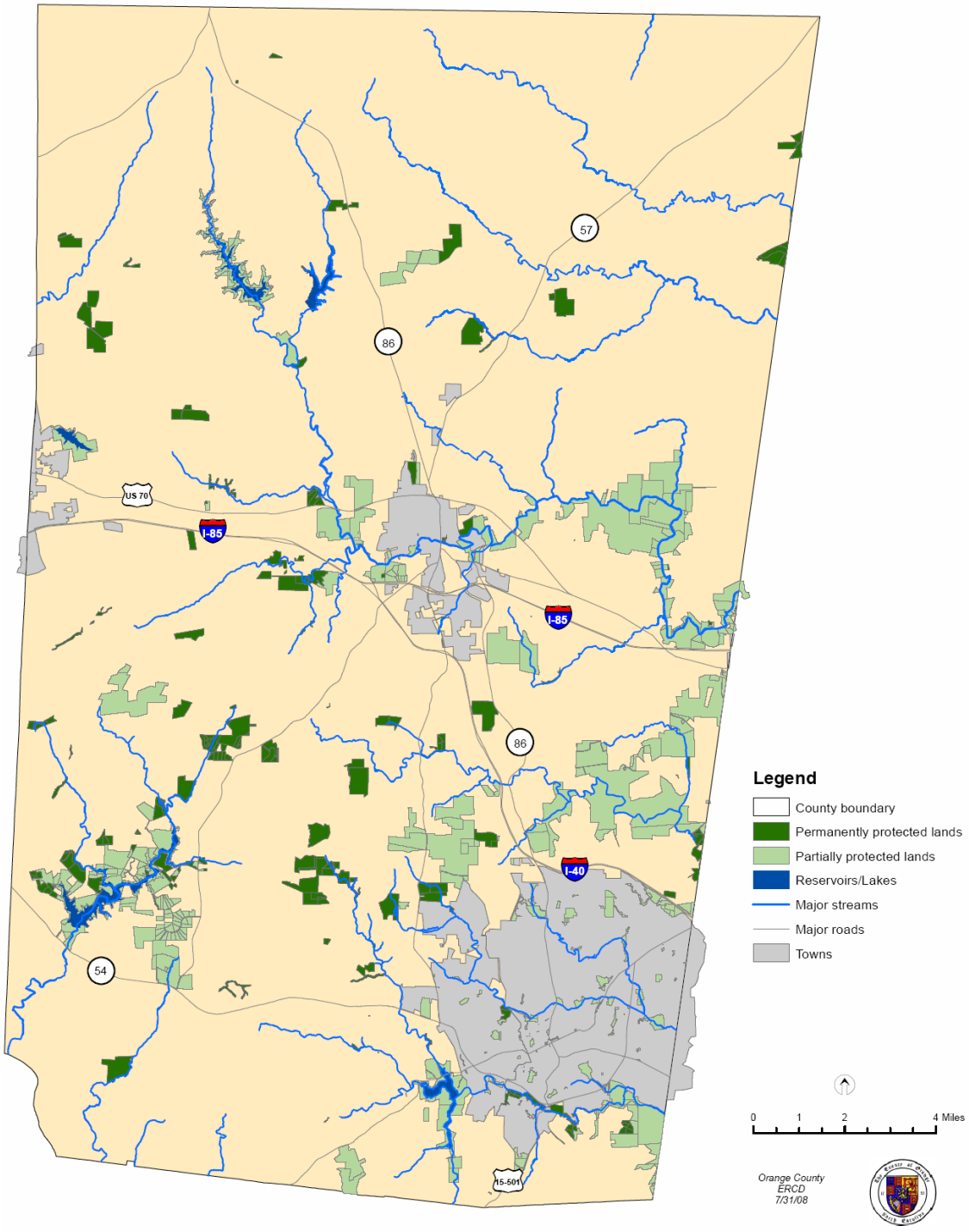
In 2000 Orange County accelerated the pace of conservation by establishing the Lands Legacy program -- the first comprehensive county land conservation program in North Carolina. Lands Legacy was the first focus of the new Environment and Resource Conservation Department, a department established in 1998 to make environmental protection a separate function of county government. Through Lands Legacy the County collaborates with local land trusts, OWASA, area universities, and other partners to protect some of the County's most important natural and cultural resources before they are lost or irreparably damaged. The types of land protected include natural areas and wildlife habitat, parkland, prime farmland, historic and cultural sites, and stream buffers. The County also works with its advisory boards to help guide its acquisition priorities and sets those priorities every two years through the adoption of the Lands Legacy Action Plan. To date, Lands Legacy has protected nearly 2,300 acres, as described in Table 6-3.

TABLE 6-3: LAND PROTECTED THROUGH LANDS LEGACY PROGRAM (2007)

Fee Simple Acquisitions	Acres
-Parkland	670
-Natural lands/Other	307
	977 acres
Conservation Easements (privately-owned lands)	
-Prime farmland	1,088
-Natural areas	210
	1,298 acres
Total Protected Land	**2,275 acres**

CURRENT ESTIMATES OF PROTECTED LAND

The County's Environment and Resource Conservation Department (ERCD) maintains a comprehensive database of protected lands throughout the County, including public parkland, nature preserves, and other public and private open space dedicated for conservation. The data includes conservation easements held by local land trusts, OWASA, Orange County and several other entities.



MAP 6-8: PROTECTED LANDS IN ORANGE COUNTY(2008)

The protected land data and trends are reported in the County's *State of the Environment* report, which is published by the Commission for the Environment (CfE). The report describes the condition of many important natural resources in the County, including its biological resources. The CfE plays an important role in the protection of those resources by advising the Board of Commissioners on which lands should be protected through the Lands Legacy program and designing future parks in ways that protect sensitive resource areas.

In 2004 the *State of the Environment* reported there were 19,265 acres of protected land in Orange County, and that just over half of that land was considered "permanently" protected.[53]

Land protection has accelerated over the past few decades. Prior to 1981 there was an estimated 4,400 acres of protected land in Orange County. Another 4,900 acres were protected during the 1980s, and then 7,150 acres in the 1990s). Since 2000 an estimated 5,000 acres have been protected thus far and it appears that figure may reach 8,000 by 2010.

By the end of 2007 a total of 22,650 acres (8.8% of the County) were protected through various means, including parks, nature preserves, historic sites, and dedicated private open space. More work is needed to meet the Commission for the Environment's goal of 10% of the County's land area being conserved by the year 2010. Many important natural resource lands remain completely unprotected. Map 6-8 illustrates the locations of protected lands in Orange County.

The amount of protected land continues to increase in Orange County thanks to the efforts by the local land trusts, OWASA, and other land conservation entities active in this region. Eno River State Park continues to expand, but is still several hundred acres short of completing the park master plan.

Although considerable progress has been made to conserve land in Orange County, many highly significant natural heritage areas remain vulnerable to being damaged or destroyed by future development. The *State of the Environment* (2004) found that about 4,000 acres (40%) of the County's 10,000 acres of documented natural areas remained unprotected.

By the end of 2007 the County, through its Lands Legacy program, had protected 2,275 acres, including land for seven new county parks and conservation easements on 1,300 acres of privately owned farms and forestlands. Many of the earlier acquisitions were to satisfy a deficit of parkland in the County. Later efforts focused on an initiative to protect farmland using conservation easements.

Over the remainder of this decade the Lands Legacy program is expected to focus more effort on the protection of significant natural areas. One objective is to establish larger areas of natural lands (including prime forests) as nature preserves. This effort was envisioned in the ERCD report that led to the adoption of Lands Legacy

[53] Permanently protected is defined here as meaning that a long-term binding agreement to preserve land was executed.

(2000). The concept was also discussed in the *Joint Master Recreation & Parks Work Group* report (1999).

Envisioned is a system of nature preserves jointly owned and managed by different entities, including Orange County. The purpose is to protect critical masses of undeveloped land (including significant natural areas) surrounded by low-density development and working farms and managed forests. Less sensitive areas might include facilities for public access. Other portions would remain wilderness areas that support native wildlife. This concept complements the desired protection of ecologically significant macrosites described earlier and recommended in the *Inventory of Natural Areas and Wildlife Habitats for Orange County, North Carolina* (2004).

6.4.4.2. ORANGE COUNTY'S NATURAL AREAS, WILDLIFE HABITAT, AND PRIME FORESTS NEEDS

The following section outlines some of the information, program enhancements, and process changes that are needed in order to:

- Support the County's goal of sustaining a balanced and healthy diversity of native plant and animal populations;
- Support the County's goal of providing a network of protected natural, cultural and agricultural lands; and
- Achieve an adequate level of protection for Orange County's most important natural areas, prime forests and wildlife habitat.

A COMPREHENSIVE NATURAL AREAS AND OPEN SPACE CONSERVATION PLAN

The *Inventory of Natural Areas and Wildlife Habitat for Orange County* proposed a specific network of protected wildlife corridors, which has been incorporated into County plans. In 2000 the Shaping Orange County Task Force recommended that the County develop a much more comprehensive conservation plan that would help to ensure long-term protection of its important biological resources.

The plan should address:

- threats to important natural areas and rare species;
- connectivity between protected areas;
- coordination with neighboring counties and conservation partners; and
- the sustainable management of critical natural resources.

EXPAND THE SCOPE OF ORANGE COUNTY'S INVENTORY OF NATURAL AREAS TO INCLUDE PREVIOUSLY UNEXPLORED SECTIONS OF THE COUNTY

The natural areas that were documented in the County's initial inventory (1988) were concentrated in areas of the County that were more easily accessible or that were already protected in some fashion.

Many sites were located in Duke Forest, Eno River State Park, and on University of North Carolina property. New areas of the County should be explored, including northern Orange County. This action is recommended by the Commission for the Environment and endorsed by the NC Natural Heritage Program.

A MONITORING PROGRAM FOR ORANGE COUNTY'S NATURAL AREAS

More fieldwork is needed to document the continued presence of rare plant and animal species in the County. The 2004 update to the County's inventory of natural areas provided a rare opportunity to re-visit sites that had been identified in 1988. Many sites have not been re-visited for 20 years. More frequent visits are necessary to ensure that those sites are intact.

A BETTER METHODOLOGY FOR MONITORING CHANGES IN FOREST COVER

A more detailed and consistent approach is needed for determining changes in forest cover. Efforts were made in 1988 and 2004 to calculate forest cover in Orange County using GIS-based methods, but there were differences in the methods used that make it difficult to compare the results. The information would be useful to get a better understanding of where the County is losing critical habitat for native plants and animals. Better data would help Orange County work with private landowners and other conservation partners on the protection of large areas of prime forest and connections between core forest areas (i.e., wildlife corridors).

A METHODOLOGY FOR MONITORING BIODIVERSITY IN ORANGE COUNTY

One of the critical issues identified in the *2004 State of the Environment* report was the loss of biodiversity in Orange County. Although the County still has large areas of open space and a diversity of wildlife, timber harvesting and development have reduced wildlife habitat and degraded aquatic habitat, which hastens the loss of certain plant and animal populations. The Commission for the Environment recommends developing a way of monitoring common non-rare indicator species as a way to measure the "state of biodiversity" in Orange County.

6.4.4.3. OBJECTIVES

Objectives are intermediate steps toward reaching a goal. The following objectives are intended to help achieve Orange County goals pertaining to natural areas, wildlife habitat and prime forests (Goals 7 and 8), which are restated below. The timeframes for the objectives conform to the guidelines discussed in *Section 1.4: Administration and Implementation Guidelines.*

Natural & Cultural Systems Goal 7: A balanced and healthy diversity of native plant and animal populations.

Objective NA-1:
Conserve high-priority natural areas and wildlife habitats, including wetlands, rivers and streams, floodplains, steep slopes, prime forests, wildlife corridors, and other critical habitats. (See also Water Resources Objective WR-1.)

Objective NA-2:
Conduct more frequent updates to the County's inventory of natural areas, and include previously unsurveyed areas of the County.

Objective NA-3:
Develop a more detailed and consistent methodology for monitoring changes in forest cover throughout the County, and specifically the extent of mature hardwood forest.

Objective NA-4:
Encourage adequate stormwater runoff controls in existing developed areas and require these controls for new subdivisions to protect sensitive downstream aquatic habitat. (See also Land Use Element Objective LU-2.3 and Erosion Control Objective EC-1.)

Objective NA-5:
Prohibit development that would cause adverse impacts on highly significant natural areas and wildlife habitat. (See also Land Use Objective LU-2.2 and Water and Wastewater Objective WW-14.)

Objective NA-6:
Develop a way of monitoring common indicator species as a way to measure the "state of biodiversity" in Orange County.

Objective NA-7:
Ensure that significant natural areas and wildlife habitat located on County-owned lands are protected with adequate ecosystem management practices and stewardship.

Objective NA-8:
Encourage forest management practices on both public and private land that minimize disruption and fragmentation of intact hardwood forests. (See also Agriculture Objective AG-9.)

Objective NA-9:
Encourage long-term productivity of farms and timber lands through best land-use management practices and conservation agreements. (See also Parks and Recreation Objective PR-1.1.)

Natural & Cultural Systems Goal 8: Networks of protected natural, cultural and agricultural lands.

Objective NA-10:
Require that all major subdivisions (defined as having more than 5 lots according to the Orange County Unified Development Ordinance) include within their boundaries open space suitable for low-impact

recreation and wildlife habitat. (See also Land Use Objective LU-4.3 and Parks and Recreation Objectives PR-1.3 and PR-4.1.)

Objective NA-11:
Develop a comprehensive conservation plan for achieving a network of protected open space throughout Orange County, which addresses 1) threats to important natural areas; 2) connectivity between protected areas; 3) coordination with neighboring counties; and 4) sustainable management of critical natural resources. (See also Parks and Recreation Objective PR-5.4.)

Objective NA-12:
Establish a system of nature preserves that protect large areas of undeveloped land (including significant natural areas) surrounded by low-density development and working farms and managed forests. (See also Parks and Recreation Objective PR-5.4.)

Objective NA-13:
Promote clustering of residential development and dedication of large areas of undisturbed land for low-impact recreational use by residents and for wildlife habitat. Where feasible, these areas should be contiguous to neighboring tracts of undisturbed land. (See also Parks and Recreation Objective PR-5.1.)

Objective NA-14:
Encourage developers and neighborhood associations to protect undeveloped community open space through formal conservation agreements.

Objective NA-15:
Protect land in and around biologically significant areas, and connections between these areas, to allow for the maintenance of native wildlife and plant populations and their functional relationships.

Objective NA-16:
Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of the Orange County landscape. (See also Land Use Objective LU-3.10, Parks and Recreation Objective PR-5.4, and Transportation Objective T-1.5.)

Objective NA-17:
Maintain and protect land that contains valuable productive resources, such as prime farmland and prime forestland, by directing incompatible development away from these areas. (See also Water and Wastewater Objective WW-14, Land Use Objective LU-2.2, and Natural Areas Objective NA-5.)

CONCLUSIONS

The County has been a leader in land protection efforts in the State of North Carolina, and more work can be done. With this chapter, the County is setting a vision of preserving an interconnected system of natural preserves, parklands, and other natural areas jointly owned and managed by different entities as one cohesive system for land protection. The goals and objectives are the framework for the County

to work with local land trusts, institutions, and private landowners to preserve a natural network of lands in the County and to ensure long-term environmental sustainability of its natural systems.

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6.4.5. WATER RESOURCES

The water resources of Orange County are part of an ecosystem with two inter-related components that rely on precipitation for recharge and replenishment: surface water, contained within rivers and lakes; and ground water, stored in rock fractures and deep soils below the land surface. The inter-relationship between surface and ground water, and their resultant interactions and impacts, is the ultimate mechanism necessary for planning and assessment of the overall resource. For example, ground water provides "baseflow" to streams, which is the primary source of water in the many creeks and streams of the County during much of the year. Conversely, surface water helps replenish the ground water supplies. Both are part of the hydrologic cycle.

It is important to view surface and ground water as a complex, interactive natural system that reacts to human activity manifested in reduced stream flow, reduced reservoir volume, degraded water quality and lowered water tables.

SURFACE WATER

Orange County is located at the headwaters of three major river basins in North Carolina and southern Virginia: the Neuse River Basin, Cape Fear River Basin and to a much lesser degree, the Roanoke River Basin. These river basins contain a number of smaller watersheds, which can be seen in Map 6-9: Orange County Watersheds. As a headwaters county, streams flow in all directions into neighboring jurisdictions, but few streams flow into Orange County. As such, the County has very limited water resources of its own. This is, and has been, a major consideration of water resources planning. Additionally, surface waters carry nutrients and sediment downstream, which create impacts to aquatic habitat and water quality and quantity.

RIVER BASINS

Much of northern Orange County is within the Neuse River Basin. The Neuse River begins east of Orange County, emerging from Falls Lake in Durham and Orange counties and flowing east-southeast to the Pamlico Sound near New Bern. The primary sub-basin of the Neuse within Orange County is the Eno River watershed, which begins in northwestern Orange County as an East Fork and West Fork, before joining to flow south toward Occoneechee Mountain and Hillsborough, and thence sharply east to Durham County and eventually Falls Lake. Within Orange County, the Eno is often described as three sections – the Upper Eno (upstream of Lake Ben Johnson in Hillsborough), the Middle Eno[54] (a three-mile stretch of the river through Hillsborough), and the Lower Eno (from this point to the Durham County line).

Another watershed within the Neuse basin in northeastern Orange County is the Little River Watershed. The Little River features a North Fork and South Fork in Orange County, before the two merge downstream in Durham

[54]The Middle Eno is not considered a water supply watershed, as it is downstream from the Hillsborough drinking water intake, and upstream of the protective "arc" of the Lower Eno water intake in Durham.

County. Finally in the Neuse, the headwaters of the Flat River are located in far northeastern Orange County. Both the Little River and Flat River continue east into Durham County into reservoirs before joining the Eno in Falls Lake. These are also water supply watersheds for Durham County.

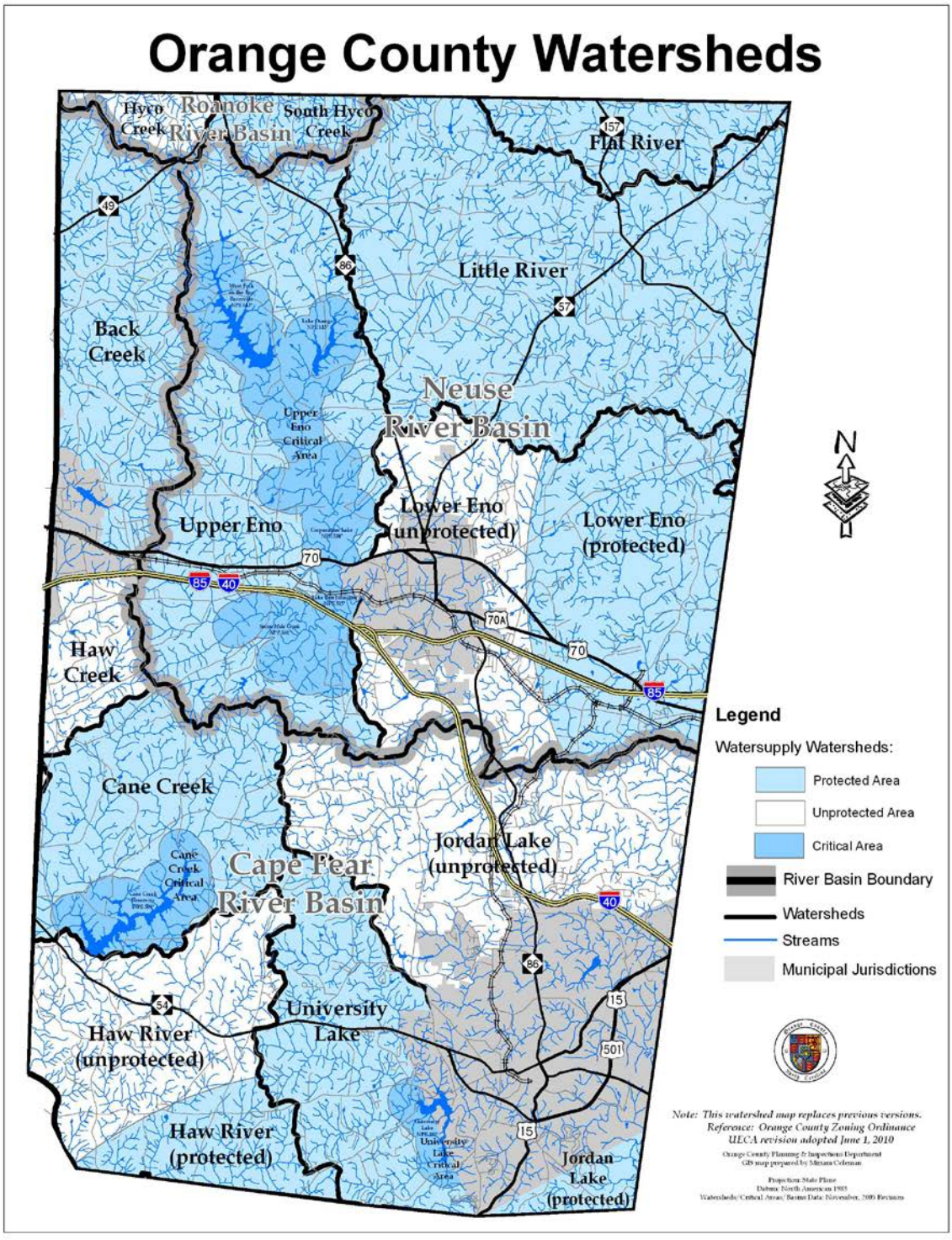
Southern and western Orange County lies within the Cape Fear River Basin. The Cape Fear River begins a few miles south of Jordan Lake, southeast of Orange County, and flows to the Atlantic Ocean south of Wilmington, but its headwaters lie far to the west, north of Greensboro. In this region, the Haw River and other streams feed Jordan Lake, a large reservoir located southeast of the County line, and thence the Cape Fear.

Many of these streams flow west/southwest into the Haw River or south and east into New Hope Creek River – the collector stream for the portion of the Cape Fear basin in Orange County. The Haw itself is the southwestern boundary of Orange County, and also has the distinction of being the only river or stream that touches Orange County from an upstream source. Within the Cape Fear Basin in Orange County are several watersheds that drain to the Haw: Back Creek and Haw Creek to the northwest and west, and Cane Creek and Collins Creek to the southwest. In the southeastern part of the County, Morgan Creek flows into Jordan Lack and New Hope Creek and its tributaries flow east and south to briefly become the New Hope River just before entering Jordan Lake. Water supply impoundments within the Cape Fear in Orange County include Cane Creek Reservoir and University Lake. Portions of western Orange County in the Cape Fear basin drain west into Quaker Creek Reservoir northeast of Mebane.

Finally, a small portion of northwestern Orange County is part of the Roanoke River Basin, and the two streams in this area – North Hyco Creek and South Hyco Creek, drain north into Caswell County and the Dan River. The Dan straddles the North Carolina–Virginia border and eventually becomes the Roanoke River, flowing east to Albemarle Sound.

In all, there are 15 different watersheds in Orange County within these three river basins. (See Map 6-9.)

MAP 6-9: ORANGE COUNTY WATERSHEDS.



WATERSHEDS

Most of these watersheds provide drinking water to citizens both within and outside of the County's boundaries. In fact, ten watersheds are classified as water supply watersheds by the State of North Carolina, meaning that the water in these areas is eventually withdrawn from downstream lakes or river intakes, and used by area water utilities to provide drinking water. Table 6-3 shows the watersheds and the different towns or water utilities that receive drinking water from the watershed.

Natural systems, including hydrologic systems, lend themselves to evaluation at the watershed bioregion level. A bioregion may be a watershed or a group of watersheds within the same basin that functions together as a system. For the purposes of natural resources planning, these bioregions are a useful way of evaluating and planning for our natural resources, and this Comprehensive Plan recognizes this fact - by using watersheds as a planning unit.

The following table lists the 15 watersheds within Orange County. Those which are also water supply watersheds are distinguished by bold font, with the water supply that it serves in parentheses.

TABLE 6-4: ORANGE COUNTY WATERSHEDS

Watershed[55]	Water Supply (lake)	Water Serves
Roanoke River Basin		
North Hyco Creek	NA	NA
South Hyco Creek	Roxboro Lake	Roxboro, Person County
Neuse River Basin		
Upper Eno River	West Fork Reservoir Corporation Lake Lake Ben Johnson	Hillsborough Orange-Alamance Hillsborough
Middle Eno River	NA	NA
Lower Eno River	West Point on Eno intake	Durham (city)
Little River	Little River Reservoir	Durham (city)
Flat River	Lake Michie	Durham (city)
Cape Fear River Basin		
Back Creek	Quaker Lake	Mebane, Graham
Haw Creek	NA	NA
Cane Creek	Cane Creek Reservoir	OWASA (Chapel Hill, Carrboro)
Collins Creek / Haw River[56]	Haw River/US 15/501 intake	Pittsboro

[55] It should be noted that State water supply watershed classifications aggregate some of these watersheds together based on the location of water supply impoundments, like University Lake. State watershed classifications do not necessarily match the hydrologic watersheds listed here.

Watershed[55]	Water Supply (lake)	Water Serves
University Lake	University Lake	OWASA (Chapel Hill, Carrboro)
Lower Morgan Creek	Jordan Lake[57]	Cary/Apex, Chatham County, others
Little Creek[58]	Jordan Lake (part)	Cary/Apex, Chatham County, others
New Hope Creek	Jordan Lake (part)	Cary/Apex, Chatham County, others

Watershed protection for these areas has long been a top priority. In 1981, Orange County became the first county in North Carolina to adopt watershed protection zoning. Watershed protection measures have been refined and increased since 1981, using technical watershed studies and new State minimum standards. Orange County watershed protection standards meet, and in most cases exceed, the State minimum measures.

Orange County also was the first county in North Carolina to adopt a Sedimentation and Erosion Control Ordinance (now known as the Erosion Control and Stormwater Ordinances) in 1987. This ordinance works to protect water quality by regulating construction erosion control and stormwater practices. Special provisions exist in certain watersheds, such as the Neuse basin.

GROUND WATER

The geological characteristics of Orange County, in which the ground water resources reside, are typical of the eastern Piedmont of North Carolina. The Piedmont as a physiographic province stretches from New Jersey to Alabama, and in North Carolina lies between the coastal plain and Blue Ridge Mountains.

The vast majority of Orange County lies within a geologic region of North Carolina known as the Carolina Terrane (formerly Carolina Slate Belt). This geologic region trends north to south through the Piedmont, generally between Winston-Salem and Chapel Hill. The Carolina Terrane is a belt of weakly metamorphosed volcanic and sedimentary and igneous rocks about 500 to 600 million years old. The region contains deeply weathered bedrock and complex geology. A small portion of the County along the

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[56] A portion of this watershed in Orange County is within the 10-mile arc for the "Haw River Watershed," marked from the Pittsboro intake at US 15/501. The remainder (upper) portion of the watershed is not considered a water supply watershed, as shown on Map 5.2.

[57] Jordan Lake currently provides water to the towns of Cary and Apex. Chatham County also acquires water from Cary. Other jurisdictions hold future allocation rights for drinking water from Jordan Lake, including OWASA and Orange County.

[58] Little Creek includes several creeks that drain Chapel Hill and Carrboro, including Bolin Creek and Booker Creek. A portion of this watershed falls into the 5-mile Jordan Lake "arc' for watershed protection; the remainder (upper portions) is not considered a water supply watershed.

southeastern edge with Durham County is within the Triassic Basin. Additional detail on the geology of the County may be found in the Natural Areas, Wildlife Habitat, and Prime Forests section of this Element and Map D10 in Appendix A. Figure 6-8: Cross-Section of Ground Water System in Orange County, shown below, illustrates the how ground water supplies are accessed.

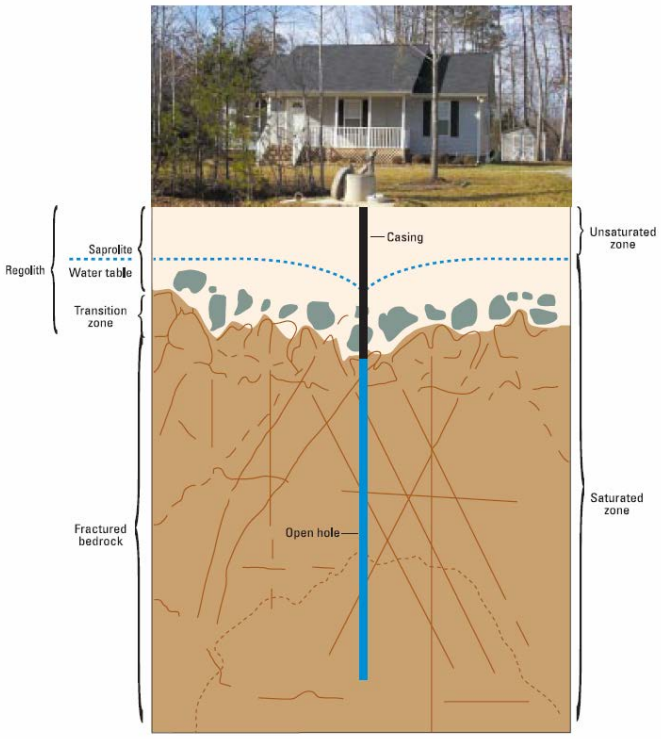


Figure 3. Principal components of the ground-water system in the Piedmont physiographic province of North Carolina.

FIGURE 6-8: CROSS SECTION OF GROUND WATER SYSTEM IN ORANGE COUNTY.

In the Piedmont region of the Carolinas and Virginia, there is no "aquifer" in the conventional sense of a regionally-extensive sandstone or limestone of high porosity and permeability. Instead, water in this region is found in the fractures of the crystalline rock located below the surface, or in a "saturated zone" of deeply weathered bedrock sometimes called "regolith."

Wells that are drilled into the Orange County geologic formations seek to intersect as many of these fractures as possible, although it is nearly impossible to know where the fractures are located. This is the reason for the wide variability of well depth and water yield in the County. The average well depth in Orange County is 300 feet, and average yield is 18 gallons per minute, however, both of these figures can vary dramatically from case to case. Ground water in Orange County is used primarily for drinking water and for agricultural and landscaping irrigation.

6.4.5.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

Orange County has a long history of data collection and interpretation through reports and studies in the area of water resources. This history is due in large part to the limited availability of surface water and the somewhat-unknown availability of ground water.

As far back as the 1960's, droughts and water shortages have been key issues of concern for County residents. The water shortages continued into the 1970's and were only abated after new reservoirs were constructed in southwestern and northwestern Orange County in the 1980's and 1990's. However, droughts of historic record in 2002 and 2007-08 have renewed these concerns.

The County has invested in many surface and ground water studies in the last 30 years to learn more about the nature of its water resources. A listing of these studies and the multitude of data collection on the topic of water resources, resource limitation and supply planning dates to the late 1970's. This documentation is extensive and provides much information about the County's approach to water resources planning and its special challenges and opportunities. The full listing of studies and reports on water resources may be found in Section *6.4.7 Other Key Documents*.

Water use in areas of the County that rely on private groundwater wells is much more difficult to assess – whether for agriculture, landscaping or residential drinking supply.

HISTORIC AND CURRENT DATA - SURFACE WATER

Of the many water resource studies conducted in Orange County there are five reports that relate to surface water and deserve special mention here. These documents are the basis for the way water resources are managed in Orange County, and serve as linchpins for much of the County's water resources standards:

TABLE 6-5: OVERVIEW OF KEY WATER RESOURCE STUDIES

Name of Study	Year	Findings/Results
Orange County Water Supply Study	1987	Determine best sites for new reservoir for central Orange. Demand expected to outpace supply by 2003 (this predated West Fork of Eno Reservoir). Limited future reservoir sites exist in the County.
University Lake Watershed Technical Study	1989	Stringent land use controls needed to protect against further degradation/sedimentation. Led to land use controls (lot size, impervious limits).
Little River/Lake Michie Watershed Technical Study	1990	Protection measures needed for these two watersheds primarily in northern Orange. County adopted land use protection standards (lot size,

Name of Study	Year	Findings/Results
		impervious limits) in 1992.
State Watershed Protection Rules and Implications for Orange County	1991	Examined proposed state minimum rules. After rules changed, County opted to keep original more protective standards in place.
Cane Creek Watershed Technical Study	1999	Stringent land use controls needed to protect against future degradation/sedimentation. Led to land use controls (lot size, impervious limits), with some open space provisions.
Jordan Lake Watershed Technical Study and Proposed Nutrient Management Rules	2004 and ongoing	Technical study for large regional lake focused on areas of concern – including Upper New Hope Arm (southeast Orange). Proposed reductions in nitrogen (25%) and phosphorus (5%) currently being considered.

The ultimate result of the many technical studies and state watershed rules is that much of the County's land area is comprised of small to medium sized water supply watersheds, which by their nature require special protection measures. The limited potential for future water supply sources makes increased protection of the existing sources and better characterization of the fractured crystalline rocks all the more critical. All of the County's major water supply watersheds have been the subject of technical studies, except for the Upper Eno watershed. This watershed has been the subject of conservation studies, but a full technical study has not been undertaken.

The County's overall approach to watershed protection, as noted in the introduction, is to pursue a non-structural approach. This involves protection of water quality at the source, by using land use measures to control impervious surface, the number of housing units (and hence wastewater systems), the infiltration of stormwater on-site, and the protection of stream buffers to further filter water as it moves from the watershed to the stream corridors.

Minimum lot size limits help achieve the goal of limiting human impacts and is a broad tool that is widely in use. Accompanying limits on the amount of land that can be impervious to water infiltration helps reduce sheet flow runoff into streams and encourage infiltration into the soil.

Orange County's stream buffer provisions are a key component of the County's watershed protection approach. Implemented through the Unified Development Ordinance, the overall size and width of protected stream buffers are based on a calculation that takes into consideration the slope of the land and the existing vegetative cover along an identified water body. At a minimum, stream buffers are required to be fifty (50) feet in width along both sides of a stream, with an additional fifteen (15) or thirty (30) feet of protected buffer required based on

severity of slope. Protected stream buffers are measured from the edge of the stream bank of defined special flood hazard areas.

Floodplains are mapped areas of the County adjoining streams in which a frequency of flooding may be expected to occur in a given timeframe. The most frequently used floodplain measure is the special flood hazard area. This denotes the floodplain area subject to a chance flood occurrence of one percent (1%) in any given year. Map D-11 of the *County Profile Element*, located in Appendix A, illustrates the location of special flood hazard areas in the County, along with other development constraints.

One of the impacts of land development over time is an increase in surface water runoff during storm events.

Another type of land that is of significance in terms of both natural areas and water quality is wetlands. Wetlands in Orange County and other upland areas are primarily associated with streams and water bodies. Wetlands are important to overall health and environmental diversity, providing habitat for aquatic and riparian species, and also serving as in important natural water filtering device. More information about the wildlife habitat associated with wetlands may be found in section 6.4.4

SURFACE WATER QUANTITY

Surface water quantity and availability is, as previously noted, considerably limited due to the "headwaters" nature of the County. A standard measurement of the amount of water in reservoirs and water systems is the calculation of "safe yield." While definitions of this term vary, and the term for safe yield is changeable, safe yield is generally defined as the demand for water that can be met under drought conditions. For example, a 30-year safe yield is the demand that a water system can support under drought conditions that would occur on an average of once every 30 years (or have a one in 30 chance of occurring in any one given year).

The following table, Table 6-6 illustrates existing and planned expansions of water supply sources in Orange County, their owner, and safe yield of supply.

TABLE 6-6: EXISTING AND PLANNED EXPANSIONS OF WATER RESOURCES

Provider	Reservoirs	Safe Yield	Storage	Owner / Serves
EXISTING				
Hillsborough	West Fork Eno, Lake Ben Johnson	2.58 mgd	810 million gallons	Hillsborough
OWASA	Cane Creek Reservoir, University Lake, NC 54 Stone Quarry Reservoir	13.0 mgd (estimated 30-year)	3,550 million gallons	(OWASA)[59] Chapel Hill, Carrboro
Orange-Alamance Water System	Corporation Lake and community wells	Uncalculated	20 million gallons	OAWS (western Orange, SE Alamance)
Orange County	Lake Orange[60]	N/A – see footnote	N/A – see footnote	Orange County (Hillsborough, OAWS)
FUTURE				
OWASA	Existing System – plus expanded Stone Quarry Reservoir	19.5 mgd (estimated 30-year)	5,950 – 6,550 million gallons	OWASA
Hillsborough	West Fork of the Eno Reservoir, Phase II	5.58 mgd	1,014 million gallons	Hillsborough

SURFACE WATER QUALITY

Water quality is affected by a number of factors. Sediment that is washed downstream affects water quality, storage capacity of reservoirs and aquatic habitat. This sediment typically comes from natural erosion, road or land construction, or agriculture.

One example of the long-term impact of sedimentation is the change that has occurred to Corporation Lake, an impoundment on the Eno River. Over the past 30 years, the available yield of water from this lake has steadily dwindled to the point where sediments have taken up much of the lake's capacity to store water.

Sediments in transit often transport soil nutrients downstream. Increased loading of nitrogen and phosphorus are the primary water quality issues that result from sedimentation. Considerable time and effort has been expended to date to address the loading of these nutrients into streams and lakes. In particular, the Neuse and Cape Fear basins have been designated Nutrient Sensitive Waters by the State. Special reduction measures have been instituted in the Neuse basin to

[59] OWASA = Orange Water and Sewer Authority

[60] Lake Orange is part of the synchronized reservoir system of the Upper Eno watershed, in conjunction with Hillsborough's West Fork of the Eno reservoir and Lake Ben Johnson. Its safe yield is part of the Hillsborough system yield listed above.

address nitrogen and phosphorus, and are currently being considered for the Cape Fear.

Each year, as required under the federal Clean Water Act, the North Carolina Division of Water Resources releases a listing of streams or stream segments that are not meeting water quality standards for the their classified use (generally, to be "fishable and swimmable)." This list of "303(d) impaired streams" for 2006 in Orange County includes:

- The southernmost segment of Collins Creek, in southwest Orange;
- All of Booker Creek, including Eastwood Lake in Chapel Hill and a branch of the stream that runs parallel to Homestead Road in Chapel Hill;
- Bolin Creek in Chapel Hill and Carrboro, up to the general vicinity of the Adams Preserve in Carrboro;
- Little Creek (the confluence of Bolin Creek and Booker Creek) near the Durham County line; and
- Meeting of the Waters Creek, near the UNC campus and NC Botanical Garden.

This listing is updated every two years.

HISTORIC AND CURRENT DATA - GROUND WATER QUANTITY AND QUALITY

Approximately 37% of the County's population, or 45,000 persons, rely on ground water for their water supply. This water is provided primarily by individual wells, although a smaller percentage of subdivisions and developments are served by larger "community" wells.

Ground water quality is also affected by contaminants, both naturally-occurring and introduced by human activity. Iron and manganese are naturally-occurring contaminants present in surface and ground waters, and are typical "nuisance" issues rather than potable water concerns. Radon is another naturally-occurring contaminant in ground water, formed by the radioactive decay of uranium. Higher than normal levels of radon have been detected in portions of southern and south-central Orange County as part of the ground water studies conducted to date. The radon findings are associated primarily with underlying granitic plutons in these areas, which stretch southward across the County line into Chatham County. Radon implies uranium-bearing rocks. Arsenic is yet another naturally occurring element of concern in the Orange County ground water.

In the early 1990's, questions about the potential limitations of ground water resources and future rural development patterns led the County to create a Water Resources Committee in 1992, to examine the questions related to groundwater quantity and quality. Based on the Committee's interim findings, the County embarked on a series of cost-share studies with the U.S. Geological Survey (USGS) to investigate ground water resources quantity and quality in Orange County. This

resulted in three studies specifically on ground water in Orange County:

- Ground-Water Recharge to the Regolith-Fractured Crystalline Rock Aquifer System, Orange County NC (1996);
- Susceptibility of Ground Water to Surface and Shallow Sources of Contamination, Orange County NC (1999); and
- Investigation of Ground-Water Availability and Quality in Orange County, NC (2001).

Data from the 1996 study produced an assessment of the amount of ground water recharge in inches (or gallons/day/acre). This information, combined with ground water recharge duration characteristics and mean recharge rates allows for the use of ground water data for land use planning purposes. (See Figure 6-9: Ground Water Recharge Duration Characteristics and Mean Recharge.)[61]

[61] As described in the 1996 USGS Water Resource Investigation Report 96-4220. While these subbasins are similar to water supply watersheds, they are aggregated differently.

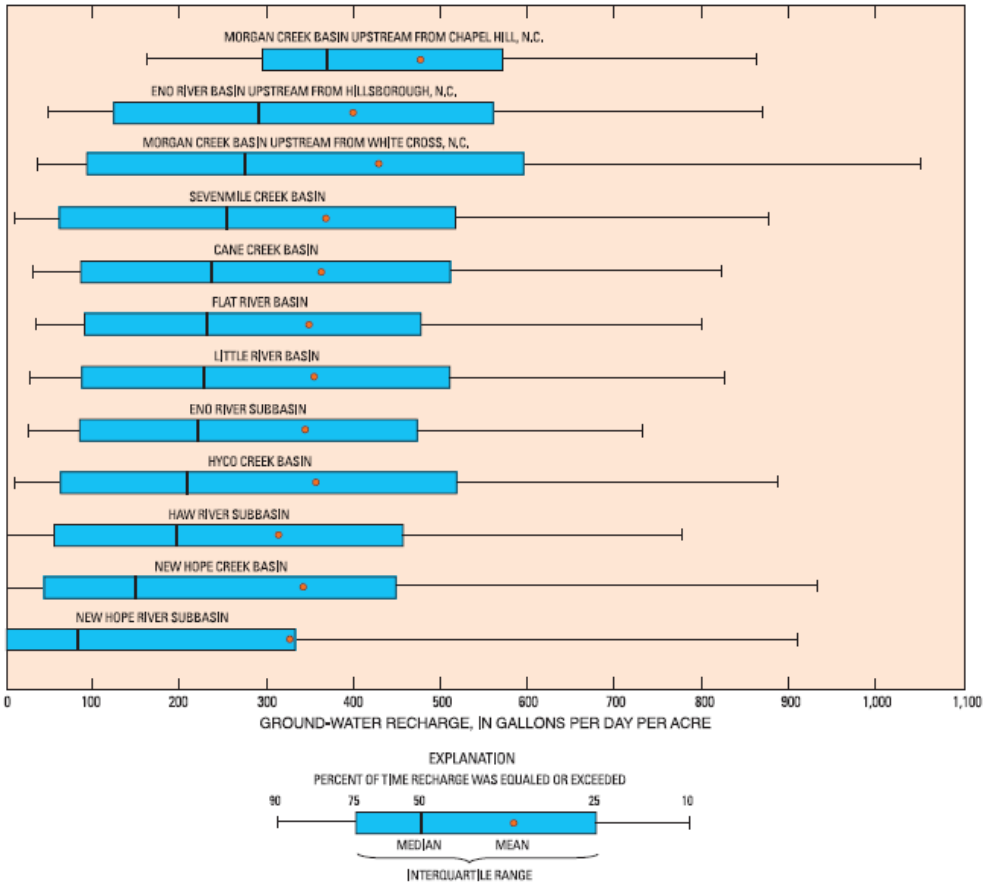


Figure 8. Selected ground-water recharge duration characteristics and mean recharge in 12 basins and subbasins in Orange County, N.C. (from Daniel, 1996, fig. 19).

FIGURE 6-9: GROUND WATER RECHARGE DURATION CHARACTERISTICS AND MEAN RECHARGE.

Based on these studies and their subsequent deliberations, the Orange County Water Resources Committee issued its final report in March 2001. The Committee made a number of findings, and issued the following recommendations:

- Conduct **further research into radon in ground water** in south-central Orange to explore health risks.
- **Create an ongoing ground water monitoring system**, using wells to evaluate changes in well yield and water quality and serve as an "early-warning system" for impending problems.
- **Consider a "water budget" approach for planning for the County's water resources** and assessing the impacts of land use patterns.

- Incorporate **sustainable ground water yield** into zoning decisions and development approvals.
- Consider **requiring new subdivisions to locate well sites prior to approval**, and create a well reserve (or wellhead protection area) on all new lots.
- **Promote water conservation for ground water users**, as well as surface water users.

In May 2001, the Water Resources Committee transitioned into the Commission for the Environment, which created a Water Resources Committee of its own to pursue a task assigned by the Orange County Board of Commissioners – analyze the findings of the USGS ground water reports and Water Resources Committee final report, and develop implementation proposals.

WATER RESOURCES TRENDS - THE SYNTHESIS OF SURFACE AND GROUND WATER

In 2004, the Commission for the Environment began drafting a plan called the "Water Resources Initiative." This plan, adopted in principle by the Board of Commissioners, proposed action in several key areas:

- Assess impact of droughts and floods by creating the observation well network proposed in the Water Resources Committee (2001) report. A recommended program design exists that could allow the County to monitor ground water in storage and issue alerts as needed.
- Further explore the impact of ground water baseflow on stream flow and aquatic life habitat.
- Review and evaluate floodplain maps and explore the inter-relationship of land use patterns and flooding to see what effect this has on intensity of flooding and floodprone areas.
- Conduct the additional research on radon in ground water in certain portions of the County (as per the Water Resources Committee report).
- Conduct increased sampling for organic contamination of ground water supplies to supplement the small sample size of the 2001 USGS study.
- Create a local inventory of ground water contamination incidents, including site checks and evaluation of possible contaminant plume migration. This would require working with State and local health officials and would provide useful information the area residents and the County.
- Identify a resource person to inform and assist citizens in well construction and siting techniques, based on information learned to date.

- Identify a resource person to provide technical and policy assistance to citizens, boards and County departments on water resources matters.
- Conduct information management of, and technical evaluations from, the database of well information gathered since the mid-1990's. This information would be useful to both the County for policy analysis and citizens for basic information about well statistics.

In 2007, the County funded a new Water Resources Coordinator position to begin addressing some of these (and other) recommendations.

The USGS studies of 1996-2001 also introduced the concept of a "water budget" approach to planning for water resources. This approach looks to tie together surface water and ground water quantity in a systematic approach. A water budget seeks to identify the amount of water within a certain area (county), and assess the means and possible mechanisms of allocating the resources in a sustainable fashion.

Trends that have become evident over the past two decades of water resource investigations include the following:

- **The County has little to no potential for new surface water supplies**. This is placing additional pressure on water conservation as a means of meeting increasing demand. Per capita usage of water increased 15% from 1985 to 2000. The importance of conservation has been further highlighted by a series of droughts in recent years.
- **Nitrogen and phosphorus concentrations in surface water have become important considerations to water quality,** especially in the Neuse and Cape Fear River basins (and the water supply sources within).
- The **amount and types of withdrawals from the Eno River are changing with growth** and changed land uses in the Eno basin.
- While the percentage of the County's population using ground water for drinking water has decreased slightly, the **overall number of people using ground water continues to increase**.
- **Ground water quality is relatively good**, except for high levels of radon in southern and south-central Orange County.
- The **number of impaired streams in the County has increased slightly in the last decade**. There are nine streams in Orange County that have volunteer groups monitoring water quality. All but one of these streams are within the Town of Carrboro or the Town of Chapel Hill's extra-territorial jurisdiction.
- The culmination of surface water and ground water studies have pointed to a **need for a comprehensive "water budget"**

approach to managing all water resources, including additional study and research. The Water Resources Initiative from 2005, and recent augmentations of this program, is representative of this trend.

- Watershed technical studies have indicated, and subsequent watershed protection standards (and evaluations of the impacts of same) have validated, that the **non-structural (land use) approach of watershed protection is an effective and low-cost method of protecting water quality**.
- **Efforts at the regional level to plan for watershed protection have been started**, which may provide for a new paradigm of watershed protection and use of large regional water supplies, like Jordan Lake.
- The **potential for water reclamation and reuse has been explored**, and was recently instituted by OWASA and UNC on a limited basis, to further conserve potable water supplies.
- **Public awareness of water issues and water conservation has been heightened** by the droughts of 2002 and 2007-08.
- **All public water suppliers in Orange County have increased their water capacity in the last 20 years**, but recent droughts are causing further exploration of additional supplies by providers.
- **Ground water contamination incidents reported to the State have increased dramatically since 1990**, but many of the incidents are still being investigated or mitigated and are not "closed out."
- **Biotic tests performed on streams in the County are showing improvement**, but only 38% of streams had test results rated "good" or "excellent."
- **Questions about the water quality impacts from the land application of wastewater treatment plant biosolids have arisen**, leading to several studies that are underway.
- A **Commission for the Environment, comprised of environmental scientists and interested citizens, was formed** in 1998 to advise the Board of County Commissioners on environmental issues, including water resources studies and policy.
- The North Carolina Division of Water Quality has begun a **multi-year study of the Neuse River basin**, including the Eno River. This study may have important implications for the existing water allocation agreements, and release of water from the Eno reservoirs.

6.4.5.2. ORANGE COUNTY WATER RESOURCE NEEDS

Orange County's water resources are clearly a foremost consideration in all aspects of planning, and help provide the policy framework and underpinnings for much of the County's land activities.

Based on the many studies and assessments conducted to date, along with recent perspective on the finite nature of the resource, the following key community needs for water have been identified:

- **Calculation of Water Demand and Supply.** In 1987, the County's future population growth and water demand was calculated against the available and expected water supply. A full reassessment of this measure has not occurred since, and may be timely given the droughts and changes in water consumption and water supplies.

- **Consideration of the Water Resources Budget Planning Approach.** Orange County has conducted or participated in many technical studies of the County's surface and ground water supplies, and has developed a proposed program for addressing comprehensive water resources planning and monitoring. A new position was established in 2008 to coordinate efforts in water resources among the many departments that have a role in water, but full consideration of the recommended "water resources budget" approach has not yet occurred.

- **Technical Watershed Study for Upper Eno.** One major watershed in Orange County has not had a technical watershed study conducted, the Upper Eno watershed. What is the future of the Eno, and what will optimize the protection of the resource and still provide for needed services? Given the complexity of this watershed, the number of different users and the low flow of the stream, a technical study of the watershed may inform changes needed to the existing Capacity Use Agreement and long-term planning for the resource.

- **Additional Technical Studies to Support Planning for Ground Water Demands.** The issue of available ground water for rural residential development has become a topic of keen interest for planners and resource managers. Ways to expand on the technical studies performed to date are needed, in a way that helps provide useful and meaningful information that can help evaluate new development proposals. This may include wellhead protection investigation and characterization of fracture systems.

- **Validating the Success of the County's Non-Structural Approach to Watershed Planning.** The County's non-structural approach to watershed protection of the last 25 years (i.e., focusing on protection at the source, stream buffers and land use protection) appears to have been effective in protecting water quality, but a quantitative study

to assess these protection measures could be performed to validate this assumption.

- **Exploration of Radon Levels in Ground Water.** Further exploration (perhaps in conjunction with Chatham County) of high radon levels in ground water.
- **Permanent Water Conservation Program.** New permanent water conservation programs may be needed to extend the life of existing water supplies and reinforce the finite nature of the resource.
- **Assessment of Drought Planning.** An assessment of contingency planning for water supplies and water provisions during drought conditions is needed to ensure they are adequate.

6.4.5.3. OBJECTIVES

Objectives are intermediate steps toward reaching a goal. The following objectives are intended to help achieve Orange County goals pertaining to water resources—specifically Goal 6, which is restated below. The timeframes for the objectives conform to the guidelines discussed in *Section 1.4: Administration and Implementation Guidelines.*

Natural & Cultural Systems Goal 6: Sustainable quality and quantity of ground and surface water resources.

Objective WR-1:
Preserve natural resources such as grasslands, woodlands and wetlands to allow for water recharge of ground water and water quality protection. (See also Natural Areas Objective NA-1.)

Objective WR-2:
Create long-term conservation programs for ground water and surface water that will help extend the life of our finite existing water supplies. (See also Water and Wastewater Objectives WW-1 and WW-11.)

Objective WR-3:
Coordinate acquisition of open space for watershed protection purposes with neighboring counties, for watersheds providing drinking water to Orange County or neighboring citizens.

Objective WR-4:
Coordinate possible nutrient trading and stormwater credits between the towns and County, including possible stream buffer acquisition or other land conservation approaches.

Objective WR-5:
Promote and participate in regional efforts to plan for use of water supplies in the region in an equitable manner, including contingency planning for water supplies during droughts. (See also Water and Wastewater Objective WW-5.)

Objective WR-6:
Ensure greater coordination among County agencies on water resources, including cooperative efforts to prevent surface and ground water pollution by addressing failing septic systems and wells. (See also Water and Wastewater Objective WW-19.)

Objective WR-7:
Promote land use patterns that preserve the natural hydrologic system and maintain a sustainable "carrying capacity" balance for the future between ground water and surface water resources (See also Land Use Objective LU-2.9.)

Objective WR-8:
Ensure that sufficient water resources are available for farms.

Objective WR-9:
Encourage and participate in efforts by the state and other regional jurisdictions to address the future use of Jordan Lake as a water supply, in a manner that links sustainable growth to future water allocation.

Objective WR-10:
Establish a county network of ground and surface monitoring wells to assist in water resources planning and drought monitoring.

Objective WR-11:
Provide incentives and educational information to landowners to increase protection of watersheds and ground water supplies and their inter-relationships.

Objective WR-12:
Prepare a new Orange County Water Supply Study, and make updated supply and demand projections that can be used to inform future decision-making.

Objective WR-13:
Create a mechanism for intergovernmental coordination of water resources, calculating a comprehensive County "water budget" approach.

Objective WR-14:
Use the new Water Supply Study (WR-11) and the State's Neuse River Basin model (2009-10) to evaluate the Upper Eno Watershed and its optimal protection measures.

Objective WR-15:
Conduct cooperative research on ground and surface water quality, working with other partners in the County and adjoining jurisdictions to address water quality problems such as radon. (See also Air and Energy Objective AE-5.)

Objective WR-16:
Conduct additional research on well yields and wellhead protection to determine if more reliable information on well yields and wellhead protection areas can be discerned with available technology.

Objective WR-17:
Reduce the number of 303(d) impaired streams by minimizing impacts of non-point and point source pollution.

Objective WR-18:
Continue hydrogeologic characterization of the ground water system (including quantifying recharge areas), with emphasis on fractures in the crystalline rocks.

Objective WR-19:
Develop water efficiency standards for new development in order to decrease per capita water use.

Objective WR-20:
Promote Best Management Practices for new developments which minimize stormwater runoff. (See also Land Use Objective LU-2.3 and Erosion Control Objective EC-1.)

Objective WR-21:
Develop land use policies that promote a 'no net loss' principle for groundwater recharge, for each recharge area.

TABLE 6-7: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Overarching Goal		√	√	√	√	√	√	√	√
Goal 1 and Objectives AE-1 – AE-16		√	√	√	√			√	√
Goal 2 and Objectives AG-1 – AG-8	√	√	√	√	√	√	√	√	√
Goal 3		√			√	√		√	
Goal 4 and Objectives CR-1 – CR-5	√	√	√	√	√	√			√
Goal 5 and Objectives CR-6 – CR-9									√
Goal 6 and Objectives WR-1 – WR-21		√	√	√	√	√	√	√	√
Goal 7 and Objectives NA-1 – NA-9	√	√	√	√	√	√			√
Goal 8 and Objectives CR-10 – CR-12, NA-10 – NA-17 and AG-9							√		√

CONCLUSIONS

As exemplified by the Board of County Commissioner's Guiding Principles for developing the 2030 Comprehensive Plan, the protection and sustainable use of the county's water resources is of paramount importance. Long-term planning and management of the County's water supplies is necessary to insure future demand can be met. The County needs to continue the momentum gained over the last two

decades to gather data, explore solutions, and implement actions to protect precious surface and ground water resources. The County can serve as the coordinator of water resource planning efforts; creating a comprehensive approach that addresses watershed planning at the regional, local, and site levels.

6.5. LINKS TO OTHER ELEMENTS

Natural and Cultural Systems are interconnected to economic development, housing, transportation, park and recreation facilities, and community services planning. Linkages between specific natural and cultural systems goals and objectives have been identified in this element. The following summarizes the objectives from other Elements that are linked with natural and cultural systems objectives.

ECONOMIC DEVELOPMENT

Objective ED-1.1:
Focus public education efforts on sustainability issues, looking at the social, economic and environmental contributions of local businesses.

Objective ED-1.7:
Enhance Orange County's tourist industry.

Objective ED-4.1:
Enhance historic character by supporting organizations' efforts to preserve, promote, and maintain historic structures, and identify Orange County policies that may be in conflict with these efforts.

Objective ED-4.4:
Enhance rural and agricultural community character by supporting local agriculture markets, supporting complementary conservation and management tools, and considering tools to make farming more profitable.

HOUSING

Objective H-3.6:
Work within the Orange County government system to identify and resolve existing policies which may be at odds with historic preservation goals, green building approaches, and workforce and affordable housing efforts.

LAND USE

Objective LU-2.2:
Continue to protect valuable resource land such as productive agricultural acreage, managed forest areas, natural areas, historic sites and properties, and potential reservoir sites through the County's Lands Legacy Program, and by directing incompatible development away from these areas through land use and zoning policies and regulations.

Objective LU-2.3:
Require non-residential and higher-density residential developments within Transition Areas to use Best Management Practices (BMP's) for

stormwater control, as outlined within the Orange County Unified Development Ordinance, to ensure that potential adverse impacts on the water quality of existing and proposed reservoir sites.

Objective LU-2.7:
Refine green building standards to guide the design, siting, construction, and management of publicly owned and managed buildings in a manner that conserves energy and/or uses non-polluting renewable energy sources. Explore the development of green building standards for private development.

Objective LU-2.9:
Evaluate the carrying capacity of groundwater and surface water resources of the 15 watersheds in Orange County.

Objective LU-3.2:
Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation system.

Objective LU-3.4:
Recognize the right to farm and discourage the location of new non-farm development, particularly more intensive residential development, within farming areas to minimize the incidence of complaints and nuisance suits against farm operations.

Objective LU-3.10:
Identify prime viewsheds along major transportation corridors and other areas, and amend County land use ordinances to ensure long-term protection of viewsheds.

Objective LU-4.3:
Determine how private developments can best accommodate or provide public and private commercial recreational facilities to serve Orange County's residents.

Objective LU-4.5:
Work within the Orange County government system to identify and resolve existing land development policies that may be in conflict with the historic preservation goals.

PARKS AND RECREATION

Objective PR-1.1:
Acquire and /or retain public ownership of parks, recreation facilities, open space, and conservation areas that will serve Orange County.

Objective PR-1.3:
Develop a land use planning mechanism for securing new parks through the development approval process.

Objective PR-4.1:
Developers shall provide for adequate and appropriate open space suitable for active/low-impact recreation in residential developments.

Objective PR-5.1:
Locate parks and recreational facilities close to residential areas to encourage informal interaction with nature, encourage walkability, and create areas of wildlife habitat with appropriate recreational facilities within the more populated areas.

Objective PR-5.4:
Encourage development of a system of private open space and conservation areas, including nature preserves, parks, linear parks, and scenic vistas compatible with the character of Orange County.

SERVICES AND FACILITIES

Objective WW-1:
Maintain a sustainable and high quality supply of ground and surface water so that available resources meet existing and projected needs.

Objective WW-5:
Maintain a cooperative joint planning process among the County, the municipalities, and water and wastewater providers and guide the extension of service in accordance with the Comprehensive Plan, the Orange county-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities.

Objective WW-11:
Increase educational efforts that increase citizen understanding of water quality problems and the need for water conservation.

Objective WW-14:
Designate prime reservoir sites in the County, and protect those sites from adverse development.

Objective WW-19:
Establish a continuing wastewater treatment inspection program within identified Protected and Critical Water Resource Areas.

Objective EC-1:
Continue to use Best Management Practices (BMP's) for stormwater control, as outlined within the Orange County Unified Development Ordinance, to minimize potential adverse impacts on the water quality.

TRANSPORTATION

Objective T-1.1:
Increase the occupancy of automobiles through ridesharing and other means; and expand the use of public transit (including bus and rail), walking, and biking as primary modes of travel.

Objective T-1.5:
Identify prime viewsheds along major transportation corridors and protect these areas for their scenic and natural resource values.

Objective T-1.6:
Expand the availability and use of public transportation (including bus and rail) throughout the County to provide better connections between employment centers, shopping and service locations, and other key

points of interest in both urban and rural areas, particularly for the County's senior and disabled populations and others without access to automobiles.

6.6. OTHER KEY DOCUMENTS

The following are lists of key documents that were useful in preparing the Natural and Cultural Systems Element. The documents are grouped according to the component chapter of the Element. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.)

AGRICULTURAL RESOURCES

- Policy Documents, Creation of APB—VFPO, Rules of Procedure (1992-2002)
- *Planning for an Agricultural Future: A Guide for North Carolina Farmers and Local Governments.* American Farmland Trust, 2007.
- *To Preserve Our Farms, Final Report of the Orange County Agricultural Task Force* (1979)
- *Preserving Our Farms: A Purchase of Development Rights Program of Orange County North Carolina* (Orange County Planning & Inspections Dept., 1994)
- *Farmland for the Future: A Program for Acquiring Agricultural Conservation Easements in Orange County, North Carolina* (1991)
- *Orange County Soil Survey & Supplement, "Important Farmlands in Orange County North Carolina"* (1978)
- *Report of the Ad Hoc Committee on Farmland Preservation to the Board of Directors of the North Carolina Associations of County Commissioners* (1984)
- *Public Policymaking: A Rural Land-Use Case Study of the Public Policy Process* (1984)
- *The Revised Universal Soil Loss Equation with Factor Values for North Carolina*? (1995)
- Kimberly Siran masters thesis, N.C. State University (1997)
- Text and Map in *1981 Land Use Element*
- *Zoning Limitations and Opportunities for Farm Enterprise Diversification: Searching for New Meanings in Old Definitions.* Robert Andrew Branan, 2006.

AIR AND ENERGY RESOURCES

- Carrboro, Hillsborough, Chapel Hill and Orange County: *Greenhouse Gas Emissions Inventory and Forecast* (draft) (ICLEI Energy Services, Toronto, ON, CA, 2007)

- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *Clean Air for the Triangle Area – An Action Agenda* (Southern Environmental Law Center, 2005)
- *Environmental Responsibility in County Government Goal* (Orange County, 2005)
- *Alternative Fuel and Low Emissions Vehicle Work Group Report*, (Orange County, 2000)
- *Marin Countywide Plan, Natural Systems and Agriculture Chapter* (Marin County CA, 2007)
- *A Report on Sustainability Indicators for Orange County* (Pamela McIntosh, 2000)

CULTURAL RESOURCES

- Preservation Ordinance, Historic Preservation Commission Rules of Procedure
- *1996 Historic Preservation Element*
- *Preserving the Orange Tradition* (local landmark program)
- Report on financial impact of local landmark program
- Draft Design Standards (two sets) prepared by Historic Preservation Commission and by grad student
- Staff prepared Historic Preservation Commission notebooks
- Draft Discussion Paper, Heritage/Scenic Corridor Program
- *The Scenic, Rustic, and Rural Roads Program*, by the Planning Board's Transportation Advisory Subcommittee (TAS),
- Multiple Properties Documentation Form (MPDF) & Publication Narrative
- Countywide inventory of historic sites (files) and Loose-leaf notebooks Architectural Resources Report of St. Mary's Road (GAI Consultants)
- National Register Historic District Nominations for Cedar Grove, The Oaks
- Text and Map in *1981 Land Use Element*
- County Policy for Cultural and Archaeological Surveys (2005)

NATURAL AREAS, WILDLIFE HABITAT AND PRIME FORESTS

- *Inventory of Sites of Cultural, Historic, Recreational, Biological, and Geological Significance in the Unincorporated Portions of Orange County* (Planning Dept., 1986; revised 1988)

- *Inventory of Natural Areas and Wildlife Habitats for Orange County* (Sather and Hall, 1988; updated 2004)
- *Vascular Flora of the Duke Forest, NC* (Palmer, 1990)
- *Eno River State Park Aquatic Inventory* (NC Wildlife Resources Commission, 1996)
- *Environment and Resources Protection Committee Report*, Shaping Orange County's Future (1998)
- *B. Everett Jordan Lake Project: Inventory for Rare, Threatened, and Endangered Species and Natural Area Inventory* (Harry LeGrand for US Army Corps of Engineers, 1999)
- *A Lands Legacy Program for Orange County* (ERCD, 2000)
- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *State of Open Space* (Triangle Land Conservancy, 2000 & 2002)
- *Triangle GreenPrint Regional Open Space Assessment* (Triangle J Council of Governments et al., 2002)
- *New Hope Corridor Open Space Master Plan* (Coulter Associates and New Hope Corridor Advisory Committee, 1991)
- *A Landscape with Wildlife for Orange County– Parts I & 2* (Wiley et al. for Triangle Land Conservancy, 1997 & 1999)
- *The Duke Forest at 75, A Resource for All Seasons* (Ida Phillips Lynch for Duke University, 2006)

WATER RESOURCES

- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *Ground-Water Recharge to the Regolith-Fractured Crystalline Rock Aquifer System, Orange County NC* (US Geological Survey in conjunction with Orange County, NC, Water Resources Investigations Report 96-4220, Charles C. Daniel III, 1996)
- *Susceptibility of Ground Water to Surface and Shallow Sources of Contamination, Orange County, NC* (US Geological Survey in conjunction with Orange County, NC, Open File-Report 99-179, Silvia Terziotti and Jo Leslie Eimers, 1999)
- *Investigation of Ground-Water Availability and Quality in Orange County, NC* (US Geological Survey Water Resources Investigations Report 00-4286, in conjunction with Orange County, NC, William L. Cunningham and Charles C. Daniel III, 2001)
- *Public Forum: State of Our Local Water Supply* (Orange Water and Sewer Authority, 2008)

- *Orange County Water Supply Study, Phase I* (Hazen and Sawyer, P.C., 1987)
- *Report of the Water Resources Committee* (Orange County Water Resources Committee, 2001)
- *Shaping Orange County's Future* (Shaping Orange County's Future Task Force, 2001)
- *Jordan Lake Watershed Technical Study and Proposed Nutrient Management Rules* (draft) (NC Division of Water Quality, 2007)
- *Cane Creek Watershed Technical Study* (TetraTech, 1999)

6.7. INTERGOVERNMENTAL COORDINATION

Natural and cultural resources know no political boundaries. As such, coordination both within Orange County government and with other area jurisdictions is of paramount importance.

INTRA-GOVERNMENTAL

On an intra-governmental level, natural and cultural resources issues are addressed by several advisory boards and staff. The Agricultural Preservation Board (APB) is charged to encourage the preservation and protection of farmland in Orange County, and to advise the Board of Commissioners on matters related to agriculture. The Economic Development Commission also has responsibilities related to agricultural economic development, and there are other local farm-related advisory boards that are partially or wholly outside of County government, such as the Soil and Water Board of Supervisors (State/federal), the Cooperative Extension Board (State), and the Farm Services Agency Board (federal). All of these boards have met together infrequently on agricultural topics of mutual interest, and have expressed a desire to do so more regularly.

The Commission for the Environment (CFE) is charged to advise the Board of Commissioners on matters affecting the environment, particularly the topical areas of air quality, water resources and natural areas/biological resources, as well as environmental education. As there are additional County advisory boards that may provide advise on these topics to the Board of Commissioners, coordination is essential.

A member of the federal Certified Local Government (CLG) program, the Historic Preservation Commission (HPC) is charged to advise the Board on matters of historic and cultural resource significance, including the identification and protection of the County's historic, archaeological and cultural resources. One of the Commission's most important duties is to recommend properties with historic of architectural significance for designation in the County's Local Landmark Program as individual landmarks or as part of local historic districts, and to grant Certificates of Appropriateness for designated properties.

INTERGOVERNMENTAL

Coordination of County policies and decisions affecting natural and cultural resources with other jurisdictions in Orange County includes working with the Towns of Chapel Hill, Carrboro, Hillsborough and Mebane, and the City of Durham, to ensure that the interconnectivity of natural resources is recognized and planned for, and that there is consistency in the way cultural resources are

addressed. Each of the municipalities within the County has mechanisms for protecting open spaces and natural areas, floodplains and watersheds, and historic districts.

In the last decade, the towns and County have worked together on many open space acquisitions that protect natural heritage sites, water quality and other sensitive lands – such as the Adams Preserve, Hollow Rock Preserve, and University Lake watershed. The County's Lands Legacy Program strives for close coordination with the other adjoining local governments. Interconnectivity of natural resource lands, whether for wildlife or human uses, is a key component and likely to be an area of emphasis for many years to come.

Many natural and cultural resource issues are multi-jurisdictional and require a regional response, such as watershed protection and air quality. Orange County participates with many regional partners through the Triangle J Council of Governments and other regional mechanisms. The County also has worked with Durham County on several conservation efforts, such as Little River Park and the New Hope Preserve, and has discussed joint ventures with Chatham County.

There are two particular areas where a need for greater coordination has been highlighted. One is in the area of historic preservation. State enabling statutes do not provide for easy coordination and consistency between town and County jurisdictions – especially in extra-territorial jurisdiction (ETJ) areas. Additionally, historic district commissions in Chapel Hill and Hillsborough have only limited to no legal jurisdiction over properties outside the boundaries of their local designated historic districts.

The second relates to agriculture and Voluntary Agricultural Districts. As urban areas encroach upon traditionally agricultural areas, the State's legislation related to Voluntary Agricultural Districts lacks clarity on how these districts function in areas that are transitioning from rural to urban uses.

In summary, conservation of the natural and cultural resources within Orange County will require heightened levels of cooperation and collaboration with the other local governments in the County and the region in future years.

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Chapter 7. Parks and Recreation Element

7.1. PURPOSE

The Parks and Recreation Element provides guidance and direction regarding recreation facility and park planning efforts in Orange County. The goals and objectives identified within this Element serve as the foundation for establishing future parks and recreation policies and action strategies undertaken by Orange County, its advisory boards, and staff. The specific process for developing a recreation and park implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

7.2. OVERVIEW

BACKGROUND

Orange County offers numerous natural and constructed recreational opportunities throughout the County, including state parks, local parks, and trails and greenways. The County and its towns have worked over the last several decades to cooperate on recreational facility and park planning efforts to deliver coordinated recreational services to the County's citizens. The County's last comprehensive park plan was adopted in 1988. Several of the municipalities have updated their park plans more recently. An updated, comprehensive, and countywide parks and recreation strategy is needed.

PARK AND RECREATION PLANNING IN ORANGE COUNTY

Orange County and the Towns of Hillsborough, Chapel Hill and Carrboro have made parks and recreational facilities an important priority among local and County government services. This is exhibited by the strong interest and effort to plan for recreational amenities in the County. Table 7-1 shows the park planning efforts that have occurred in the Orange County.

TABLE 7-1: PARKS AND RECREATION PLANNING IN ORANGE COUNTY

Jurisdiction	Adopted Park Plan?	Year Adopted	Acreage of Current Parks	Other Related Plans
Carrboro	Yes	2006	80 acres	
Chapel Hill	Yes	2002	255 acres	2006 Greenways Master Plan
Hillsborough	Yes	2007	28 acres	
Mebane	No		141 acres	Master Plan for Lake Michael Park
Orange County	Yes	1988	359 acres	Lands Legacy Plan, Joint Master Recreation and Parks Report

Each of the recreation and park master plans that has been developed in Orange County have included an assessment of existing facilities, an identification of park and facilities needs, and a recommended strategy for funding projects, acquiring land, and working collaboratively with other jurisdictions, sometimes including the school districts, to do joint planning for recreational facilities.

The 1988 Orange County Recreation and Park Master Plan recommended that the County concentrate efforts in the provision of four types of recreation and park facilities: 1) community parks (serving the more densely populated unincorporated areas of the County); 2) district parks; 3) greenways; and 4) swimming pools. The plan made specific recommendations for the number and locations of parks:

- **Six Community Parks** – One each in the Efland, University Station area of Eno/Chapel Hill Townships, White Cross, and Caldwell communities, as well as the Northern and Fairview parks;
- **Four District Parks** – One each in Bingham Township, Cheeks/Hillsborough Township, Chapel Hill Township, and Little River/Cedar Grove Township; and
- **Two public swimming pool**s.

Since 1988, two park land purchase and development bonds totaling $26 million have been approved by voters. The County has assisted with funding for pools in the Sportsplex facility as well as at Homestead Park in Chapel Hill. A community park has been built in the Efland/Cheeks area, and plans are progressing for improvements at the Northern and Fairview Parks. Land has been acquired for a new park at the Blackwood Farm, near University Station and plans for acquisition of a park site in Eno Township (North-Central Park) are in the current Lands Legacy Plan. The communities of Caldwell and White Cross remain without concrete plans for community parks. However, land acquisition for the White Cross-area park is in the current Lands Legacy Action Plan, and the new Little River Regional Park and Natural Area is in close proximity to Caldwell.

The 391-acre Little River Regional Park and Natural Area (which is larger than a district or community park) has been developed in Little River Township and plans are well under way for the Chapel Hill Township District Park, now named Twin Creeks. A district park for Bingham has not been planned to date, as land acquisition is still underway. The proposed Cheeks/Hillsborough District Park will be met through a split-site approach, combining the active recreation at the West Ten Soccer Center with future low-impact public access areas at the Seven-Mile Creek Preserve, which is located nearby. This split-site approach was confirmed by the Board of County Commissioners in early 2008.

INTER-JURISDICTIONAL RECREATION AND PARK PLANNING

Orange County has taken a lead role in coordinating park and recreation planning with the municipalities and other jurisdictions, such as OWASA. The following historical summary charts the work of these jurisdictions to coordinate and plan for parks and recreational facilities in Orange County.

REPORT OF THE RECREATION AND PARKS WORKING GROUP

In 1996, the County initiated a process to develop a Recreation and Parks Working Group that developed recommendations to establish principles for coordinated countywide recreation and park facility planning, foster greater cooperation in use of existing facilities, and support private recreation providers and public/private partnerships. The work group developed a number of recommendations presented to the Assembly of Governments, including setting park standards, an inventory of park and recreational facilities, and the inclusion of park facilities in new school sites.

REPORT ON THE COORDINATION OF RECREATION AND PARKS SERVICES IN ORANGE COUNTY (1997)

This report described different options for the improvement of services to the community through intergovernmental coordination of parks and recreation functions, including:

- A countywide long range plan for parks and recreation;
- Acquisition and protection of good park sites;
- A lead role for Orange County in funding, acquisition, development, ownership, and maintenance of new facilities;
- Coordination and work toward partial consolidation of selected functions; and
- A countywide bond proposal, which led to the successful 1997 countywide Parks Bond.

REPORT OF THE JOINT MASTER RECREATION AND PARKS (JMRP) WORK GROUP

This report followed up on many of the recommendations from the 1996 and 1997 reports. As a part of this report, an inventory of facilities and community parks needs was developed for each jurisdiction, and recommendations were forwarded on a variety of issues, including:

- Formation of an Intergovernmental Parks Work Group to share information and explore collaboration opportunities;
- Possible funding mechanisms;
- Use of the County's Lands Legacy program as a vehicle for coordinated parkland acquisition; and
- The need for a bond referendum to address parkland deficits.

POTENTIAL JOINT CAPITAL FUNDING FOR PARKS

This report was presented to the Assembly of Governments in 2000. It further explored the possibilities for joint parks, and suggested a mechanism for County and town roles for future joint parks, including the County taking a lead on capital funding and land acquisition and potential town roles in operation and maintenance of joint facilities. This was a precursor to the successful 2001 Parks, Recreation and Open Space Bond.

Key objectives of these efforts that are still critical for coordinated park planning in Orange County today include:

- Ongoing work of the Inter-Governmental Parks Working Group;
- Development of Inter-jurisdictional standards;
- Joint Siting, Design and Management of School Parks and Sites;
- Public / Private Partnerships;
- Joint Capital Facilities Planning / Coordinated Land Acquisition;

- Open Facilities Policy;
- Payment in-Lieu Changes; and
- Addressing Existing Needs.

KEY ISSUES

Park planning has evolved since the 1988 Orange County Master Recreation and Parks Plan was adopted. Emerging issues that will need to be addressed in future recreation and park planning initiatives include:

- Coordinating with municipalities to arrange for **appropriate cost-sharing and use policies** as new parks and recreation facilities are developed that draw patrons from multiple jurisdictions;
- Coordinating with the local school districts to develop **joint use recreational facilities** on their campuses;
- Linking local greenway and trail development efforts with the **Mountains to Sea Trail**;
- Planning for and developing recreational opportunities on the **Haw River Blueway (canoe trail and hiking trail)**;
- Developing an **inter-connected system of greenways and trails** linking town and County parks and open spaces; and
- Determining what the **new recreational demands** are that are not currently being met in Orange County.

7.3. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

Orange County has been providing park and recreational facilities to the citizens of Orange County since the 1970's. Prior to that time, the towns provided public park and recreational opportunities, such as Umstead Park, Cedar Falls Park, and Wilson Park. In 1988, Orange County adopted its first official Park plan and has subsequently developed and expanded many parks and trails.

EXISTING AND PLANNED COUNTY PARKS AND RECREATIONAL FACILITIES

Today, the Orange County Parks and recreation Department manages more than ten parks and recreational facilities, and numerous trails. Additional parks and facilities are being developed in the future. Existing and future facilities are described in Table 7-2.

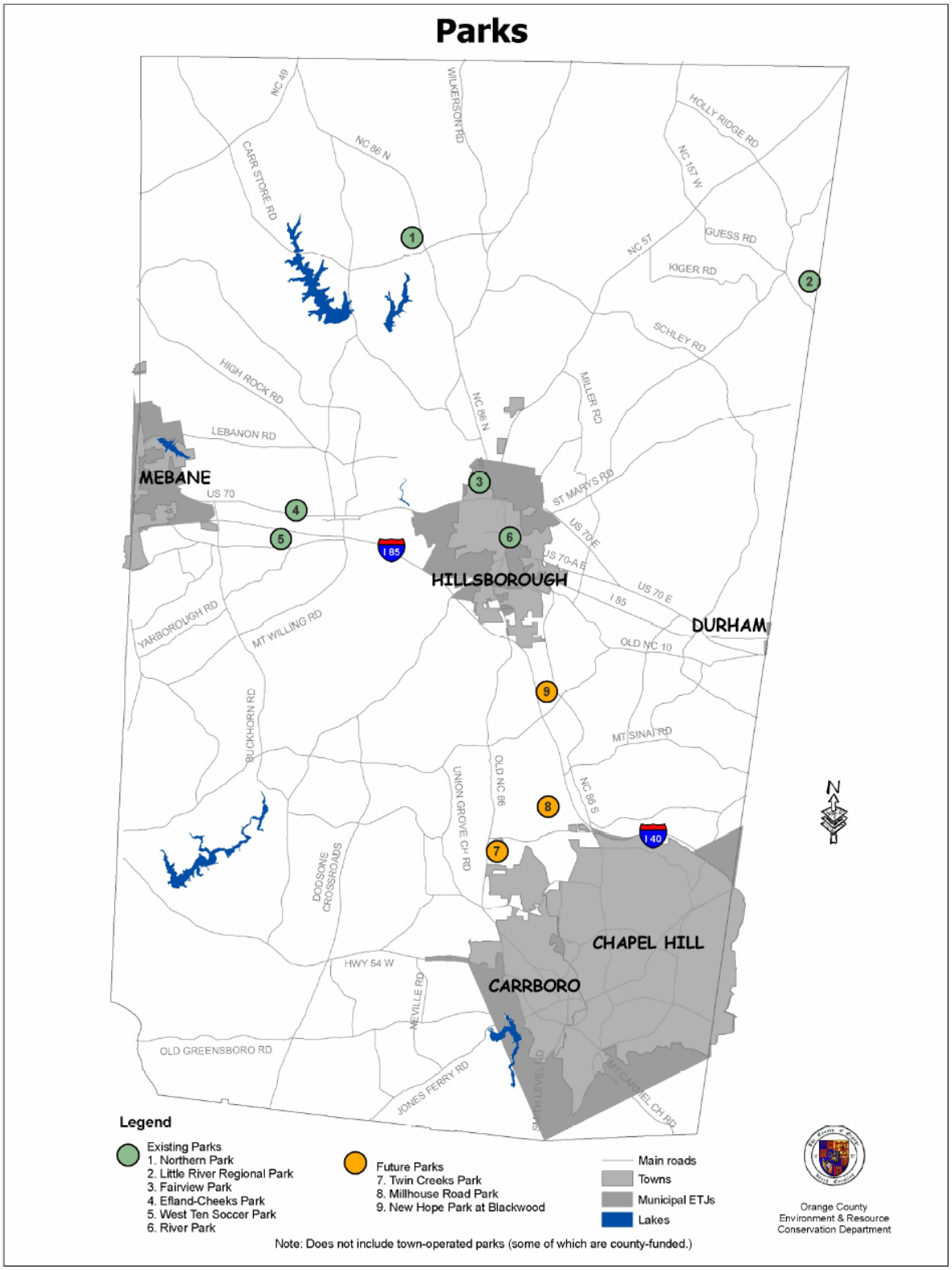
TABLE 7-2: EXISTING AND PLANNED PARKS AND RECREATIONAL FACILITIES

Park/Facility	Location	Description
Central Recreation Center and Park	Queen/Tryon and Hassell Streets in Hillsborough	Outdoor facilities include a multi-purpose field, children's playground, picnic area and parking. The recreation center includes meeting/activity rooms and a gymnasium.
Efland-Cheeks Park	Richmond Road, off US-70 West in Efland and Cheeks Township	11-acre park is co-located with Efland-Cheeks Elementary School. It features a lighted multi-purpose field, two small ballfields, a lighted walking track, two picnic shelters, a playground, a community center, two lighted basketball courts and trails.
Fairview Park (Expansion planned)	Northern Hillsborough on Rainey Avenue	Joint partnership with Hillsborough. 67-acre park includes youth baseball field, picnic area, a new playground with recommended plans for "Phase 2" facilities to include lighted basketball courts, lighted youth baseball/softball field, an additional new playground, picnic shelter and restrooms, a lighted walking track, trails, three tennis courts, and a volleyball court.
Homestead Park Aquatic Center	Eastern end of Homestead Rd in Chapel Hill	27,000 square foot building with two pools, locker rooms, lobby, classroom, and offices to be located on the existing Homestead Park site.
Little River Regional Park	Along border of Orange and Durham Counties on Guess Rd	Created in partnership with Durham County and non-profit groups, the 391-acre regional park and natural area protects a natural heritage corridor along the Little River. More than 7-miles of hiking trails, a playground, two picnic shelters, ADA loop trail, more than 7-miles of bike trails, refurbished farm buildings, possible horse trails, and a group camp site.
Millhouse Road Park (Planned)	Millhouse Road north of Chapel Hill	69-acre park area adjoining Duke Forest. Master Plan yet to be developed.
New Hope Park at Blackwood (Planned)	New Hope Church Road and NC-86	152-acre park currently in master planning phase.

Park/Facility	Location	Description
Northern Park	NC-86, seven miles north of Hillsborough	Co-located on 48 acres with the Northern Human Services Center, the park features a lighted baseball/softball field, gymnasium, meeting rooms, and art and pottery rooms in the center. Currently under construction, Phase II includes a second lighted ballfield, a lighted walking track, a multi-purpose field, a picnic shelter with restrooms, two lighted basketball courts, two playgrounds, trails and parking.
River Park (Planned)	Margaret Lane, Hillsborough (between the Orange County Courthouse and the Eno River)	Six-acre open area will include trails, benches, and picnic tables, a performance stage, and a public market. It is adjacent to the Stillhouse Creek Ecosystem Enhancement Project, which features trail connections and environmental education signage.
Skills Development Center Pocket Park	503 West Franklin Street	Small pocket park along Franklin Street in Chapel Hill.
Smith Playing Fields	1709 High School Road (adjoining Chapel Hill High School)	Joint project of the Town of Carrboro, Orange County, and Chapel Hill-Carrboro School District. Includes two acres, with two lighted soccer fields adjacent to school.
Southern Human Services Center	Homestead Road in Chapel Hill	Nature trails wind around the center and the adjoining ridge. The new Robert and Pearl Seymour Senior Center is located on this campus.
Twin Creeks Park and Educational Campus (Planned)	Old 86 north of Carrboro	96-acre park will be co-located with a 97-acre educational campus. The park will include a picnic shelter, meadow and nature trail, and two full-sized soccer fields. The full park will eventually have the following lighted facilities: four full size soccer fields, two baseball/softball fields, tennis courts, basketball courts, and a street hockey court. That park will also include two playgrounds, a water "Spray-park," three picnic shelters, concession and restroom building, croquet and senior activities area, and use of old farmstead buildings.

Park/Facility	Location	Description
Upper Eno Nature Preserves - Public Access Areas (Planned)	West and southwest of Hillsborough	Future nature preserve(s) encompassing hundreds of acres are envisioned in the Seven-Mile Creek area and along the Eno River. These preserves would include areas designated for public access, including trails and low impact recreation facilities.
New Hope Creek Preserve – Hollow Rock Access Area	Orange-Durham County line, along Erwin Road	A 72-acre preserve would include future public access area with trails, in conjunction with Durham County and Triangle Land Conservancy. Currently in master planning stage.
West Ten Soccer Park	West-central Orange County, near Gravelly Hill Middle School	Co-located with the middle school, the 33-acre soccer complex features five full size lighted soccer fields, including a championship field, a practice field, a concession stand with restrooms and a lighted walking track. A future phase includes tennis courts.
Adams Preserve	Bolin Creek near Estes Drive Extension, in Carrboro (adjoining Carrboro's Wilson Park)	A 27-acre preserve in central Carrboro that features a forested natural area protected in collaboration with the Town of Carrboro.
Starfield Conservation Area	New Hope Creek, north of New Hope Church Road	A conservation easement was granted by the developer of a subdivision that includes protection of a portion of the Currie Hill Natural Heritage site, and a future public trail segment along New Hope Creek.
Northeast Park (Planned)	Schley and Mincey Roads, six miles northeast of Hillsborough	Future 142-acre park will feature active and low-impact recreation, may be co-located with other public facilities.

Map 7-1 depicts the locations of existing and future Orange County parks.



MAP 7-1: EXISTING AND FUTURE COUNTY PARKS

In addition to the existing and planned parklands, Orange County has purchased additional lands through its Lands Legacy Program, or other means, that have current or future recreational components, such as the Adams Preserve.

The Triangle Sportsplex, owned by Orange County and operated by a private firm, offers wellness and fitness programs as well as a pool, ice rink and other amenities. Wellness, recreation and fitness programs targeted to seniors are also offered at multiple sites, including the Seymour Senior Center in Chapel Hill and Central Orange Senior Center in Hillsborough.

Parks and Recreational Facilities of Other Jurisdictions

The Towns of Chapel Hill and Carrboro have independent parks and recreation departments that plan for and provide park and recreation services within the Towns. The Town of Hillsborough does not have dedicated staff to manage and operate park and recreation services and relies on the Orange County Parks and Recreation Department and the Environment and Resource Conservation Department for acquisition, development and management of parks.

A comprehensive list of all public parks and recreational facilities in Orange County, including those managed by the towns, is included in a document entitled *Comprehensive Park and Recreational Facilities*. The Countywide Composite Parks Map, showing all of the jurisdiction's planned and existing parks, is also included in *Appendix M*.

Other park and recreation facilities in Orange County are provided by the following:

- Orange Water and Sewer Authority holds more than 3,000 acres of land in the County, and provides recreational facilities at University Lake and Cane Creek Reservoir;
- Duke University has several Duke Forest properties in Orange County that are used as a private research forest and provides natural areas and public trailways in the County;
- The State of North Carolina manages and operates two state parks in Orange County. The Occoneechee Mountain State Park and the Eno River State Park are both located in Orange County near the Town of Hillsborough; and
- The University of North Carolina's new Carolina North campus is expected to include open space and recreational facilities and fields. Planning for this large new research campus in central Chapel Hill is currently underway.

7.4. ORANGE COUNTY PARK AND RECREATION NEEDS

Projections for Orange County's future population between now and 2030 could mean an additional 40,000-80,000 persons that would need parks and recreational services in the future. Approximately one-quarter of those additional residents will likely live outside of the municipalities, which means that the County

will have primary responsibility for providing recreation facilities, services and opportunities to somewhere between 10,000 and 20,000 new residents.

To continue providing adequate opportunities for recreation in Orange County, new facilities and programs will need to be added. Planning and funding of these services and facilities will require a coordinated strategy with the towns and school districts in Orange County.

Much has changed in terms of park needs and facilities since the 1988 Master Plan. A countywide assessment of the new demands for parks and recreation, and a coordinated plan for providing those facilities and services is needed.

7.5. GOALS

Parks and recreation Overarching Goal: Regionally coordinated park facilities that provide healthy opportunities for recreation and exercise for all citizens of Orange County, and that preserve important cultural and natural resources.

Parks and recreation Goal 1:
Adequate parks and recreational facilities for all citizens within the County, regardless of age, gender, race or disability.

Parks and recreation Goal 2:
A partnership among regional recreational providers and facility owners/managers, including the appropriate co-location and sharing of school facilities, that meets the County's recreation needs.

Parks and recreation Goal 3:
Recreational facilities available for the public use in a manner that is multi-generational and accessible to all County citizens at both the countywide and community level.

Parks and recreation Goal 4:
Healthy lifestyles, quality of life and community building through the provision of a variety of affordable recreational facilities and choice of leisure activities, while responding to the changing needs and interests of County residents.

Parks and recreation Goal 5:
Park and recreational facilities that are environmentally-responsible, and where cultural and natural resources and open space within these sites are protected.

7.6. OBJECTIVES

The intent of this Plan is that the following list of objectives will help guide regular and ongoing decision-making by the County related to recreation and park planning initiatives. Each objective has a recommended timeline for

completion.(Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines.)*

Parks and recreation Goal 1: Adequate parks and recreational facilities for all citizens within the County, regardless of age, gender, race or disability.

Objective PR-1.1:
Acquire and /or retain public ownership of parks, recreation facilities, open space, and conservation areas that will serve Orange County. (See also Natural Areas Objective NA-9.)

Objective PR-1.2:
Acquire and/or retain lands suitable for siting both indoor and outdoor active recreation facilities to serve all Orange County residents.

Objective PR-1.3:
Develop a land use planning mechanism for securing new parks through the development approval process. (See also Natural Areas Objective NA-10 and Land Use Objective LU-4.3.)

Objective PR-1.4:
Consider alternative funding possibilities for future park facilities, such as non-profit foundations.

Parks and recreation Goal 2: A partnership among regional recreational providers and facility owners/managers, including the appropriate co-location and sharing of school facilities, that meets the County's recreation needs.

Objective PR-2.1:
The County will serve as the lead coordinator of regional open space and recreation facility providers in the County (including OWASA, UNC-Chapel Hill, and Duke University), and coordinate regional efforts including future parkland and recreation facility planning, acquisitions, and operations/maintenance of community, district, and regional park and recreation facilities.

Objective PR-2.2:
Develop a methodology to be used by regional recreational providers in determining the number of recreation and park facilities needed. The agreed upon methodology should address countywide and community-specific service areas and how needs are determined within those service areas, such as linking facility needs to population growth.

Objective PR-2.3:
Develop a program for land dedication/recreation payment that is effective and comprehensive.

Objective PR-2.4:
Establish a mechanism to promote shared use of existing public and institutional buildings and grounds for public recreation, as well as for their primary uses. (See also Education Objective E-2.)

Objective PR-2.5:
Adopt criteria for evaluating potential land acquisitions for recreation and park facilities in cooperation with other regional park providers.

Objective PR-2.6:
Develop a Memorandum of Agreement among the local governments on joint capital and/or operational funding for future parks and recreational facilities. (See also Education Objective E-2.)

Parks and recreation Goal 3: Recreational facilities available for the public use in a manner that is multi-generational and accessible to all County citizens at both the countywide and community levels.

Objective PR-3.1:
Locate parks and recreational facilities close to residential areas and transportation nodes, to increase public knowledge and accessibility to these facilities, including alternative transportation modes.

Objective PR-3.2:
Implement individual park master plans, such as the 2006 Fairview Park Master Plan.

Objective PR-3.3:
Create a new Parks and Recreation Facilities Master Plan Map, to guide future parks planning and help leverage outside funding.

Parks and Recreation Goal 4: Healthy lifestyles, quality of life and community building through the provision of a variety of affordable recreational facilities and choice of leisure activities, while responding to the changing needs and interests of County residents.

Objective PR-4.1:
Developers shall provide for adequate and appropriate open space suitable for active/low-impact recreation in residential developments. (See also Natural Areas Objective NA-10.)

Objective PR-4.2:
Investigate the potential for public and/or private commercial partnerships and recreational facilities needed to serve Orange County's residents.

Objective PR-4.3:
Work to keep recreational facilities and services affordable and sustainable to the general public.

Objective PR-4.4:
Periodically survey the public, and conduct needs assessments, on recreation services.

Parks and Recreation Goal 5: Park and recreational facilities that are environmentally-responsible, and where cultural and natural resources and open space within these sites are protected.

Objective PR-5.1:
Locate parks and recreational facilities close to residential areas to encourage informal interaction with nature, encourage walkability, and create areas of wildlife habitat with appropriate recreational facilities within the more populated areas. (See also Natural Areas Objective NA-13.)

Objective PR-5.2:
Landscape parks and recreational facilities with native vegetation and minimize water use where practical. Prohibit use of known invasive non-native species in County facilities, and take steps to eradicate occurrences of same.

Objective PR-5.3:
Ensure public access to County-owned parks and nature preserves, but direct facilities and trails away from the most ecologically sensitive sites.

Objective PR-5.4:
Encourage development of a system of private open space and conservation areas, including nature preserves, parks, linear parks, and scenic vistas compatible with the character of Orange County. (See also Natural Areas Objectives NA-11, NA-12, and NA-16, and Transportation Objective T- 1.5.)

Objective PR-5.5:
Develop linear parks and rustic trails in the Rural Buffer, and explore opportunities for preservation and connectivity along other identified stream corridors.

Objective PR-5.6:
Create a new Parks and Recreation Facilities Plan Map, to guide future parks planning and help leverage outside funding.

TABLE 7-3: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Goal 1 and Objectives PR-1.1 – PR-1.4	√	√			√			√	√
Goal 2 and Objectives PR-2.1 – PR-2.6	√	√							√
Goal 3 and Objectives PR-3.1 – PR-3.3	√	√						√	√
Goal 4 and Objectives PR-4.1 – PR-4.4	√	√							√
Goal 5 and Objectives PR-5.1 – PR-5.6	√	√			√	√	√		√

7.7. LINKS TO OTHER ELEMENTS

Park and recreational planning is interlinked to with land use, transportation, and natural and cultural systems planning in Orange County. Provided here is a listing of the objectives from other Plan Elements that are linked to Parks and Recreation objectives.

LAND USE

Objective LU-4.3:
Determine how best private developments can accommodate or provide public and private commercial recreational facilities to serve Orange County's residents.

NATURAL AND CULTURAL SYSTEMS

Objective NA-10:
Require that all major subdivisions (defined as having more than 5 lots according to the Orange County Unified Development Ordinance) include within their boundaries open space suitable for low-impact recreation and wildlife habitat.

Objective NA-11:
Develop a comprehensive conservation plan for achieving a network of protected open space throughout Orange County, which addresses 1) threats to important natural areas; 2) connectivity between protected areas; 3) coordination with neighboring counties; and 4) sustainable management of critical natural resources.

Objective NA-12:
Establish a system of nature preserves that protect large areas of undeveloped land (including significant natural areas) surrounded by low-density development and working farms and managed forests.

Objective NA-13:
Promote clustering of residential development and dedication of large areas of undisturbed land for low-impact recreational use by residents and for wildlife habitat. Where feasible, these areas should be contiguous to neighboring tracts of undisturbed land.

Objective NA-16:
Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of the Orange County landscape.

SERVICES AND FACILITIES

Objective E-2:
Continue to work with parks and recreation providers in the County to identify opportunities for co-location and shared funding of school and public recreational "joint use" facilities.

TRANSPORTATION

Objective T-1.5:
Identify prime viewsheds along major transportation corridors and protect these areas for their scenic and natural resource values.

7.8. OTHER KEY DOCUMENTS

Several documents were used as resources in the development of this Element and are listed below. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.)

- *Master Recreation and Parks Plan* (1988)
- *Recreation Dedication/Payment-In-Lieu Report* (1995)
- *Executive Summary – Report of the Joint Master Recreation and Parks Work Group* (2000)

- *Report to the Master Recreation and Parks Work Group* (1999)
- *Report on Potential Joint Capital Funding for Parks* (2000)
- *A New Era for Parks – Organizational Structures for Parks Coordination* (2001)
- *Report of the Master Plan Work Group on the Chapel Hill Township Park and Educational Campus* (2003)
- *Concept Plan Review Committee Recommendations for the Efland-Cheeks Park, Phase 2* (2003)
- *Composite Countywide Plan for Parks and Trails – Carrboro, Chapel Hill, Hillsborough, Mebane, and Orange County* (2006)
- *Fairview Public Campus Master Plan Committee Recommendations* (2006)
- *Final Draft of the New Hope Park at Blackwood Farm Master Plan Committee Report*
- *Town of Hillsborough Parks and Recreation Master Plan* (2007)
- *Carrboro Recreation and Parks Comprehensive Master Plan* (2006)
- *Chapel Hill Greenways Plan* (2006)
- *Chapel Hill Parks and Recreation Plan* (2002)
- *Draft Orange County Recreation and Parks Strategic Plan* (2005)
- *Carrboro Greenways Plan* (2007)
- *Lands Legacy Program Action Plan* (2006-2008)

7.9. INTERGOVERNMENTAL COORDINATION

Intergovernmental collaboration for the planning, funding, and maintenance of future parks and recreational facilities in Orange County is necessary if tax dollars are to be used efficiently and services are to be provided equitably throughout the County. As addressed in Goal 2, Orange County needs to continue to lead an ongoing dialogue with the Towns of Hillsborough, Chapel Hill, Carrboro, and Mebane, and the Chapel Hill-Carrboro and Orange County School districts, as well as other parks and recreational providers, to coordinate future park planning and funding efforts.

Chapter 8. Services and Facilities Element

8.1. PURPOSE AND SUSTAINABLE GOVERNMENT

This Services (Utilities) and Community Facilities Element provides guidance and direction regarding the provision of public facilities and services in Orange County. The goals and objectives identified within this element serve as the foundation for establishing future public services and facilities policies and action strategies undertaken by Orange County, its advisory boards, and staff. This specific process for developing a services and facilities implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

Service delivery responsibilities and the types of facilities required vary widely among counties. Services and facilities should be provided in a manner that reflects the specific needs of the community, while taking into account its fiscal limitations. The role and responsibility of Orange County government is to ensure that a proper balance is reached that will maintain social equity and diversity and that relies upon, supports, and promotes the wise use and reuse of natural and fiscal resources in all of its actions and programs. Although sustainability is discussed throughout this Plan, the concept of Sustainable Government is introduced and emphasized here to reflect that the relationship between Orange County government and the provision of services to the community is more than that of simply service provider and customer.

8.2. OVERVIEW

Orange County provides a robust array of publicly funded and managed facilities and services to County residents. The availability of infrastructure and community services adds considerable value to the community. A general list of these facilities and services provided in Orange County includes:

- **Animal Services** - The Animal Services Department is responsible for Animal Control and Animal Sheltering activities within Orange County. The Animal Control Division enforces State and County laws that apply to animals, including cruelty laws, nuisance animals and dangerous wildlife, within the unincorporated portion of Orange County and the Town of Hillsborough. Orange County's Animal Shelter is an open-door facility and operates both intake and adoption services.

- **Emergency Services** – Orange County contributes to the provision of fire prevention and rescue services, hazardous materials response, emergency medical services, and emergency 911 services throughout the County.

- **Erosion/Control and Stormwater Management** – Erosion control and stormwater management activities in the County are regulated by state laws and County ordinances to ensure that land disturbance activities do not adversely impact our water bodies and natural lands. County inspectors monitor development activities to ensure these regulations are upheld.

- **Law Enforcement** – The Orange County Sheriff's Department protects and serves the people of Orange County by enforcing local

laws, preserving the peace, and carrying out other duties aimed at protecting the health, safety, and welfare of the County's residents.

- **Libraries** – Orange County's library system works in conjunction with municipal library systems to provide a variety of print, digital, and audio resources to County residents.
- **Provision of Public Water and Wastewater** – The County leads the coordination of the provision of public water and sewer services throughout the County. The County works with five utilities that provide direct potable water and/or sanitary sewer services to ensure that limited water resources are managed wisely, and to ensure an adequate provision of services are available to future populations.
- **Public Court System** – North Carolina's District 15B court system is located in Orange County. This includes Superior and District Courts, as well as a Small Claims Court, and several specialty courts.
- **Public Education** – Two public school districts operate in Orange County: Orange County School District, and the Chapel Hill-Carrboro School District. The County provides operating and capital financing to these districts and coordinates with the school districts on the provision of education in the County. The Durham Technical Community College, Orange County Campus, opened its doors for continuing education and basic skills courses in May 2008, with curriculum courses starting Fall Semester 2008.
- **Public Health and Mental Health** – The County offers public health and mental health services to area residents. Prevention of epidemics, protection against environmental hazards, education regarding healthy behaviors, and mental health assistance programs are provided to residents of the County.
- **Services for the Aging** – The County provides a variety of programs and services to increase the health and wellness of aging residents. Services include special activities and events, professional health and wellness consultations, community volunteering, and coordination of local services to the aging.
- **Solid Waste Management** – Solid waste management services in the County are provided and coordinated by Orange County. Services include operating the Orange County Landfill, Orange County Solid Waste Convenience Centers and Orange Community Recycling Programs.
- **Telecommunications** – Within Orange County and the four municipalities there are sixty-one known wireless telecommunication structures (towers). Tower siting has become a very contentious issue with local citizens, and the County is working to address siting of these towers.

The Comprehensive Plan addresses several other public services directly in other elements (i.e., Natural and Cultural Resources, Land Use, Housing, Parks and Recreation). This element, Services and Facilities, addresses services that provide

the facilities we need to live together as a community. It highlights water and wastewater, erosion control and stormwater management, solid waste management, law enforcement, fire and emergency services, library services, and public education. The education component of this chapter focuses on school facilities. Other education issues and policies are addressed in related documents listed at the end of the chapter.

Other public services (Public Court System, Public Health and Mental Health, Services for the Aging, and others) are also critical components of County government that are addressed in other County plans and policy documents, listed at the end of this chapter.

8.3. GOALS

The following public services and facilities goals will guide future policy and implementation strategies for the County.

Services and Community Facilities Overarching Goal: Growth consistent with the provision of adequate and sustainable County services and facilities while managing the impacts upon the environmental infrastructure and effectively protecting the County's natural and cultural resources.

Services and Community Facilities Goal 1:
Efficient provisions of public water and sewer service systems which are consistent with the Land Use Plan and which abide by the current Water and Sewer Management Planning Boundary Agreement, the existing Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and future agreements to be negotiated among the County and public and private service providers.

Services and Community Facilities Goal 2:
Adequate, safe, and healthy groundwater withdrawal and wastewater disposal systems with minimal impacts upon water and land resources.

Services and Community Facilities Goal 3:
High quality educational facilities that support our diverse and growing population and present opportunities for life-long learning.

Services and Community Facilities Goal 4:
High quality library facilities that support our diverse and growing population and present opportunities for life-long learning.

Services and Community Facilities Goal 5:
Efficient and effective drainage, stormwater, floodplain management, and erosion control systems.

Services and Community Facilities Goal 6:
Less solid waste per capita with cost effective and environmentally responsible disposal and management.

Services and Community Facilities Goal 7:
Efficient and effective public safety, including police, fire, telecommunications, emergency services, and animal services.

8.4. COMPONENT ELEMENTS

The Services and Facilities Element addresses public facilities and services independently by providing background information about the service and the service area, trends in providing the service/facility in the County, and goals and objectives for guiding future decisions regarding these services.

8.4.1. WATER AND WASTEWATER

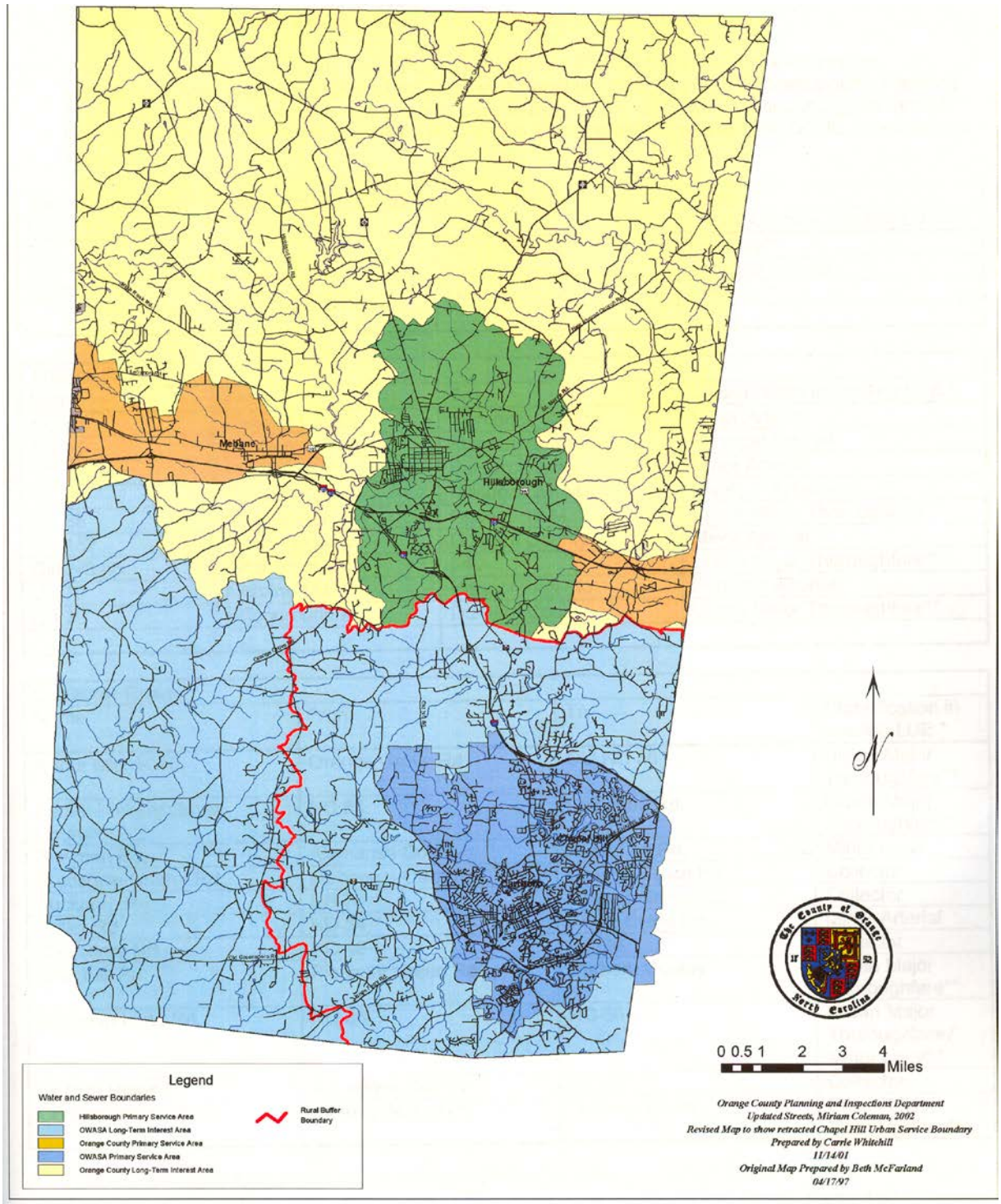
Over the past quarter-century, citizens and policy-makers in Orange County have expended tremendous energy to evaluate and protect current and future drinking water supplies, whether surface water or ground water. Much of the early interest was driven by droughts and a lack of supply in the 1970s and 1980s that saw regular water shortages in Chapel Hill, Carrboro, and Hillsborough and eventually led to the creation of new reservoirs. Droughts were not the only reason water supplies were a critical issue. The increasing population of Orange County also influences the quality and quantity of water. Growth trends are expected to continue and will require that the orderly provision of water and wastewater services are adequate to meet the needs of current and future populations. (See *Section 6.4.5: Water Resources* for more information on surface and ground water supplies in Orange County.)

WATER AND SEWER MANAGEMENT, PLANNING, AND BOUNDARY AGREEMENT

Limited water resources and an expanding population base require strategic coordination to ensure that existing and future populations can be adequately served.

In December, 2001, to further its goal of strategic coordination, the Orange County Board of Commissioners, OWASA, and the Towns of Chapel Hill, Carrboro, and Hillsborough entered into a Water-Sewer Management, Planning, and Boundary Agreement. The agreement designates a countywide system of utility service areas for water and sewer service providers upon which the signatory entities could rely when making decisions related to issues such as planning, land use, annexation, zoning, and growth management. The agreement is in effect for 10 years and will renew automatically unless a signatory party provides notice of intent to withdraw. All parties to the agreement must approve any requested changes. The Water and Sewer Management, Planning, and Boundary Agreement is included as *Appendix N.*

Map 8-1 below outlines the service area boundaries that were established through this agreement. Primary Service Areas designate areas where water and/or sewer service is now provided, or might reasonably be provided in the future. Long-Term Interest Areas designate areas where public water and/or sewer is not anticipated to be provided, but identifies the potential service provider should an “emergency” situation arise where extension of service is required, such as private system failures. Map 8-1 also shows the boundary of the Rural Buffer which was established as part of the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan.



MAP 8-1: WATER AND SEWER MANAGEMENT, PLANNING, AND BOUNDARY AGREEMENT.

SERVICE PROVIDERS

The majority of public water and sanitary sewer users in Orange County are located within the municipalities and receive these services through utility providers. OWASA and the Town of Hillsborough are the primary providers in the County. Orange County does not own or operate a utility and therefore is not a direct service provider in Orange County. Orange County government leads the coordination of water and wastewater services in the County. The County advises and in some instances is part of the governing structure of the four providers of water and/or wastewater services in Orange County: the Orange Water and Sewer Authority (OWASA), the Town of Hillsborough, and two providers that deliver services under contract with Orange County - the Orange-Alamance Water System, Incorporated, and the Graham-Mebane Water System, operated by the City of Mebane. The County is responsible for ensuring that adequate services are provided to County residents. As stated in the County's Water and Sewer Policy document, the County's role in the provision of water and/or sewage disposal services are:

- To correct a public health emergency;
- To provide service to an essential public facility;
- To provide for economic development opportunities; and
- To provide bases (information and infrastructure), consistent with the Orange County Comprehensive Plan, for the extension and expansion of existing water and sewer services.

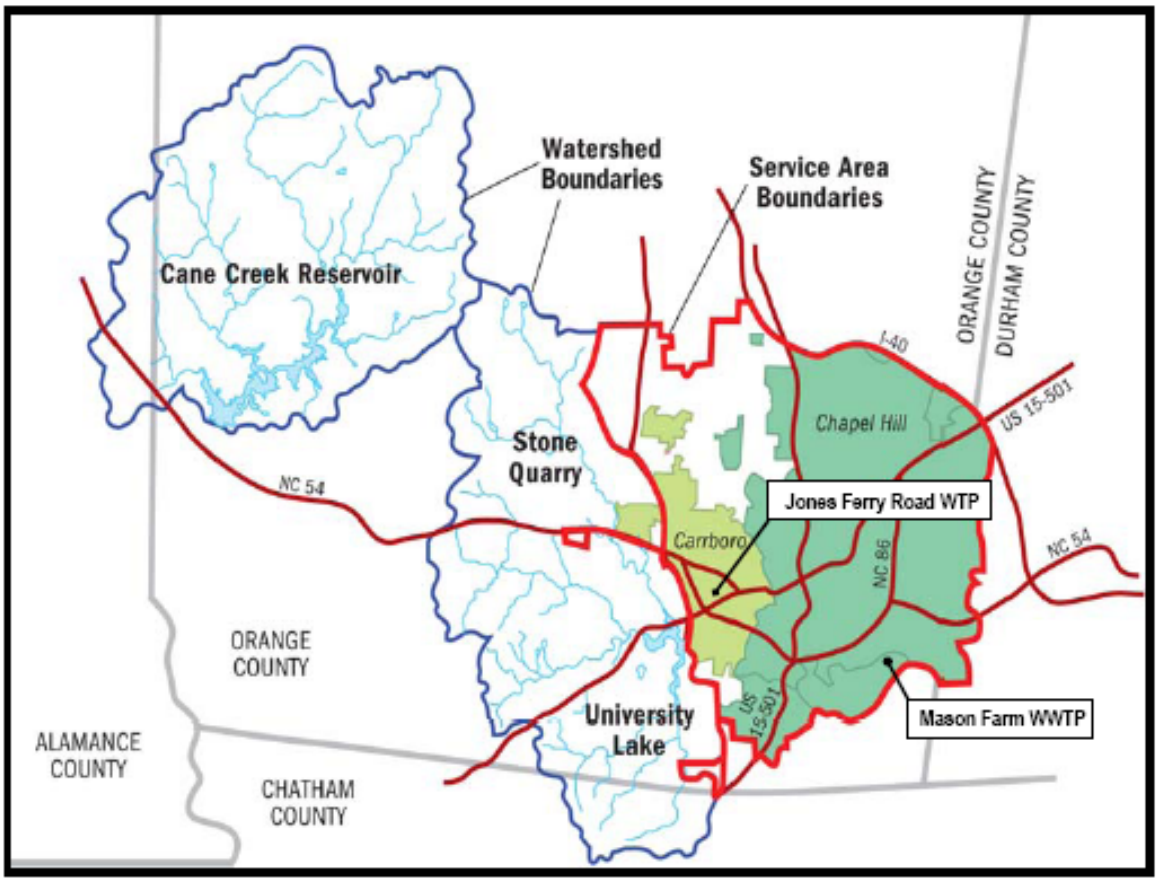
Provided here are descriptions of the service providers in the County.

ORANGE WATER AND SEWER AUTHORITY (OWASA)

Since 1977, the Orange Water and Sewer Authority has provided water and sewer services to the Towns of Chapel Hill and Carrboro and portions of unincorporated Orange County. OWASA is a non-profit utility governed by a Board of Directors, who are appointed by the elected boards of Carrboro, Chapel Hill, and Orange County. Drinking water and wastewater collection were provided to an estimated 80,000 people (approximately 66% of the County population) through more than 19,000 accounts in 2007. Approximately 55% of OWASA's water demand is by residential customers, 30% by UNC-Chapel Hill, and 15% by commercial, institutional (non-UNC), and all other customers.

OWASA draws from three raw water sources: the Cane Creek Reservoir, University Lake, and the Stone Quarry Reservoir with a storage volume of 3.6 billion gallons. This system can reliably supply about 11.5 million gallons of water per day (mgd) under extreme drought conditions. Between 1980 and 2000, water demand increased by an average of about 0.22 mgd per year. Water is treated at the Jones Ferry Road Treatment Plant. Future plans for the water supply include expanding the Stone Quarry reservoir from its present volume of 200 million gallons to a volume of 2.4 to 3.0 billion gallons by 2030. OWASA also holds a storage allocation equivalent to approximately 5 mgd from the U.S. Army Corps of Engineers' B. Everett Jordan Reservoir in Chatham County. This allocation may be developed in the future, perhaps in partnership with other local entities, to provide a supplemental supply source during periods of extreme drought.

OWASA manages more than 300 miles of public sanitary sewers and 24 pump stations. Wastewater is treated at the Mason Farm Wastewater Treatment Plant (WWTP), which has a maximum monthly capacity of 14.5 mgd. The WWTP also accepts and treats "septage," the high strength waste pumped out of septic tanks by private companies. Beginning in 2009, OWASA's Mason Farm WWTP will provide more than 0.6 mgd of highly treated reclaimed water for non-potable use on the UNC campus. OWASA's service area, reservoirs, and treatments plants are identified in Map 8-2 below.



MAP 8-2: OWASA SERVICE AREA, RESERVOIRS, AND TREATMENT PLANTS.

Source: Fiscal Year 2005 OWASA Sustainability Report

OWASA's water distribution system is linked to neighboring systems in Durham, Hillsborough, and Chatham County. These interconnections can provide supplemental service during unplanned outages or scheduled maintenance.

OWASA has responded to the demand for more sustainable water resource management brought on by water shortages and drought conditions in Orange County by developing a long-term water conservation goal, related objectives, and specific water use reduction targets. The goal is to "develop,

fund, and implement a cost-effective water conservation and demand management program that will meet our community's long-term water supply needs (through 2050) by making the highest and best use of our local water resources and eliminating the need for costly new water supply sources and facilities." Two essential components of OWASA's water supply and conservation strategy are the continued recycling of water treatment "process water", and the use of highly treated "reclaimed water" to meet non-drinking water needs.

TOWN OF HILLSBOROUGH

The Town of Hillsborough owns and operates a municipal utility that provides water and sanitary sewer services. Service is provided to most areas within the town limits and extra-territorial jurisdiction (ETJ), and additional portions of Hillsborough and Eno Townships to the south and east of town. The Town has identified a future utility service area that extends south and east of the current Town and its ETJ. The Town recently implemented a Strategic Growth Plan (2006) that identifies a potential urban services area. If adopted, this urban services area would define the utility service area for Hillsborough.

The town provides service to more than 4,000 customer accounts. Approximately 92% are residential users, 7% are commercial/institutional users, and 1% are industrial users.

Hillsborough's 10 mgd raw water storage supply is drawn from Lake Ben Johnston on the Eno River. The safe yield supply is 2.58 mgd, with a 810 million gallon storage capacity. Available supply is affected by withdrawals upstream at Corporation Lake. Under optimal conditions, the County can allow Hillsborough to draw water from Lake Orange. The current agreement allocates 1.8 mgd to Hillsborough when the lake is at normal levels.

The water treatment plant capacity is 3.0 mgd, which provides for 2.0 mgd peak day demand. Hillsborough has an agreement to treat up to 0.4 mgd from the county-owned Efland/Cheeks sewer system. Expansion of the system will increase peak day demand service to 3.0 mgd.

Water usage has increased steadily at a rate of 6% annually over the past 10-20 years. Future expansions of the system will increase the safe yield to 5.58 mgd with an additional 1,014 million gallon storage capacity. Hillsborough has interconnection agreements with OWASA, Durham, and the Orange-Alamance System to meet demands during crisis situations. Estimates show that even with planned expansions, Hillsborough is likely to need additional water supplies by 2011.

ORANGE-ALAMANCE WATER SYSTEM, INC.

Orange Alamance Water Systems, Incorporated, a non-profit membership organization, was formed in 1969 to serve populated areas in western Orange and eastern Alamance Counties. Orange Alamance Water Systems has a service area in and around the Efland area. It crosses the ridgeline separating two major drainage basins, the Cape Fear and the Upper Neuse, serving the US 70 corridor west from Efland, the Mebane area, and several rural communities in eastern Alamance County. A small portion of Cedar Grove Township is also served with water by the system. The system currently serves more than 8,000 customers in Orange and Alamance Counties near the Towns.

The primary raw water source for Orange Alamance Water System, Inc., is Corporation Lake, an impoundment on the Eno River just north of U.S-70. This source has a 20-year safe yield of 0.7 mgd, and a storage capacity of 20 million gallons. Because of sedimentation problems with the impoundments, the storage capacity has been limited since the dam's construction in 1969. In addition, the Orange County Water Conservation Ordinance, effective 1988, allocates 0.8 mgd to Orange Alamance Water System, Inc. from Lake Orange when the lake is at normal levels. This allocation drops to 0.32 mgd when Lake Orange reaches crisis level. The system purchases additional water from the Towns of Graham, Mebane, Haw River, and Hillsborough; and can draw additional water supplies from these systems during crisis situations. The system plans on purchasing 0.800 million gallons of additional water supply from the Town of Haw River by 2025.

GRAHAM-MEBANE WATER SYSTEM

In the summer of 2004, Orange County entered into a Utility Service Agreement with the City of Mebane to deliver water and wastewater service to much of the Buckhorn Economic Development District between West Ten Road and Interstate 40/85.

CITY OF DURHAM

Part of the City of Durham crosses over into Orange County. There is little development in this area today; however, the Durham long-range plan designates part of the unincorporated areas of Orange County along I-85 as a future Urban Growth Area. In the future, the City of Durham is expected to provide water and wastewater service to this area that includes the Eno Economic Development District and a few additional surrounding properties. (See Map 5-3 on page 5-5.)

COUNTY WATER INITIATIVES

As Orange County's population grows, so will demand for water and sanitary sewer services. Droughts occurring in recent years (2001-2002; 2007-2008) have raised the level of concern regarding adequate water supplies in the County. Water restrictions were enacted to ensure that capacities were used efficiently and water conservation was achieved. Because the County does not directly provide water and wastewater services, it must coordinate with area providers to ensure the County has sustainable water supplies into the future.

Orange County holds a 1-Million Gallon per Day (MGD) allocation of water held within Jordan Lake. The State of North Carolina has been assigned the use of the entire water supply storage in Jordan Lake and can assign this storage to local government having a need for water supply storage.

In 2008, the County hired a water resources coordinator. The charge of the coordinator is to focus on water conservation and public health efforts countywide, coordinating with the service providers and private well and septic users to ensure long-term sustainability of County water supply and treatment systems.

8.4.1.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following data provide background information on potable water and wastewater use in Orange County. Additional data and trends on water resources can be found in *Section 6.4.5: Water Resources* and *Appendix A: County Profile (Data) Element*.) .

TABLE 8-1: AVERAGE AND MAXIMUM DAILY WATER DEMAND PER YEAR (1992-2003)

Water Provider	1992	1997	2001	2003
OWASA				
Average Daily Demand (mgd)	7.14	8.98	10.17	8.22
Maximum Daily Demand (mgd)	12	14.34	13.75	12.81
Public Water Supply Safe Yield	13.5	13.5	15.1	12.5
Hillsborough				
Average Daily Demand (mgd)	1.46	1.8	1.23	1.2
Maximum Daily Demand (mgd)	2.04	2.65	1.87	1.83
Public Water Supply Safe Yield	0.68	0.68	2.58	2.58
Orange – Alamance *(Orange County portion of service area)*				
Average Daily Demand (mgd)	0.24	0.36	0.29	0.3
Maximum Daily Demand (mgd)	0.34	0.44	0.39	0.4
Public Water Supply Safe Yield	0.12	0.12	0.12	0.12

In 2000, the majority of water demand in the County came from residential, commercial, and institutional water users (75%), 11% from domestic and individual well users, 5% from agricultural irrigation, 2% from livestock use, and 7% from other uses. Over the period of 1985-2000, Orange County increased water usage from 10.33 mgd to 17.19 mgd, a 66% increase.

8.4.1.2. ORANGE COUNTY WATER AND WASTEWATER NEEDS

Orange County has worked diligently to conserve and ensure wise use of its precious water resources. Consideration of the following issues will ensure water resources will meet the demands of future County populations.

- Orange County needs to coordinate the provision of water and wastewater services with area providers to ensure that the needs of future populations are met.

- OWASA has led the County in water conservation programs and measures. Other providers could learn from and implement similar measures to ensure long-term sustainability of their systems.

8.4.1.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decision-making by the County related to the provision of water and wastewater services. Each objective has a recommended timeline for completion.(Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 1: Efficient provisions of public water and sewer service systems which are consistent with the Land Use Plan and which abide by the current Water and Sewer Management Planning Boundary Agreement, the existing Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and future agreements to be negotiated among the County and public and private service.

Objective WW-1:
Maintain a sustainable and high quality supply of ground and surface water so that available resources meet existing and projected needs. (See also Water Resources Objective WR-2.)

Objective WW-2:
Coordinate the provision of potable water and sanitary sewer services with the County's Land Use Plan and Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, targeting these services to urban, transitional, and economic development districts in a manner that does not endanger environmental resources. (See also Land Use Objective LU-1.1, Housing Objective H-1.5, and Economic Development Objective ED-2.10.)

Objective WW-3:
Maintain and add new partners to the existing Water and Sewer Management Planning and Boundary Agreement with the Towns of Chapel Hill, Carrboro, and Hillsborough and OWASA. Work to establish similar agreements with the Cities of Mebane and Durham and Orange-Alamance Water System. (See also Land Use Objective 3.6.)

Objective WW-4:
Orange County welcomes opportunities to coordinate with Orange-Alamance Water System to plan future service areas in the County.

Objective WW-5:
Maintain a cooperative joint planning process among the County, the municipalities, and water and wastewater providers and guide the extension of service in accordance with the Comprehensive Plan, the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities. (See also Water Resources Objective WR-5.)

Objective WW-6:
Develop and implement a process whereby the responsibilities and duties associated with the operation and management of package sewage treatment plants are specified as a requirement of the permitting process for such facilities.

Objective WW-7:
Revisit and revise the Water Sewer Management Planning and Boundary Agreement to ensure consistency with the Future Land Use Map and land use categories. (See also Land Use Objective LU-6.2.)

Objective WW-8:
Reduce the number of requests from utility authorities and others for plan and zoning amendments needed to accommodate public water and wastewater facilities.

Objective WW-9:
Ensure that public water and sewer services are provided in those areas that can be practically and efficiently served by these facilities, as provided in the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and as delineated in the Water and Sewer Management Planning and Boundary Agreement, as well as any inter-local government agreement that implements the Agreement.

Services and Community Facilities Goal 2: Adequate, safe, and healthy groundwater withdrawal and wastewater disposal systems with minimal impacts upon water and land resources.

Objective WW-10:
Ensure that all development projects of a dense character have access to clean, safe, and reliable water supplies.

Objective WW-11:
Increase educational efforts that increase citizen understanding of water quality problems and the need for water conservation. (See also Water Resources Objective WR-2.)

Objective WW-12:
Prohibit package sewage treatment plants in the Watershed Critical Areas.

Objective WW-13:
Prohibit the establishment of public water and sewer services in the areas designated as Watershed Critical Areas, except to address emergency public health situations.

Objective WW-14:
Designate prime reservoir sites in the County, and protect those sites from adverse development. (See also Natural Areas Objectives NA-5 and NA-17 and Land Use Objective LU-2.2.)

Objective WW-15:
Prohibit commercial and industrial land uses from locating and/or expanding within identified Watershed Critical Areas. (See also Economic Development Objective ED-2.7 and Land Use Objective LU-2.5.)

Objective WW-16:
Ensure that the type of wastewater disposal facilities serving a development are appropriate given present and future demand for service, the distribution of users, and the capacity of the natural environment to absorb the impact.

Objective WW-17:
Ensure that buyers of property within the County are fully informed about the on-site sewage disposal requirements of their property.

Objective WW-18:
Allow on-site wastewater disposal in rural areas where soil conditions are acceptable. Where there are unacceptable soils, state-approved on-site sewage disposal systems shall be required.

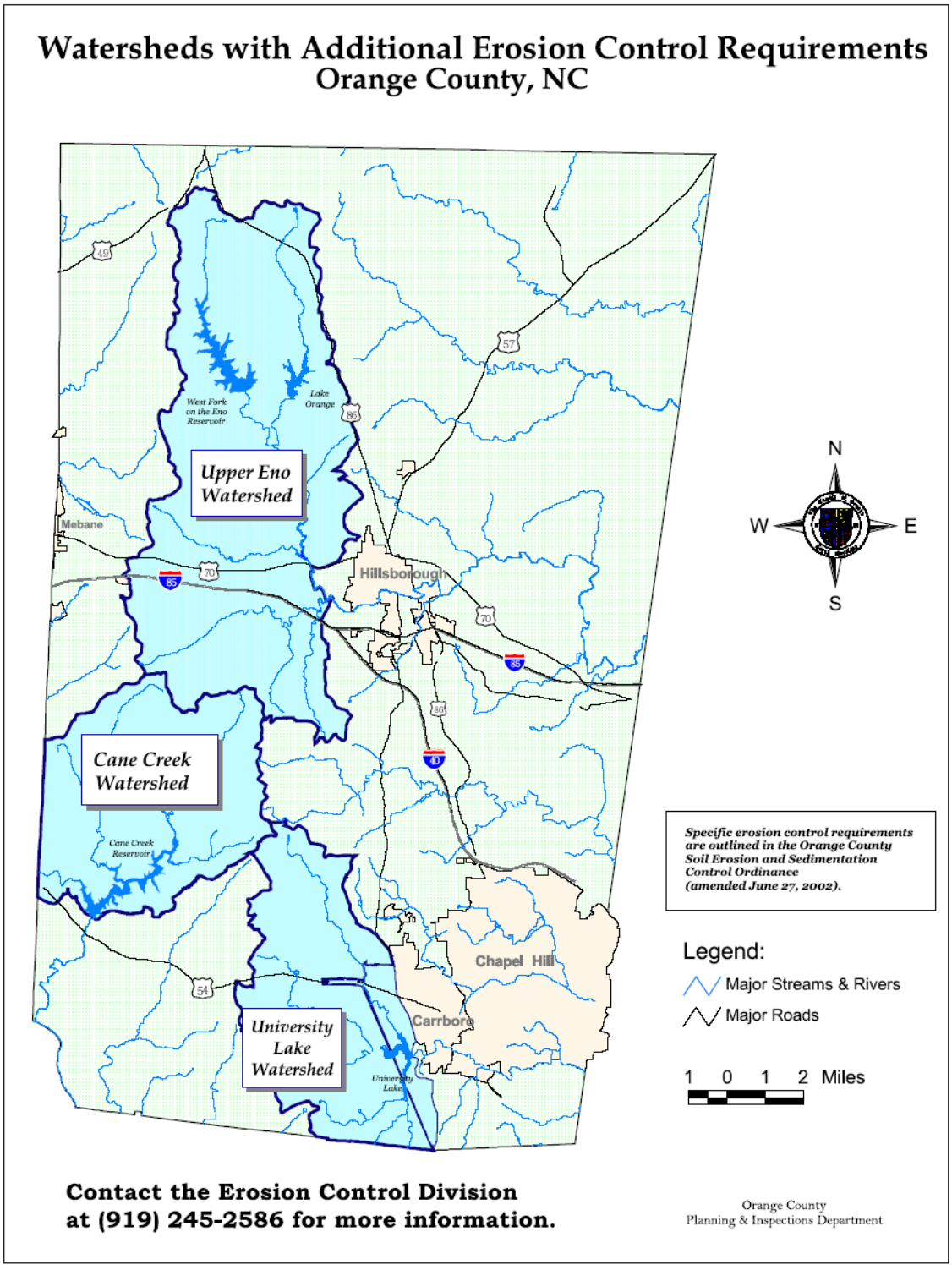
Objective WW-19:
Establish a continuing wastewater treatment inspection program within identified Protected and Critical Water Resource Areas. (See also Water Resources Objective WR-6.)

8.4.2. EROSION CONTROL AND STORMWATER MANAGEMENT

Orange County's Erosion Control Division is charged with enforcing the Erosion Control and Stormwater provisions of the Orange County Unified Development Ordinance, including inspections of land development, and review of erosion control plans. These provisions of the Ordinance regulate land development activities to ensure that watersheds are protected from adverse affects of development, and that grading and site development do not create hazardous stormwater flows. The division also administers the Neuse Buffer Rules and participates in regional watershed planning initiatives.

The Erosion Control division reviews land disturbance activities and erosion control plans countywide, including parts of Durham County annexed by Chapel Hill. Disturbance of more than 20,000 feet in a non-protected watershed and disturbance of more than 10,000 square feet in a protected watershed must obtain pre-approval from Erosion Control and applicants are required to submit an erosion control plan. The County holds several agreements with the municipalities for enforcement, including enforcement of Hillsborough's National Pollutant Discharge Elimination System Phase II Stormwater Program and erosion control enforcement in Chapel Hill, Carrboro, Hillsborough, and the portion of Mebane in Orange County. In addition, the division develops educational materials and conducts educational programs related to erosion control, stormwater runoff pollution, stream buffers, and water quality protection.

Of the 32 local governments in the Neuse River Basin, Orange County was the first and only to receive delegated authority from the state Environmental Management Commission to enforce the Neuse Rules. Any land disturbance in University Lake, Cane Creek, and the Upper Eno watersheds are reviewed by the division. Entities with the power of eminent domain, such as the Department of Transportation, University of North Carolina, OWASA, and School Districts, are regulated by the state. Orange County does monitor some of these entities through various voluntary agreements, such as a written request from the Chapel Hill-Carrboro School System to monitor Carrboro High School. Map 8-3 identifies the watersheds where Neuse River Basin erosion control measures are required.



MAP 8-3: WATERSHEDS WITH ADDITIONAL EROSION CONTROL REQUIREMENTS.

Per the Neuse River Basin rules, Erosion Control staff are trained in surface water identification and can legally define and differentiate ephemeral, intermittent, and perennial streams. The purpose of this is to identify riparian buffers during erosion control and stormwater review to ensure that they are not encroached by development.

8.4.2.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The Erosion Control Division provides monthly reports to the state regarding number of inspections, total acres permitted and disturbed, enforcement, and several other metrics. This is also tracked and reported to the municipalities. The table below shows the number of projects inspected, by municipality, during the months of July through September 2007.

TABLE 8-2: EROSION CONTROL LAND DISTURBANCE SUMMARY (JULY – SEPTEMBER 2007)

	Orange County	Hillsborough	Chapel Hill	Carrboro	Mebane
July 2007					
Projects Inspected	5	2	2	0	0
Acres Graded	10.2	5.7	11.8	0	0
Revenue YTD	$6,885	$2,866	$8,919	$0	$0
August 2007					
Projects Inspected	2	2	2	0	0
Acres Graded	1.8	2.9	3.7	0	0
Revenue YTD	$7,724	$4,287	$11,218	$0	$0
September 2007					
Projects Inspected	0	1	3	1	0
Acres Graded	0	3	1.9	19.5	0
Revenue YTD	$7,724	$5,808	$13,402	$34,807	$0

Between January and September 2007, the Erosion Control Division conducted 397 inspections.

8.4.2.2. ORANGE COUNTY EROSION CONTROL AND STORMWATER MANGEMENT NEEDS

Orange County leads the state in erosion control and stormwater management inspections. Efforts to further improve the activities of the Erosion Control Division include:

- Needed improvements to ongoing surface water mapping in the County; and
- Needed additional water quality data to inform inspection and watershed protection programs.

8.4.2.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decisions-making by the County related to regulation of erosion control and stormwater systems. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 5: Efficient and effective drainage, stormwater, floodplain management, and erosion control systems.

Objective EC-1:
Continue to use Best Management Practices (BMP's) for stormwater control, as outlined within the Orange County Unified Development Ordinance, to minimize potential adverse impacts on the water quality. (See also Land Use Objective LU-2.3, Natural Areas Objective NA-4 and Water Resources Objective WR-20.)

Objective EC-2:
Protect and maintain the chemical, physical, and biological quality and integrity of water supply reservoirs.

Objective EC-3:
Prohibit activities that adversely affect surface and ground water systems that may serve or do serve as a public water supply.

Objective EC-4:
Use low-impact stormwater design principles when developing new or retrofitting existing drainage systems that do not functionally approximate the natural drainage pattern.

Objective EC-5:
Minimize sedimentation and erosion to reduce the transport of sediment and pollutants to surface waters.

Objective EC-6:
Protect and maintain the existing aquatic, riparian and terrestrial habitats-of fish and wildlife.

Objective EC-7:
Prevent flood damage to public and private property.

Objective EC-8:
Protect the absorptive, purifying and retentive functions of the natural systems existing in the County.

Objective EC-9:
Provide educational materials and programs to school groups, civic groups, developers and interested citizens about water quality protection.

Objective EC-10:
Develop programs and incentives that encourage the implementation of Best Management Practices, Low Impact Design, and on-site capture of stormwater in development projects.

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8.4.3. SOLID WASTE AND RECYCLING

Countywide solid waste material disposal and recycling is managed by Orange County. Orange County deposits an average of 57,200 tons of municipal solid waste and 16,000 tons of construction and demolition waste annually at its 208-acre Solid Waste Management Facility on Eubanks Road in the Chapel Hill Township, just north of the Town limits.

The County owns and operates two separate landfills at its solid waste management facility:

- The lined landfill on the south side of Eubanks Road accepts **municipal solid waste** and covers about 26 acres of the 80 acres on the south side. Other operations at this site include collection and processing of electronics and hazardous waste which may continue to operate after landfill closure.

- The **construction and demolition waste** landfill is on the north side of the Eubanks Road site. It occupies 13 acres of the 120 acres owned and operated by the County on that side of the road.

Other activities at the facility include an 8,000 ton per year yard waste mulching and sales operation, compost sales, wood waste grinding, scrap metal and corrugated cardboard recovery, tire recovery, and recycling processing and transfer. A 45-acre closed and capped municipal solid waste landfill and an 11-acre closed and capped construction and demolition landfill are also located at the site. Methane from the closed municipal solid waste landfill is passively vented and groundwater sites are monitored twice a year at multiple locations surrounding the waste sites.

The County owns another sixty acres of land immediately south of the southern part of the landfill that is not designated for solid waste functions, but was purchased in 1984 by the Solid Waste Enterprise fund. There is an adjoining 108 acres further south (the Greene Tract) remaining in joint ownership of the County and the Towns of Carrboro and Chapel Hill that had also been purchased by the Solid Waste Enterprise Fund. That is not slated for solid waste activity either and has potential for other types of development. Currently it remains open space and no definite plans have been made for long-term development.

The Solid Waste Department also owns two remote properties that house solid waste convenience centers at Ferguson Road and Old Greensboro Highway and Walnut Grove Church Road. A third such site is on landfill-owned property at Eubanks Road. Another two convenience center sites are leased at Bradshaw Quarry Road and High Rock Road. A sixth site is under consideration for development on county-owned land in the northeast quadrant of the County.

LANDFILL GAS RECOVERY

The closed 45-acre municipal solid waste area of the landfill generates a biogas that is vented to the atmosphere. There is an opportunity for installation of a biogas capture system by a private third party, should they deem it cost-effective. The newly emerging market for carbon credits coupled to the actual dollar value of the energy in the gas along with various

tax credits for renewable energy development may make this relatively small project economically attractive to a private developer in the near future.

The active 26-acre municipal solid waste lined area of the landfill will close in a little more than three years and there are plans to install a gas recovery system at this site. Orange County is currently negotiating with the University of North Carolina to develop a process for recovering this methane gas to produce energy.

FUTURE USE OF LANDFILL FACILITY

Closed municipal solid waste landfill sites tend to generate a gas that is a mixture of predominantly methane, carbon dioxide and water vapor with traces of other molecules such as hydrogen sulfide. The gas can emerge into the atmosphere in combustible concentrations whether it's captured and piped or simply migrates out through the soil. Federal regulations for capped landfills make it difficult to find short-term public uses for any closed municipal solid waste landfill site. Some passive uses might be considered under special circumstances. Thirty years is the U.S. Environmental Protection Agency's estimated time-frame for biological activity to have slowed enough so that more active use of the site may be possible.

Use of not only the municipal solid waste site, but the closed construction and demolition site, is further constrained by the presence of adjoining active solid waste operations. These active areas are slated to remain active solid waste management sites for the foreseeable future, thus further constraining any consideration of alternative uses. Monitoring and controlling public access for non-solid waste activities would be very challenging to say the least. The Solid Waste Department has not therefore promoted any alternative uses of the closed portions of the site.

8.4.3.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

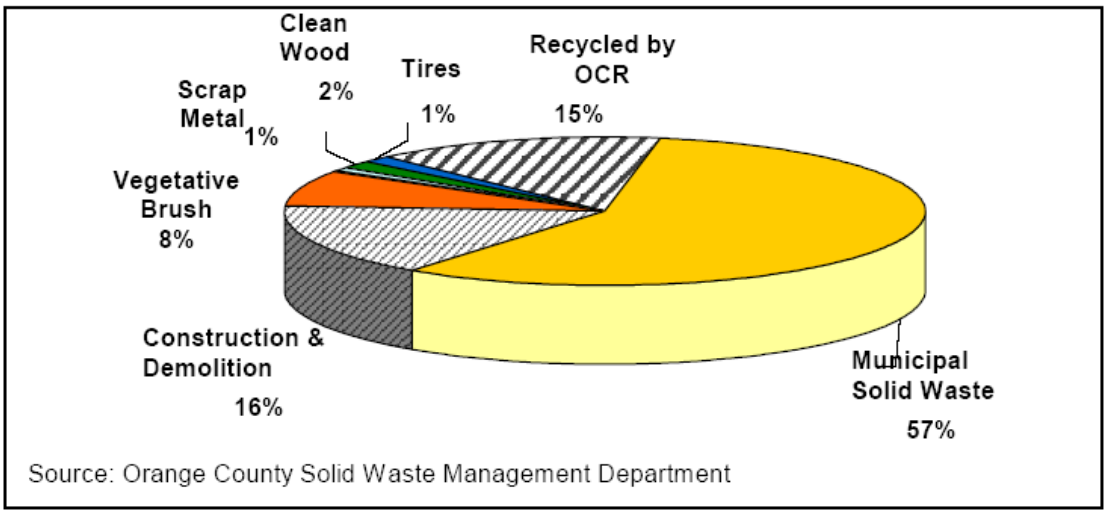
Municipal solid waste tonnage in Orange County has been the same for the past seven years and construction and demolition waste has been the same for the past three. In light of increasing populations and development activity, sustaining the same levels of waste disposal is a success for the County. The table below states the amount of waste by type of material in Orange County.

TABLE 8-3: ORANGE COUNTY SOLID WASTE MANAGEMENT STATISTICS

Type of Material/Waste	Tons	How Managed
Municipal Solid Waste	57,298	Buried in lined landfill
Construction & Demolition (includes stumps, trailers)	15,546	Buried in unlined landfill
Subtotal Buried at Landfill	73,844	
Brush/Vegetative Waste/Yard Waste	8,144	Chipped and aged for sale as mulch on site
Clean wood waste – lumber, plywood	1,529	Chipped for sale as fuel
Scrap metal	793	Segregated for sale
White Goods/Appliances	342	Segregated for sale
Whole Tires	1,557	Segregated and shipped off for recycling
Subtotal Recycled at Landfill	12,366	
Recyclables from curbside, drop off apartments, commercial	15,000	Processed & sold for remanufacturing
Hazardous wastes, motor oil, filters, antifreeze, batteries, and electronics	642	Segregated and sent off for recycling, recovery, combustion, neutralization, secure landfilling
Subtotal Managed by Recycling Program	15,642	
Total Solid Waste Materials	**101,855**	

In fiscal year 2005-2006, the majority of waste managed in the County was municipal solid waste (57%), followed by construction and demolition waste (16%), recycled waste (15%), vegetative brush (8%), clean wood (2%), and scrap metals and tires (both 1%). See Figure 8-1 below.

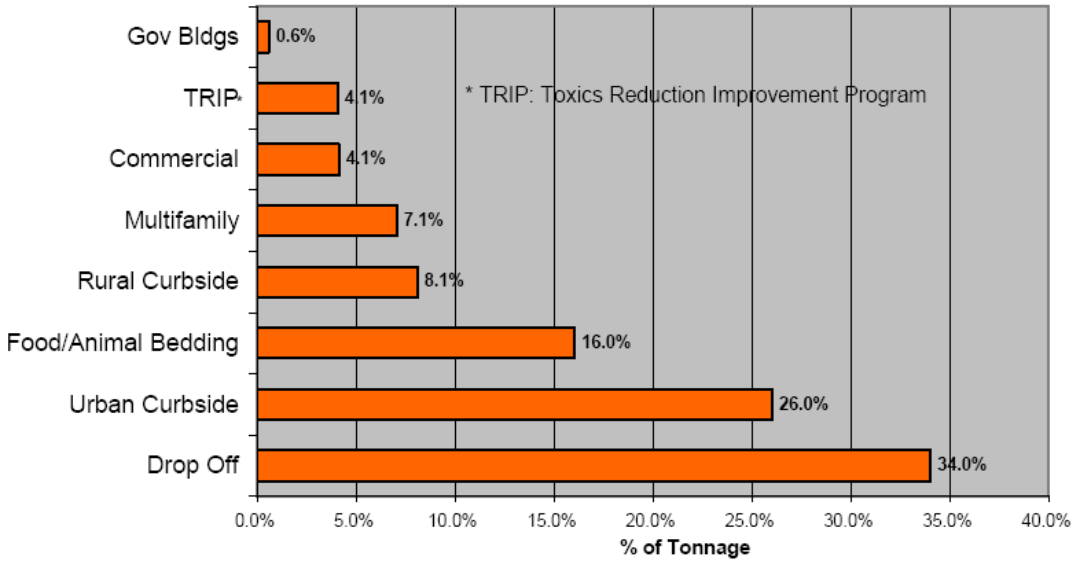
FIGURE 8-1: TONS OF SOLID WASTE MANAGEMENT BY ORANGE COUNTY (FY 2005/2006)



Source: Orange County Solid Waste Management Department

In fiscal year 2005-2006, the largest percentage of recycled materials in Orange County was from dropped off recycling (34%), followed by urban curbside (26%), food/animal bedding (16%), rural curbside (8.1%), multifamily (7.1%), commercial (4%), Toxic Reduction Improvement Program (4.1%), and government buildings (0.6%). See Figure 8-2 below.

FIGURE 8-2: RECYCLING PROGRAMS BY TONNAGE (FY 2005/2006)



Source: Orange County Solid Waste Management Department

MEASURING PROGRESS TOWARDS 61% WASTE REDUCTION GOAL

Orange County, as all other counties in North Carolina, measures its solid waste management effectiveness by a waste reduction calculation when compared to the benchmark year of 1991-92. In our County, that benchmark is 1.36 tons per person. Orange County has an ambitious goal of reducing waste by 61% per capita compared to that benchmark year. That benchmark measurement included all tons managed by Orange County, including waste deposited into landfills, recyclables collected that year, mulched brush, and other operations, such as appliance recycling, that recycle or dispose of materials in ways other than placing in a landfill. This was done to give those counties that had begun recycling prior to setting the benchmark some credit for that work.

As part of the North Carolina solid waste management statutes, the state solid waste office required a solid waste plan and set goals of 25% waste reduction per capita by 1996 and 40% by 2001. Orange County has achieved and even surpassed these goals since developing its first solid waste plan in 1997. The County's own goals were 45% waste reduction by 2001 and 61% initially by 2006. The latter goal was retained as a numerical goal, but any time frame has been rescinded. A few of the progress marks include 1995-96, 2001 and 2005-06 shown in the table below. The tentative waste reduction percentage for 2006-07 is given by the State at 47.6%. This new reduction level shows some

more progress towards the ultimate County goal after hovering around 45% for several years.

TABLE 8-4: WASTE REDUCTION RATES IN ORANGE COUNTY

Year	1991-92	1995-96	2001-02	2005-06
Tons per capita	1.36	(n/a)	0.81	0.77
Waste reduction rate	(n/a)	(n/a)	40%	43%

8.4.3.2. ORANGE COUNTY SOLID WASTE AND RECYCLING NEEDS

Orange County Solid Waste planning efforts have identified several activities in the County to address current and future solid waste management needs. The following needs are being addressed through ongoing planning activities:

1. **Development of an integrated solid waste management plan.** The overarching goal of the plan is the county-adopted goal of 61% waste reduction per capita. There is a solid waste work plan group consisting of elected officials, the Solid Waste Advisory Board and staff from the towns and County developing recommendations on approaches to reducing waste sent to landfills, financing the effort, and future disposal options. They project to conclude work in the summer of 2008 with a recommendation to the Board of County Commissioners.

2. **Search for a transfer station site.** The municipal solid waste lined landfill is projected to reach capacity in 2011 and at that point, solid waste would be transferred out to some remote facility via tractor trailer trucks. A site for transferring the waste from individual garbage collection trucks to these long distance hauling vehicles is needed. The search is being led by the Board of County Commissioners using a solid waste consultant and Orange County Solid Waste staff, and includes discussions of site size, and other screening and selection criteria. The site search, design, permitting and construction are projected to take at least three and a half years.

3. **Ongoing staff-led activity to accommodate program growth and changes.** Solid waste management in our County remains a dynamic activity with a high degree of public scrutiny, demand for more recycling services, environmental regulations and constant technical innovations driving staff to continuously create new responses. This incremental planning for operational changes must take place regardless of the pace of the two previous activities; thus there is a constantly shifting playing field to accommodate the ongoing pressures to change and provide more services. Every effort is made to integrate incremental activities with the broader solid waste planning efforts in items 1 and 2 above.

8.4.3.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decision-making by the County related to regulation of solid waste management. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 6: Less solid waste per capita with cost effective and environmentally responsible disposal and management.

Objective SW-1:
Continue to affirm, support, and work towards achieving a 61% waste reduction goal adopted by the County in 1997.

Objective SW-2:
Encourage the recycling of solid waste, including but not limited to the preference for deconstruction practices over demolition, to minimize waste disposed of in landfills.

Objective SW-3:
Evaluate the solid waste collection system presently used by the County in terms of efficiency and long-term sustainability. Recommend alternative systems or means to improve the existing system based on this evaluation.

Objective SW-4:
Use land use planning, zoning regulations, and the process of development approvals to enable the appropriate environmental controls and oversight of necessary solid waste facilities. (See also Land Use Objective LU-4.2.)

Objective SW-5:
Require new construction and substantial remodeling of non-single family property to set-aside adequate space and access for solid waste management and recycling materials storage on site.

Objective SW-6:
Work with municipalities in Orange County to review development proposals to ensure that adequate space for solid waste management facilities is included within site plans.

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8.4.4. PUBLIC SAFETY AND TELECOMMUNICATIONS

Law enforcement, fire prevention, and emergency services are delivered by County and municipal service providers throughout the County. Partnerships between the County and towns provide opportunities for co-location and efficient provision of services countywide. Telecommunication facilities are located throughout the County and provide for critical public safety communications. These facilities are regulated by the County's development regulations, as well as federal laws.

EMERGENCY SERVICES

Orange County Emergency Services is comprised of three divisions and complemented by the network of telecommunication facilities:

- **911 Communications** provides emergency communications and dispatch for three police departments (Hillsborough, Carrboro, and Chapel Hill), the Sheriff's office, three municipal fire departments (Hillsborough, Chapel Hill and Carrboro), eight volunteer fire departments, and two rescue squads (Orange County Rescue Squad (Hillsborough) and South Orange Rescue Squad (Carrboro)).

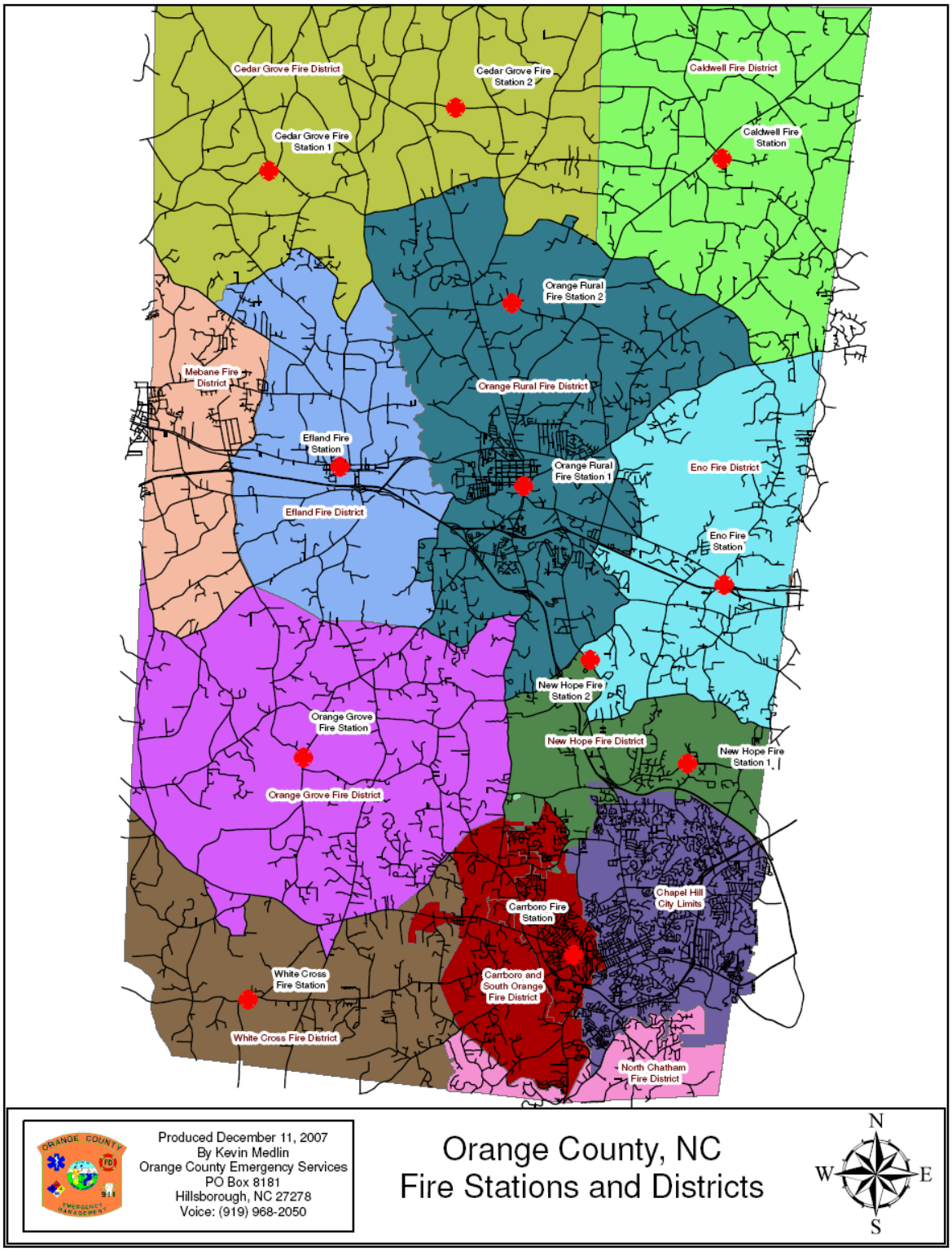
- **Emergency Medical Services** provides basic and advanced medical services to all of the residents in the County, supplemented by the two volunteer rescue squads (Carrboro and Hillsborough). The County contracts out for building space for personnel and equipment. This space is shared with the two volunteer squads. The County also houses one ambulance and paramedic at the office on New Hope Church Road and a paramedic is stationed in Efland. The two rescue squads provide emergency medical services and rescue services to residents in the County.

- The **County Fire Marshall** is responsible for enforcing the North Carolina fire prevention code, conducting fire inspections, reviewing plans for new building construction, fire/arson investigations, County fire department coordination, and hazardous materials response in the unincorporated areas of Orange County. Eight volunteer fire departments provide fire protection and basic first responder services in the County. In addition, Mebane and North Chatham Fire Departments provide services in Orange County. There are 12 fire stations located throughout the County.

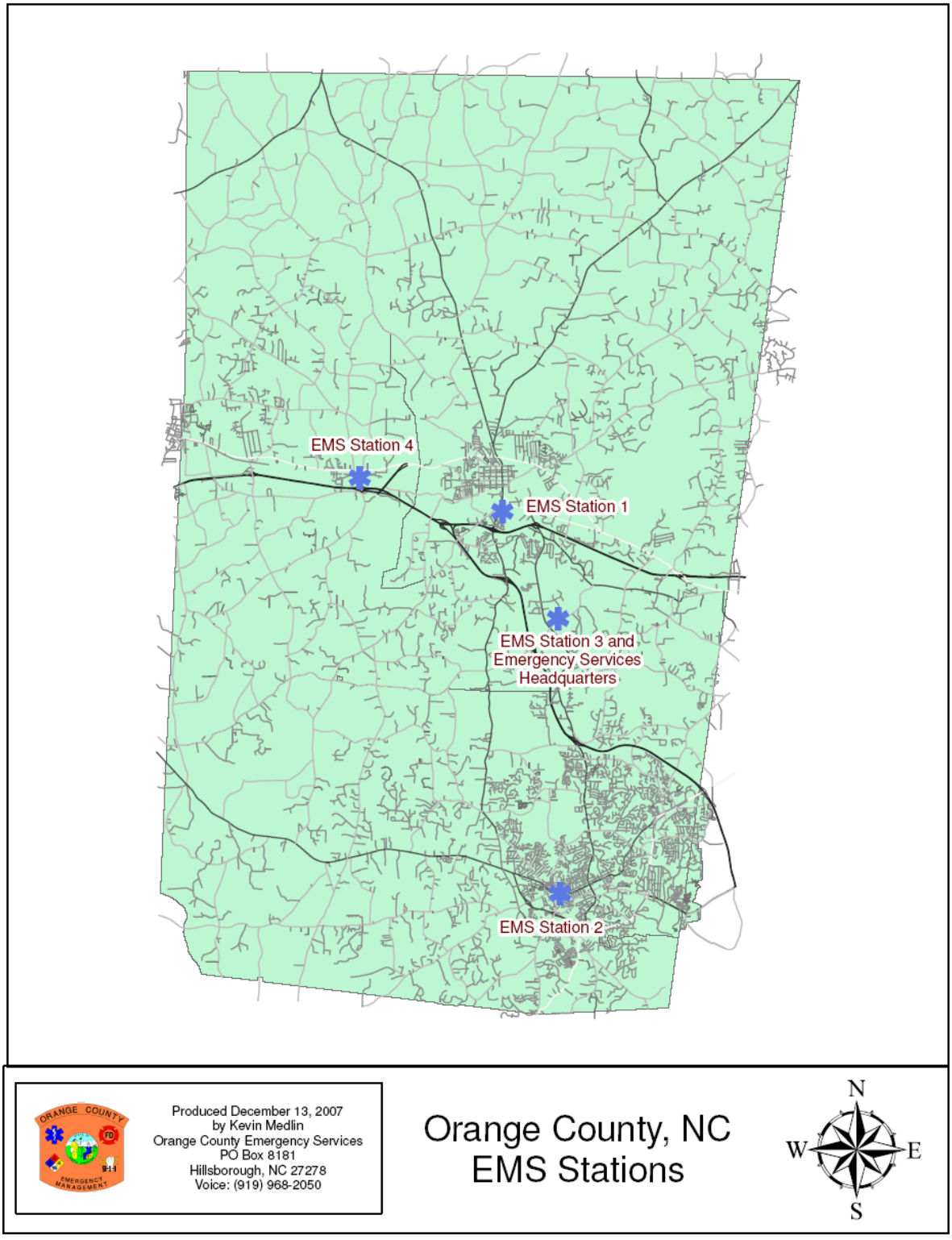
- **Telecommunications** facilities are located throughout the County. Both public and private facilities located water towers, electrical transmission towers, or on rooftops, complement other telecommunications systems used by the State Highway Patrol, 911 Communications, Emergency Medical Services, local police and fire departments, and local utility providers.

Residents are served by the respective fire station or stations within respective fire districts. Map 8-4 shows the fire stations and fire districts in

Orange County. Map 8-5 identifies emergency medical service station locations in the County.



MAP 8-4: ORANGE COUNTY FIRE STATIONS AND DISTRICTS



MAP 8-5: ORANGE COUNTY EMERGENCY MEDICAL SERVICE STATIONS

LAW ENFORCEMENT

The Orange County Sheriff's Office provides law enforcement services throughout the County. Assistance is provided to municipal law enforcement departments (Chapel Hill, Carrboro, Hillsborough) when they ask for or need assistance. The Sheriff, as in all counties in North Carolina, is elected for a term of four years. The Sheriff and Sheriff's deputies have the authority to arrest for any violation of the law and are the only law enforcement officers in the County with authority to serve Civil Process, such as domestic orders, civil summons, summary ejectments, etc. Deputies are responsible for answering and resolving complaints such as domestic violence, domestic abuse, missing persons and runaways, drug violations, assaults, larcenies and burglaries, homicides, arsons, vandalisms, and other offences.

In the unincorporated portions of the County, the Sheriff's Office provides 24-hour patrol service and responds to emergency and non-emergency calls, and administers civil processes. Required by state statute, Orange County must provide bailiffs for the County courts, opening and closing court when they are in session. The County also provides School Resource Deputies that serve eight (8) County schools daily.

The only jail in Orange County is maintained by the Sheriff's Department. All persons sent to the jail from court or sentenced by the court to jail are held in this facility in Hillsborough, and the Sheriff transports prisoners accordingly.

TELECOMMUNICATION TOWERS

In Orange County and the four incorporated towns, there are presently sixty-one (61) known telecommunication tower sites, and local governments continue to receive permission to locate additional towers. The average tower height is 214 feet with a range between 30 and 1,307 feet. Fifteen of the telecommunication towers in Orange County are more than 200 feet in height. All but five towers more than 200 feet are guyed, and except for the recent Piedmont Electric replacement tower, all were constructed before 1996.

Recent innovations have eliminated the need for tall towers, but have created digital technologies, which require more bandwidth capacity, shorter ranges, and greater data transmission capacities. The County will likely continue to see development proposals for additional towers over the long-term.

8.4.4.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

Key data and trends that inform future decision-making regarding law enforcement, fire prevention, and emergency services in the County include:

- Fire department responses for fire and medical calls average 17 calls per day in the County. This includes calls in the Town of Hillsborough as Orange Rural Fire Department contracts with the Hillsborough for fire and first responder services within the town limits.

- The County jail houses 129 persons and, on average, exceeds this daily capacity. In the next few years, the County will face the burden of having to build another jail.

8.4.4.2. ORANGE COUNTY PUBLIC SAFETY AND TELECOMMUNICATION NEEDS

Growth and service delivery is the area of most concern at this time. The County is faced with the challenge of how to provide adequate services, projected staffing needs, and location of new facilities to provide optimal response for future populations. Key needs to be addressed include:

- The fire departments in the County are faced with **increasing numbers of responses and recruitment/retention issues**. As a result, five of the eight volunteer fire departments now have paid staff to supplement volunteers for emergency response and service delivery.

- Fire Departments and Emergency Medical Services are challenged with the **increase in call volumes**. Emergency medical services call volumes are expected to exceed 10,000 calls in 2008.

- 911 communications and emergency medical services are **challenged with the increases in populations as well as service delivery in the County and towns**. Carrboro Fire and Rescue Department and Efland Fire Department are about to begin construction of new fire stations and have approached the County about the possibility of entering into a partnership with the County to place emergency medical service stations at the fire stations. That scenario would enhance delivery of services to the residents and could eliminate the need for the County to purchase property for emergency medical service stations. Several new facilities are being built to service retirement/assisted living facilities in the County as well as the towns.

- Much of the rural character of the County is changing from primarily open land and farms to residential developments. The County has very **limited infrastructure (water lines and fire hydrants) in place to accommodate fire suppression efforts**. As a result, the fire departments are faced with having to develop some unique techniques to provide water for fire suppression efforts. With the increasing number of homes being constructed, the number of emergency responses increases yearly.

- Section 704 of the federal Telecommunications Act of 1996 created a new framework for the regulation of telecommunication facilities, particularly wireless "cell" towers and the associated equipment and infrastructure. In essence, **the federal government limited the authority of local governments to regulate or create a "barrier to entry" of new telecommunication facilities** that would create the

public interest "information highway." Since 1996 all local governments have grappled with the limits of their authority in this field to protect their local interests through local zoning regulations. As a result, local regulations have been pushed into a somewhat unchartered limit of authority that has resulted in hundreds of lawsuits in an attempt to resolve the balance intended in the 1996 Act. The County needs to keep abreast of legal challenges that will set precedent on the extent of local regulations on these facilities.

8.4.4.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decision-making by the County related to the provision of law enforcement, fire, emergency services, and telecommunication facilities. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 7: Efficient and effective public safety including, police, fire, telecommunications, emergency services, and animal services.

Objective PS-T-1:
Ensure the provision of adequate public safety protection standards for residential, commercial, and industrial development.

Objective PS-T-2:
Ensure that all state roads in the County receive non-duplicated names to be posted on signs at intersections and that all houses are numbered in order to improve the response times of law enforcement and emergency vehicles. (See also Transportation Objective T-2.3.)

Objective PS-T-3:
Establish and maintain an appropriate level of service for law enforcement and emergency services and ensure the provision of adequate public safety protection standards for residential, commercial, and industrial development throughout the County.

Objective PS-T-4:
Maintain high levels of cooperation and sharing of equipment among all departments and agencies involved in law enforcement, public safety, crime prevention, fire protection, and emergency services to assure a high level of service in a cost effective manner.

Objective PS-T-5:
Include in applied site design standards for residential, commercial, and industrial development, appropriate road design standards to ensure adequate law enforcement and emergency vehicle access to the development. (See also Transportation Objective T-2.3.)

Objective PS-T-6:
Develop a mechanism for cooperation with telecommunication facilities stakeholders regarding the siting and design of towers.

Objective PS-T-7:
Manage the number of future wireless telecommunication facilities by identifying preferred locations capable of accommodating service Countywide.

Objective PS-T-8:
Encourage the expansion of affordable, high-speed Internet access, fiber-optic lines, and other high-speed communication networks to rural and underserved areas.

Objective PS-9
Maintain a radio communication system that ensures reliable notification and oversight of emergency assets, such as personnel, vehicles, and response equipment, throughout Orange County and inter-operability of communication among jurisdictions.

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8.4.5. LIBRARY SERVICES

Orange County's public library services are delivered through a hierarchical library system that includes regional, County, and municipal library facilities and services.

The Hyconeechee Regional Public Library System covers Orange, Caswell, and Person Counties. The Orange County Public Library in Hillsborough is the headquarters for the six branch regional system. Together the libraries exchange books, programs, and information to better serve the three counties, and surrounding areas.

The Orange County Public Library System consists of three public libraries (Orange County Public Library, Carrboro Branch Library and Cedar Grove Branch Library) and the Carrboro Cybrary facility.

The Chapel Hill Public Library, which is a Town-owned and managed library outside of the County library system, is the busiest public library per capita in North Carolina. It serves 300,000 people annually with an average of 1,000 visitors a day. Chapel Hill is in the process of expanding this facility to add an additional 45,000 square feet of library space and an art garden.

LIBRARY PLANNING

In 2004, Orange County undertook a task force led planning effort to develop a plan for improving library services and to make recommendations to improve library services and facilities. The scope of the 2025 Long-Range Library Facility Planning report covered a broader array of library planning recommendations than originally intended due to significant findings that pointed to the need for a more comprehensive countywide vision to increase the quality and quantity of library services in the County. The needs assessment section addresses the key findings of this report.

One of the key findings was a need for a new Orange County central library facility in Hillsborough. Construction of this facility, which will be located on Margaret Lane in Hillsborough, is anticipated in 2009.

8.4.5.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

Despite a number of very positive attributes of the Orange County Library – the quality, creativity, and initiative of library staff, its programs, and outreach efforts, and its local history collection, among others – facility space, staffing levels, and collection size are significantly below average professional standards. Steps have been taken over the last decade to extend services beyond the central library, and the library administration has made a concerted effort to find creative and collaborative ways to bring the system closer to state standards, but the County system still lags significantly behind the norm. See Table 8-5 below for a comparison of the County and Chapel Hill public library systems to state averages and guidelines for service.

TABLE 8-5: LIBRARY RESOURCES COMPARED TO STATE AVERAGE AND STANDARDS (2002-2003)

Resources	Orange County Central Library	Chapel Hill Public Library	NC Average/Guidelines
Est. 2002 population	71,225	50,540	8,323,375
Books per capita	1.01	2.75	1.88 (basic standard = 2)
Reader seats/1,000 population	0.88	1.8	N/A (professional standard = 3-5)
Full-time equivalent staff/2,000 population	0.27	1.22	1
Square footage per capita	0.18	0.54	Standard = 0.65
Registered borrowers / % of populations	19.8%	50%	50%
Circulation per capita	2.02	15.55	5.38
Library income per capita	$10.12	$38.40	$18.88
Local Government Revenues per Capita	$8.16	$33.03 (Town and County)	$15.55

8.4.5.2. ORANGE COUNTY LIBRARY NEEDS

The 2004 assessment of library services in the County identified the following needs:

- The population of the County as a whole values education and is supportive of library services, but it is **confused by the current system of library governance and funding responsibilities**.
- The **development of library services for Orange County residents has been fragmented at best**, resulting in great disparity in the level of library services provided throughout the County.
- The **facilities and resources of the Orange County Public Library system are significantly below the standard required** to provide effective public library services. Library staff has been creative and resourceful in "making do" with very limited resources.
- The population is growing at a high rate, with significant growth in the number of older residents and residents moving here from other countries. The **central library has**

not been enlarged in more than 20 years, despite the growth in population during the same period.

- The residents of the County depend heavily on the Chapel Hill Public Library to supplement the resources of the Orange County Library for their library needs. The **presence of this library, operated by a separate jurisdiction, affects the planning of countywide library services.**
- Orange County is proud of its history and rich in historic resources that are preserved by a number of institutions in Hillsborough, including the public library. **Public access to these resources is limited,** however.

8.4.5.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decisions-making by the County related to library services. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 4: High quality library facilities that support our diverse and growing population and present opportunities for life-long learning.

Objective L-1:
Develop a comprehensive 3-5 year strategic plan that places priority on achieving a vision of countywide equitable library services and resources for all citizens of Orange County, and identifies specific measures for implementing Library Service Standards adopted by the Board of County Commissioners.

Objective L-2:
Adopt a long-range library facility plan that takes into consideration the needs of the entire County and is based on 20-year population projections.

Objective L-3:
Establish an Orange County Heritage Center to make accessible the local history materials now located in various facilities.

Objective L-4:
Establish a branch library to serve the central west area of the County centered on Cheeks Township that will accommodate the future population growth of this area over the next 10-20 years.

Objective L-5:
Provide additional library services to people in the sourthwest area of the County centered on Bingham Township.

Objective L-6:
Evaluate the rural community for the establishment of cybraries or small branch libraries to provide access to library resources at these more distant sites.

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8.4.6. EDUCATION

Orange County is nationally known for its excellent public education systems. Two districts serve the residents of Orange County – the Chapel Hill-Carrboro City School District and the Orange County School District. The County funds the two school districts, and the Towns of Chapel Hill and Carrboro levy additional taxes to supplement school district funding. The two school districts are governed by separate School Boards that determine school district policies, approve development and expansion of facilities, and provide overall direction for the activities of the school districts. This chapter focuses on school facilities provided by the two districts. Other educational policies and issues are addressed in related documents listed at the end of this chapter.

DURHAM TECHNICAL COMMUNITY COLLEGE

The Durham Technical Community College (DTCC), Orange County Campus, is located on 20 acres in Hillsborough. This satellite campus opened its doors for continuing education and basic skills courses in May 2008, with curriculum courses starting Fall Semester 2008. The DTCC main campus is located on Lawson Street in Durham. The new campus building houses 22 instructional spaces, including multi-purpose rooms, computer labs and special purpose science labs, as well as flex space which could be used for vocational or trades classes. The facility also includes green building features such as "daylighting" utilizing aluminum light shelves, photovoltaic systems, solar-assisted domestic water heating, rainwater collection and reuse, waterless urinals, and operable window vents in all classroom areas, all of which will help the building be more energy efficient and ecologically friendly. The campus has the capacity for four more buildings. DTCC offers the following programs of study: Arts, Sciences, and University Transfer; Business and Public Service Technologies; Health Technologies; Industrial and Engineering Technologies; and Information Systems Technologies.

CHAPEL HILL-CARRBORO CITY SCHOOL DISTRICT

Established in 1909, Chapel Hill-Carrboro City Schools (CHCCS) provides educational services to school-age residents of the two Towns and some unincorporated areas near the Towns. The district operates three high schools, four middle schools, ten elementary schools, a school for young people being treated at UNC Hospital, and an alternative program for high school students. These schools serve more than 11,000 students. CHCCS employs 1,870 staff members of whom 1,150 are teachers or administrators.

The mission included in the CHCCS Strategic School Plan for 2008-2013 is "Empower all students to acquire the knowledge, skills and insights necessary to live rewarding, productive lives, prepared to contribute positively to the global community." The plan laid out annual capital expenditures for school facility and recreational expansion, identified funding sources for these projects, and set a schedule for implementation. The school district updates its strategic plan regularly.

ORANGE COUNTY SCHOOL DISTRICT

The Orange County School District provides public education services to student-age residents of Hillsborough, the portion of Mebane that lies in Orange County, and most of the unincorporated areas of the County. It operates seven elementary schools, three middle schools, and two high schools, and an alternative school. Orange County Schools has a projected enrollment of 7,000 students for the 2008-2009 school year. Board approved capital improvements for fiscal year 2007-2008 include more than $2 million of improvements to existing facilities, including maintenance of heating and cooling systems, bathrooms, updating health and safety features, and improving athletic facilities.

The district provides its students with a wide range of excellent educational opportunities.

In 2008, Orange County Schools completed a series of studies that will increase efficiency and improve responsiveness district-wide. The Orange County Board of Education approved a re-allocation of Title I funding that will provide district resents with three pre-kindergarten classrooms for early intervention.

In the fall of 2003, Orange County Schools organized a task force of parents, students, community members, teachers, school administrators, and other staff to develop a five-year strategic plan for the district, which was later adopted by the district. Since that time, the plan has guided programmatic, operational, and financial decisions within the district, using five overarching priorities:

1. High Student Achievement;
2. Healthy Students in Safe and Caring Schools;
3. Quality Teachers, Administrators, and Staff;
4. Strong Family, Business, and Community Support; and
5. Effective and Efficient Operation.

SCHOOLS ADEQUATE PUBLIC FACILITIES ORDINANCE

Orange County has express authority from the State of North Carolina to ensure that the provision of public education services in the County keep pace with new development activities that result in increased demand for school services. The County has a Schools Adequate Public Facilities Ordinance which outlines the specific standards that must be met before new developments can be permitted. The County also has a memorandum of understanding with the two school districts, and the Towns of Chapel Hill, Carrboro, and Hillsborough to work together to ensure that new growth within the school districts keep pace with new developments, and sets out the roles and responsibilities for implementing the ordinance. The parties work cooperatively to develop and implement a Capital Improvement Plan for the construction of schools. This plan sets certain standards for existing schools, exceedance of which triggers the need to expand system capacity. A Certificate of Adequate Public Schools is issued by the Board of Education to new developments. This certification process ensures that capacity exists to serve new students that will be generated by new developments. Orange

County, the school systems, and municipalities are collaborating on opportunities to identify and secure potential sites for future schools. The Towns of Carrboro, Chapel Hill, and Hillsborough along with the City of Mebane have undertaken a specific effort to explore the prospects for school sites that are consistent with the new standards and that could potentially be "landbanked" for future use.

SCHOOL IMPACT FEES

The County also has authority to levy school impact fees from residential developers. Impact fees are fees assigned to developers to offset the new demand for school services that the development will create. The concept is that new housing developments will generate new families and new students, and that developers should pay their "fair share" of the cost to provide services to these new students. Impact fees are assigned to new developments during the development review process and are based on the estimated student impact that the development is expected to generate. These funds are used for capital improvement purposes to provide adequate school services to these new students. Operating expenses for the two school districts are paid out of their general operating funds and not by impact fees.

JOINT LOCATION OF SCHOOLS AND PARK/RECREATION FACILITIES

The Joint Master Recreation and Parks Plan Work Group, comprised of elected officials, advisory commission members, public at large and staff from Chapel Hill, Carrboro, Hillsborough, and Orange County was instituted in 1998. The charge of the group was to develop a blueprint for the direction of future joint parks and recreation efforts in the County. The work group developed a report with a central message that the best hope for a strong parks and recreation program lies in partnerships among the jurisdictions. It identified key opportunities for cooperation including the joint siting, design, and management of school and park sites across jurisdictions, and recommended strategies to implement this goal. Specifically, it recommended a Parks and Resource Lands Council to work closely with the existing Schools and Land Use Council to identify joint location opportunities and develop plans to this end. This effort is still supported today.

SCHOOL DISTRICT CONSOLIDATION

In 2003, the Orange County Board of County Commissioners tasked County staff with evaluating whether the two County school districts should be merged. The key concern that drove this effort was the matter of educational funding equity. A goal related to the pursuit of "equitable school funding" has been included in the board's annual set of formal goals since the early 1900s. The evaluation focused on the financial, organizational, and legal considerations of a possible school merger. Although no formal recommendations were made in the report, actions taken since that time have included the production of the Grumet Report, an efficiency study, and the establishment of collaboration meetings among the boards.

It was not the first time the County undertook such an evaluation. A study was performed in 1985 that recommended not merging school districts at that time, but that "a single school system will prove to be desirable in the

future." If the school districts continue to experience inequities in funding, it is likely that these discussions will continue.

8.4.6.1. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following statistics provide a snapshot of the County's two public school districts for the 2006-2007 school year. Table 3-11 compares the average size schools in the two school districts with the state average. Orange County's school size is lower than Chapel Hill-Carrboro schools on average for all three school types. While slightly higher than state averages, the Chapel Hill-Carrboro City School District has only slightly larger elementary and middle schools. Only the high schools are significantly larger than the state average. See Table 8-6.

TABLE 8-6: COMPARISON OF AVERAGE SCHOOL SIZES (2006-2007)

School Districts	Elementary	Middle	High
Chapel Hill-Carrboro School District	552	646	1,736
Orange County School District	438	524	1,068
State Average	510	666	989

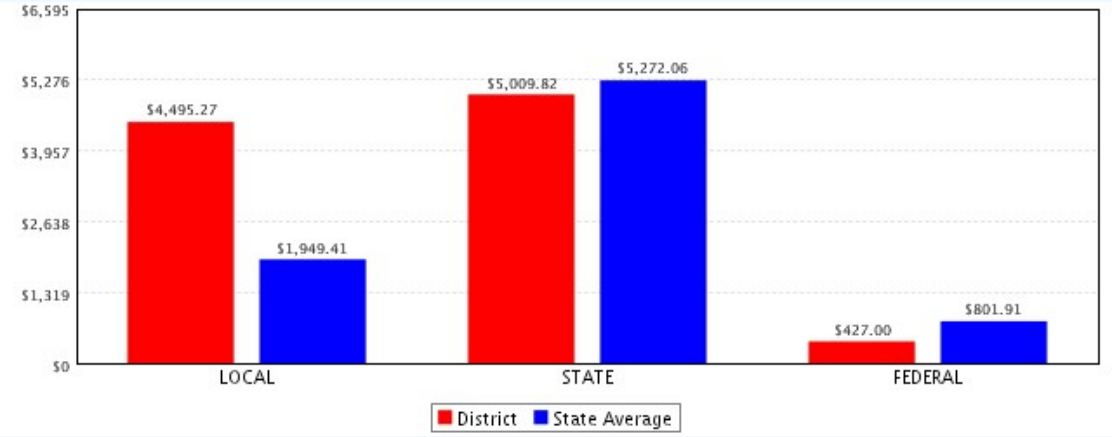
More pertinent, Table 8-7 compares average class sizes by grade for the two school districts and the state average. Both school districts generally align with state averages. However, Orange County has a larger average class size than the state average for grades 2-5 and 8. See Table 8-7.

TABLE 8-7: COMPARISON OF AVERAGE SCHOOL CLASS SIZES (2006-2007)

	Kind.	1st	2nd	3rd	4th	5th	6th	7th	8th
CH-Carr	18	19	20	19	22	22	20	20	19
OC	19	18	20	21	21	22	20	20	21
State Average	19	19	19	19	20	21	21	21	20

Comparisons of Chapel Hill-Carrboro City School District funding with state averages show that local funding of the school district is significantly higher than the state average for local funding. State and federal funding is slightly lower for the district. See Figure 8-3.

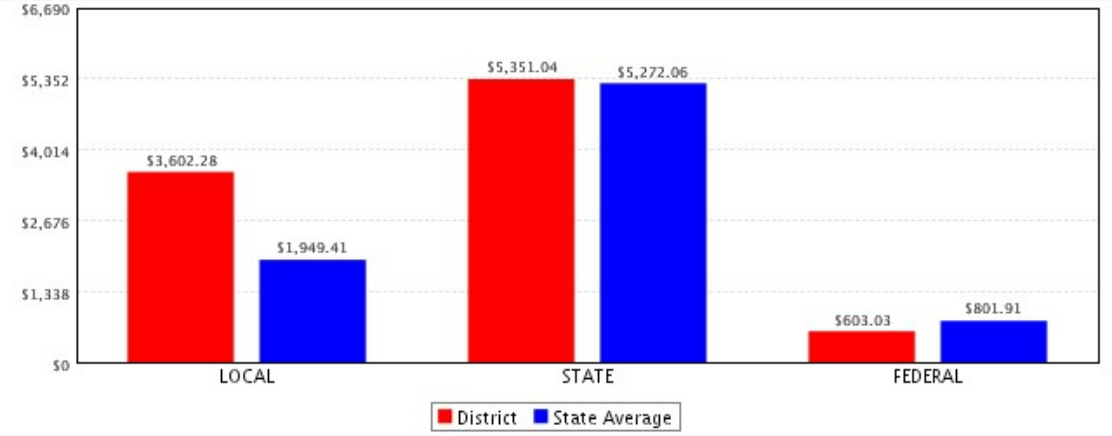
FIGURE 8-3: COMPARISON OF SOURCES OF FUNDS PER PUPIL FOR CHAPEL HILL-CARRBORO DISTRICT AND STATE AVERAGE (2006-2007)



Source: North Carolina Public Department of Instruction, 2007.

The Orange County School District also is higher than the state average for local funding, but is approximately $900 less per pupil than the Chapel Hill-Carrboro district. The Orange County District receives more funding from the state than the average state district, and less from federal sources. See Figure 8-4.

FIGURE 8-4: COMPARISON OF SOURCES OF FUNDS PER PUPIL FOR ORANGE COUNTY DISTRICT AND STATE AVERAGE (2006-2007)



Source: North Carolina Public Department of Instruction, 2007.

8.4.6.2. ORANGE COUNTY EDUCATIONAL NEEDS

As the County's population grows over the next 20 years, the County will need to work with the school districts to support and maintain the excellent quality of the two systems. The biggest challenge will be providing an equitable distribution of facilities and programmatic funding to the two districts to ensure that students across the County have equal opportunities. The County will also need to work with the school districts to maintain a socio-economic balance of students attending the two schools.

8.4.6.3. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decisions-making by the County related to public education planning and funding. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Services and Community Facilities Goal 3: High quality educational facilities that support our diverse and growing population and present opportunities for life-long learning.

Objective E-1:
Continue the coordination of planning activities among the School Boards, Planning Boards, Planning Departments, and other jurisdictions to provide for the future space needs and appropriate location of schools to meet the long-term educational needs of Orange County residents.

Objective E-2:
Continue to work with parks and recreation providers in the County to identify opportunities for co-location and shared funding of school and public recreational "joint use" facilities. (See also Parks and Recreation Objective PR-2.4.)

Objective E-3:
Achieve an equitable distribution of educational facilities.

Objective E-4:
Develop a standard that requires residential developers to provide an adequate amount of acreage to meet future school facility needs.

Objective E-5:
Increase educational opportunities for older persons.

TABLE 8-8: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Overarching Goal	√	√	√	√	√	√	√	√	√
Goal 1 and Objectives WW-1 – WW-9	√	√	√	√	√		√	√	
Goal 2 and Objectives WW-10 – WW-19	√	√	√	√	√	√	√		
Goal 3 and Objectives E-1 – E-5	√	√						√	√
Goal 4 and Objectives L-1 – L-6	√	√						√	√
Goal 5 and Objectives EC-1 – EC-10	√	√			√	√	√		
Goal 6 and Objectives SW-1 – SW-6	√	√			√	√			√
Goal 7 and Objectives PS-T-1 – PS-T-9	√	√	√				√	√	

8.5. LINKS TO OTHER ELEMENTS

Planning for public services and facilities requires coordination with land use planning, economic development, housing, and other planning objectives. Provided here is a list of the objectives from other Plan Elements that are linked to services and facilities objectives. Some of the Plan objectives that lend themselves toward the concept and spirit of Sustainable Government are noted with an asterisk (*).

ECONOMIC DEVELOPMENT

Objective ED-2.1:
Encourage compact and higher density development in areas served by water and sewer.

Objective ED-2.7:
Select industrial sites in Economic Development Areas based on present and planned supporting systems, such as public water and sewer, access to adequate highway, rail, or public transportation infrastructures, and minimize detrimental environmental or negative social outcomes.

Objective ED-2.10:
Extend public water and sewer into all three Economic Development Districts.

HOUSING

Objective H-1.5:
Ensure that a variety of housing types can be developed throughout the County in a sustainable manner that locates housing near employment centers and commercial centers and that efficiently uses existing and planned public services. (See also Land Use Objectives LU-1.1 and LU-6.2.)

Land Use

LAND USE

Objective LU-1.1:
Coordinate the location of higher intensity / high density residential and non-residential development with existing or planned locations of public transportation, commercial and community services, and adequate supporting infrastructure (i.e., water and sewer, high-speed internet access, streets, and sidewalks), while avoiding areas with protected natural and cultural resources. This could be achieved by increasing allowable densities and creating new mixed-use zoning districts where adequate public services are available.

Objective LU-1.3*:
Create a "sustainable development checklist" to be included as part of the development review process that would evaluate and report on whether proposed developments are appropriate considering existing on-site environmental conditions and features, whether they are compatible with existing natural and cultural resources, whether adequate provision of public services exist for the proposed land use, and whether the proposed development will enhance community character.

Objective LU-2.2:
Continue to protect valuable resource land such as productive agricultural acreage, managed forest areas, natural areas, historic sites and properties, and potential reservoir sites through the County's Lands Legacy Program, and by directing incompatible development

away from these areas through land use and zoning policies and regulations.

Objective LU-2.3:
Require non-residential and higher-density residential developments within Transition Areas to use Best Management Practices (BMP's) for stormwater control, as outlined within the Orange County Unified Development Ordinance, to ensure that potential adverse impacts on the water quality of existing and proposed reservoir sites.

Objective LU-2.7*:

Refine green building standards to guide the design, siting, construction, and management of publicly owned and managed buildings in a manner that conserves energy and/or uses non-polluting renewable energy sources. Explore the development of green building standards for private development. (See also Air and Energy Objective AE-11.)

Objective LU-2.5:
Adopt and implement policies that specify appropriate land uses and intensities of development in Protected and Critical Water Resource Areas that will not have potential adverse impacts on water resources.

Objective LU-3.1*:
Discourage urban sprawl, encourage a separation of urban and rural land uses, and direct new development into areas where necessary community facilities and services exist through periodic updates to the Land Use Plan. (See also Economic Development Objective ED-2.8.)

Objective LU-3.2*:
Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation system. (See also Transportation Objective T-1.1, Economic Development Objective ED-2.3, and Air and Energy Resources AE-8.)

Objective LU-3.6:
Establish consistency between the Land Use Plan and the Water and Sewer Management Planning and Boundary Agreement and Map.

Objective LU-4.2*:
Review and amend the Orange County Unified Development Ordinance to identify and eliminate existing regulatory impediments to objectives identified in the Comprehensive Plan. Such objectives include the development of energy efficient buildings within the County, and development of affordable housing.

Objective LU-6.2:
Maintain a cooperative joint planning process among the County municipalities and those organizations responsible for the provision of water and sewer services to guide the extension of service in accordance with the Comprehensive Plan, the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Land Use Plan, and the policies of the municipalities.

Objective LU-6.5*:
Establish a "one-stop" County central permitting office.

Objective LU-6.6*:
Evaluate and consider the "Community Building" recommendations of the Shaping Orange County's Future's Task Force.

NATURAL AND CULTURAL SYSTEMS

Objective NA-5:
Prohibit development that would cause adverse impacts on highly significant natural areas and wildlife habitat.

Objective NA-7*:
Ensure that significant natural areas and wildlife habitat located on County-owned lands are protected with adequate ecosystem management practices and stewardship.

Objective WR-2:
Create long-term conservation programs for ground water and surface water that will help extend the life of our finite existing water supplies.

Objective WR-5:
Promote and participate in regional efforts to plan for use of water supplies in the region in an equitable manner, including contingency planning for water supplies during droughts.

Objective WR-6:
Ensure greater coordination among County agencies on water resources, including cooperative efforts to prevent surface and ground water pollution by addressing failing septic systems and wells.

Objective WR-20:
Promote Best Management Practices for new developments which minimize stormwater runoff.

Objective AE-11*:
Improve the energy efficiency of buildings through several action steps: 1) upgrade existing buildings, including County and school buildings; 2) educate planning and building inspection officials about the technologies and techniques of energy efficient construction; and 3) encourage the use of LEED “Gold” (or equivalent) as a standard in new construction.

PARKS AND RECREATION

Objective PR-2.4:
Establish a mechanism to promote shared use of existing public and institutional buildings and grounds for public recreation, as well as for their primary uses.

Objective PR-5.1*:
Locate parks and recreational facilities close to residential areas to encourage informal interaction with nature, encourage walkability, and create areas of wildlife habitat with appropriate recreational facilities within the more populated areas.

Objective PR-5.2*:
Landscape parks and recreational facilities with native vegetation and minimize water use where practical. Prohibit use of known invasive non-native species in County facilities, and take steps to eradicate occurrences of same.

TRANSPORTATION

Objective T-2.3:
Increase countywide access for emergency vehicles, including ways to improve response times, both for existing and new developments.

8.6. OTHER KEY DOCUMENTS

The following policy documents, reports, and studies were used to develop this element. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.):

- *Orange County Water and Sewer Policy* (1991)
- *Mebane Water and Sewer Agreement* (2004)
- *Orange County Comprehensive Plan Draft* (Land Use Element – Water Resources Section begun 1989, revised through 2002)
- *2006 Efland-Mebane Small Area Plan*
- *2005 OWASA Sustainability Report*
- *Orange County Soil Erosion and Sedimentation Ordinance* (2006)
- *Monthly Land Disturbance and Revenue Report* (July 2007-October 2007)
- Procedures for Erosion and Sedimentation Control Enforcement in the Town of Chapel Hill
- *Solid Waste Management Report 1998*
- Memorandum from the Solid Waste Advisory Board Stating Goals for the 2030 Comprehensive Plan (May 2007)
- Annual Recycling Tonnage Summaries (2005, 2006, 2007)
- *County Waste Reduction Report* (2005 & 2006)
- *Long-Range Library Facility Planning Report* (2004)
- County Library Service Standards (2007)
- *Schools Adequate Public Facilities Ordinance*
- *Educational Facilities Impact Fees Ordinance*

- 2003 Staff Report to Board of County Commissioners - *An Analysis of Potential Impacts Resulting from a Possible Merger of the OC and CH-Carr School Districts*
- *2003 Strategic Plan Priorities for Orange County School District*
- *2007-2008 Board of County Commissioner's Approved Capital Improvement Projects for Orange County Schools*
- *Chapel Hill - Carrboro School Strategic Plan: A Commitment to Excellence* (2002-2008)
- *2004-2014 Capital Improvement Plan for Chapel Hill - Carrboro Schools*
- *2007 Orange County Master Aging Plan*

8.7. INTERGOVERNMENTAL COORDINATION

Achieving these objectives will require coordination among service providers in the County.

- County and individual **water** suppliers must think in regional terms when planning for long-term public water resource strategies, and should coordinate efforts to maximize financial resources and existing infrastructure. Moreover, efforts should be coordinated to ensure that conservation efforts are equitable across the County and that each service area is doing its parts to efficiently use precious water resources.
- The County has provided strong leadership and human resource capacity to regulate and enforce state and local **erosion control** and stormwater management regulations. The County should continue to maintain agreements with the towns to inspect and monitor local developments, and to maintain consistent standards for land disturbance activities in the County.
- County **solid waste disposal and recycling programs** are provided countywide. Achieving the goal of solid waste reduction will require all jurisdictions in the County to take up this goal and encourage increased recycling and reduction in waste. The County will need to work with local governments to make sure that land use plans provide opportunities for siting needed waste management facilities. The identification of the location for a new landfill transfer station site will require a countywide dialogue to ensure that the new facility will not adversely harm certain communities more than others, and in general should be a location that is convenient to all County residents.
- Expected population growth in the County will require additional **law enforcement and fire/emergency services**. The County and towns have been very successful at coordinating the provision of these services to ensure consistent service delivery throughout the County through the use of paid and voluntary personnel, and joint use of facilities. The County will need to continue to work with the

towns to identify gaps in service and create joint solutions for delivering services to these areas.

- **Library services** in the County have been disjointed and often not equitable across the County due to a lack of resources and funding. The library systems have been creative at finding ways to provide library resources countywide. As local financial resources likely will continue to be stretched, solutions for providing library resources may require joint funding strategies, better coordination between the two library systems, and siting of new facilities in locations that can provide resources to a wide service area.

- **Schools** have long been known to be a key factor in determining where demand for new development will occur. The County school districts have been proactive in working with the County and towns to coordinate the siting of schools with the land use plans of the jurisdictions to ensure that schools are located in areas that best serve the student populations and are located in areas where residential development exists or is encouraged. Continuing to maintain this dialogue will ensure good land use planning for the long-term.

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Chapter 9. Transportation Element

9.1. PURPOSE

This Transportation Element provides guidance and direction regarding future transportation efforts in Orange County. The goals and objectives identified within this element serve as the foundation for establishing future transportation policies and action strategies undertaken by Orange County, its advisory boards, and staff. This specific process for developing a transportation implementation strategy is outlined in *Section 1.4: Administration and Implementation Guidelines*.

9.2. OVERVIEW

Orange County's transportation system is often described as a network. The term network describes a collection of destinations and connections. On the ground in a transportation network, the destinations would be areas where people live and destinations people have outside their homes, places like work, shopping centers, parks, government offices, etc. Connections are the routes people take to travel between nodes, between home and work, for instance. Destinations and connections together can be viewed as the physical structure of a transportation network. Another term, traffic, is used to name the activity that takes place on the network.

Planning for a transportation system requires planning for destinations and connections, as well as traffic. All three components are essential for a logical, robust network.

Orange County's transportation network is comprised of a hierarchy of roads that moves automobiles and provides access to land developments, railroad lines that allow freight and commuter trains to move through the County, bicycle routes that provide access to points of interest and recreational trails, and local sidewalks and pedestrian facilities that foster walking in neighborhoods, downtowns, and at commercial and employment centers.

While the County, in partnership with the Towns of Hillsborough, Chapel Hill, Carrboro, and Mebane, has been a long-standing proponent of a multi-modal transportation system, more can be done to encourage non-automobile forms of transportation. New facilities and improvements are needed to encourage a more efficient and effective transportation system that achieves the County's goals of achieving long-term sustainability and maintaining Orange County's distinctive community character.

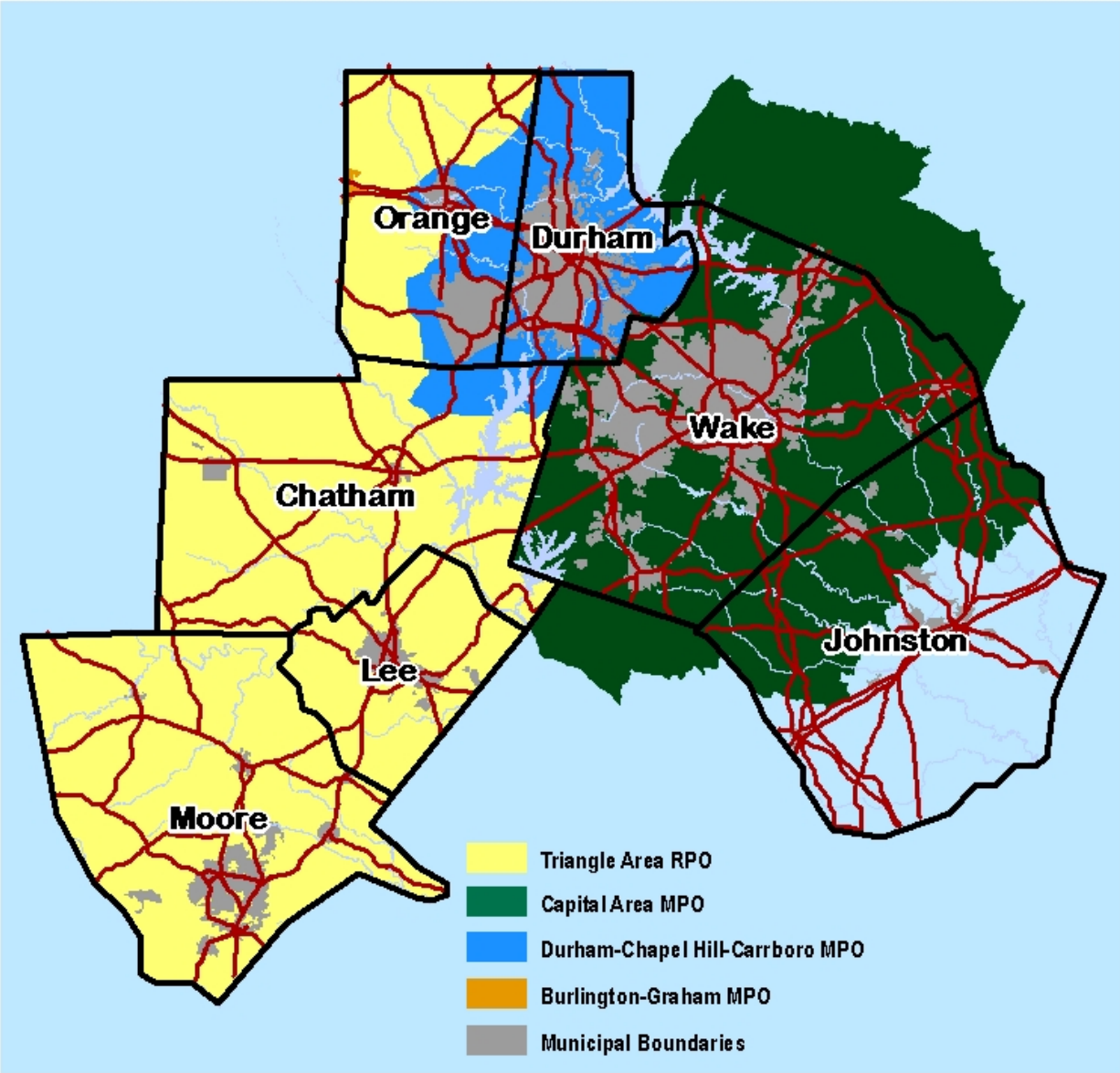
TRANSPORTATION PLANNING

Transportation Planning in Orange County is guided by federal legislation that requires states to carry out a continuing, cooperative, and comprehensive statewide multimodal transportation planning process that facilitates the safe and efficient management, operation, and development of surface transportation systems that will serve the mobility needs of people and freight (including accessible pedestrian walkways and bicycle transportation facilities) and that fosters economic growth and development within and between States and urbanized areas, while minimizing transportation-related fuel consumption and air pollution in all areas of the State, including those areas subject to the metropolitan transportation planning requirements. The "three-C" process (continuing, cooperative, comprehensive) includes the development of a long

range statewide transportation plan and statewide transportation improvement program (STIP). The State Long Range Transportation Plan and Transportation Improvement Program is developed in cooperation with the Metropolitan Planning Organization designated by federal legislation for the metropolitan area. The State consults with the local officials of the affected nonmetropolitan area to develop the transportation plan and TIP for nonmetropolitan areas.

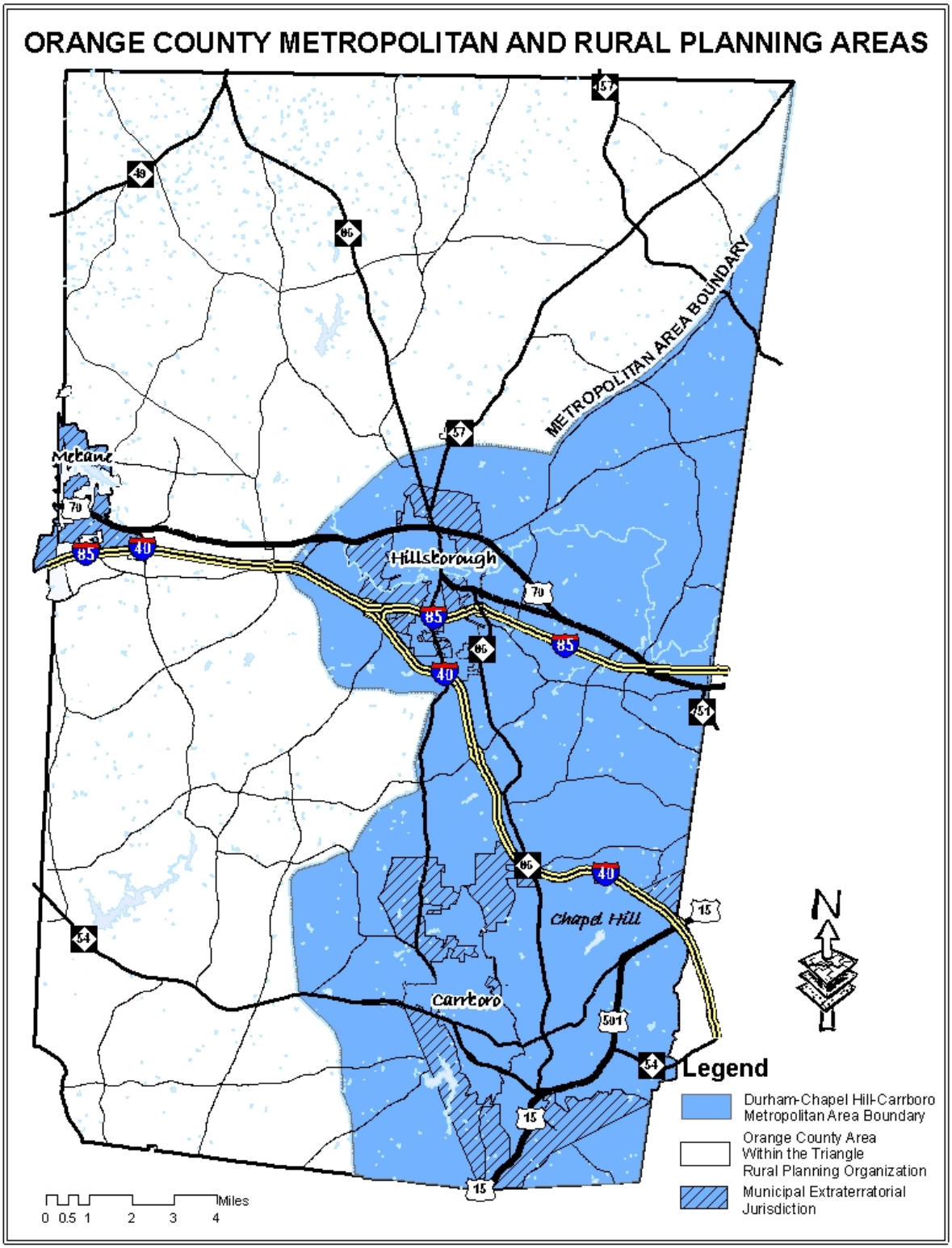
The Durham-Chapel Hill-Carrboro (DCHC) Metropolitan Planning Organization (MPO) is the regional organization responsible for transportation planning in the western part of the Research Triangle area, including the eastern, and more urban, portions of Orange County. The DCHC MPO Transportation Advisory Committee (TAC), the policy and decision making body of the organization, is made up of elected officials from the local jurisdictions in the Metropolitan Area Boundary, and the North Carolina Board of Transportation member representing the area. The Triangle Area Rural Planning Organization (TARPO) coordinates the transportation planning in the rural areas outside the Metropolitan Area Boundary of Orange County and Chatham County and for all of Lee and Moore Counties.

The TARPO Rural Transportation Advisory Committee (RTAC) is made up of elected officials of the member jurisdictions and the Division 8 North Carolina Board of Transportation member. These are the two organizations through which Orange County coordinates its plans for local transportation projects for implementation through regional programs. Map 9-1 shows the transportation planning jurisdictions in the Research Triangle region.



MAP 9-1: REGIONAL TRANSPORTATION PLANNING ORGANIZATIONS

Map 9-2, below, shows the boundaries of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization and the Triangle Area Rural Planning Organization within Orange County.



MAP 9-2: TRANSPORTATION PLANNING ORGANIZATIONS IN ORANGE COUNTY

The **Durham-Chapel Hill-Carrboro Metropolitan Planning Organization** (MPO) coordinates planning and development of transportation facilities in its jurisdiction through two primary planning mechanisms:

- **Long-Range Transportation Plan.** The plan is a guide for major transportation investments in the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization area. It is designed to support land use and air quality goals for the urban area, and is prepared in accordance with federal requirements. The plan projects the amount and type of transportation demand over a 20-year minimum period, and is updated every four years to demonstrate compliance with air quality standards. It identifies priority highway, bus transit, rail transit, bicycle, and pedestrian improvements needed to service future populations, and the projected costs of these improvements. The Long Range Transportation Plan is fiscally constrained and identifies viable anticipated funding sources for projects proposed in the plan.

- **Metropolitan Transportation Improvement Program.** This program is a seven year document that is included in the Statewide Transportation Improvement Program and contains funding and scheduling information for bicycle, pedestrian, highway, rail, public transportation, and enhancement projects. Every two years, the Metropolitan Planning Organization develops a prioritized list of projects to be considered for funding in the biennial update of the Metropolitan Transportation Improvement Program. Projects must come from adopted transportation plans

The Triangle Area Rural Planning Organization (TARPO) coordinates the transportation planning in the rural areas of Orange County and Chatham County outside the Metropolitan Boundary Area and for all of Lee and Moore Counties. (See Map 9-1.) Triangle J Council of Governments is the administrator and lead planning agency for the TARPO, and coordinates transportation plans and programs and land use policies and programs in the four-county planning area. The general purpose and responsibilities of the Rural Planning Organization are to:

1. Develop long-range local and regional multi-modal transportation plans in cooperation with the area Metropolitan Planning Organizations (MPOs) and the NCDOT.
2. Provide a forum for public participation in the rural transportation planning process.
3. Develop and prioritize suggestions for transportation projects that the RPO believes should be included in the State Transportation Improvement Program (STIP).
4. Provide transportation-related information to local governments and other interested organizations.

The Orange Unified Transportation Board (OUTBoard) is made up of 14 citizens and two ex-officio liaisons from the Board of County Commissioners. The OUTBoard provides recommendations to the Board of County Commissioners regarding overall planning and programming of transportation improvements in the County, including identifying and

setting priorities for the County's roadway and transit needs along with associated costs and specific sources of funding.

- Assisting in development and review of the transportation component of the comprehensive plan;
- Providing recommendations to the Board regarding Federal and State legislation affecting transportation in Orange County; and
- Exploring and making recommendations on innovative techniques and methods to improve the efficiency and capacity of existing and future transportation systems.

COUNTYWIDE ROAD NETWORK

Orange County's road network is comprised of a hierarchy of roads including interstates, major US and NC highways, North Carolina Secondary Roads, and local roads that serve different functions in providing access to other regions and within Orange County.

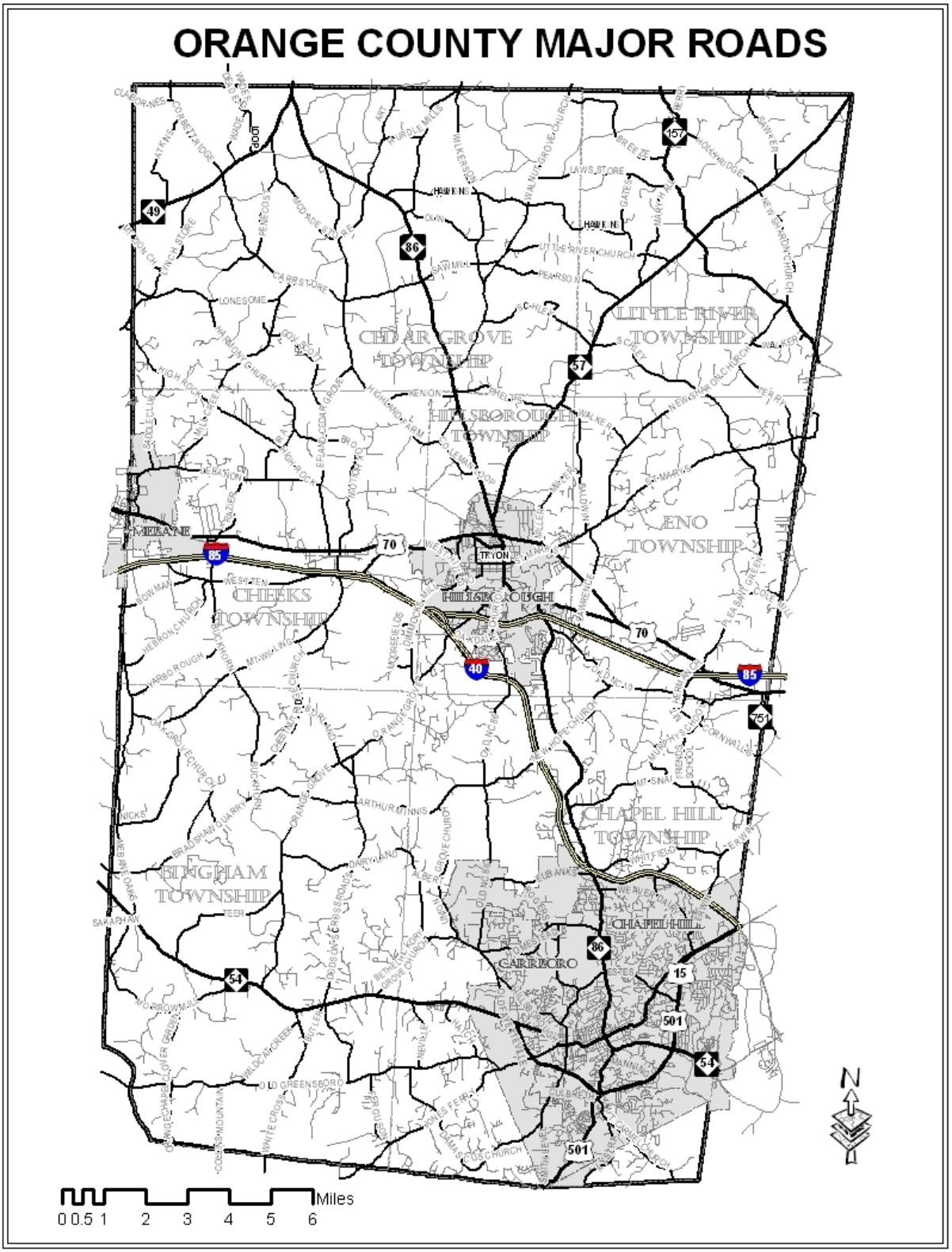
Interstate 40 and Interstate 85 are part of the Federal Interstate Highway System and are the major corridors that provide for transport of people and goods through Orange County to other regions, including employment centers in the Triangle Area (Durham, Research Triangle Park and Raleigh) to the east and the Triad (Greensboro, Winston-Salem and High Point) to the west.

Major US and NC routes linking Orange County with surrounding areas also provide intra-county access and linkage to the rural areas of the County. US 70 is a major highway that provides east-west access through Orange County, linking the City of Durham in Durham County, the Town of Hillsborough in Orange County and the Town of Mebane in Alamance County. US 15 and US 501 provide north-south access linking the City of Durham to the Towns of Chapel Hill and Carrboro and the Town of Pittsboro in Chatham County. NC 86 provides north-south access through Orange County from Caswell County and links the Towns of Hillsborough and Chapel Hill. NC 57 provides north-south access from Person County through Orange County to the Town of Hillsborough. NC 54 provides linkage between Research Triangle Park in Durham and Wake Counties, the Towns of Chapel Hill and Carrboro, and Greensboro in Guilford County.

A widespread state-maintained system of Secondary Roads provides access to the major regional corridors from the rural areas of the County.

Local roads emphasize the land access function, and connect rural residential and commercial development with the Secondary Road System and major US and NC corridors.

Map 9-3 below illustrates how Orange County road network functions to provide inter-county and intra-county access.



MAP 9-3: MAJOR ROADS IN ORANGE COUNTY

ALTERNATIVE MODES OF TRANSPORTATION

Orange County residents have several options for using alternative modes of transportation.

Three public transportation systems provide bus service in Orange County:

- **Triangle Transit**– the "TT" provides regional bus service linking the Town of Chapel Hill to Research Triangle Park, Raleigh-Durham International Airport, Duke University, NC State University, and other key regional locations. TT also contracts with Orange Public Transportation (the "Orange Bus") to provide service between the Towns of Hillsborough and Chapel Hill." In addition, TT has a vanpool program for commuters that have a greater than 20-mile round-trip.

- **Chapel Hill Transit** – the Towns of Chapel Hill and Carrboro, and the University of North Carolina-Chapel Hill partner to provide daily fare free bus service to routes in Chapel Hill and Carrboro. Services include fixed route bus service, park and ride shuttle service for special events, shared ride feeder service to areas which do not receive regular bus service, and EZ rider service for individuals with mobility limitations. Many of the bus stops are shared with TT and provide access to the larger regional bus system.

- **Orange Public Transportation** – Orange County provides bus service to County residents on the "Orange Bus" including fixed route (in partnership with TT) general public service, door to door pick-up and drop-off service for human service contracting agencies, deviated fixed route service for the general public, and paratransit service for disabled residents.

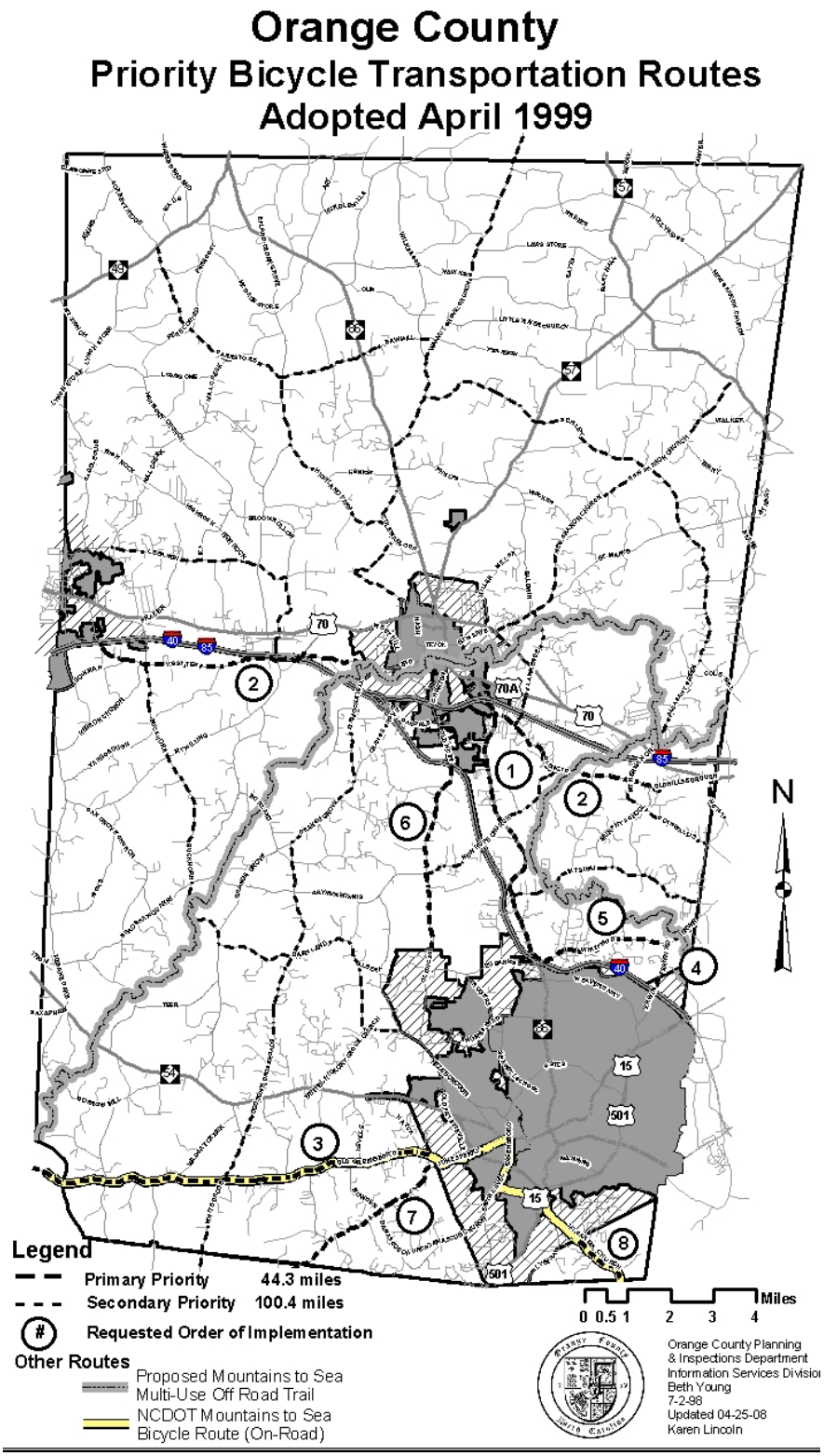
Private Sector Transportation Services - Several for profit private sector transportation services are available to transport individuals and groups and may be more cost effective for some transportation needs than the above named systems.

Orange County residents have opportunities to ride-share through various private transportation providers as well as through Triangle Transit's vanpool program. TT also hosts a website for Share the Ride NC, a statewide ride share matching service for both local and inter-county trips.

Orange County has an active bicycling community that uses Orange County roads for recreational riding, competitive training, and commuting. Orange County's Bicycle Transportation Plan identifies major routes for improvements to facilitate bicycle commutes. The Bicycle Transportation Plan is included in the regional DCHC Long Range Transportation Plan. Although there are currently no bicycle lanes on Orange County roads outside municipalities, Orange County has been able to obtain modest improvements for bicycles, such as two-foot paved shoulders on secondary roads, through NCDOT programs for resurfacing roads and spot safety projects. A State Transportation Improvement Program project that will identify popular cycling routes on an Orange County Bike Map is underway, and should be completed by the end of 2008. NCDOT will install numbered bike route signs as part of the overall development of the County bike route system.

There are no pedestrian trails outside of parks and greenways. However, several plans outline a connected trail system throughout the County through parks and environmentally sensitive areas along floodplains from Chapel Hill into Durham County.

Amtrak passenger service traverses central Orange County through the Town of Hillsborough, but currently does not stop in Orange County. There is widespread community support for a passenger train stop in Orange County. All local County jurisdictions, in early 2008, indicated their support for a train station to be located in Hillsborough and the Town of Hillsborough requested North Carolina Department of Transportation Rail Division, North Carolina Railroad and the National Railroad Passenger Corporation (Amtrak) to consider adding a stop in Hillsborough. Officials with the N.C. Department of Transportation and Amtrak, in July 2008, confirmed that a passenger train stop in Hillsborough is a financially viable endeavor according to a financial impact analysis conducted by Amtrak.



MAP 9-4: PRIORITY BICYCLE TRANSPORTATION ROUTES

RECENT TRANSPORTATION PLANNING EFFORTS

Orange County has undertaken several transportation planning efforts over the last several decades. Summaries of these plans and reports are provided here.

ORANGE COUNTY, NORTH CAROLINA BICYCLE TRANSPORTATION PLAN (1999)

In 1999, Orange County adopted a Bicycle Plan that included recommendations for all of Orange County outside of the municipal extra-territorial planning jurisdictions and the transition areas of the Joint Planning Land Use Plan. The purpose of the plan was to identify key bicycle and pedestrian connections between subdivisions and other developments. A Task Force was appointed and met over a 6-month period to develop the plan. The plan identifies priority and secondary bicycle routes, and sets out goals and objectives for improving bicycle and pedestrian facilities in the County. It goes on to outline two general strategies for improving bicycle facilities and programs:

- Bicycle facility improvements on roads; and
- Programs to increase cyclist safety and efficient transportation cycling.

Detailed implementation strategies are identified for these two general strategies. A timeline and cost estimates were prepared for the development of paved shoulders on identified primary priority bicycle transportation routes. The plan was formally adopted by the Board of County Commissioners in 1999.

Many Orange County citizens bicycle for recreation. While bicycle improvements proposed in the Bicycle Transportation Plan can also be used for recreational bicycling, it is important to note that transportation funding can not be used for improvements that do not serve a transportation purpose. The County should plan for recreational bicycle trails and bikeways. Coordinating those plans with on-road planned transportation programs can help fund a comprehensive bicycle network that can accommodate the needs and various skill levels of cyclists in Orange County.

ALTERNATIVE FUEL VEHICLE OPTIONS REPORT (2000)

Acknowledging that protection of the air quality in Orange County is essential for the well being of the County's residents, the Board of County Commissioners passed three air quality resolutions in 1999. These resolutions directed County employees to begin an Ozone Air Quality Action Plan, to investigate low emission and fuel-efficient vehicles, and to examine the purchase of alternative fuel vehicles (AFVs) as an option for County fleet emissions reduction. An Alternative Fuel and Low Emission Vehicles work group was established to lead the investigation of these latter issues and to propose an action plan which includes the potential purchase of a number of alternative fuel vehicles. The report sets out short-term, intermediate term, and long-term goals:

- **Short-Term Goal:** Research the advantages and disadvantages of the various alternative fuel vehicle options, and use that information to apply for state grants to cover the costs associated with purchasing multiple vehicles in 2001;
- **Intermediate-Term Goal:** Explore the possibility of acquiring an alternative fuel bus, continue replacing gasoline vehicles with alternative fuel vehicles, as appropriate, develop the educational

component of the County's alternative fuel vehicle program, and coordinate with other jurisdictions through the newly formed Triangle J Clean Cities Program; and

- **Long-Term Goal:** Minimize emissions from the County's vehicle fleet and maximize the fleet's fuel efficiency.

The report provides research on the pros and cons of alternative fuel vehicles and sets out specific strategies for meeting each of the three goals.

RECOMMENDATIONS OF THE JOINT ORANGE COUNTY-HILLSBOROUGH ECONOMIC DEVELOPMENT DISTRICT TRANSPORTATION WORKING GROUP (2001)

An outgrowth of the Orange County Economic Development District workgroup, the Economic Development District Transportation Committee, met in 2001 to discuss concerns about the existing transportation system, particularly in the Economic Development Districts in and around Hillsborough. The committee was comprised of a broad array of interests, including elected officials, planning board members, representatives from the Commission for the Environment, the Chamber of Commerce, the Alliance for Historic Hillsborough, the Economic Development Commission, the Eno River Association, a local developer, a design professional, property owners, and County staff.

Discussions focused on the potential for the Elizabeth Brady Road extension (or a viable alternative), setting priorities for the 2001 Transportation Improvement Program, and addressing the insufficiencies of the existing transportation system and its ability to service future development in the Economic Development Districts. The group identified a set of shared interests, objectives that new transportation projects should achieve, criteria for evaluating development of new roadways, and specific roadway improvements. The committee recommended to the Orange County Board of Commissioners and the Hillsborough Town Board of Commissioners that suggestions regarding the evaluation of the Elizabeth Brady Road extension be provided to NC-Department of Transportation, that a list of transportation improvements be selected for the next round of the Transportation Improvement Program, and that three particular policies be implemented locally:

- Encourage the County to provide park and ride for employees;
- Consider a policy about road widening similar to Carrboro's (no road widening greater than three lanes in town); and
- Set up a standing joint town/county committee to address transportation issues.

ACCESS MANAGEMENT AWARENESS PROJECT AND REPORT FOR ORANGE GROVE ROAD (2003)

In March 2002, the Board of County Commissioners and the Town of Hillsborough established the Orange Grove Road Transportation Task Force as part of its continuing cooperative planning effort. Existing and proposed development activity, as well as existing public facilities, such as schools in this corridor, prompted a review of transportation issues and a discussion regarding the range of transportation planning initiatives that could lead to a multi-modal system along the portions of the Orange Grove Road corridor included in the study. The task force determined that access management (i.e., transportation improvements that manage access to developments while seeking to preserve the flow of traffic on a roadway) was the key to addressing these issues. The report includes

analysis of the area, a survey of access management best practices, an analysis of the regulatory framework, and a list of possible tools that could be used to implement the recommendations. The report also includes specific transportation goals, objectives, and policies for joint transportation planning. The intent was that these policy frameworks could be applied in other areas of the County.

EFLAND-MEBANE SMALL AREA PLAN (2006).

A small area plan for the Efland-Mebane area of Orange County was developed and adopted in 2006. This plan outlines several key strategies for improving the multi-modal transportation system in the area, including:

- Further analysis and identification of transportation enhancements to improve congestion and traffic problems along key roadways, particularly focusing on Buckhorn Road;
- Provision of bus service to the area and a park-and-ride lot;
- Addition of bicycle lanes along major roadways;
- Provision of sidewalks in new developments, retrofitting sidewalks in existing developments, and the addition of other pedestrian facilities, like pedestrian bridges, to link key locations; and
- Development of a streetscape plan to identify locations for street trees, sidewalks, and other street improvements.

ORANGE COUNTY MASTER AGING PLAN.

In 2007, Orange County adopted the *Orange County Master Aging Plan: Building-Aging Friendly Communities in Orange* that sets goals and strategies for coordinating delivery of community services to older adults who have different levels of functional capacity throughout their life spans. The plan identifies five new demographic conditions affecting communities across the nation:

- An explosion in the numbers of older persons.
- A dramatic increase in longer lives for older persons.
- An uneven distribution of older persons within the County with different key characteristics, particularly the uneven locational distribution of elderly housing.
- More residents living more of their advanced years in declining health and limited function.
- A large and growing number of older persons (retirees and non-retirees) who are a major human resource.

Four overarching goals provide the County with guidance in planning for our elderly population. Goal C is relevant to the provision of transportation services for the elderly:

- **Goal C: Transit/Mobility** – Enhance mobility options for all older adults regardless of functionality, through a multi-modal vision that is acceptable, efficient, effective, and affordable.

Several of the transportation objectives listed in this chapter were derived from the objectives of the Master Aging Plan. Key strategies are outlined in the *Master Aging Plan* that can inform future efforts for implementation of this element.

ORANGE COUNTY COMPREHENSIVE TRANSPORTATION PLAN

The Orange Unified Transportation Board (OUTBoard) initiated development of a comprehensive transportation plan in 2008 that will set countywide long-term transportation goals for roads, transit (bus and rail), and pedestrian/bicycle facilities. The intent of the plan is to have a series of maps and specific strategies for implementing the County's vision of an inter-connected and multi-modal transportation network. The OUTBoard has developed a framework for the plan that is provided in *Appendix O: Draft Framework for Orange County Comprehensive Transportation Plan.*

This Transportation Element includes an objective to develop and adopt a comprehensive transportation plan within two years of adoption of the Comprehensive Plan.

KEY ISSUES

Several key issues have been raised through during past transportation planning efforts that set the stage for developing transportation policies and implementation strategies. These are:

- There is a **strong desire to provide more multi-modal opportunities** for commuting and traveling to key points of interest in the County, such as UNC-Chapel Hill's main campus and the future Carolina North campus, the new County campus in downtown Hillsborough, and other destinations. Success of future transit, bicycle and pedestrian modes is largely dependent upon the location, pattern, and density of future developments in the County. Mixed-use, higher density developments are advantageous for promoting use of alternative modes of travel.

- **Reducing carbon emissions and increasing energy efficiency** of the County's transportation system is paramount. Guiding principles of this Plan include encouraging energy efficiency and reducing air pollution in the County. Commuting trends in the County show that more miles are being driven per person over time. Increased use of energy efficient, low-emissions vehicles and the shortening of commutes by locating residential, commercial, and employment developments in closer proximity can help achieve these County goals.

- Regional Metropolitan Planning Organizations in the Research Triangle region have concluded that providing well-planned and timely major **regional transit** investments is a very important part of maintaining the Triangle region's current levels of transportation mobility, high quality of life and economic prosperity. While plans for federal funding are now on hold, regional partners are preparing a set of recommended major transit investments to serve the Research Triangle region. As this strategic planning moves forward, the County will need to ensure that new developments are appropriate and will reinforce the use of potential future transit services.

- Development of the new University of North Carolina-Chapel Hill campus – **Carolina North** – will be a high priority for transportation planning in the coming years. While the campus is located in Chapel Hill and near Interstate-40, it is likely there will be workers commuting from and through other parts of the County to get to this new employment center. This campus is an ideal opportunity for using alternative modes of transportation to move workers to and from work, and to ensure that traffic volumes on existing roads do not exceed capacities.

- The plan to develop a bypass to relieve traffic through Hillsborough's historic downtown will continue to be an important planning issue for the County and the town. An Environmental Impact Statement is being prepared for the proposed **Elizabeth Brady Road Extension**. The County's involvement in this project will be critical for ensuring that the final outcome meets the needs and expectations of the County and Hillsborough.

- The County's aging population is increasing, and with that comes a **need to provide additional transportation services for seniors** needing access to medical and social services, especially for those that are physically disabled.

- **Many bicycle routes throughout the County are deemed dangerous** due to lack of adequate road shoulders, poor visibility, and other issues. Plans for improving these should be done in a comprehensive manner that coordinates the need for bike paths, trails, and other transportation and recreational improvements among the County's jurisdictions to achieve efficient solutions.

9.3. HISTORIC DATA, CURRENT DATA, EVALUATION OF TRENDS

The following data provide background information on the historical and current transportation conditions in Orange County. Additional data on this topic can be found in *Appendix A: County Profile (Data) Element*.

KEY FACTS

The following snapshot of Orange County's transportation related statistics can help inform development of future transportation planning strategies.

- There were **84,983 cars and trucks registered in Orange County in 2005**, representing a 33% increase in vehicle registrations since 1990;

- On average, **the length of travel is increasing in Orange County**. In 2000, daily vehicle miles traveled was 28.9. In 2003, per capita daily vehicle miles traveled was 30.2;

- Future projections estimate that the number of **daily vehicle miles traveled for Orange County will increase by 8.3%** from 2000 to 2015;

- In Orange County, the **point sources of air emissions are relatively small compared to other emission sources** (i.e., non-point sources, such as automobile exhaust emissions);

- Sixty percent of the labor force lives and works in Orange County. The remaining 40% commute to other counties for employment. Likewise, **40% of Orange County's labor force commutes in from other counties**;
- The **average drive time to work for Orange County residents is twenty-two minutes**, representing a 19% increase since 1980;
- The **percentage of workers who bike or walk to work is higher in Orange County than the state**, owing largely to the presence of the University of North Carolina-Chapel Hill campus;
- According to the North Carolina Department of Transportation, **75% of state-maintained roads in Orange County are in the unincorporated areas**; and
- Based on a 2000 report, **Orange County had 215 miles of unpaved roads that were not maintained by the state**. This is one of the highest counts in the state.

More information on these key statistics is provided in the following charts and graphs.

VEHICLE MILES TRAVELED

Automobile use in the County has been increasing since 1990. Figure 9-1 shows that total and per capita vehicle miles traveled have been consistently increasing in the County over the last decade. 2015 projections predict that this trend will continue. See Figure 9-1.

FIGURE 9-1: HISTORIC AND PROJECTED VEHICLE MILES TRAVELED IN ORANGE COUNTY (1990-2015)

	Measured		Projected			% Increase
	1990	2000	2003	2007	2015	2000-2015
Rural[1]						
Interstate	745,550	1,417,590	1,414,490	1,673,667	2,155,278	52%
Arterial	75,700	196,100	192,150	217,288	261,398	33%
Collector	569,300	647,630	678,090	757,525	947,433	46%
Local	111,300	148,980	167,670	175,512	238,130	60%
Total	**1,501,850**	**2,410,300**	**2,452,400**	**2,823,992**	**3,602,239**	**49%**
Urban and small urban[1]						
Interstate	21,070	114,320	109,200	132,904	172,555	51%
Freeway	53,660	57,420	61,600	63,559	79,569	39%
Arterial	558,040	754,080	445,200	867,498	1,083,826	44%
Collector	35,890	41,500	388,590	46,245	57,894	40%
Local	57,620	34,080	107,980	37,138	148,104	335%
Total	**726,280**	**1,001,400**	**1,112,570**	**1,147,344**	**1,541,948**	**54%**
Grand Total	**2,228,130**	**3,411,700**	**3,564,970**	**3,971,336**	**5,144,187**	**51%**
Per Capita DVMT	**23.7**	**28.9**	**30.2**	**29.9**	**31.3**	**8.3%**

Notes and Sources:

[1] Road classifications are defined in the appendix.

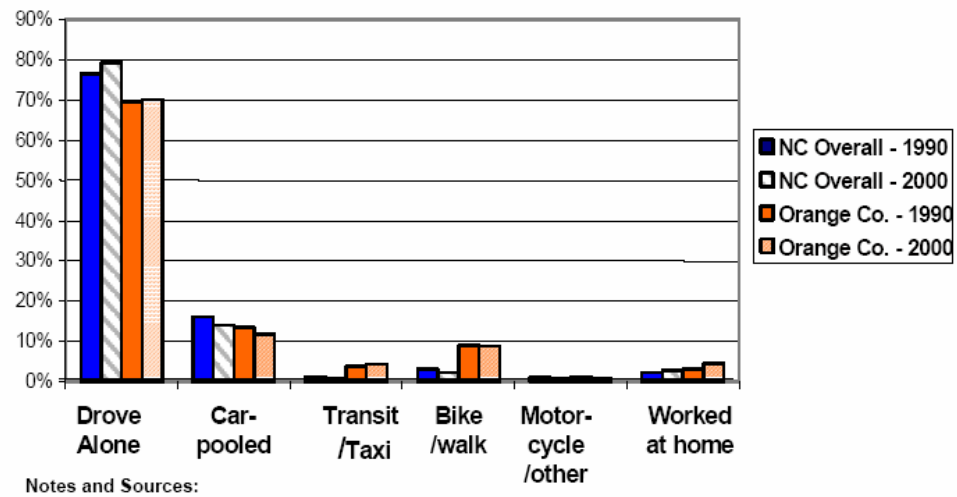
Note: Daily vehicle miles traveled (DVMT) represents vehicle use on public roads in Orange County by both residents and non-Orange County residents.

Source: NCDOT, as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

JOURNEY TO WORK

The percent of Orange County commuters that drive alone in their cars is less than the state average, and the percent of commuters using alternative forms of transportation is higher in Orange County than in the state. There was a slight increase in single-occupancy vehicles in the County between 1990 and 2000, and the number of persons car-pooling over this period also declined slightly. Transit and bicycle use has been stable in the County. More workers worked from home in 2000 than in 1990, a trend that is likely to continue. See Figure 9-2.

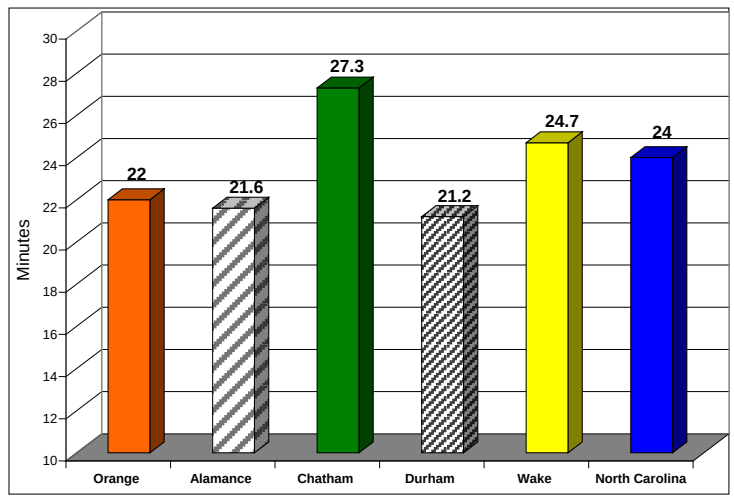
FIGURE 9-2: COMPARISON OF JOURNEYS TO WORK IN ORANGE COUNTY AND THE STATE OF NORTH CAROLINA (1990-2000)



Notes and Sources:
US Census Bureau as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

The average commute times in Orange County are on the low end compared with other counties in the Research Triangle region. In 2000, the average commute time for workers in Orange County was 22 minutes. Workers in Wake County commuted on average for 24.7 minutes per day, and workers in Chatham County commuted on average 27.3 minutes per day. Only workers in Alamance and Durham Counties had a shorter commute time than workers in Orange County. See Figure 9-3.

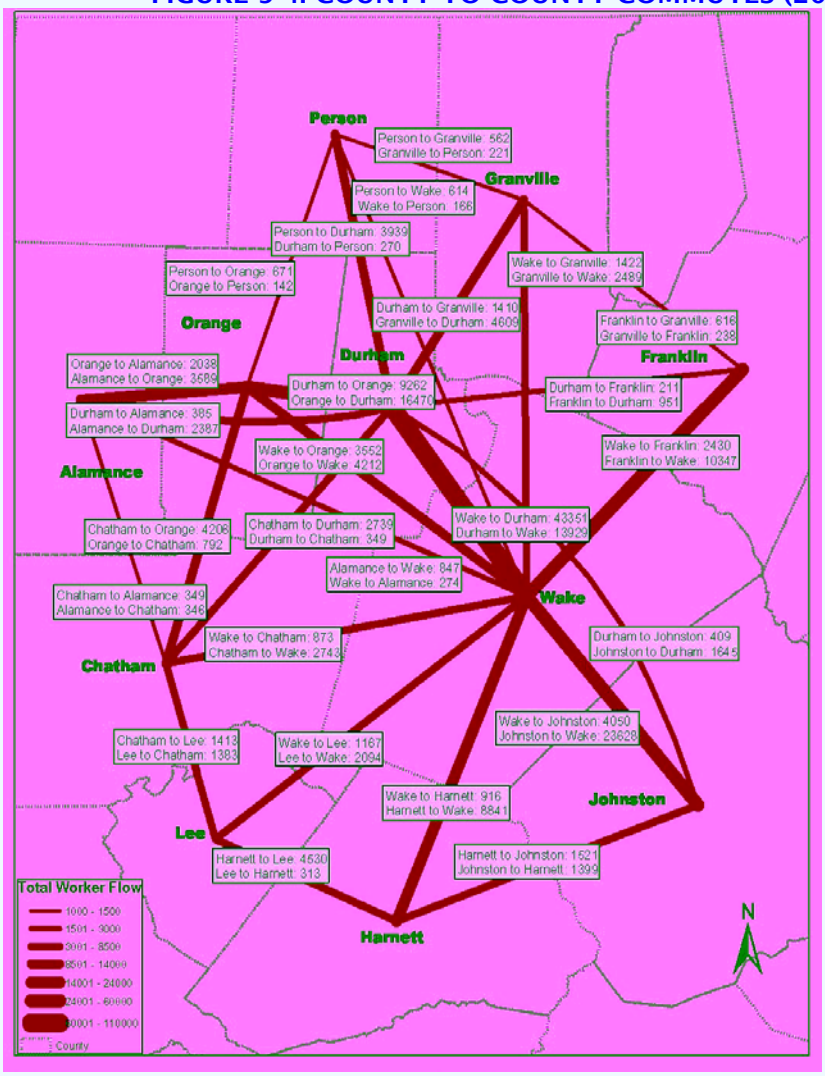
FIGURE 9-3: COMPARISON OF AVERAGE COMMUTE TIMES IN THE TRIANGLE REGION (2000)



Source: Appendix A: County Profile (Data) Element

In 2000, approximately 40% of the County's workforce commuted to work in other counties. Likewise, 40% of the County's workforce commuted in from other areas. Cross-county commute data illustrate where residents of Orange County that worked outside of the County traveled to each day, and where Orange County workers that lived outside the County commuted from. In 2000, a large proportion of these residents were commuting to Durham (16,470), while a smaller proportion was commuting from Durham to Orange County (9,262). In 2000, the commutes between Orange County and Wake were fairly similar. 3,552 persons commuted to Orange from Wake and 4,212 commuted from Orange to Wake. More commuters came from Alamance to Orange (3,589) than from Orange to Alamance (2,038). See Figure 9-4.

FIGURE 9-4: COUNTY TO COUNTY COMMUTES (2000)



Notes and Sources:
The width of the line indicates the volume of commuters between counties. Values are provided within the yellow boxes.

REGISTERED VEHICLES AND ACCIDENTS

The number of registered vehicles in Orange County has kept pace with population increases. In 1980, there were 45,046 vehicles registered in the County. By 2000 that number had increased by more than 33,000 to 78,177 registered vehicles. By 2005, there were 84,983. Registered vehicles increased by 88% between 1980 and 2005. Traffic accidents in the County increased by 69% over this same period, showing that there have been fewer traffic accidents per registered vehicle over time. See Figure 9-5.

FIGURE 9-5: REGISTERED VEHICLES AND TRAFFIC ACCIDENTS IN ORANGE COUNTY (1980-2005)

Year	Auto/ Truck Regs[2]	Traffic Accidents[3]
1980	45,046	1,695
1990	63,711	2,018
2000	78,177	2,715
2001	80,101	2,927
2002	81,390	2,874
2003	82,093	3,034
2004	83,886	2,799
2005	84,983	2,875

Notes and Sources:

1 NC Department of Transportation

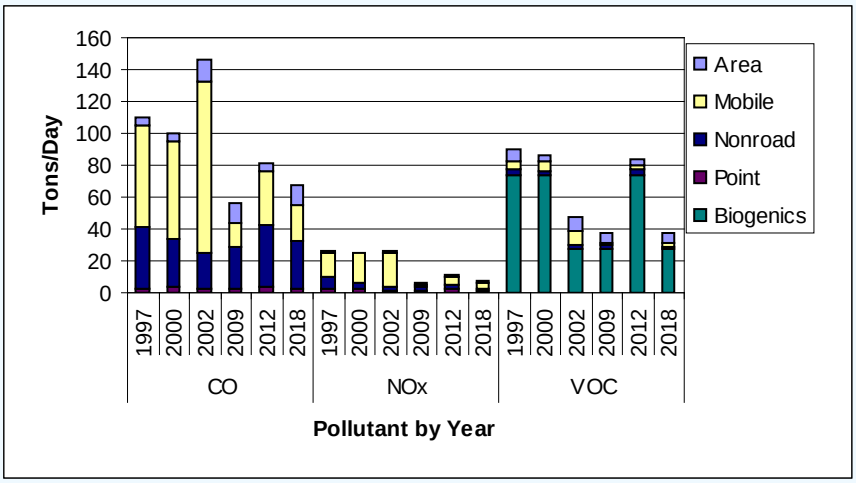
2 Actual registrations for automobiles and trucks for the calendar year in which the vehicles were registered.

3 A reportable accident is one that involves a motor vehicle resulting in injury, death, or total property damage of $1,000 or more.

VEHICLE AIR EMISSIONS

Inventories of local air emissions show that mobile uses (i.e., automobiles, trucks, other vehicles) were the primary generator of non-point source carbon monoxide (CO) emissions in the County. In 2000, mobile sources (e.g., automobiles, trucks) generated almost 60% of carbon monoxide (CO) emissions, and almost 80% of nitrogen oxides. Non-road emissions (e.g., lawn mowers, outboard engines, and agricultural equipment) were also a significant source of pollutant emissions during this period. Together, these two sources are the primary generators of carbon monoxide and nitrogen oxide emissions in the County. Projections by the North Carolina Department of Air Quality suggest that total emissions will decrease over time, and that mobile and non-road vehicles will continue to be the primary sources. See Figure 9-6.

FIGURE 9-6: ESIMATED AND PROJECTED EMISSIONS BY SOURCE (1997-2018)



Source: North Carolina Departmnet of Air Quality (NC DAQ)

The U.S. Environmental Protection Agency designated Orange County and other counties in the Research Triangle region as ozone non-attainment areas. This designation means that ozone levels in the area exceeded federal standards over a three-year period, and that regulatory measures have to be taken to reduce these levels and improve air quality. In late 2007, the EPA approved a request from the State to redesignate the Raleigh-Durham-Chapel Hill area to "attainment" and it is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017. Many car-owners in Orange County have addressed this need to decrease air emissions and reduce the use of non-renewable resources by purchasing alternative fuel vehicles. As of 2003, there were 141 registered hybrid vehicles in Orange County. See Figure 9-7.

FIGURE 9-7: REGISTERED HYBRID VEHICLES IN ORANGE COUNTY (2003)

Honda Civic	35
Honda Insight	14
Toyota Prius	92
Total Registered Hybrid Vehicles	**141**

Source: Orange County State of the Environment Report, 2004.

9.4. ORANGE COUNTY TRANSPORTATION NEEDS

Future population increases in Orange County will bring more houses, more jobs, and more commercial opportunities to the County. The County's transportation system, including roads, buses, bike trails, and pedestrian facilities, will need to keep pace with this new development. The system will need to offer more alternative transportation options, use energy resources wisely, reduce greenhouse gas emissions and improve air quality over time.

A long standing position of Orange County has been that new roads and the significant widening of existing roads does little to improve the transportation system. Orange County has traditionally directed its resources to improve alternatives to the single passenger motorized vehicle as the primary means of transportation. The focus has been on public transportation, improving traffic flow, alleviating congestion at busy intersections, improving safety for cyclists and those who choose to walk.

- In June 2004, the U.S. Environmental Protection Agency (EPA) designated Orange County as a non-attainment area for ozone per National Ambient Air Quality Standards (NAAQS). In late 2007, however, the EPA approved a request from the State to redesignate the Raleigh-Durham Chapel hill area to "attainment" and is now in a maintenance program to follow a State plan for maintaining the ozone standard through 2017. Efforts have been undertaken to identify the sources of these pollutants, including both point sources and non-point sources. Automobile use and non-motorized vehicles such as such as lawnmowers, outboard engines, and agricultural equipment are the primary generators of several air pollutants found in Orange County. To improve the air quality of Orange, these **pollutant emissions need to be reduced**. The challenge for Orange County is to:

  1. Reduce the projected increase in vehicle miles traveled.
  2. Increase mass transit ridership.
  3. Reduce the use of fossil fuels.

- The **County needs a comprehensive transportation plan** that identifies long-term, coordinated goals for planning the County's transportation system of roads, bikeways, pedestrian facilities, and rail\transit systems that will meet the needs of future populations. Unlike regional transportation plans, a comprehensive transportation plan would identify on maps long-term transportation improvement goals for the County, irrespective of financial constraints. Comprehensive transportation planning should be coordinated with land use planning to ensure that development and transportation systems are planned for in tandem. It should look beyond the County's jurisdiction and include projects being undertaken by the towns that could be integrated into a -wide system, such as bike trails and greenways. The plan could provide direction when updating Regional Transportation Improvement Programs and Long-Range Plans, and streamline transportation planning efforts in the County. The OUTBoard has begun work on this plan, and a draft plan framework

can be found in *Appendix O: Draft Framework for Orange County Comprehensive Transportation Plan.* The comprehensive transportation plan should address deficiencies in the existing transportation system to provide needed improvements to:

1. Increase safety for cyclists and pedestrians.
2. Link bicycle lanes.
3. Link foot trails.

- Area specific plans, such as the Efland-Mebane Small Area Plan and the Orange Grove Road Access Management Plan, identify specific transportation improvements such as improving access management, increasing walkability, reducing congestion in high volume traffic areas, roadway realignments, provision of a park and ride lot, and other enhancements. A **process for integrating implementation strategies from area specific plans into the County's comprehensive transportation planning process** should be developed.
- Counties have few resources to construct bicycle facilities. Orange County needs strategies to fund implementation of the 1999 Bicycle Transportation Plan. The County should identify funding sources to make improvements to designated bicycle routes for transportation and recreational uses and to increase safety for bicyclists throughout the County.

9.5. GOALS

The following transportation goals will guide future policy and implementation strategies for the County.

Transportation Overarching Goal: An efficient and balanced transportation system that uses multiple motorized and non-motorized modes of transportation and for which the planning, design, and implementation will be guided by the following overarching qualities:

A. Protects air quality, water quality and quantity, soil quality, and biological resources
B. Promotes public health and safety
C. Encourages sustainable economic development
D. Provides equal access to all users
E. Is highly modally and inter-modally integrated and connected
F. Fosters sustainable and efficient use of resources, including financial and natural resources
G. Protects the County's natural and cultural heritage
H. Uses creative and well-designed infrastructure

I. Is attractive, user-friendly, and easy to understand because of factors such as signage, brochures, and web pages

J. Respects privacy and citizen rights.

Transportation Goal 1:
An efficient and integrated multi-modal transportation system that protects the natural environment and community character.

Transportation Goal 2:
A multi-modal transportation system that is affordable, available, accessible to all users, and that promotes public health and safety.

Transportation Goal 3:
Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.

Transportation Goal 4:
A countywide and regionally-integrated, multi-modal transportation planning process that is comprehensive, creative and effective.

9.6. OBJECTIVES

The intent of this Plan is that this list of objectives will help guide regular and ongoing decision-making by the County related to transportation initiatives. Each objective has a recommended timeline for completion. (Definitions of timelines provided in *Section 1.4: Administration and Implementation Guidelines*.)

Transportation Goal 1: An efficient and integrated multi-modal transportation system that protects the natural environment and community character.

Objective T-1.1:
Increase the occupancy of automobiles through ridesharing and other means; and expand the use of public transit (including bus and rail), walking, and biking as primary modes of travel. (See also Economic Development Objective ED-2.3.)

Objective T-1.2:
Facilitate the overall development and use of a transportation system that is more energy-efficient, reduces carbon emissions, and reduces the use of fossil fuels while promoting the use of local renewable and sustainable fuels.

Objective T-1.3:
Develop new transportation facilities in a manner that has a positive impact or avoids negative impacts on the natural environment,

including air quality, water resources, biological resources, and wildlife habitat.

Objective T-1.4:
Develop new transportation facilities in a manner that has a positive impact or avoids negative impacts on the community, including historical or cultural assets, existing neighborhoods, schools and recreational facilities, and the overall rural character in Orange County.

Objective T-1.5:
Identify prime view sheds along major transportation corridors and protect these areas for their scenic and natural resource values. (See also Parks and Recreation Objective PR-5.4.)

Objective T-1.6:
Expand the availability and use of public transportation (including bus and rail) throughout the County to provide better connections between employment centers, shopping and service locations, and other key points of interest in both urban and rural areas, particularly for the County's senior and disabled populations and others without access to automobiles.

Transportation Goal 2: A multi-modal transportation system that is affordable, available, and accessible to all users and that promotes public health and safety.

Objective T-2.1:
Increase the provision of bikeways and walkways, and also increase supportive facilities such as bicycle parking zones.

Objective T-2.2:
Evaluate and serve special transportation needs of the senior population, youth, the economically disadvantaged and the disabled, including both everyday needs and disaster transit provision.

Objective T-2.3:
Increase countywide access for emergency vehicles, including ways to improve response times, both for existing and new developments. (See also Services and Community Facilities Objectives PST-2 and PST-5.)

Objective T-2.4:
Improve the provision of public transit facilities and services, and also increase supportive facilities for transit, such as park and ride lots.

Objective T-2.5:
Improve public education and advertising of existing transit services.

Objective T-2.6:
Increase safety awareness between car drivers and bicycle riders, and increase safety for pedestrians.

Objective T-2.7:
Construct bicycle facilities in Orange County that will make cycling safer, more convenient, and more efficient.

Transportation Goal 3: Integrated land use planning and transportation planning that serves existing development, supports future development, and is consistent with the County's land use plans which include provisions for preserving the natural environment and community character.

Objective T-3.1:
Improve the County's transportation system by first enhancing existing facilities as opposed to developing new facilities.

Objective T-3.2:
Create and implement an Orange County Comprehensive Transportation Plan that provides the framework for a comprehensive and connected transportation system supporting a mix of all transportation modes, including sidewalks and bicycle facilities, bus and rail transit facilities, and highways. The plan should be coordinated with the goals and objectives of this Comprehensive Plan and seek to maintain and enhance community character and the natural environment.

Objective T-3.3:
Determine the policies to guide connectivity within and between residential developments based on their impact on neighborhood character.

Objective T-3.4:
Direct development to higher density mixed-use districts along transit corridors and make necessary multi-modal transportation improvements to service lands that are slated for future intense development, such as Economic Development Districts.

Objective T-3.5:
Use innovative techniques to increase mobility and reduce rush hour congestion.

Transportation Goal 4: A countywide and regionally-integrated, multi-modal transportation planning process that is comprehensive, creative and effective.

Objective T-4.1:
Work with nearby jurisdictions to integrate the County's transportation plans with those of other transportation planning agencies and service providers in Orange County and the Triangle region. The resulting intermodal transportation system should reflect regional goals and objectives to meet projected travel demand and to reduce congestion and reliance on single occupancy vehicles.

Objective T-4.2:
Plan and integrate the County's multi-modal transportation routes and services with regional transportation agencies and transit service providers, agencies and transit providers in neighboring counties, the North Carolina Department of Transportation, Amtrak, and the North Carolina Railroad.

Objective T-4.3:
Revive rail transportation in Orange County and the Triangle region.

TABLE 9-1: GOALS AND OBJECTIVES LINKS TO PLANNING PRINCIPLES

GOAL/ OBJECTIVE	BOARD OF COUNTY COMMISSIONERS' PLANNING PRINCIPLES								
	1. Efficient and Fiscally Responsible Provision of Public Facilities and Services 2. Sustainable Growth and Development 3. A. Encouragement of Energy Efficiency, Lower Energy Consumption, and the Use of Non-Polluting Renewable Energy Resources B. Promotion of Both Air Quality Protection and the Development of an Effective Transportation System 4. Natural Area Resource Preservation 5. Preservation of Rural Land Use Pattern 6. Water Resources Preservation 7. Promotion of Economic Prosperity and Diversity 8. Preservation of Community Character								
	1	2	3A	3B	4	5	6	7	8
Overarching Goal	√	√	√	√		√	√		√
Goal 1 and Objectives T-1.1 – T-1.6	√	√	√	√		√	√	√	
Goal 2 and Objectives T-2.1 – T-2.7	√	√	√	√				√	√
Goal 3 and Objectives T-3.1 – T-3.5	√	√	√	√		√		√	
Goal 4 and Objectives T-4.1 – T-4.3	√	√	√	√				√	

9.7. LINKS TO OTHER ELEMENTS

Transportation planning and land use planning are interlinked processes. Like land use planning, natural resource protection, economic development, housing, and other planning efforts reinforce and inform transportation planning efforts. Below is a listing of objectives from other Elements that are linked to transportation planning objectives.

ECONOMIC DEVELOPMENT

Objective ED-2.3:
Promote public transportation, alternative modes of transportation, and encourage carpooling and park-and-ride participation.

LAND USE

Objective LU-3.2:
Coordinate land use patterns to facilitate the expanded use of non-auto modes of travel, the increased occupancy of automobiles, and the development and use of an energy-efficient transportation systems.

Objective LU-3.10:
Identify prime viewsheds along major transportation corridors and other areas, and amend County land use ordinances to ensure long-term protection of viewsheds.

NATURAL AND CULTURAL SYSTEMS

Objective AE-7:
Expand and enhance Orange County's public transportation system.

Objective AE-8:
Improve transportation efficiency: promote more public transportation, ride sharing, and alternative transportation such as bicycles and walking.

Objective NA-16:
Create a system of public and private open space and conservation areas, including parks, nature preserves, and scenic vistas representative of the Orange County landscape.

PARKS AND RECREATION

Objective PR-5.4:
Encourage development of a system of private open space and conservation areas, including nature preserves, parks, linear parks, and scenic vistas compatible with the character of Orange County.

SERVICES AND FACILITIES

Objective PS-T-2:
Ensure that all state roads in the County receive non-duplicated names to be posted on signs at intersections and that all houses are numbered in order to improve the responsible time of law enforcement and emergency vehicles.

Objective PS-T-5:
Include in applied site design standards for residential, commercial, and industrial development, appropriate road design standards to ensure adequate law enforcement and emergency vehicle access to the development.

9.8. OTHER KEY DOCUMENTS

Key documents used to develop this element are included below. (See *Section 1.2.5: Where to Look for Related Information* if you would like to obtain one of these documents.)

- *1999 Orange County Bicycle Transportation Plan*
- *2000 Draft Update of the Orange County Transportation Element*
- *2000 Alternative Fuel Vehicle Options Report*
- *2001 Recommendations of the Joint Economic Development District Work Group*
- *2006 Efland/Mebane Small Area Plan*
- *2003 Orange Grove Road Access Management Plan*
- *Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2009-2015)*
- *Triangle Area Rural Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Triangle Area Rural Planning Organization Transportation Improvement Program (2009-2015)*
- *2007 Master Aging Plan: Building Aging-Friendly Communities in Orange*
- *2030 Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Long Range Transportation Plan (April 2005) and amendments (May 2007)*
- *2008 Regional Transit Vision Plan: Recommendations for North Carolina's Research Triangle Region.*

9.9. INTERGOVERNMENTAL COORDINATION

Because transportation in Orange County is largely planned at the regional level, intergovernmental coordination is already institutionalized in the planning process. Land planning and development is also coordinated in certain joint planning areas, but not in others. Efforts to increase multi-modal opportunities and improve the efficiency and sustainability of the County's transportation system will need to include representatives of the County, towns, the University of North Carolina-Chapel Hill, and other key partners. The County needs to work with these entities to share information, leverage financial resources, and set countywide transportation strategies.

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Appendix A. County Profile (Data) Element

The *County Profile (Data) Element* (the "County Profile") serves as the primary reference point for basic information common to each of the Elements contained within the Comprehensive Plan. As such, it is intended to provide a convenient location for population statistics as well as key social, environmental, and economic conditions that exist within Orange County.

Although the scope of the Comprehensive Plan is intended to guide the development and growth in unincorporated areas of Orange County, many data variables are available for the County as a whole. Unless otherwise indicated, tables and charts for county-level data will pertain to both the incorporated and unincorporated areas. Population values for the extra-territorial jurisdictions will not be included within city or town totals, but rather within the unincorporated County totals.

The complete *County Profile (Data) Element* is provided on the following pages.

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ORANGE COUNTY PROFILE (DATA) ELEMENT

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Section A: Purpose

The County Profile (Data) Element (hereafter referred to as the County Profile) serves as the primary reference point for basic information common to each of the Elements contained within the Comprehensive Plan. As such, it is intended to provide a convenient location for population statistics as well as key social, environmental, and economic conditions that exist within Orange County. Although the scope of the Comprehensive Plan is intended to guide the development and growth in unincorporated areas of Orange County, many data variables are available for the county as a whole. Unless otherwise indicated, tables and charts for county-level data will pertain to both the incorporated and unincorporated areas; further, population values for the extra-territorial jurisdictions will not be included within city or town totals but rather within the unincorporated county totals.

The County Profile Element contains three sections: Historic and Current Conditions, Population Projections and General Maps. The Historic and Current Conditions section contains the most recent data available, which in most instances is either the 2000 Census or the 2005 State certified estimates. Population projections are included in the County Profile to be used as a resource for future planning. Maps depicting locations, trends, and geographic features are incorporated to provide a visual reference for data and information contained within this and other Elements. Please note these maps are general in nature and do not have extensive explanatory notations contained within the County Profile, although they may be referenced by other Elements.

Policy-makers, community organizations, and advocates need a consistent source for information and data to guide decision-making and to provide benchmarks for assessing progress toward meeting objectives. Conditions contained within the County Profile are dynamic and therefore will need to undergo periodic updates as recommended in Chapter 1, Section 1.5.2 of the Comprehensive Plan. During these updates, data will be revised to reflect the most current information available and to account for other changing community conditions.

The County Profile has not been designed as an exhaustive resource for all demographics. The publications and agencies cited as sources at the end of each table or chart usually contain additional statistical detail and present a more comprehensive range of information than can reasonably be presented here. Users are encouraged to consult these sources for more specific information. Additional data, detailed information, and future conditions for specific topics may be contained within the seven (7) Elements of the Comprehensive Plan, prepared by departments and organizations with expertise in the respective areas.

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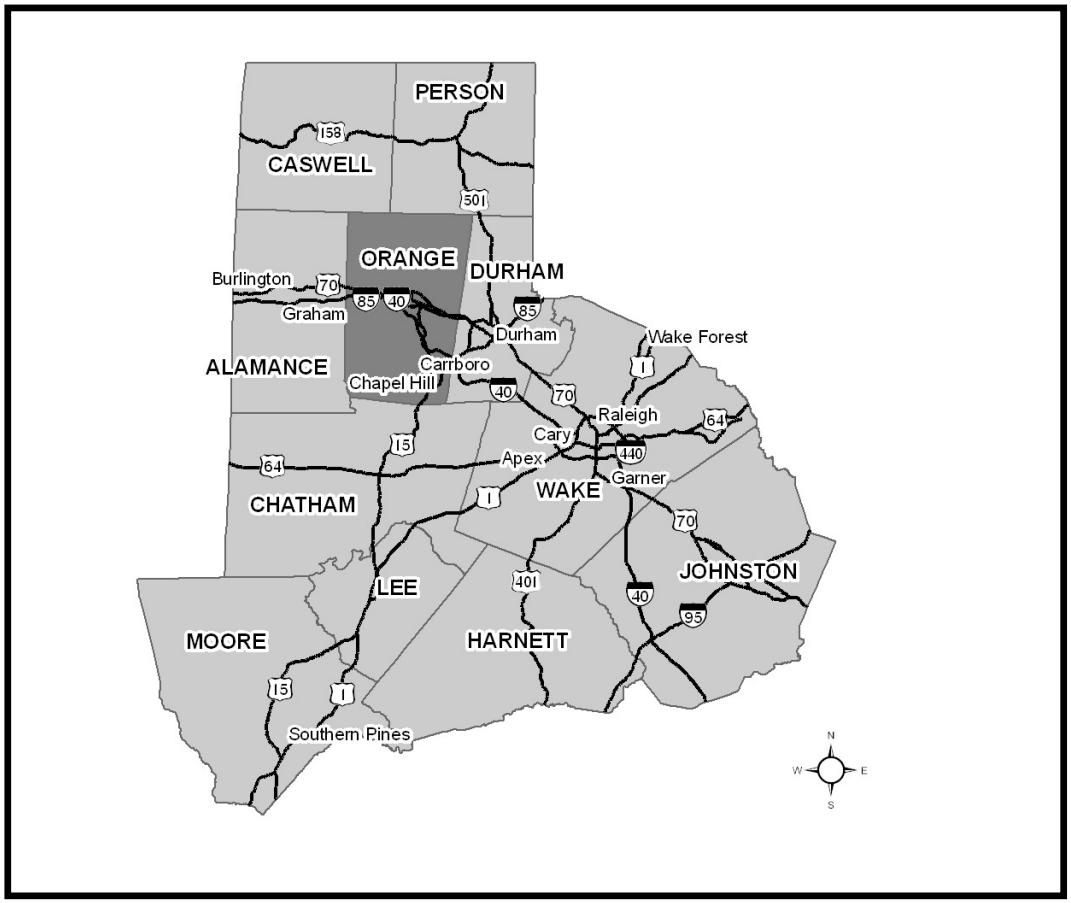
Sub-Section B1. Geographic Context

B1.1. ORANGE COUNTY LOCATION

Orange County is centrally located in the Piedmont region of North Carolina. The County offers scenic farms and small town living as well as first-rate educational opportunities and vibrant urban areas.

The County is located within the fast growing Triangle area, with a regional population of over 1.2 million. The Triangle includes the state capital, Raleigh, and twenty-three other municipalities. At the heart of this area is the Research Triangle Park, anchored by three major universities: UNC Chapel Hill, Duke University and NC State University, and home to research and development related industries that attract people from around the globe.

Map B.1.1. Orange County and Surrounding Area



Interstates 85 and 40 provide the primary transit linkages for Orange County residents to surrounding Triangle communities. These interstates also connect the County to other major cities in North Carolina, including: the Triad cities of Greensboro, High Point and Winston-Salem, as well as Charlotte to the west and southwest along I-85; and Wilmington to the east along I-40.
Orange County is also linked to the surrounding regions by natural resources, such as rivers and their watersheds, which overlap county and municipal boundaries.

B1.2. ORANGE COUNTY DESCRIPTION

As an integral part of the Triangle, Orange County has experienced dramatic Increases in population during the past few decades more than doubling its population from 57,707 in 1970 to an estimated population of 121,991 in 2005. With a total land area of 254,720 acres or 399 square miles, Orange County has an overall population density of 305 persons per square mile (in 2005), although population is not evenly distributed throughout the county. Density is focused in the southern section of the County with fifty-seven percent of the population residing within the towns of Chapel Hill and Carrboro.

The County is divided into the seven townships of Bingham, Cedar Grove, Chapel Hill, Cheeks, Eno, Hillsborough, and Little River. Five of the seven were once used as voting districts in the nineteenth century; however, none have legal standing today. Within its boundaries, the County also contains five incorporated municipalities/cities: Carrboro, Chapel Hill, Hillsborough, and portions of Durham and Mebane. Outside of the municipal boundaries, urban growth areas or extra-territorial jurisdictions (ETJ) have been identified. The respective municipalities exercise planning authority over these areas into which they expect to grow. Additionally, Transition Areas have been identified around towns as areas in the process of changing from rural to urban. Beyond the Transition Areas, a Rural Buffer surrounds the towns of Chapel Hill and Carrboro. The Rural Buffer contains approximately 38,000 acres and is expected to remain rural in character, with annexation by municipalities prohibited. This concept is unique to Orange County and underscores the importance of retaining the rural residential and agricultural character in the unincorporated areas of the County.

B1.3. FIGURES AND TABLES

B1a) Table: Orange County Township Population Profile, 2000

Geographic Area	Land Area In Square Miles[1]	Population					
		Total[2]	Rural	Urban	Male	Female	Density Per square mile of land area
Bingham	73.3	6,181	6,181	-	3,084	3,097	84.3
Cedar Grove	78.0	4,930	4,930	-	2,451	2,479	63.2
Chapel Hill	90.9	76,578	9,620	69,654	36,897	42,377	842.2
Cheeks	50.8	7,064	5,850	1,214	3,450	3,614	138.9
Eno	36.6	6,092	4,284	1,808	3,040	3,052	166.4
Hillsborough	26.3	11,639	4,205	7,434	5,613	6,026	443.2
Little River	43.8	3,047	3,047	-	1,503	1,544	69.5
Orange County	399.8	115,531	38,117	80,110	56,038	62,189	288.9

Notes and Sources:

[1] Land Area excludes Water Areas.

[2] Values represent the corrected numbers for the 2000 census, updated January 9, 2004.

Source: US Census Bureau (2000, corrected)

B1b) Table: Orange County Township Housing and Income Profile, 2000

Geographic Area	Housing Units		Number of Hhlds[1]	Avg Hhld[2] Size	Median Household Income	Per Capita Income
	Number of Units	Density Per square mile of land area				
Bingham	2,830	38.6	2,639	2.3	$50,506	$28,106
Cedar Grove	2,082	26.7	1,870	2.6	$52,088	$22,199
Chapel Hill	31,085	359.3	28,902	2.3	$40,852	$25,660
Cheeks	2,930	57.6	2,742	2.6	$39,904	$17,665
Eno	2,609	71.3	2,449	2.5	$49,767	$26,568
Hillsborough	4,909	186.9	4,514	2.6	$41,237	$22,384
Little River	1,261	28.8	1,166	2.6	$56,176	$25,872
Orange County	47,706	123.3	44,282	2.6	$42,372	$24,873

Notes and Sources:

[1] Hhld = Household(s)

[2] Avg Hhld Size = Population/Number of Hhlds

Source: US Census Bureau (2000, corrected)

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Sub-Section B2. Population

B2.1. BACKGROUND

Population change is a fundamental factor affecting the pattern of development and the provision of services throughout the County. Population refers to the absolute number of persons, to their race/ethnicity, age groups, and physical distribution across the county. Changes in the county's age distribution may be the most influential demographic change facing the County. Orange County's median age has historically been younger, reflecting the influence of Chapel Hill's college population. Recent trends, however, have shown a gradual aging of the Orange County population and the United States population as a whole.

Because population changes at a local and regional level will likely have ramifications countywide, this section contains municipal (cities and towns) and regional comparisons. Unless otherwise indicated, population tables for county-level data pertain to the entire county, including municipal areas and their extra-territorial jurisdictions (ETJ).

Historic population values were obtained primarily from the US Census Bureau. In 2003, the US Census Bureau issued an amended 2000 Census count for the Town of Chapel Hill. The Town's population was amended from 48,175 to 46,019; likewise the County's population was amended from 118,227 to 115, 531. Most data tables reflect the amended values and are so noted.

State-certified population estimates for the municipalities and counties for 2005 were provided by the NC Office of Budget, Planning, and Management, Demographics Section. It is important to note that the 2005 population estimates from the NC Office of Budget, Planning and Management (OBPM) are provided as the most recent estimates available for municipalities. However, use caution when making any comparisons between US Census Data (1980, 1990, and 2000) and NC OBPM estimates (2005). For Orange County, it is significant that the NC OBPM does not project populations for unincorporated areas. Rather, unincorporated populations are yielded from the resulting balance after municipal and countywide population estimates are made. The Orange County Planning Department believes that the 2005 estimate provided for unincorporated Orange County (46,964) may be low and the data provided in Table C1c should be consulted for comparison.

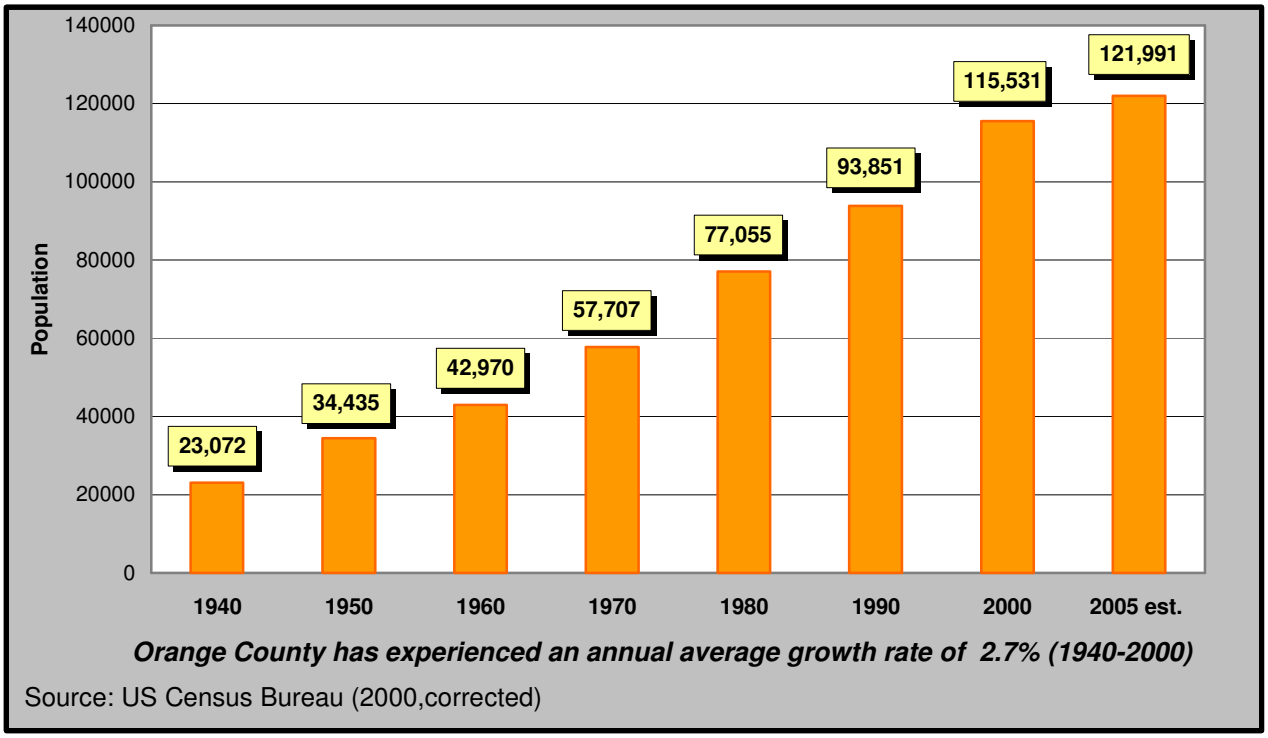
Historic and current demographic conditions in this section lay a foundation for further analysis, such as population projections covered in Section C. Maps depicting Orange County population distributions by age and North Carolina population growth by county can be found in Section D.

B2.2. HIGHLIGHTS

- Orange County's total population for 2005 is estimated to be 121,991. During the 30-year time period from 1970 to 2000, Orange County more than doubled its population.
- Orange County's population grew at what is considered a moderate rate of 23% during the decade of 1990-2000.
- Over 1.2 million people live in the Triangle areas including the Durham and Raleigh Metropolitan Statistical Areas.
- Population change is not distributed evenly throughout Orange County. In absolute terms, Chapel Hill Township accounted for over two-thirds of the County's growth with 82% of this growth in the urbanized areas of Chapel Hill and Carrboro.
- Little River Township has shown the largest percent increase in population (104%) since 1980, growing from 1,493 to 3,047 persons in 2000.
- Incorporated Cities and Towns account for only 8% of Orange County's land area but 62% of the population.
- The majority of Orange County's growth (75%) was attributed to the in-migration of new residents. Between 1990 and 2000, 19,000 new residents relocated to Orange County.
- The remaining 25% growth was due to natural increases, which is the number of births that exceeded the number of deaths.
- The median age for Orange County has increased from 25.7 in 1980 to 30.4 in 2000.
- In absolute terms, population growth for the 65(+) age group has doubled since 1980, from 5,783 to 10,639.
- The school age population (5-18) has grown by 8,000 since 1980.
- Orange County's population is slightly younger when compared to the State, with age spikes in the 15-19 and 20-24 age groups, due to the presence of UNC-Chapel Hill and other universities in the area.

B2.3. FIGURES AND TABLES

B2a) Figure: Orange County Population Growth, 1940-2005



B2b) Table: Orange County Population by Race and Ethnicity, 2000

Place	Total Population	White	Black or African American	Asian and Pacific Islander	Native American/Indian	Other/Two or More Races	Hispanic or Latino Ethnicity
Orange County	115,531	78.0%	13.8%	4.1%	0.4%	4.1%	4.5%
Carrboro	16,782	72.7%	13.5%	5.2%	0.0%	8.7%	12.3%
Chapel Hill [1]	46,019	82.5%	12.1%	7.6%	0.0%	3.6%	3.4%
Hillsborough	5,446	60.3%	34.8%	0.6%	0.0%	4.3%	2.8%
Mebane [1]	7,284	77.4%	17.5%	0.6%	0.0%	4.5%	5.2%
North Carolina	8,049,313	72.1%	21.6%	1.4%	1.2%	4.8%	4.7%

Notes and Sources:
[1]Total population for multi-county towns.
Source: U.S.Census Bureau (2000, corrected)

B2c) Table: Orange County Municipal1 and Unincorporated Population

Municipality	Population[2] 1980	1990	2000	% Increase 1980-2000	2005[3]
Town of Carrboro	7,336	12,134	16,782	128.8%	17,797
Town of Chapel Hill [4]	32,038	37,596	44,102	37.7%	50,262
City of Durham [4]		17	39	n/a	47
City of Mebane[4]	379	485	675	78.1%	759
Town of Hillsborough	3,019	4,263	5,446	80.4%	6,162
Unincorporated County[5]	34,102	39,356	48,487	42.2%	46,964
ORANGE COUNTY	**77,055**	**93,851**	**115,531**	**49.9%**	**121,991**

Notes and Sources:

[1] Municipal refers to incorporated cities and towns.

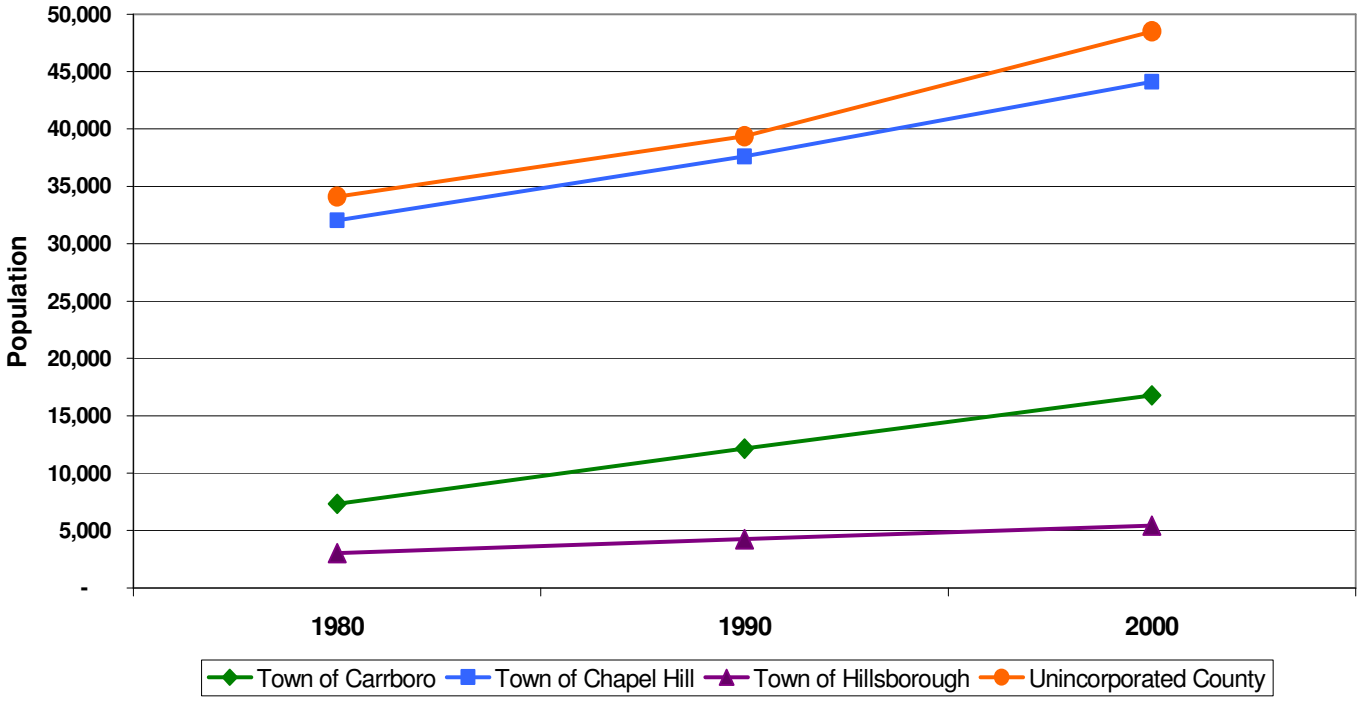
2 The Population figures for 1980, 1990, and 2000 are from the US Census.

3 2005 Estimated population is from the NC Office of Budget, Planning and Management

4 Only the portions within Orange County are included.

5 ETJs are included in unincorporated totals.

B2d) Figure: Orange County Municipal and Unincorporated Population



B2e) Table: Comparative Population Growth Trends: Townships

Township	Population Totals: Year 1980	1990	2000	Population Change: AAGR [1] 1980-1990	1990-2000	1980-2000	% Increase 1980-1990	1990-2000	1980-2000
Little River	1,493	2,183	3,047	3.9%	3.4%	3.6%	46.2%	39.6%	104.1%
Cedar Grove	3,166	3,691	4,930	1.5%	2.9%	2.2%	16.6%	33.6%	55.7%
Cheeks	4,821	5,422	7,064	1.2%	2.7%	1.9%	12.5%	30.3%	46.5%
Hillsborough	8,599	10,136	11,639	1.7%	1.4%	1.5%	17.9%	14.8%	35.4%
Eno	4,450	5,262	6,092	1.7%	1.5%	1.6%	18.2%	15.8%	36.9%
Bingham	3,954	5,184	6,181	2.7%	1.8%	2.3%	31.1%	19.2%	56.3%
Chapel Hill	50,572	61,973	76,578	2.1%	2.1%	2.1%	22.5%	23.6%	51.4%
Orange County	77,055	93,851	115,531	2.0%	2.1%	2.0%	21.8%	23.1%	49.9%

Notes and Sources:
[1] AAGR=Average Annual Growth Rate
Source: U.S. Census Bureau (2000, corrected)

B2f) Table: Comparative Population Growth Trends: Cities/Towns

City	Population Totals: Year 1980	1990	2000	2005 [1]	Population Change: AAGR [2] 1980-1990	1990-2000	2000-2005	% Increase 1980-1990	1990-2000	2000-2005
Carrboro	7,336	12,134	16,782	17,797	5.2%	3.3%	1.2%	65.4%	38.3%	6.0%
Chapel Hill [3]	32,421	38,711	46,019	52,397	1.8%	1.7%	2.6%	19.4%	18.9%	13.9%
Hillsborough	3,019	4,263	5,446	6,162	3.5%	2.5%	2.5%	41.2%	27.8%	13.1%
Durham [3]	101,149	136,612	187,035	209,123	3.1%	3.2%	2.3%	35.1%	36.9%	11.8%
Mebane [3]	2,782	4,754	7,367	8,100	5.5%	4.5%	1.9%	70.9%	55.0%	9.9%
Burlington	37,266	39,498	44,917	47,295	0.6%	1.3%	1.0%	6.0%	13.7%	5.3%
Raleigh	150,255	212,092	276,094	338,357	3.5%	2.7%	4.2%	41.2%	30.2%	22.6%
Cary	21,763	44,397	94,536	115,967	7.4%	7.9%	4.2%	104.0%	112.9%	22.7%

Notes and Sources:
[1] 2005 estimates from NC Office of Budget, Planning and Management, Demographics Section
[2] AAGR=Average Annual Growth Rate
[3] Includes total multi-county population.
Source: U.S. Census Bureau (2000, corrected)

B2g) Table: Comparative Population Growth Trends: Counties

County	Population Totals Year 1980	1990	2000	2005 [1]	Population Change AAGR [2] 1980-1990	1990-2000	2000-2005	% Increase 1980-1990	1990-2000	2000-2005
Orange	77,055	93,851	115,531	121,991	2.0%	2.1%	1.1%	21.8%	23.1%	5.6%
Alamance	99,319	108,213	130,794	138,578	0.9%	1.9%	1.2%	9.0%	20.9%	6.0%
Chatham	33,415	38,979	49,329	56,090	1.6%	2.4%	2.6%	16.7%	26.6%	13.7%
Durham	101,149	136,612	187,035	242,207	3.1%	3.2%	5.3%	35.1%	36.9%	29.5%
Person	29,164	30,180	35,623	37,125	0.3%	1.7%	0.8%	3.5%	18.0%	4.2%
Wake	301,429	426,301	627,846	755,053	3.5%	3.9%	3.8%	41.4%	47.3%	20.3%
North Carolina	**5,874,429**	**6,628,637**	**8,049,313**	**8,682,066**	**1.2%**	**2.0%**	**1.5%**	**12.8%**	**21.4%**	**7.9%**

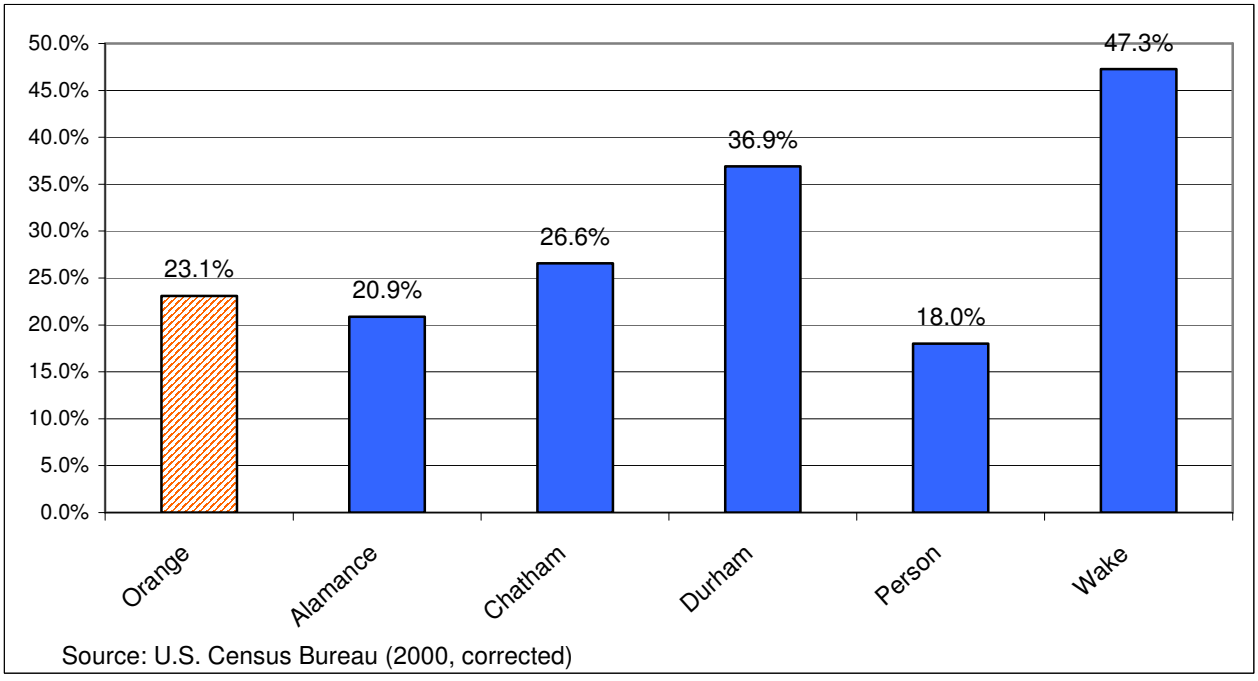
Notes and Sources:

[1] 2005 estimates from NC Office of Budget, Planning and Management, Demographics Section

[2] AAGR=Average Annual Growth Rate

Source: U.S. Census Bureau (2000, corrected)

B2h) Figure: Comparative Population Growth Trends, by County, 1990-2000



Source: U.S. Census Bureau (2000, corrected)

B2i) Table: Municipal Density and Population Percents: Comparisons, by County, 2005

County	Population				Land Area		
	Pop. 2005	Municipal Density[1]	% Non-Municipal	% Municipal[2]	Total Area (Sq Mile)	% Non-Municipal	% Municpal
Orange	121,991	2,360	38.5%	61.5%	399.8	92.0%	8.0%
Alamance	138,578	1,709	39.2%	60.8%	430.0	88.5%	11.5%
Chatham	56,090	945	80.9%	19.1%	682.9	98.3%	1.7%
Durham	242,210	2,019	12.6%	87.4%	290.3	63.9%	36.1%
Person	37,125	1,402	76.2%	23.8%	392.1	98.4%	1.6%
Wake	755,034	2,201	23.0%	77.0%	831.9	68.2%	31.8%
North Carolina	**8,682,066**	**1,286**	**46.9%**	**53.1%**	**48,711**	**92.6%**	**7.4%**

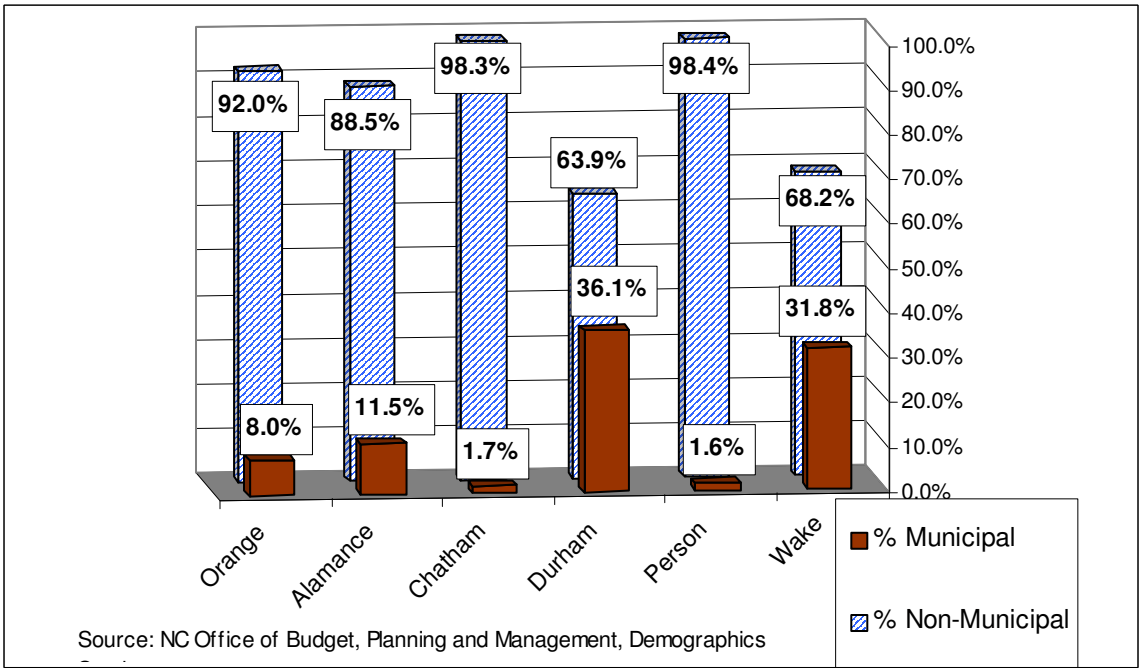
Notes and Sources:

[1] Municipal Density=Persons per Square Mile in Municipal Areas Only

[2] "Municipal" refers to the population living in active municipalities (cities) and excluding ETJ areas.

Source: NC Office of Budget, Planning and Management, Demographics Section

B2j) Figure: Municipal Density Percentages, by County 2005



Source: NC Office of Budget, Planning and Management, Demographics

B2k) Table: Metropolitan Statistical Area 5 Year Growth Comparisons

MeSA [1]	County	2005 Pop	2000-2005 Growth[2]	% Growth	Natural Increase[3]	Net Migration[4]	% Net Migration	2005 Persons Per Sq Mile Estimates[5]
Charlotte-Gastonia-Concord		**1,327,650**	**161,854**	**13.9**	**58,293**	**103,561**	**8.9**	
	Anson	25,766	491	1.9	218	273	1.1	48
	Cabarrus	150,434	19,371	14.8	5,520	13,851	10.6	413
	Gaston	193,886	3,570	1.9	3,297	273	0.1	544
	Mecklenburg	796,232	100,862	14.5	41,458	59,404	8.5	1,513
	Union	161,332	37,560	30.3	7,800	29,760	24.0	253
Durham		**457,416**	**33,613**	**7.9**	**16,220**	**17,393**	**4.1**	
	Chatham	56,090	6,761	13.7	1,057	5,704	11.6	82
	Durham	242,210	18,896	8.5	11,507	7,389	3.3	834
	Orange	121,991	6,454	5.6	3,272	3,182	2.8	305
	Person	37,125	1,502	4.2	384	1,118	3.1	95
Greensboro-High Point		**670,528**	**27,081**	**4.2**	**16,658**	**10,423**	**1.6**	
	Guilford	441,428	20,380	4.8	12,631	7,749	1.8	680
	Randolph	137,283	6,812	5.2	3,571	3,241	2.5	174
	Rockingham	91,817	-111	-0.1	456	-567	-0.6	162
Raleigh-Cary		**955,452**	**158,426**	**19.9**	**47,795**	**110,631**	**13.9**	
	Franklin	54,106	6,846	14.5	1,216	5,630	11.9	110
	Johnston	146,312	24,412	20.0	6,135	18,277	15.0	185
	Wake	755,034	127,168	20.3	40,444	86,724	13.8	908
					0			
Total MeSA		**6,008,294**	**525,436**	**9.6**	**209,690**	**315,746**	**5.8**	
NORTH CAROLINA		**8,682,066**	**635,253**	**7.9**	**246,258**	**388,995**	**4.8**	178

Notes and Sources:

[1] MeSA = Metropolitan Statistical Area

[2] Growth = (Natural Increase + Net Migration)

[3] Migration- Persons moving into Orange County from another county or state.

[4] Natural Increase = (Births - Deaths)

[5] Persons per Sq Mile = (Population/Land Area)

Source: NC State Demographics

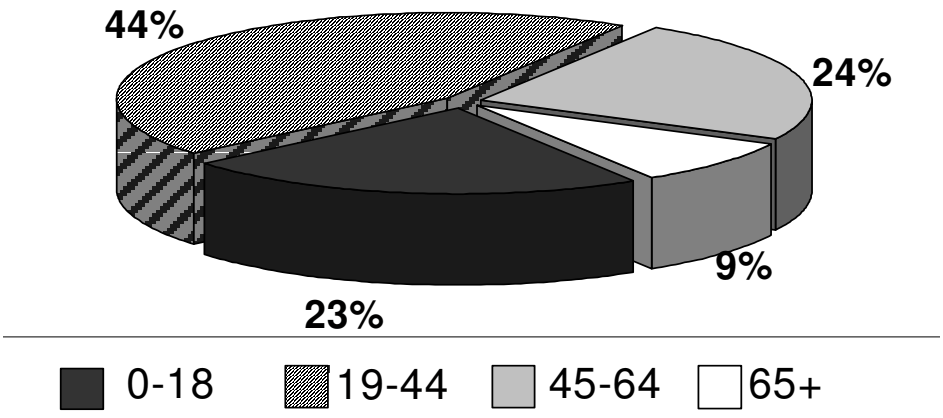
B2l) Table: Orange County Population by Age

Age	1980	1980 % of the Pop.	1990	1990 % of the Pop.	2000	2000 % of the Pop.	2005 est.	2005 % of the Pop.
0-4	3,994	5.2%	5,440	5.8%	5,854	5.1%	6,418	5.2%
5-14	8,891	11.5%	9,707	10.3%	14,200	12.3%	13,796	11.3%
15-18	5,702	7.4%	5,300	5.6%	6,641	5.7%	7,645	6.2%
0-18 Total	18,587	24.1%	20,447	21.8%	26,695	23.1%	27,859	22.7%
19-24	18,596	24.1%	18,948	20.2%	19,468	16.9%	21,435	17.5%
25-34	15,537	20.2%	18,059	19.2%	17,887	15.5%	16,420	13.4%
35-44	7,751	10.1%	14,299	15.2%	17,448	15.1%	17,187	14.0%
45-54	5,709	7.4%	8,146	8.7%	15,923	13.8%	17,476	14.3%
55-64	5,092	6.6%	5,869	6.3%	8,181	7.1%	11,458	9.4%
19-64 Total	52,685	68.4%	65,321	69.6%	78,907	68.3%	83,976	68.6%
65-74	3,553	4.6%	4,755	5.1%	5,275	4.6%	5,631	4.6%
75-84	1,752	2.3%	2,517	2.7%	3,482	3.0%	3,613	3.0%
85 +	478	0.6%	811	0.9%	1,174	1.0%	1,395	1.1%
65+ Total	5,783	7.5%	8,083	8.6%	9,931	8.6%	10,639	8.7%
Grand Total	77,055	100.0%	93,851	100.0%	115,533	100.0%	122,474	100.0%

Notes and Sources:

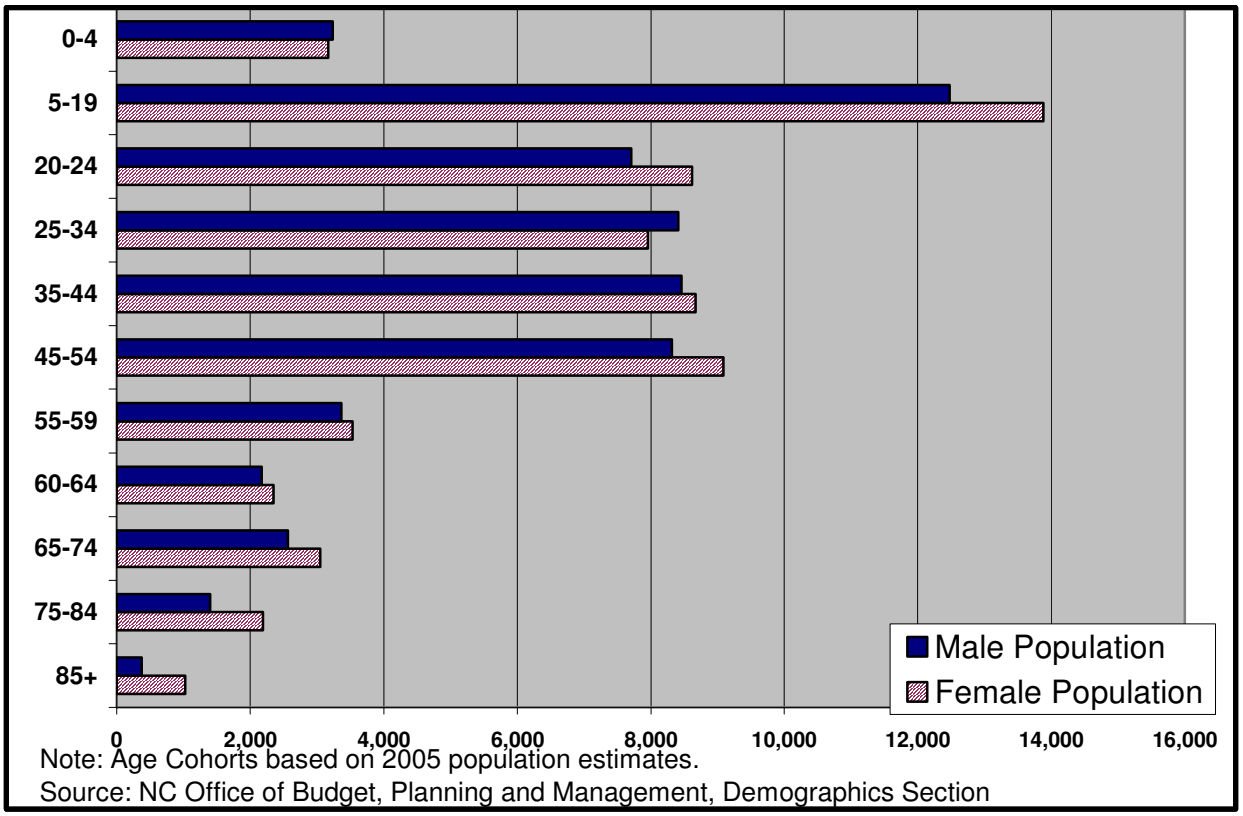
Population totals for age cohorts may differ from County totals elsewhere due to rounding.
Source: NC Office of Budget, Planning and Management, Demographics Section

B2m) Figure: Orange County Percent Population by Age Group, 2005



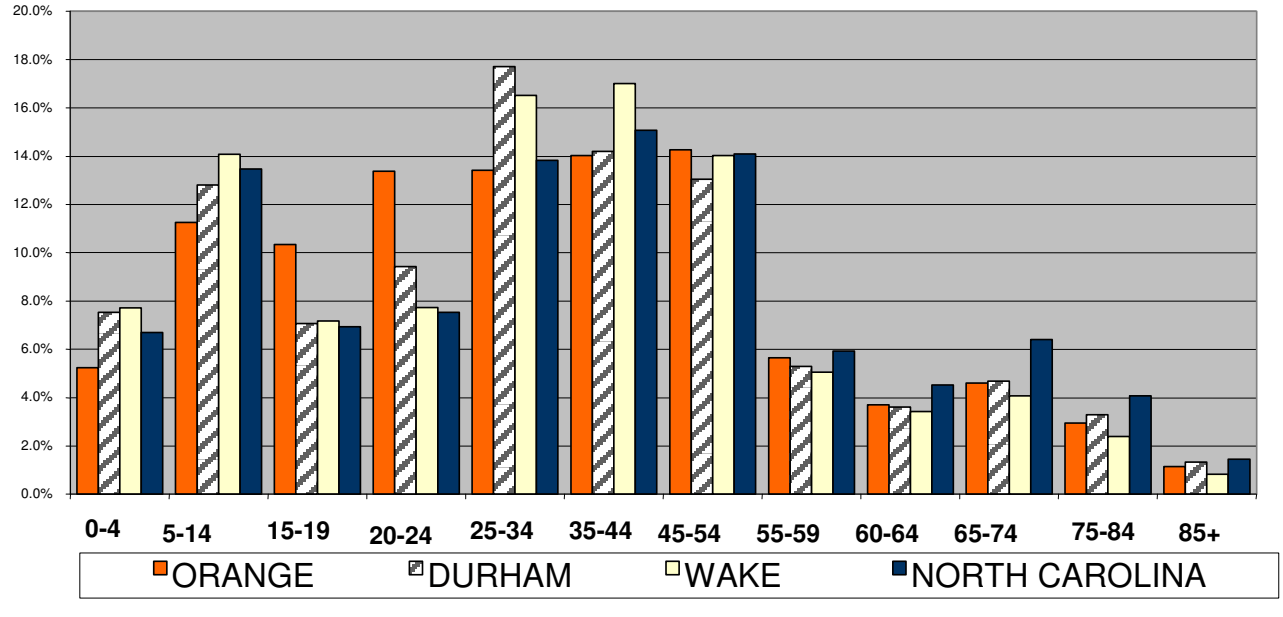
Source: NC Office of Budget, Planning and Management, Demographics Section

B2n) Figure: Orange County Age and Gender Breakouts, 2005



Note: Age Cohorts based on 2005 population estimates.
Source: NC Office of Budget, Planning and Management, Demographics Section

B2o) Figure: Age Cohort Regional Comparisons, 2005



Source: NC Office of Budget, Planning and Management, Demographics Section

Sub-Section B3. Housing

B3.1. BACKGROUND

This section examines Orange County's existing housing conditions including housing sales, prices, and trends. When possible, data for the municipalities (cities) have been listed separately. However, much of the information is available only for the county as a whole. Data for Orange County that excludes the cities will be labeled as Unincorporated Orange County.

In-depth information and analysis of the housing market, and more specifically affordable housing, can be found within the Housing Element of the Comprehensive Plan. Information contained in this section has been obtained primarily from the US Census Bureau, the Orange County Department of Housing and Community Development and the Triangle MLS.

B3.2. HIGHLIGHTS

- According to the 2000 Census (corrected), there were 47,706 housing units in Orange County with an average household size of 2.6 people.
- Median house values for owner occupied housing in all of Orange County has increased by over $160,000 (a nine-fold increase) since 1970.
- Orange County's re-sale and new housing sales prices (for homes on the real estate market) have increased 87% from 1995-2005 to an average price of $320,489 for homes sold in 2005.
- Only 18% of homes on the market in 2005 were considered affordable for families of four making median income or less.
- Of the Triangle counties, Orange County has the highest housing sales price. The sales price gap continues to widen among these counties, with housing prices increasing nearly twice as fast in Orange as Durham and Wake counties since 1995.
- Availability of homes with sales prices in the $120,000 and less range has dropped over 40% while the number of homes available in the $250,000+ range has increased 32% since 2000.
- Within Orange County, housing prices vary significantly. Hillsborough homes sell on average for $100,000 less than homes sold in the Chapel Hill/Carrboro area in 2005.
- Similarly, existing housing tax values are polarized within the county. In the unincorporated areas of Orange County, 50% of the houses are valued under $120,000 whereas in Chapel Hill 45% of the homes are valued at $250,000 or more.
- Renters occupy over 50% of available housing units in Chapel Hill. Likewise, the majority of large complex rental apartments are in Chapel Hill, accounting for 56.7% of all large complex apartments in Orange County for 2005.
- Based on information by the Orange County Department of Housing & Community Development, in 2005, there were a significant number of three bedroom apartment units available at all income levels except for those at the incomes less than 30% of median.
- Unincorporated Orange County only contains 1.8% of available apartment housing.
- Average rents in Orange County were $708 in 2005.

B3.3. FIGURES AND TABLES

B3a) Table: Orange County Housing Profile, 2000

Housing Attribute	Carrboro	Chapel Hill	Hillsborough	Total Orange Co.
People Per Hshld	2.2	2.2	2.5	2.6
# Housing Units	8,207	18,976	2,329	47,706
Vacant House Units	8%	6%	10%	7%
Renter Occ [1] Units	63%	54%	36%	39%
Owner Occ [1] Units	29%	40%	55%	54%
Mobile Homes	107	234	170	5,124
Med [2] Contract Rent	$607	$607	$485	$591
Med [2] Value Owner Unit	$172,800	$229,100	$117,100	$179,000
Occ Units >10yr old	68.8%	77.9%	74.1%	70.3%
Occ Units >20yr old	42.9%	58.0%	57.0%	49.2%
Occ Units >30yr old	22.4%	37.2%	41.7%	29.3%

Notes and Sources:

[1] Occ=Occupied. Indicates whether the owner lives in the unit or if it is rental property.
[2] Med=Median. See Appendix for further explanation.
Source: US Census Bureau (2000, corrected)

B3b) Table: Orange County Family Household Size by Township, 2000

Township	Number of Family households [1]	2-person household % of Total	3-person household % of Total	4-person household % of Total	5-person household % of Total	6-person household % of Total	7-or-more person household % of Total
Bingham	1,737	46.5%	27.6%	17.6%	6.3%	1.3%	0.6%
Cedar Grove	1,425	41.0%	26.7%	21.3%	7.9%	2.0%	1.2%
Chapel Hill	2,050	43.8%	26.1%	19.4%	7.0%	2.2%	1.5%
Cheeks	3,126	43.1%	25.9%	20.4%	6.9%	2.7%	1.1%
Eno	15,080	44.0%	24.2%	21.3%	7.3%	2.0%	1.1%
Hillsborough	1,786	44.6%	27.3%	20.1%	5.7%	1.7%	0.7%
Little River	922	45.1%	25.1%	21.6%	5.9%	1.5%	0.9%
Orange County	26,126	44.0%	25.2%	20.7%	7.0%	2.0%	1.1%

Notes and Sources:

[1] Family Households includes all of the related people who occupy a housing unit.
Source: US Census Bureau, 2000

B3c) Table: Regional Housing Profile, County Comparisons, 2000

Housing Attribute	Orange County [3]	Alamance County	Chatham County	Durham County	Person County	Wake County	North Carolina
# Housing Units	47,706	55,463	21,358	95,452	15,504	258,953	3,523,944
Vacant Units	7%	7%	8%	7%	9%	7%	11%
Renter Occ[1] Units	39%	28%	21%	43%	23%	32%	27%
Owner Occ[1] Units	54%	65%	71%	51%	68%	62%	62%
Mobile Homes	5,124	8,493	4,306	1,547	3,644	14,210	577,323
Med[2] Contract Rent	$591	$443	$446	$561	$341	$631	$431
Med[2] Value Owner Unit	$179,000	$107,200	$127,200	$129,000	$90,400	$162,900	$108,300
Occ Units >10yr old	72.6%	70.4%	63.4%	70.9%	67.6%	58.8%	65.0%
Occ Units >20yr old	50.8%	55.2%	43.9%	51.5%	51.6%	35.2%	47.7%
Occ Units >30yr old	30.3%	40.9%	28.9%	34.3%	37.1%	20.4%	31.5%

Notes and Sources:

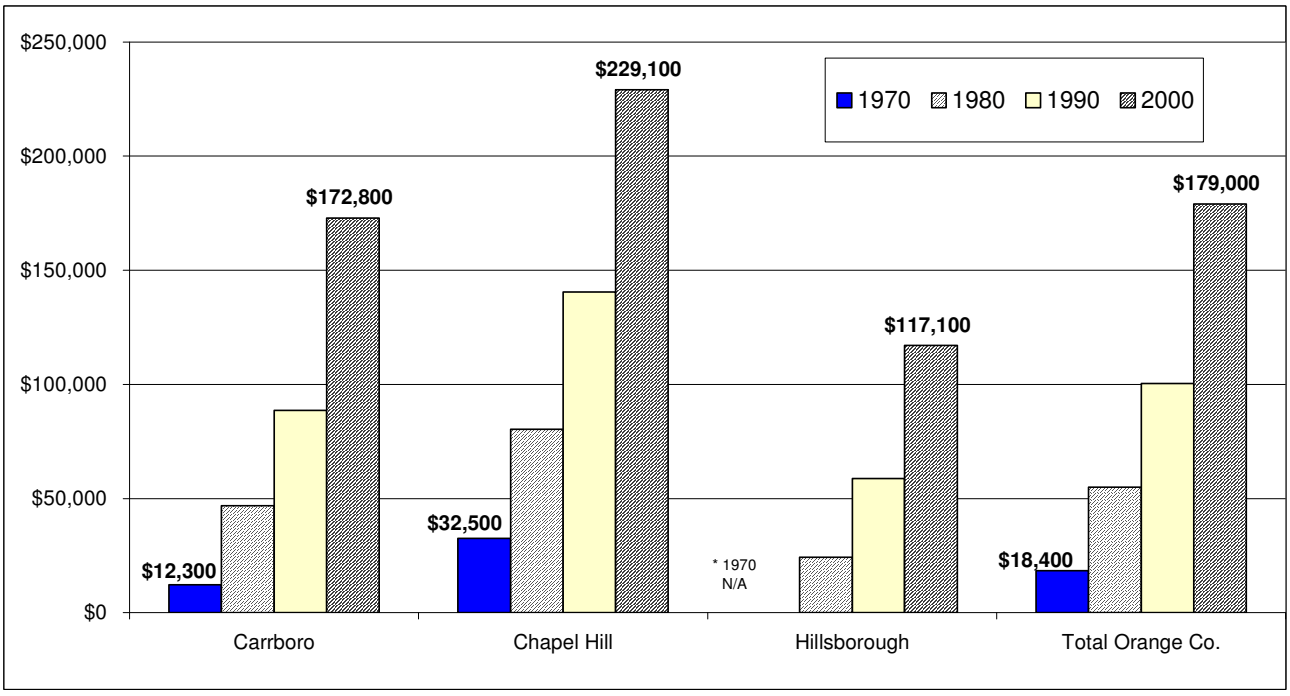
[1] Occ=Occupied. Indicates whether the owner lives in the unit or if it is rental property.

[2] Med=Median. See Appendix for further explanation.

[3]Corrected totals for Orange County. Figures include municipalities + unincorporated areas.

Source: US Census Bureau, 2000

B3d) Figure: Median House Value (Owner Occupied) Trends, 1970-2000



Notes and Sources:

LINC Report

US Census Bureau, 2000

B3e) Table: Total Orange County Housing Sales Price Distribution, 2000-2005

Price Distribution [1]	2000	2001	2002	2003	2004	2005	Change 2000-2005
< $79,000	5.2%	4.0%	3.3%	2.3%	4.6%	2.9%	-44%
$80,000 - $119,999	13.1%	12.4%	11.6%	10.9%	8.9%	7.5%	-43%
$120,000 - $159,000	15.1%	16.0%	15.3%	14.3%	12.6%	14.0%	-7%
$160,000 - $199,000	14.2%	13.9%	14.7%	13.1%	11.4%	11.5%	-19%
$200,000 - $249,999	13.7%	12.1%	12.1%	14.4%	14.8%	14.0%	2%
$250,000+	38.6%	41.6%	43.7%	45.2%	47.8%	51.0%	32%
Avg Price	$235,633	$249,226	$261,895	$280,592	$298,883	$320,489	36%

Notes and Sources:

[1] For new and re-sale residences.

Data compiled by Chapel Hill Planning Department

Source: Triangle MLS

B3f) Table: Orange County and City Housing Sales Price Distribution, 2005

Price Distribution [1]	Total Orange County [2]	Chapel Hill/ Carrboro	Hillsborough
< $79,000	55	20	21
$80,000 - $119,999	141	100	21
$120,000 - $159,000	235	127	46
$160,000 - $199,000	218	140	54
$200,000 - $249,999	268	189	55
$250,000+	967	792	108
Avg Price	$320,489	$349,667	$242,533

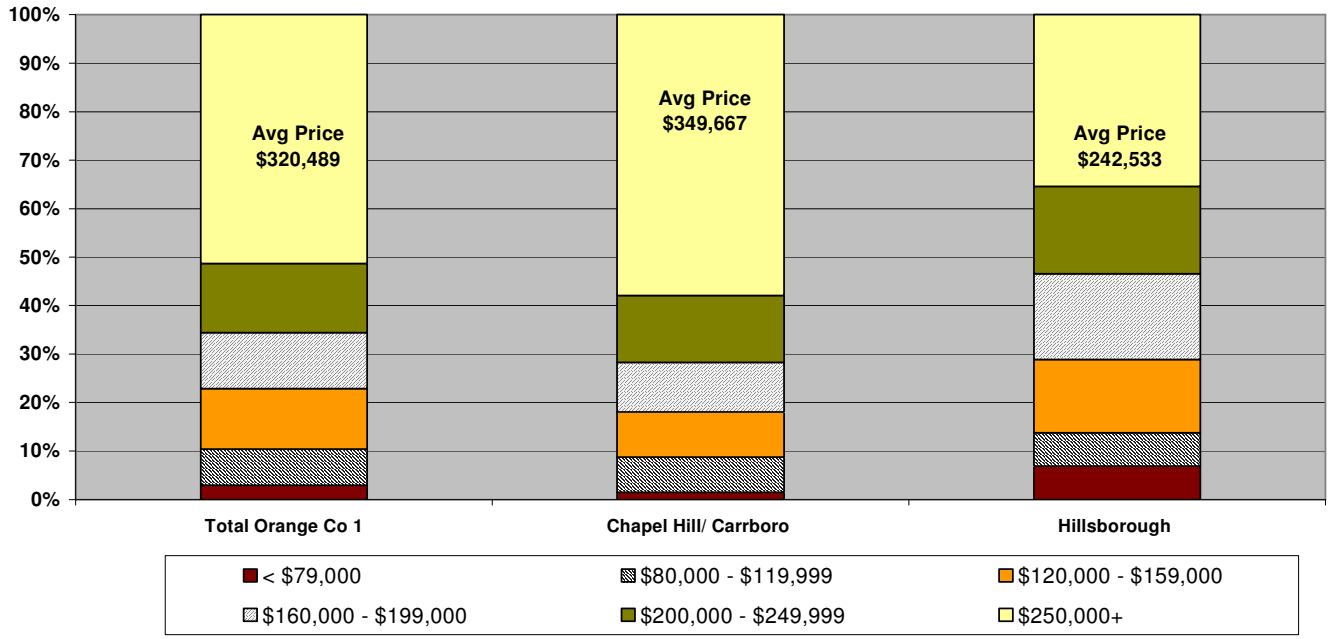
Notes and Sources:

[1] For new and re-sale residences.

[2] Numbers include homes within cities and unincorporated areas.

Source: Brian Decker, Triangle MLS

B3g) Figure: Orange County and City Housing Sales Price by Percent Distribution, 2005



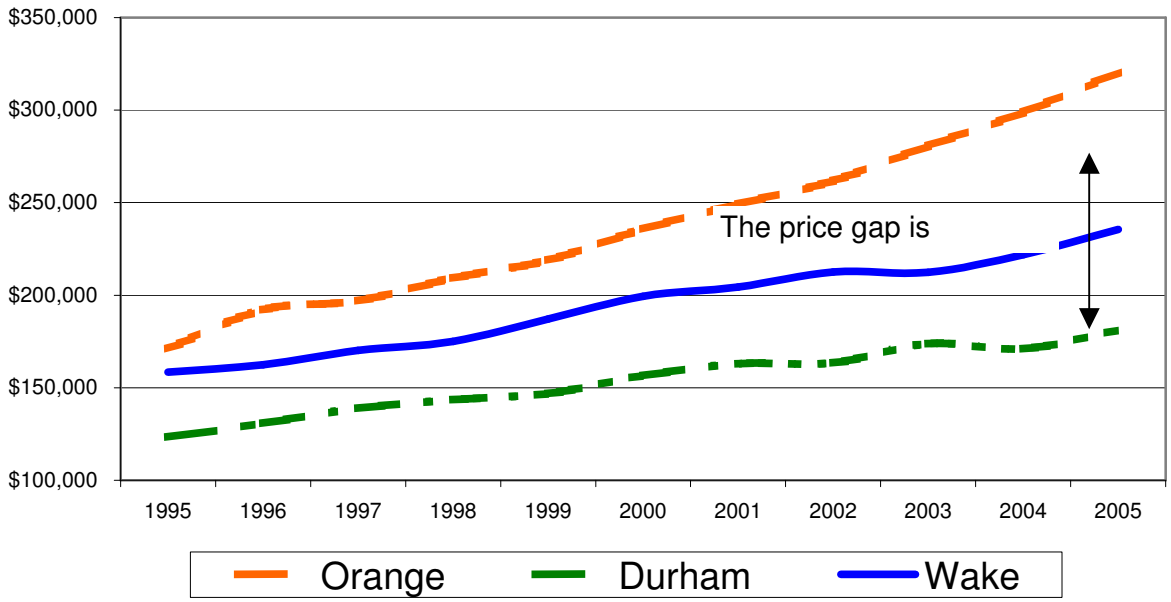
Notes and Sources:
[1] Numbers include homes within cities and unincorporated areas.
Source: Triangle MLS

B3h) Table: Average Regional Housing Sales Price Trends, 1995-2005

Year	Orange	Durham	Wake	Total Avg. Price
1995	$171,038	$123,266	$158,431	$150,912
1996	$192,144	$130,749	$162,474	$161,789
1997	$197,071	$138,876	$170,170	$168,706
1998	$209,208	$143,529	$175,039	$175,925
1999	$218,875	$146,795	$187,217	$184,296
2000	$235,633	$156,568	$199,362	$197,188
2001	$249,226	$162,913	$204,374	$205,504
2002	$261,895	$163,462	$212,567	$212,641
2003	$280,592	$173,844	$212,382	$222,273
2004	$298,883	$171,071	$221,903	$230,619
2005	$320,489	$181,162	$235,615	$245,756
%Change 1995-2005	87.4%	47.0%	48.7%	62.8%

Notes and Sources:
Source: Triangle MLS
Data compiled by Chapel Hill Planning Department

B3i) Figure: Average Regional Housing Sales Price Trends, 1995-2005



Source: Triangle MLS

B3j) Table: Orange County House Tax Values, 2005

House Value [2]	Total County	Chapel Hill[1] / Carrboro (City+ETJ)	Hillsborough (City + ETJ)	Mebane[1] (City+ETJ)	Unincorporated
10,000-79,999	22.2%	9.9%	39.9%	35.4%	30.7%
80,000-119999	20.0%	18.5%	20.6%	33.2%	20.8%
120,000-159,999	14.6%	14.7%	14.3%	15.1%	14.5%
160,000-199,999	10.8%	12.2%	11.3%	5.0%	9.6%
200,000-249,999	10.2%	13.5%	5.1%	4.2%	8.1%
250,000+	22.2%	31.2%	8.8%	7.1%	16.2%
Total	100%	100%	100%	100%	100%

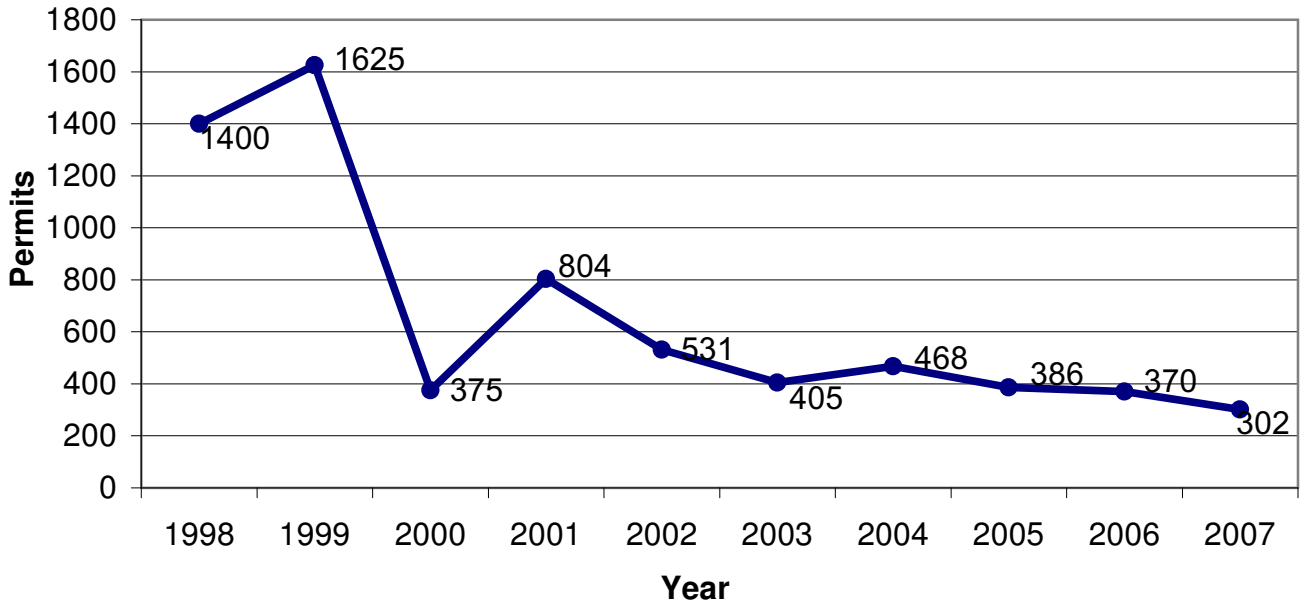
Notes and Sources:

[1] Includes portions of Cities in Orange County only.Unincorporated is Total County minus all Cities and ETJ.

[2] Housing values based on current tax value.

Source: Orange County Department of Planning and Inspections, GIS Section

B3k) Figure: New Residential Permits, Orange County Planning and Inspections Department Jurisdiction, FY 1998-2007



Source: Orange County Department of Planning and Inspections

B3l) Table: Orange County Permitted Residential Construction, 2005

Housing Type	Quantity	Square Feet	Value [1]
Single Family Dwellings (Detached)	313	1,175,041	$96,988,130
Residential Townhouse (Attached)	15	37,115	$243,862
Doublewide Mobile Home New	11	21,176	$668,376
Doublewide Mobile Home Replacement	6	9,581	$150,000
Singlewide Mobile Home New	9	8,764	$165,000
Singlewide Mobile Home Replacement	29	29,652	$310,090
Total	383	1,281,329	$98,525,458

Notes and Sources:

[1]Construction Value as reported by Permit Applicant

For areas within Orange County Inspection's jurisdiction.

Source: Orange County Department of Planning and Inspections

B3m) Table: Availability of Orange County Housing by Median Income, Snapshot: August 26, 2005

	60% of Median		80% of Median Income		100% of Median Income	
	Three Person[2]	Four Person	Three Person	Four Person	Three Person	Four Person
Median Incomes[1]	$ 38,520	$ 42,672	$ 51,360	$ 56,896	$ 64,200	$ 71,120
Single Family Houses on the Market (190 Total Units Available) [3]						
Affordable Housing[4]	$124,737	$138,182	$199,579	$210,036	$249,473	$262,546
Homes Available [5]	2	2	9	11	21	23
Affordable as a % of the Available Housing Market	1.1%	1.1%	4.7%	5.8%	11.1%	12.1%

Notes and Sources:

[1] Median Incomes: US Census Bureau, 2000

[2] Denotes number of persons in household.

[3] Homes available in Unincorporated Orange County on August 26th, 2005.

[4] Housing price necessary to be affordabable for the family size shown.

[5] One newly constructed home was available that was affordable at or below 110% of median income.

Source: *Comprehensive Housing Strategy "Draft", April 2006*, Orange County Dept. of Housing and Community Devt
Market data provided by Triangle MLS

B3n) Table: Orange County[1] Apartment[2] Growth, Vacancy Rates and Average Rents, 1996-2005

Description	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Total Units in Market Segment	6,136	6,893	7,479	7,628	7,815	8,705	8,822	8,671	8,617	9,249
Percent Increase/Decrease	0.0%	12.3%	8.5%	-2.8%	7.5%	11.4%	1.3%	-1.7%	-6.0%	7.3%
Vacancy Rate	1.8%	4.3%	5.5%	6.4%	8.0%	8.5%	8.5%	9.7%	9.4%	9.3%
Average Rent	$627	$647	$685	$749	$756	$764	$782	$783	$758	$708
Percent Increase/Decrease	0.0%	3.2%	5.9%	9.3%	0.9%	1.1%	2.4%	0.1%	-3.2%	-6.6%

Notes and Sources:

[1] For all of Orange County

[2] Developments with over 50 units only.

Source: *Comprehensive Housing Strategy "Draft", April 2006*, Orange County Dept. of Housing and Community Devt
Data provided by Chapel Hill Sub Market Summary, Real Data Apartment Market Research

B3o) Table: Orange County Apartment Unit Size Mix in Large Complex Developments, 2005

Location	Studio	One [1]	Two	Three	Four	Total	% of Apt Housing Availability
Chapel Hill	5	2061	2842	535	138	5581	56.7%
Carrboro	16	1075	2194	177	0	3462	35.2%
Hillsborough	0	151	350	128	0	629	6.4%
Orange Co (Uninc)	0	92	76	8	0	176	1.8%
Total	21	3379	5462	848	138	9848	100.0%

Notes and Sources:

[1] Denotes number of bedrooms

Source: *Comprehensive Housing Strategy "Draft"*, April 2006

Orange County Department of Housing and Community Development

B3p) Table: Orange County Availability of Three Bedroom Apartments by Median Income, July 2005

	30% of Median Income	50% of Median Income	60% of Median Income	80% of Median Income	100% of Median Income
Median Incomes[1]	$19,260	$32,100	$38,520	$51,360	$64,200
3 Bedroom Apartment Units at Market [2]					
Number of Units Available (July 2005)	24	172	511	703	862
Number of Vacant Units	1	15	99	130	140
Vacancy Rate	4.2%	8.7%	19.4%	18.5%	16.2%

Notes and Sources:

[1]Median Incomes for 3 Person Families

[2]Large complexes only.

Source: *Comprehensive Housing Strategy "Draft", April 2006*, pg 29

Orange County Dept. of Housing and Community Development

Data provided by Real Data, Apartment Index by Average Rent, pg 545

B3q) Table: Orange County Household Size by Township, 2000

Township	Number of Family households[1]	2-person household % of Total	3-person household % of Total	4-person household % of Total	5-person household % of Total	6-person household % of Total	7-or-more person household % of Total
Bingham	1,737	46.5%	27.6%	17.6%	6.3%	1.3%	0.6%
Cedar Grove	1,425	41.0%	26.7%	21.3%	7.9%	2.0%	1.2%
Chapel Hill	2,050	43.8%	26.1%	19.4%	7.0%	2.2%	1.5%
Cheeks	3,126	43.1%	25.9%	20.4%	6.9%	2.7%	1.1%
Eno	15,080	44.0%	24.2%	21.3%	7.3%	2.0%	1.1%
Hillsborough	1,786	44.6%	27.3%	20.1%	5.7%	1.7%	0.7%
Little River	922	45.1%	25.1%	21.6%	5.9%	1.5%	0.9%
Orange County	26,126	44.0%	25.2%	20.7%	7.0%	2.0%	1.1%

Notes and Sources:

[1] Family Households includes all of the related people who occupy a housing unit.

Source: US Census Bureau, 2000

B3r) Table: Orange County Families by Township, 2000

Township	Families with own Children Under 18 Years of Age					
	Population in Families (With or Without Children)	All Families With Own Children Under 18 Years of Age	In married-couple families:	In other families:	Male householder, no wife present:	Female householder, no husband present:
Bingham	4,969	1,254	1,002	252	67	185
Cedar Grove	4,288	1,098	878	220	58	162
Cheeks	6,089	1,572	1,205	367	89	278
Hillsborough	9,258	2,604	1,680	924	168	756
Chapel Hill	44,645	13,598	10,613	2,985	460	2,525
Eno	5,165	1,367	1,048	319	84	235
Little River	2,710	694	592	102	34	68
Orange County Total	77,124	22,187	17,018	5,169	960	4,209

Source: US Census Bureau, 2000

Sub-Section B4: Employment and Economy

B4.1. BACKGROUND

Orange County is fortunate to be a part of an economically vibrant region that includes the Research Triangle Park, which attracts people and businesses from around the globe. Economic conditions and employment opportunities are often the catalyst for changes in population trends, land use, and resource consumption. In Orange County, commercial and industrial activities are primarily focused within the municipalities and cities, although districts for Economic Development have been identified in the unincorporated areas. This chapter provides a brief overview of general economic conditions; further discussion of the economy will be covered in the Economic Development Element of the Comprehensive Plan.

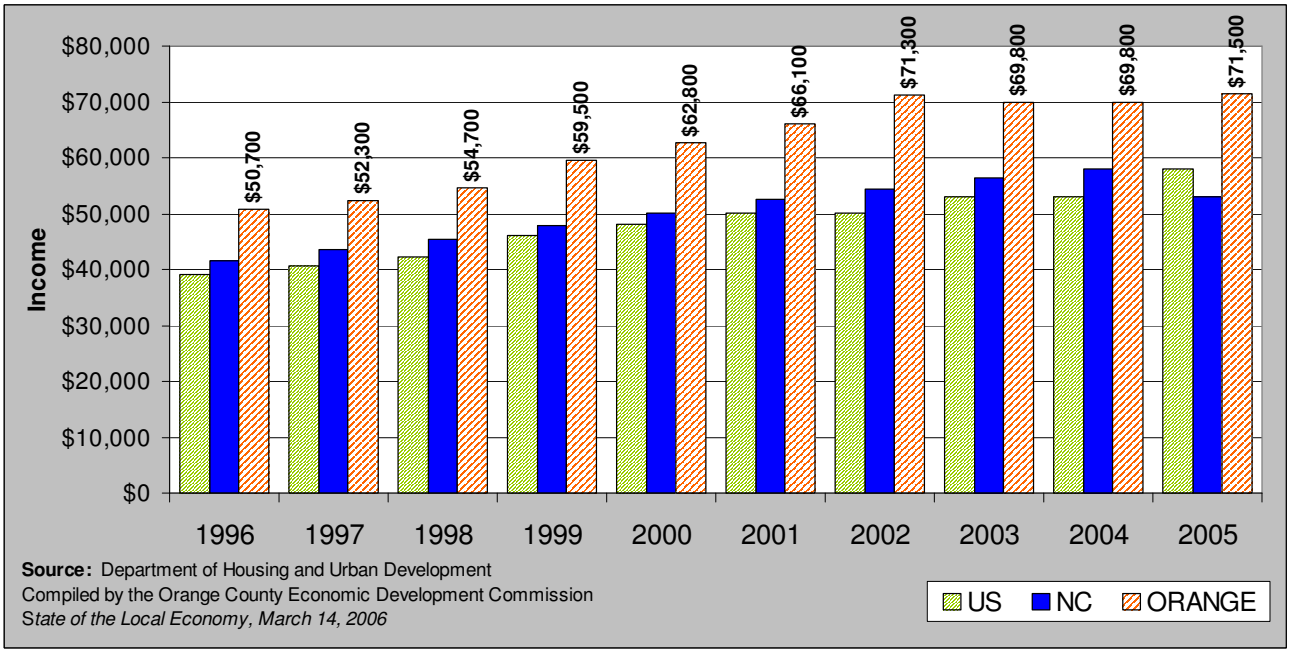
Statistics and data cited in this section have been obtained primarily from the US Census Bureau and Orange County's Economic Development Commission. Although not included herein, socioeconomic data and projections based on the Triangle Regional Model (TRM) for Orange, Chatham, and Durham Counties are now available through the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). To obtain this data, contact the Orange County Department of Planning and Inspections or one of the above mentioned member municipalities.

B4.2. HIGHLIGHTS

- Orange County's median family income was $59,874 in 2000 23% higher than the US and 35% higher than the North Carolina average.
- Incomes have been rising steadily over the past 10 years.
- In the year 2000, 14.1% of Orange County residents were considered to be in poverty compared to 12.3% of North Carolina residents. This statistic includes the incomes of college students who live within the county.
- Orange County has twice the percent of college graduates as the state of North Carolina and the United States.
- Private Industry employs slightly over one-half of the Orange County population.
- Within the private sector, retail trade has the greatest number of employees, at slightly over 6,000; however, it has leveled off since the late 1990's.
- Manufacturing jobs have decreased nearly 40% since 2002, in part due to factory closings and relocations.
- Agriculture generated $42 million dollars in income in 2005.
- The State government generates nearly half of the annual wages paid in Orange County, owing to the number of people employed by UNC-Chapel Hill, the County's largest employers.
- Weekly average wages for Orange County were $781 as of September 2006, 12% higher than the state's average wages of $696.
- In 2005, (55) commercial occupancy permits with a total value of over $40 million dollars were issued by the Orange County Planning and Inspections Department for establishments located within its jurisdiction.
- Orange County has the lowest unemployment—in the Triangle Area.

B4.3. HIGHLIGHTS

B4a) Figure: Median Family Income Comparisons, 1996-2005



Source: Department of Housing and Urban Development
Compiled by the Orange County Economic Development Commission
State of the Local Economy, March 14, 2006

B4b) Table: Regional Income Comparisons, 1970-2000

Location	Year	Per Capita Income	Mean Family Income	Median Family Income	Median Hshld Income	% in Poverty*
Orange County	2000	$30,885	$81,427	$59,874	$42,372	14.1
	1990	$21,090	$50,393	$40,685	$29,968	13.9
	1980	$8,898	$23,321	$19,305	$14,939	15.1
	1970	$3,601	$10,714	$8,700	No data	16.8
Durham County	2000	$30,675	$67,013	$53,223	$43,337	13.4
	1990	$20,000	$43,892	$38,578	$30,526	11.9
	1980	$9,464	$21,719	$19,286	$15,395	14.1
	1970	$3,794	$10,064	$8,713	No data	18
Wake County	2000	$35,959	$80,845	$67,149	$54,988	7.8
	1990	$22,329	$51,211	$44,302	$36,222	8.4
	1980	$10,361	$24,603	$21,977	$18,643	10
	1970	$3,996	$10,873	$9,557	No data	15.3
North Carolina	2000	$27,071	$58,789	$46,335	$39,184	12.3
	1990	$17,246	$38,064	$31,548	$26,647	13
	1980	$8,195	$19,513	$16,792	$14,481	14.8
	1970	$3,267	$8,872	$7,774	6976	20.3

Notes and Sources:

* Includes college student populations.

Source: US Census Bureau

B4c) Table: Orange County Adults, Educational Attainment, 2000

Location	High School Graduates	College Graduates
Orange County (Total)	87.6%	56.9%
- Chapel Hill	94.3%	77.0%
- Carrboro	90.2%	66.1%
- Hillsborough	70.9%	31.8%
MSA[1]	85.3%	45.9%
North Carolina	78.1%	22.5%
United States	84.0%	26.0%

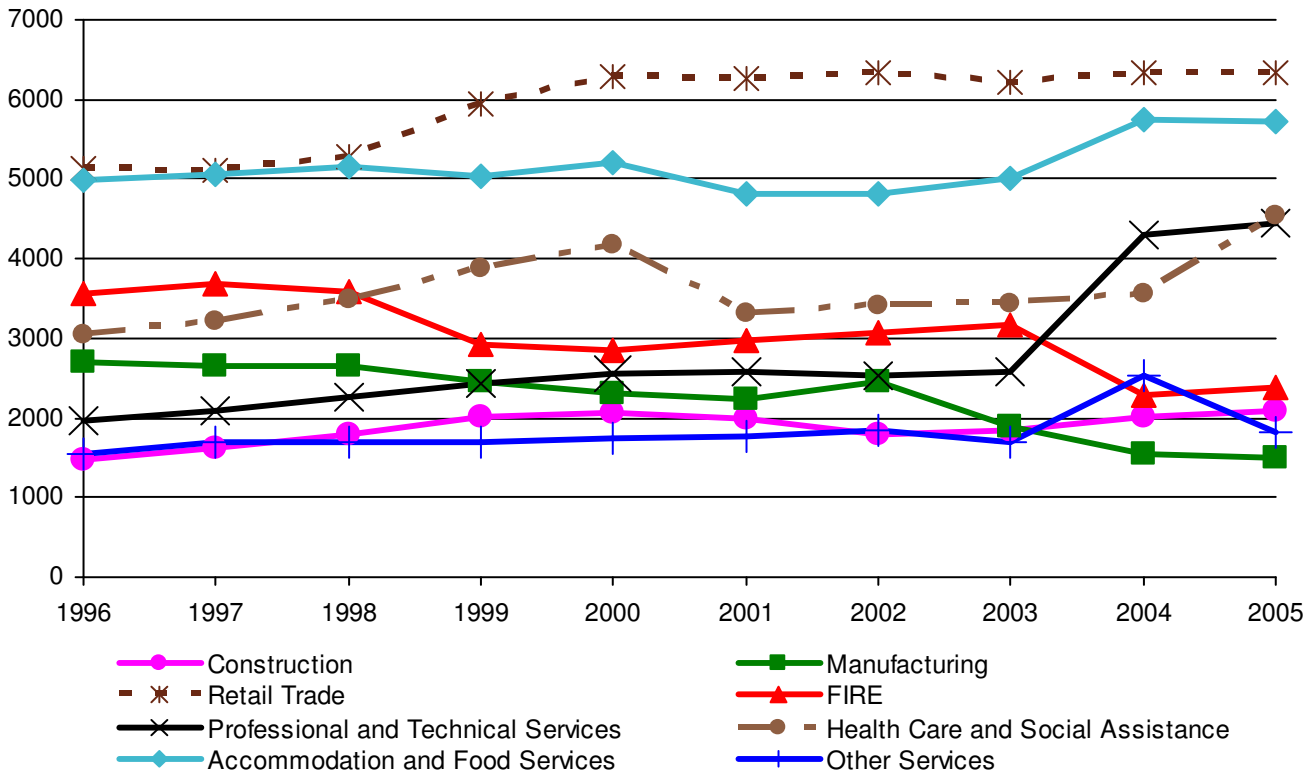
Notes and Sources:

[1] MSA=Metropolitan Statistical Area

Source: US Census Bureau, 2000

As compiled by the Orange County Economic Development Commission

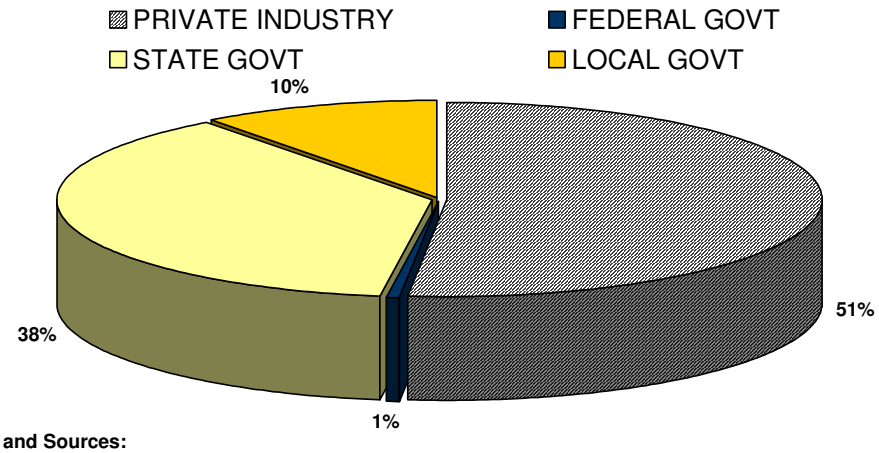
B4d) Figure: Orange County Job Trends, Private Sector Employment,



Notes and Sources:

Employment Security Commission of NC,
Compiled by the Orange County Economic Development Commission
State of the Local Economy, March 14, 2006

B4e) Figure: Orange County Employment Sectors by Type, 2005



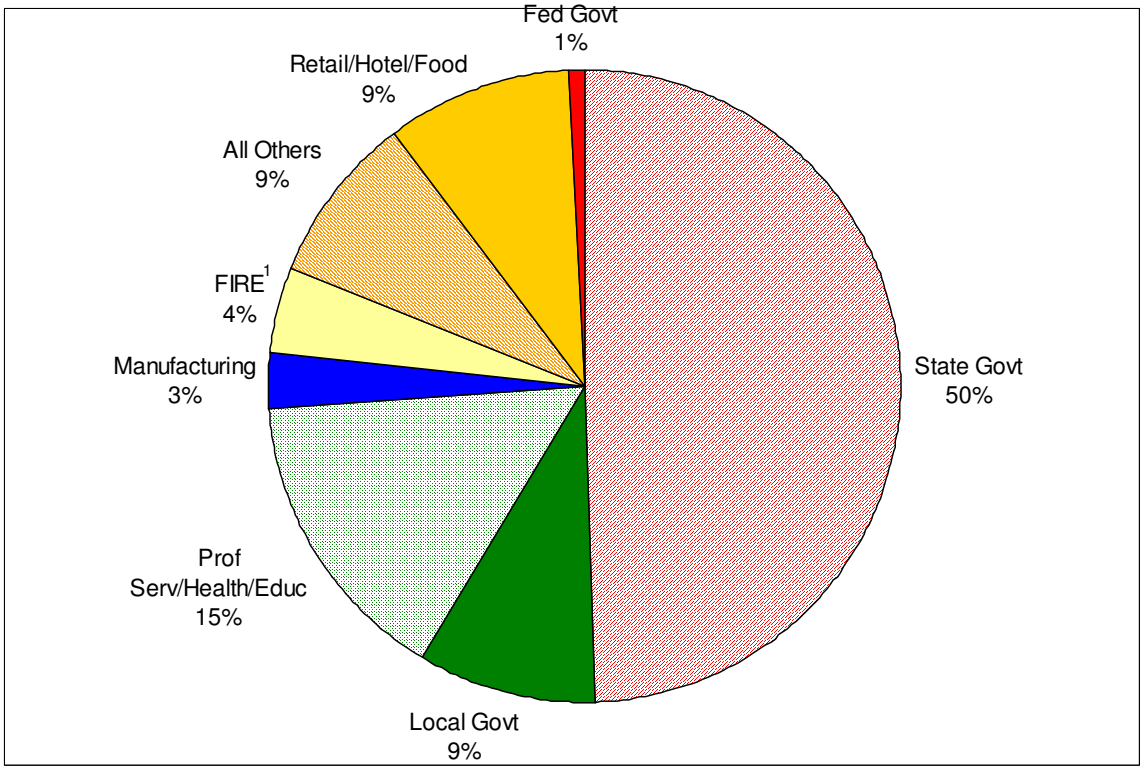
Notes and Sources:
Employment Security Commission of NC
Compiled by the Orange County Economic Development Commission, *State of the Local Economy, March 14, 2006*

B4f) Table: Orange County Employment by Industry, 3rd Qtr, 2006

Employment Sector	Number of Business Units	Number of Employees
Total, All Industries	3,467	59,871
Education and Health Services	393	30,241
Trade, Transportation, and Utilities	558	8,062
Leisure and Hospitality	314	5,850
Professional and Business Services	740	4,921
Public Administration	39	2,558
Construction	357	2,140
Financial Activities	310	1,950
Other Services	399	1,650
Manufacturing	74	1,496
Information	63	578
Unclassified	196	239
Natural Resources and Mining	24	186

Source: NAICS Employment and Wages, Quarterly Census of Employment and Wages (QCEW) Unit, ESC/LMI Division

B4g) Figure: Orange County Total Annual Wages Paid, 2nd Qtr 2005



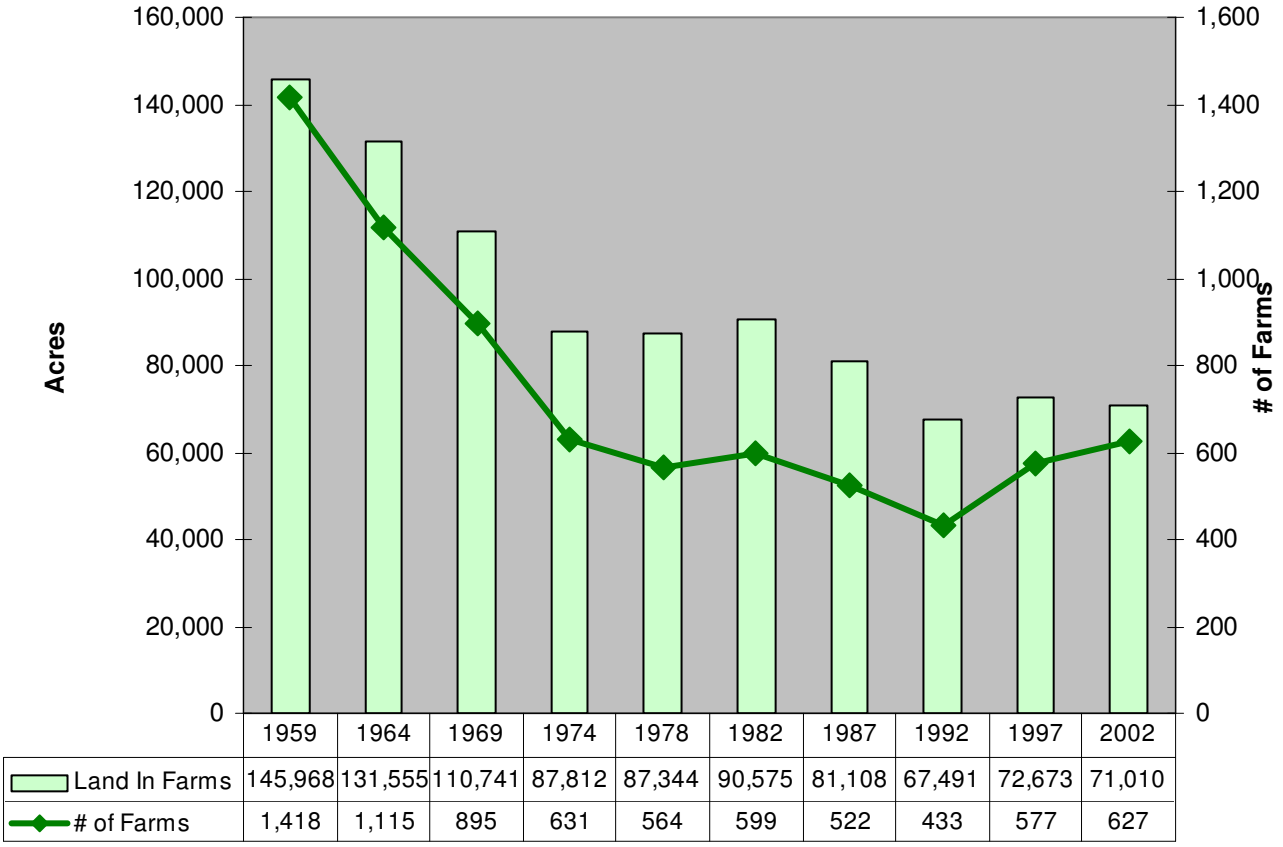
Notes and Sources
1 FIRE = Finance, Insurance and Real Estate
Source: Employment Security Commission of NC
Compiled by the Orange County Economic Development Commission
State of the Local Ecomony, March 14, 2006

B4h) Table: Average Weekly Wages, State/County Comparisons, 3rd Qtr 2006

Location	Average Wkly Wage	% of NC Wages
Orange County	$781	112.2
Alamance County	$599	86.1
Chatham County	$555	79.7
Durham County	$1,039	149.3
Wake County	$781	112.2
North Carolina	$696	--

Notes and Sources:
NAICS Employment and Wages, ESC/LMI Division
Quarterly Census of Employment and Wages (QCEW) Unit

B4i) Figure: Orange County Agriculture Trends, 1959-2002



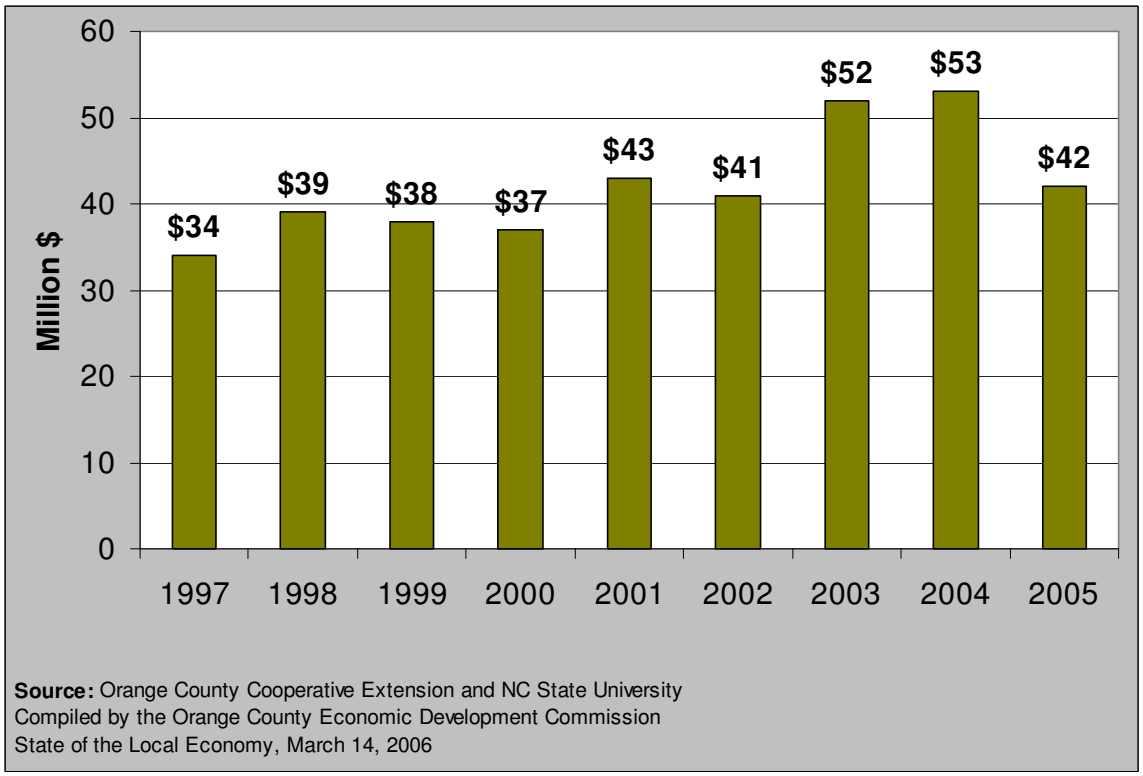
	1959	1964	1969	1974	1978	1982	1987	1992	1997	2002
Land In Farms	145,968	131,555	110,741	87,812	87,344	90,575	81,108	67,491	72,673	71,010
# of Farms	1,418	1,115	895	631	564	599	522	433	577	627

B4j) Table: Agriculture Census, State/County Comparisons, 2002

Location	Number of Farms	Total Land in Farms, Acres	Est % of County Acreage in Farms	Avg Farm Size, Acres	Harvested Cropland, Acres
Orange	627	71,010	27.8%	113	19,405
Alamance	831	97,793	35.5%	118	23,423
Chatham	1,128	118,752	27.2%	105	24,590
Durham	238	26,074	14.0%	110	4,510
Wake	846	92,803	17.4%	110	27,305
North Carolina	53,930	9,079,001	29.1%	168	4,308,209

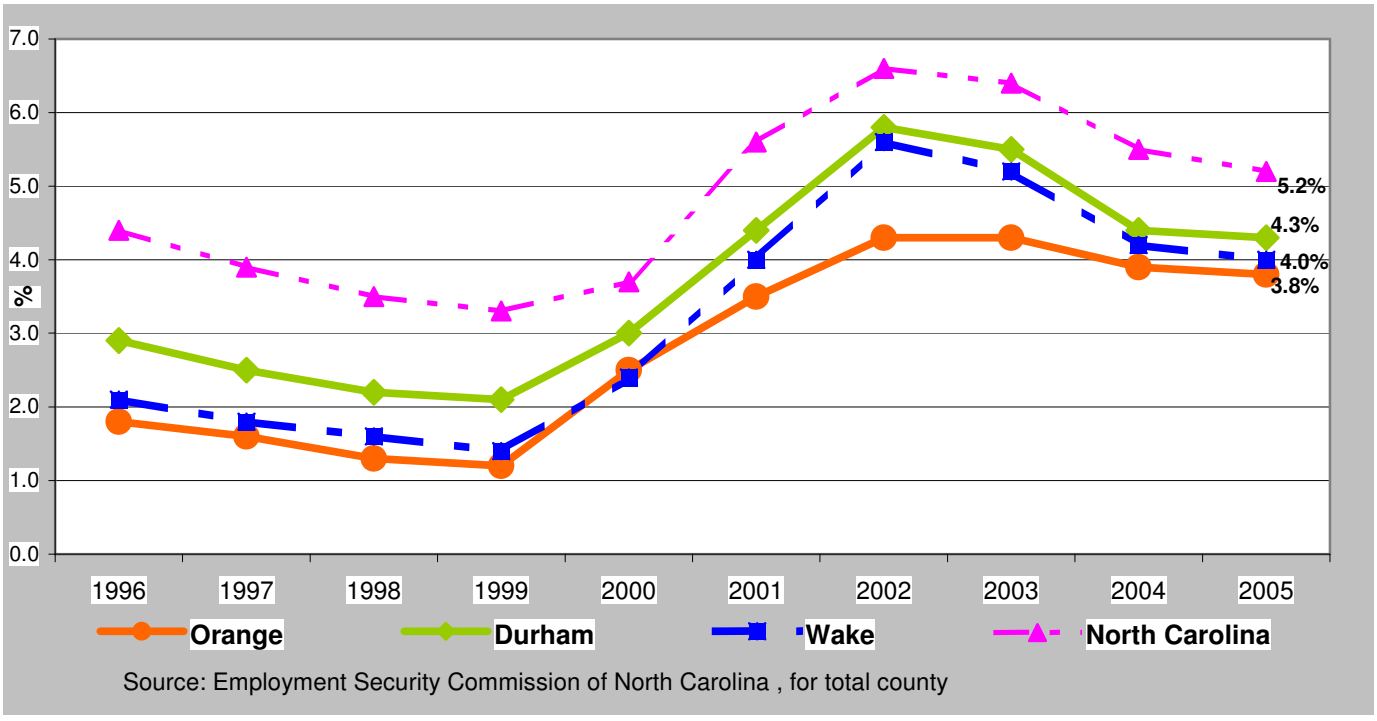
Source: 2002 Census of Agriculture, US Department of Agriculture

B4k) Figure: Orange County Total Agriculture Income in Millions $, 1997-2005



Source: Orange County Cooperative Extension and NC State University
Compiled by the Orange County Economic Development Commission
State of the Local Economy, March 14, 2006

B4l) Figure: State/County Unemployment Rate Comparisons, 1996-2005



Source: Employment Security Commission of North Carolina , for total county

B4m) Table: Orange County[1] New and Change Commercial Occupancy Permits by Square Feet and Value, 2005

Occupancy Type	Quantity	Square Feet	Value [2]
Assembly	7	7,433	$ 592,971
Business	27	43,202	$ 2,000,303
Educational	3	128,425	$ 18,702,788
Factory/Industrial	2	6,401	$ 61,000
Mercantile	11	157,872	$ 14,489,490
Storage	5	87,601	$ 5,224,359
TOTAL	55	430,934	$ 41,070,911

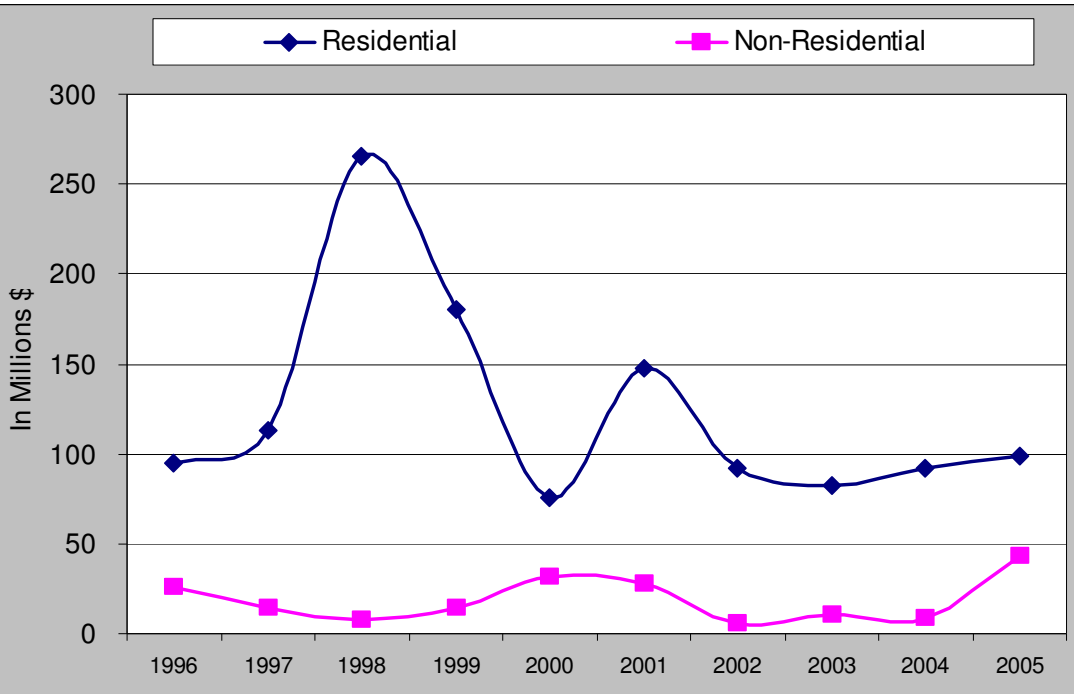
Notes and Sources:

[1] For areas within Orange County's Inspection jurisdiction.

[2]Construction Value as reported by Permit Applicant

Source: Orange County Department of Planning and Inspections

B4n) Figure: Orange County[1] Residential and Non-Residential Construction Permitted Building Value, FY 1996-2005



Notes and Sources:

[1] For areas within Orange County's Inspection jurisdiction.

NC Department of Labor Statistics, Orange County Department of Planning and Inspections

Compiled by the Orange County Economic Development Commission

Sub-Section B5. Environment and Resources

B5.1. BACKGROUND

Good air and water quality are essential to promoting a high quality of life and a sustainable community. Because pollutants do not respect arbitrary county lines, Orange County's environmental quality is integrally linked to the larger Triangle area. Understanding the sources and impacts of pollution and protecting and maintaining a high quality environment will be key to future sustainable development.

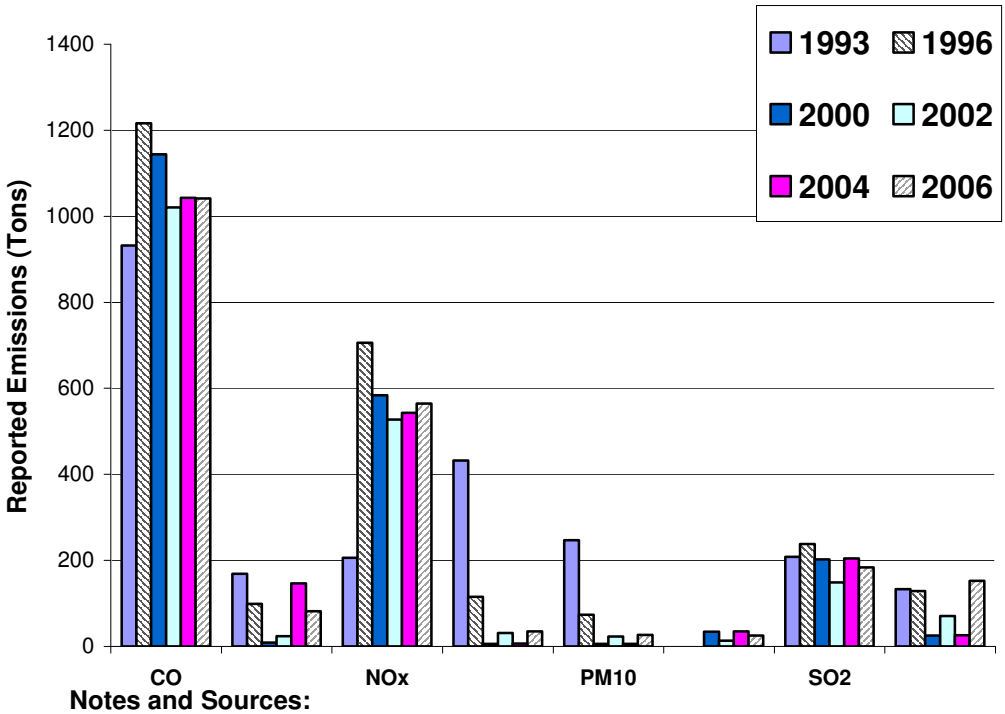
This section contains a brief overview of environmental conditions within Orange County. More detailed analysis is located within the Natural and Cultural Systems Element of the Comprehensive Plan. Much of the information contained within this section has been abstracted from the "State of the Environment, 2004" compiled by the Orange County Commission for the Environment.

B5.2. HIGHLIGHTS

- In Orange County, point sources of air emissions are relatively small compared to other emission sources (i.e. non-point sources).
- The Triangle Area, including Orange County, was declared a 'non-attainment' area in 2004 by the US Environmental Protection Agency for violating federal ozone standards.
- The variation in year-to-year Ground Level Ozone exceedances is largely related to hot weather extremes, as seen in the fluctuations in the number of exceedances from 1995 to 2003.
- Because Orange County contains the upper reaches of three of the State's major river basins – the Neuse, the Cape Fear and Roanoke, many rivers begin here but few flow into the County.
- Overall, about one -third of Orange County residents rely on ground water resources; however, rural areas outside of public water service areas rely almost exclusively on groundwater.
- Orange Water and Sewer Authority is the largest public authority that provides water and wastewater treatment services to Orange County's residents.
- In 2005, OWASA provided services to 19,400 accounts or 75,000 people.
- OWASA's average daily wastewater flows increased 250 percent from 2.2 million gallons per day (mgd) to 7.7 mgd from 1970 – 2004. OWASA Sustainability Report: October 2005.
- During this same time period (1970-2004), major reductions in pollutant loadings took place.
- Per person water demand decreased from 121 gallons per day in FY 2004 to 108 gallons per day in FY 2005, representing a 10% decrease.
- OWASA recycled 92% of wastewater biosolids in FY 2005.
- The Orange County landfill managed 100,097 tons of waste in FY 05/06. The percent of recycled materials has increased by 11% since FY 04/05.
- Urban curbside recycling accounts for 26% of all recycling in Orange County, an increase of 13% from fiscal year 04/05.

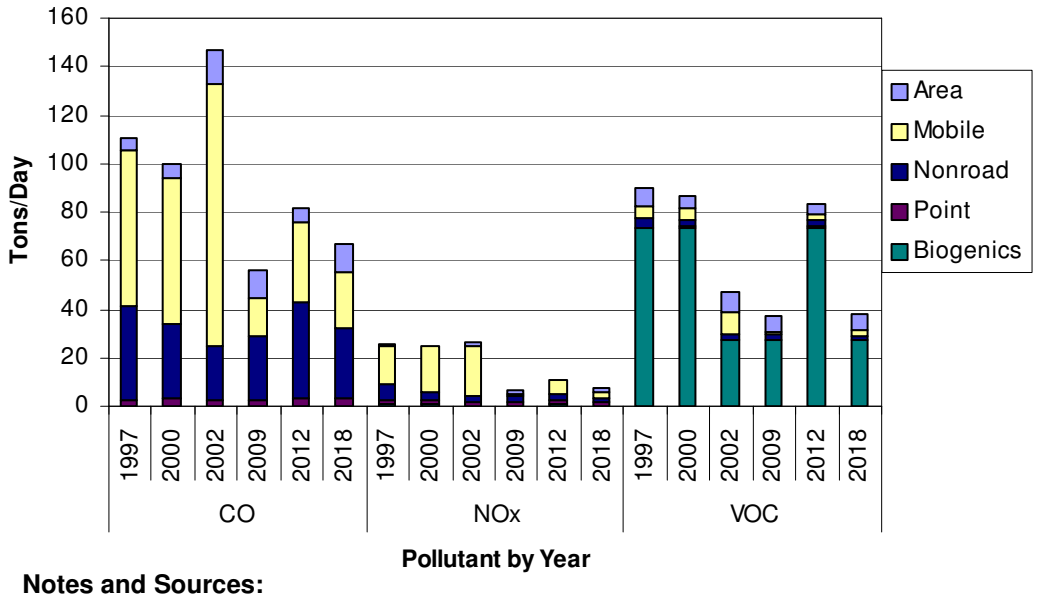
B5.3. FIGURES AND TABLES

B5a) Figure: Trends in Point Source Air Pollution, 1993-2006



Notes and Sources:
Terms and abbreviations defined in Appendix B.
NC Department for Air Quality (NCDAQ)

B5b) Figure: Estimated and Projected Emissions by Source, 2000-2018



Notes and Sources:
Terms and abbreviations defined in Appendix B.
NC Department for Air Quality (NCDAQ)

B5c) Table: Number of Ozone Exceedance Days, 1995-2003

Site	Number of Exceedance Days								
	1995	1996	1997	1998	1999	2000	2001	2002	2003
Duke Street, Durham County	2	4	3	16	0	7	3	17	3
St. Augustine's, Wake County	6	0	15	18	25	6	4	19	3
WRAL Tower, Wake County	6	5	12	19	22	3	0	11	3
Pittsboro, Chatham County	4	3	8	8	5	0	0	13	1
Cherry Grove, Caswell County	4	7	17	19	0	9	6	15	3
McLeansville, Guilford County	5	3	3	17	0	8	4	20	2
Triangle - Based on nine monitors	**16**	**19**	**26**	**40**	**29**	**13**	**9**	**29**	**8**

Source: US Environmental Protection Agency and the NC Department of Air Quality (NCDAQ) as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

B5d) Average and Maximum Daily Water Demand Per Year, 1992-2003

Water Provider	1992	1997	2001	2003
OWASA				
Average Daily Demand (mgd)[2]	**7.14**	**8.38**	**10.17**	**8.22**
Maximum Daily Demand (mgd)	**12**	**14.34**	**13.75**	**12.81**
Public Water Supply Safe Yield (mgd)	**13.5**	**13.5**	**15.1**	**12.5 [3]**
Hillsborough				
Average Daily Demand (mgd)	**1.46**	**1.8**	**1.23**	**1.2**
Maximum Daily Demand (mgd)	**2.04**	**2.65**	**1.87**	**1.83**
Public Water Supply Safe Yield (mgd)	**0.68**	**0.68**	**2.58**	**2.58 [4]**
Orange - Alamance				
(Orange County Portion)				
Average Daily Demand (mgd)	**0.24**	**0.36**	**0.29**	**0.3**
Maximum Daily Demand (mgd)	**0.34**	**0.44**	**0.39**	**0.4**
Public Water Supply Safe Yield (mgd)	**0.12**	**0.12**	**0.12**	**0.12**

Notes and Sources:

[1]Supplemental water supply sources (i.e. purchases) are not factored into safe yields.

[2]mgd = millions gallons per day

[3]Decrease due to change in OWASA's modeling.

[4]Equals 1.9 for W. Fork of Eno plus .68 for Lake Ben Johnson.

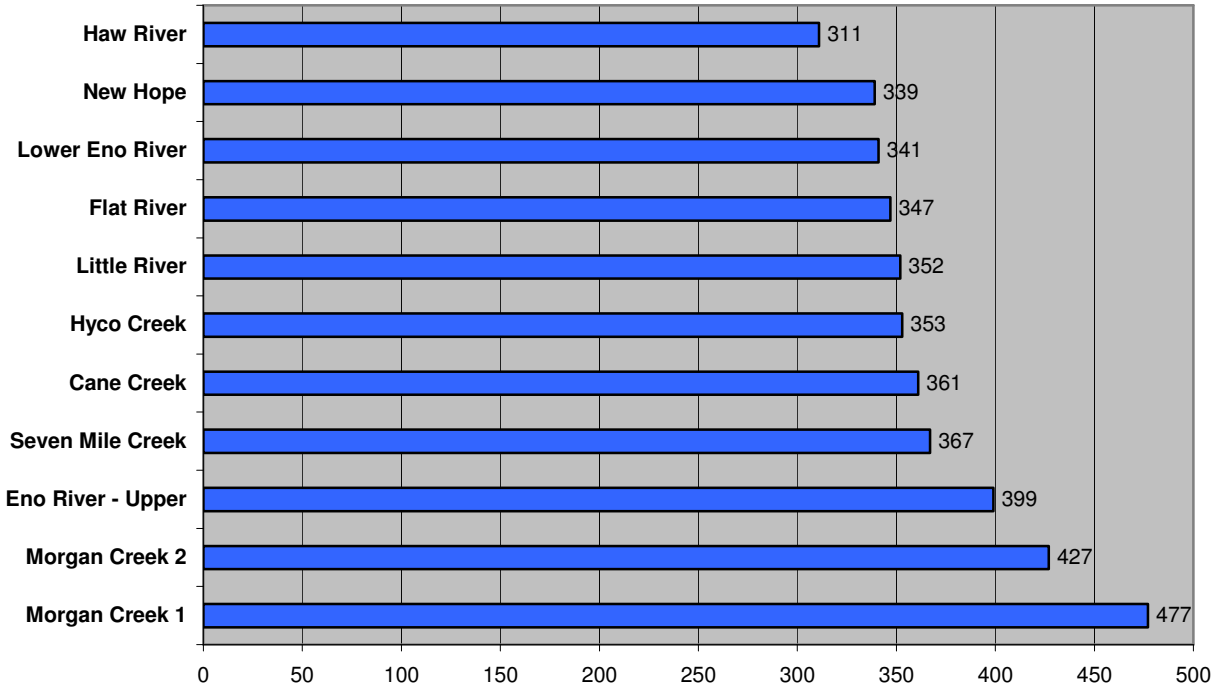
Sources: Triangle J Council of Government (TJCOG) and North Carolina Division

B5e) Table: Relation of Selected Well Characteristics to Well Use

Statistical summary[1] of well characteristics according to use						
Use of Well	Average yld (gal/min)[2]	Average yld per foot ([gal/min]/ft)[2]	Average depth (ft)[2]	Average casing (ft)[2]	Average Water level (ft)[2]	Number of Wells
Domestic	16.4	0.1153	206.2	53.5	26.4	590
Public	30	0.1614	242.1	55.5	30	14
Commercial /Industrial	34.4	0.1441	258	47.9	28.2	20

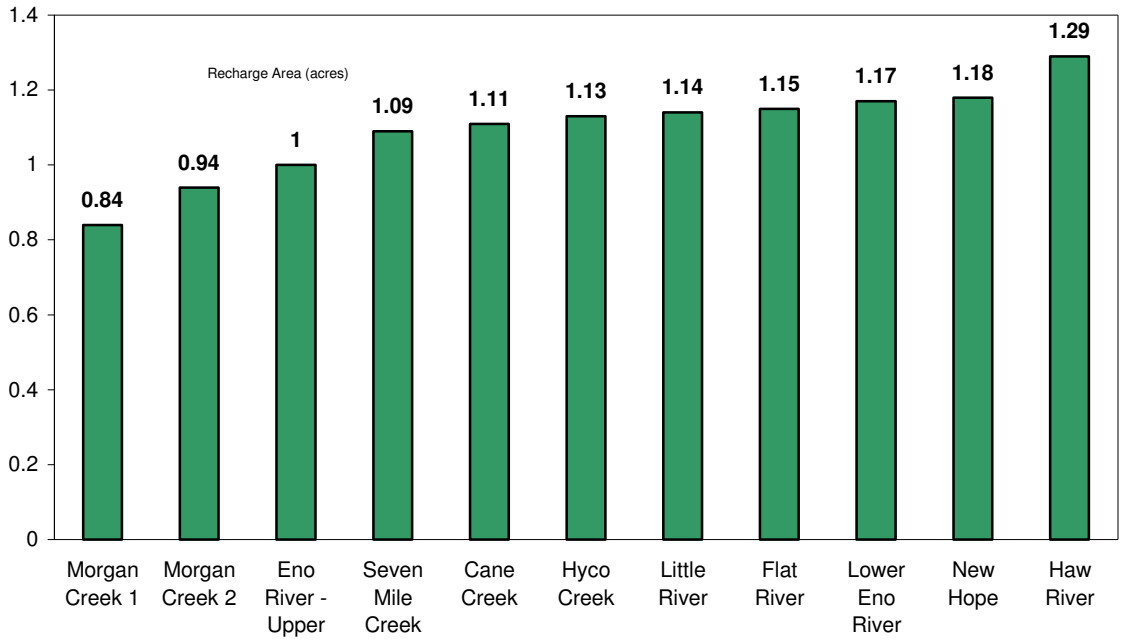
Notes and Sources:
[1]Based on countywide inventory of 649 wells in Orange County.
[2] Abbreviations: [gal/min, gallons per minute; (gal/min)/ft, gallons per minute per foot; ft, feet]
Source: William L. Cunningham and Charles C. Daniel, III. "Investigation of Ground-Water Availability and Quality in Orange County, North Carolina." US Geological Survey (2001): 16, Table 5.

B5f) Figure: Mean Groundwater Recharge Rate (gallons/day/acre), USGS Basin



Notes and Sources:
[1]Morgan Creek upstream of Chapel Hill.
[2]The portion of Morgan Creek upstream from USG gaging station 5, north of NC 54 (also referred to as upstream of White Cross).
USGS, "Groundwater Recharge to the Regolith-Fractures Crystalline Rock Aquifer System, 1996.

B5g) Figure: Groundwater Recharge Areas in Acres by USGS Basin



Notes and Sources:
[1]Morgan Creek upstream of Chapel Hill.
[2]The portion of Morgan Creek upstream from USG gaging station 5, north of NC 54 (also referred to as upstream of White Cross).
USGS, "Groundwater Recharge to the Regolith-Fractures Crystalline Rock Aquifer System, 1996.

B5h) **Table: 303(d) Listed Streams[1] in Orange County[2], 2006**

Stream Name	AU NUMBER
Bolin Creek (Hogan Lake)	16-41-1-15-1-(0.5)b
Booker Creek (Eastwood Lake)	16-41-1-15-2-(1)
Booker Creek	16-41-1-15-2-(4)
Booker Creek	16-41-1-15-2-(5)
Meeting of the Waters	16-41-2-7

Notes and Sources:
[1]303(d) Listed Streams are water bodies that do not meet water quality standards required under the federal Clean Water Act.
[2]Orange County's 303(d) Listed Streams are within Chapel Hill's municipal jurisdiction. These streams are located within the Cape Fear Basin and drain into Jordan Lake.
Source: North Carolina Department of Environment and Natural Resources

B5i) Table: Miles of Perennial Streams in Orange County, 2003/2006[1]

System Name	Total Miles	Undisturbed	Disturbed[2]	Disturbed Percent
Cape Fear	1,137,550	897,789	239,761	21.1%
Neuse	1,044,126	978,656	65,469	6.3%
Total	2,181,676	1,876,445	305,230	14.0%

Notes and Sources:

1 Cape Fear as of 3/03; Neuse as of 9/06. Roanoke Basin n/a

[2] Stream miles considered "Disturbed" if the presence of a house or field was within 100' buffer of the stream. This distance was subtracted out of total length.

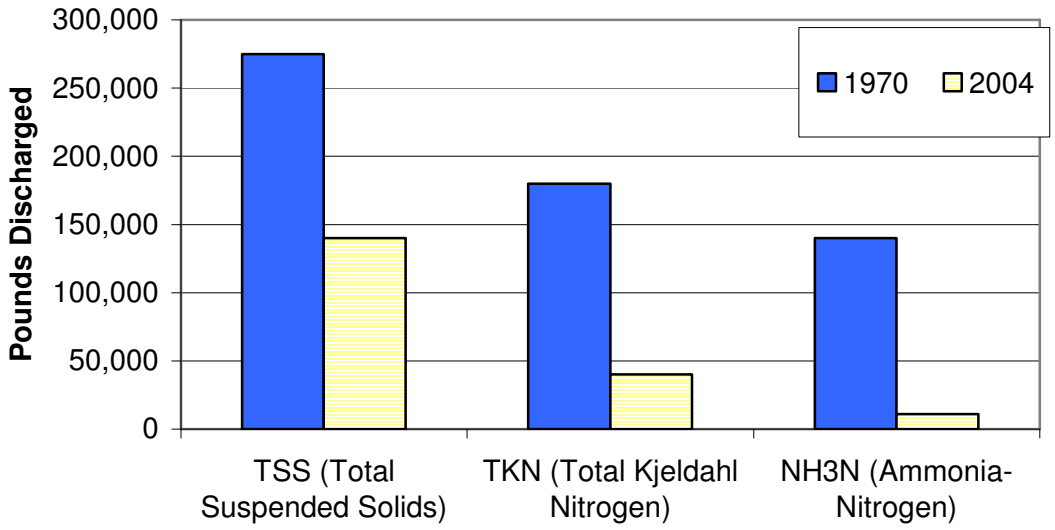
Source: Orange County Environment and Resource Conservation Department

B5j) Table: Orange County Wastewater Spills, 1998-2003

	1998	1999	2000	2001	2002	2003	% Change '98-'03
Number of Spills	62	55	26	10	31	33	-46.80%
Ttl Vol. Of Spills (gal)	1,592,970	467,035	2,224,980	19,220	920,680	107,321	-93.30%
Ttl Vol Reaching Surface waters	1,539,495	461,739	2,204,327	18,110	217,460	94,212	-93.90%

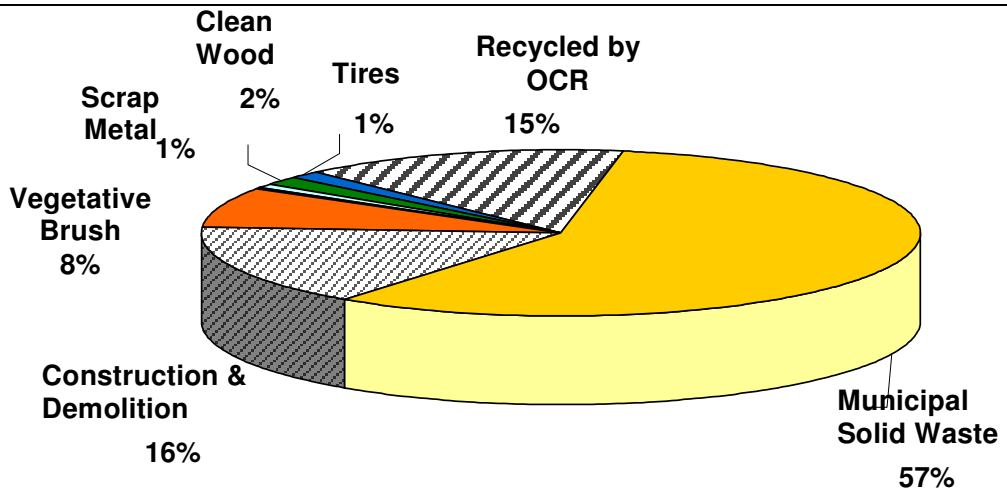
Source: North Carolina Department of Environment and Natural Resources

B5k) Pollutants Discharged from Mason Farm Waste Water Treatment Plant



Source: OWASA Sustainability Report: October 2005

B5l) Figure: Orange County Landfill Tons Managed by Percent, FY 05/06



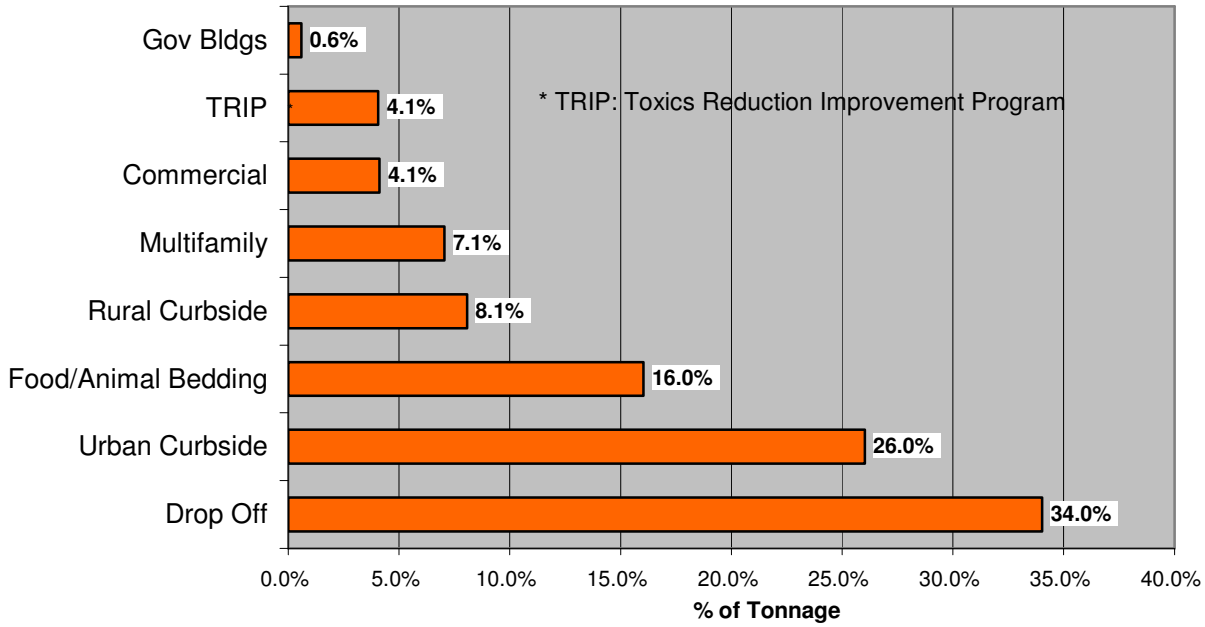
Source: Orange County Solid Waste Management Department

B5m) Table: Orange County Landfill Tons Managed[1], FY 04/05 and 05/06

Type of Material	2004-2005	2005-2006	% change
Municipal Solid Waste	56,308	57,568	2%
Construction & Demolition Waste[2]	16,084	15,874	-1%
Vegetative (brush)	9,106	7,655	-16%
White Goods (appliances)	430	429	0%
Scrap Metal	746	836	12%
Clean Wood	1,586	1,663	5%
Tires	1,231	1,339	9%
Recycled by Orange Community Recycling (OCR)	13,326	14,733	11%
Total Managed	98,817	100,097	1%

Notes and Sources:
[1] Disposed and Managed in Orange County
[2] In County includes mobile homes
Source: Orange County Solid Waste Management Department

B5n) Figure: Orange County Recycling Programs, Tonnage by Percent, FY05/06



Source: Orange County Solid Waste Management Department

B5o) Table: Tonnage Recycled by Orange County Recycling Programs, FY 04/05 and 05/06

Program Totals	FY 04-05 (tons)	FY 05-06 (tons)	% Change
Drop Off	4,643	4,983	7.3%
Urban Curbside	3,362	3,810	13.3%
Food/Animal Bedding	1,917	2,350	22.6%
Rural Curbside	1,140	1,184	3.9%
Multifamily	1,026	1,033	0.7%
Commercial	646	604	(6.5%)
TRIP[1]	487	595	22.1%
Gov Bldgs	104	86	(17.6%)
Subtotal:	13,325	14,645	9.9%

[1]Toxics Reduction Improvement Program
Source: Orange County Solid Waste Management Department

Sub-Section B6. Transportation

B6.1. BACKGROUND

Transportation in and around Orange County is a major issue, as traffic congestion often increases disproportionately to the county's population growth. The single-occupancy automobile remains the primary mode of travel to and from work for Orange County residents. For this and other reasons, there are more cars on the road now than ever. Increased traffic and congestion is closely linked to the location of housing and employment centers and results in a negative effect on air quality and the quality of life in general.

Orange County is a member of two regional transportation planning organizations working to improve transportation infrastructure, to promote alternative modes of transportation, and to increase mobility between communities. Within Orange County, local and regional transit services, such as the Triangle Transit Authority (TTA) and Chapel Hill Transit (CHT) shuttle commuters to work and to appointments within and between urban areas and universities. Orange County Public Transportation's "Orange Bus" addresses transit needs outside of the municipalities in rural areas.

Unless otherwise noted, data provided in tables and charts is for all of Orange County. Details on local and regional transportation initiatives can be found in the Transportation Element. Information on the effects of transportation on the environment and air quality may be found in the Natural and Cultural Systems Element.

B6.2. HIGHLIGHTS

- There were 84,983 cars and trucks registered in Orange County in 2005, representing a 33% increase in vehicle registrations since 1990.
- Traffic accidents have increased nearly 43% since 1990.
- According to the NC Department of Transportation (NCDOT), 75% of state-maintained roads in Orange County are in the unincorporated (rural) areas.
- In 2005, unpaved roads represent less than 5% of total roadway miles maintained by NCDOT in Orange County, compared to 29% of roads in 1980. (This figure does not include privately maintained roadways.)
- Based on a 2000 report, Orange County had 215 miles of unpaved, non-NCDOT maintained roads, one of the highest number of miles in the state.
- The number of daily vehicle miles traveled (DMVT) for Orange County is projected to increase by 8.3% per capita from 2000 to 2015. Overall the gross DVMT is projected to increases by 51% by 2015.
- There is no AMTRAK railway stop in Orange County.
- The percentage of workers who bike or walk to work is higher than the state as a whole, owing largely to the presence of the UNC campus in Chapel Hill.
- The average drive time to work for Orange County residents is 22 minutes, representing a 19% increase since 1980.
- Sixty percent of the County's labor force lives and works in Orange County. The remaining 40% commute to other counties for employment. Likewise, 40% of Orange County's labor force commutes in from other counties.

B6.3. FIGURES AND TABLES

B6a) Table: Orange County Registered Vehicles and Traffic Accidents[1]: 1980-2005

Year	Auto/ Truck Regs[2]	Traffic Accidents[3]
1980	45,046	1,695
1990	63,711	2,018
2000	78,177	2,715
2001	80,101	2,927
2002	81,390	2,874
2003	82,093	3,034
2004	83,886	2,799
2005	84,983	2,875

Notes and Sources:

1 NC Department of Transportation

2 Actual registrations for automobiles and trucks for the calendar year in which the vehicles were registered.

3 A reportable accident is one that involves a motor vehicle resulting in injury, death, or total property damage of $1,000 or more.

B6b) Table: Orange County Bicycle Crashes, 1997-2004

City Name	1997	1998	1999	2000	2001	2002	2003	2004	Totals [1]
Carrboro	8	6	7	7	9	4	4	1	46
Chapel Hill	16	15	20	21	16	9	11	11	119
Hillsborough	0	2	1	2	0	0	1	0	6
Non-City (Rural)	3	4	6	3	0	2	3	4	25
Totals	**27**	**27**	**34**	**33**	**25**	**15**	**19**	**16**	**196**

Notes and Sources:

[1] Counts of crashes are based on police reports where at least one (1) unit was a bicycle.

Source: NC Dept of Transportation, Division of Bicycle and Pedestrian Transportation

B6c) Table: Orange County Pedestrian Crashes, 1997-2004

City Name	1997	1998	1999	2000	2001	2002	2003	2004	Totals[1]
Carrboro	5	6	5	5	5	7	7	2	42
Chapel Hill	22	25	26	24	31	18	21	32	199
Hillsborough	0	1	1	2	1	1	3	2	11
Non-City (Rural)	6	3	4	1	0	5	7	5	31
Totals	**33**	**35**	**36**	**32**	**37**	**31**	**38**	**38**	**283**

Notes and Sources:

[1] Counts of crashes are based on police reports where at least one (1) person was a pedestrian.
Source: NC Dept of Transportation, Division of Bicycle and Pedestrian Transportation

B6d) Table: Orange County NC DOT Maintained Roadways, 1980-2005

Year	Prim Hwy Mileage[1]	Sec Hwy Mileage[2]	Pvd Hwy Mileage[3]	Upvd Hwy Mileage[4]
1980	117.8	641.3	535.8	223.3
1990	127.5	668.4	622.6	173.3
2000	126.6	687.7	754.9	59.4
2001	126.6	690.1	762.6	54.1
2002	126.5	692.9	762.6	46.1
2003	126.5	698.8	780.5	44.8
2004	126.5	700.8	827.3	42.0
2005	126.5	704.3	791.9	38.9

Notes and Sources:

[1] Primary Highway Miles: Total mileage for primary roads, including both paved and unpaved mileage. The state primary highway system is composed of all interstate, US, and NC numbered highways.

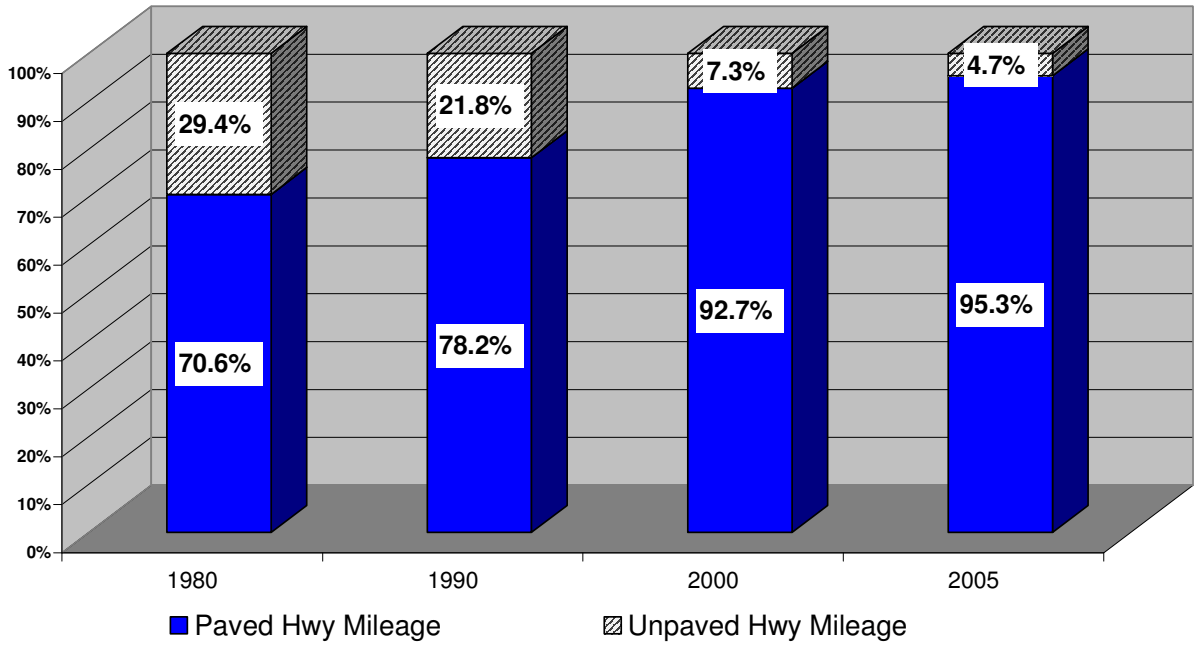
[2] Secondary Highway Miles: Total mileage for secondary roads including both paved and unpaved mileage. The state secondary road system is composed of all state-maintained roads other than primary ones.

[3] Total paved mileage of primary and secondary roads, excluding unnumbered roads, such as school driveways, state university campus roads, rural fire department drives, etc.

[4] Total unpaved mileage of primary and secondary roads , excluding unnumbered roads, such as school driveways, state university campus roads, and rural fire department drives.

Source: NC Department of Transportation

B6e) Table: Orange County Percent NC DOT Maintained Roadways, 1980-2005



B6f) Table: Orange County Lane Miles: 1985-2003

Year	Lane Miles[1]	Time Period	% Increase
1985	1,602	1985-1990	4.7%
1990	1,678	1990-1995	1.9%
1995	1,710	1995-2000	2.3%
2000	1,750	2000-2003	2.2%
2003	1,788	1985-2003	11.6%

[1] The lane miles shown are defined as the centerline mileage times the number of lanes. Example: 1.23 miles multiplied by 3 lanes = 3.69 miles. These mileage totals are for all state maintained roads in Orange County (Interstate, US, NC and SR). Source: NCDOT as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

B6g) Table: Orange County Daily Vehicle Miles Traveled (DVMT), 1990-2015

	Measured		Projected			% Increase
	1990	2000	2003	2007	2015	2000-2015
Rural[1]						
Interstate	745,550	1,417,590	1,414,490	1,673,667	2,155,278	52%
Arterial	75,700	196,100	192,150	217,288	261,398	33%
Collector	569,300	647,630	678,090	757,525	947,433	46%
Local	111,300	148,980	167,670	175,512	238,130	60%
Total	**1,501,850**	**2,410,300**	**2,452,400**	**2,823,992**	**3,602,239**	**49%**
Urban and small urban[1]						
Interstate	21,070	114,320	109,200	132,904	172,555	51%
Freeway	53,660	57,420	61,600	63,559	79,569	39%
Arterial	558,040	754,080	445,200	867,498	1,083,826	44%
Collector	35,890	41,500	388,590	46,245	57,894	40%
Local	57,620	34,080	107,980	37,138	148,104	335%
Total	**726,280**	**1,001,400**	**1,112,570**	**1,147,344**	**1,541,948**	**54%**
Grand Total	**2,228,130**	**3,411,700**	**3,564,970**	**3,971,336**	**5,144,187**	**51%**
Per Capita DVMT	**23.7**	**28.9**	**30.2**	**29.9**	**31.3**	**8.3%**

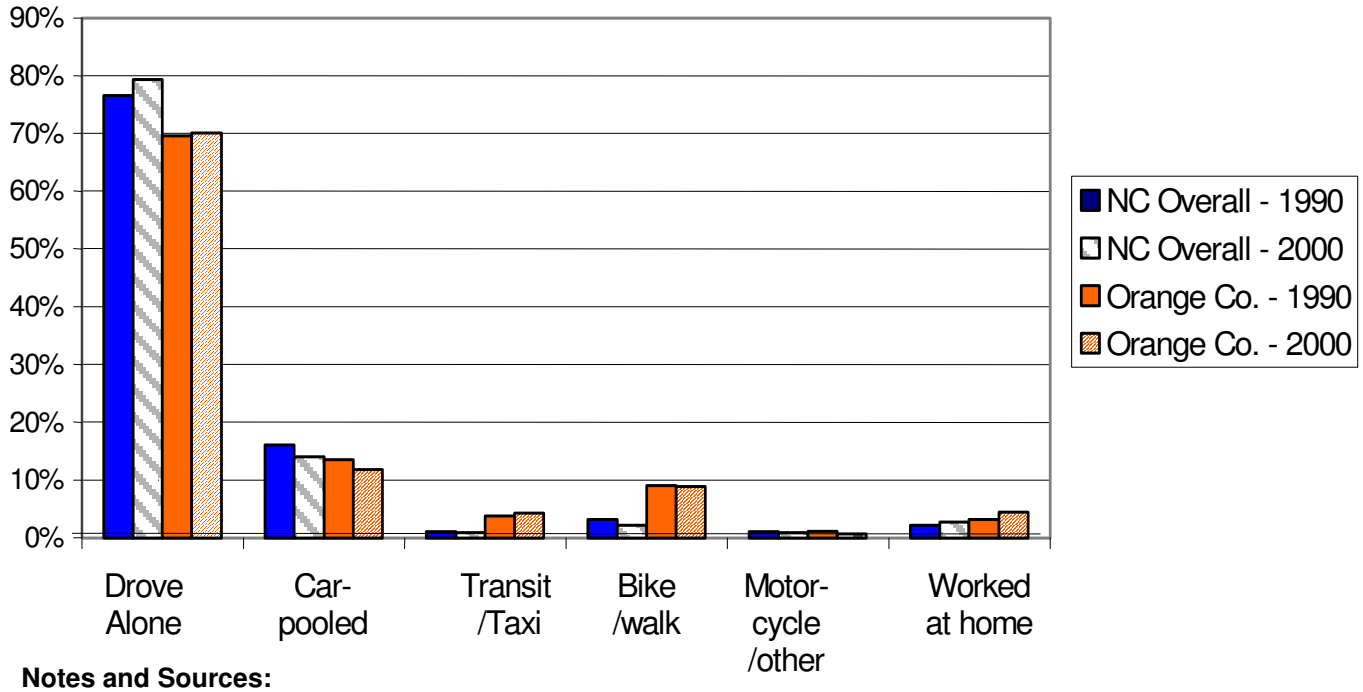
Notes and Sources:

[1] Road classifications are defined in the appendix.

Note: Daily vehicle miles traveled (DVMT) represents vehicle use on public roads in Orange County by both residents and non-Orange County residents.

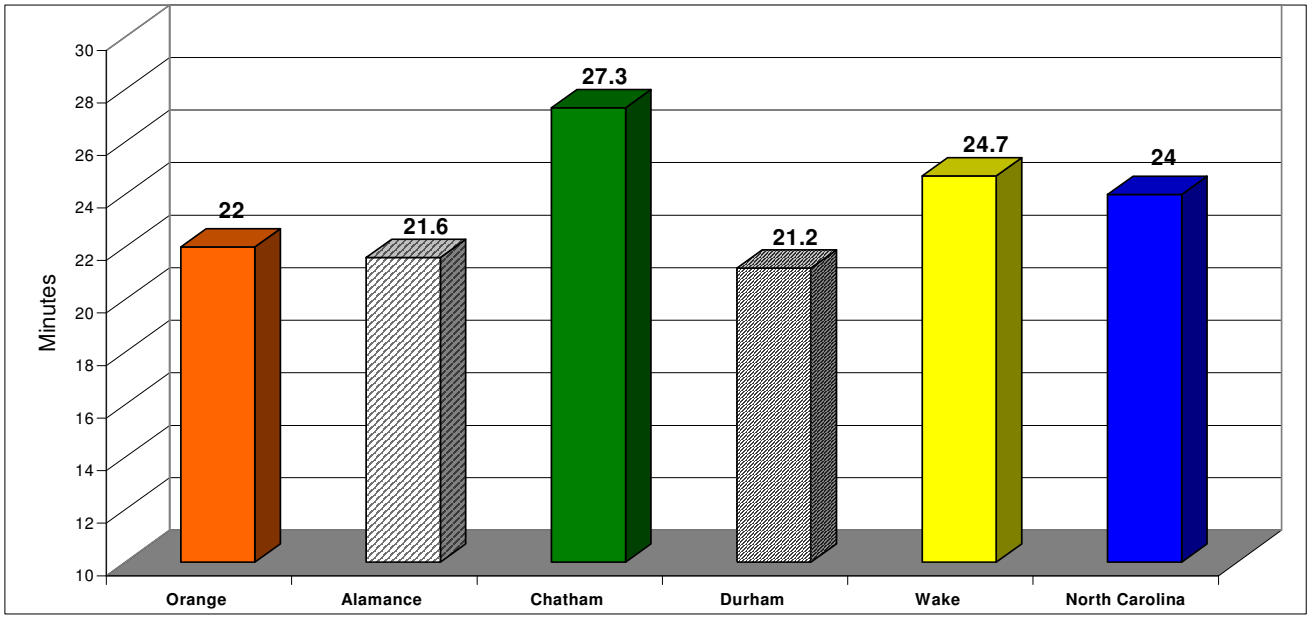
Source: NCDOT, as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

B6h) Figure: Means of Transportation to Work, Orange County and North Carolina



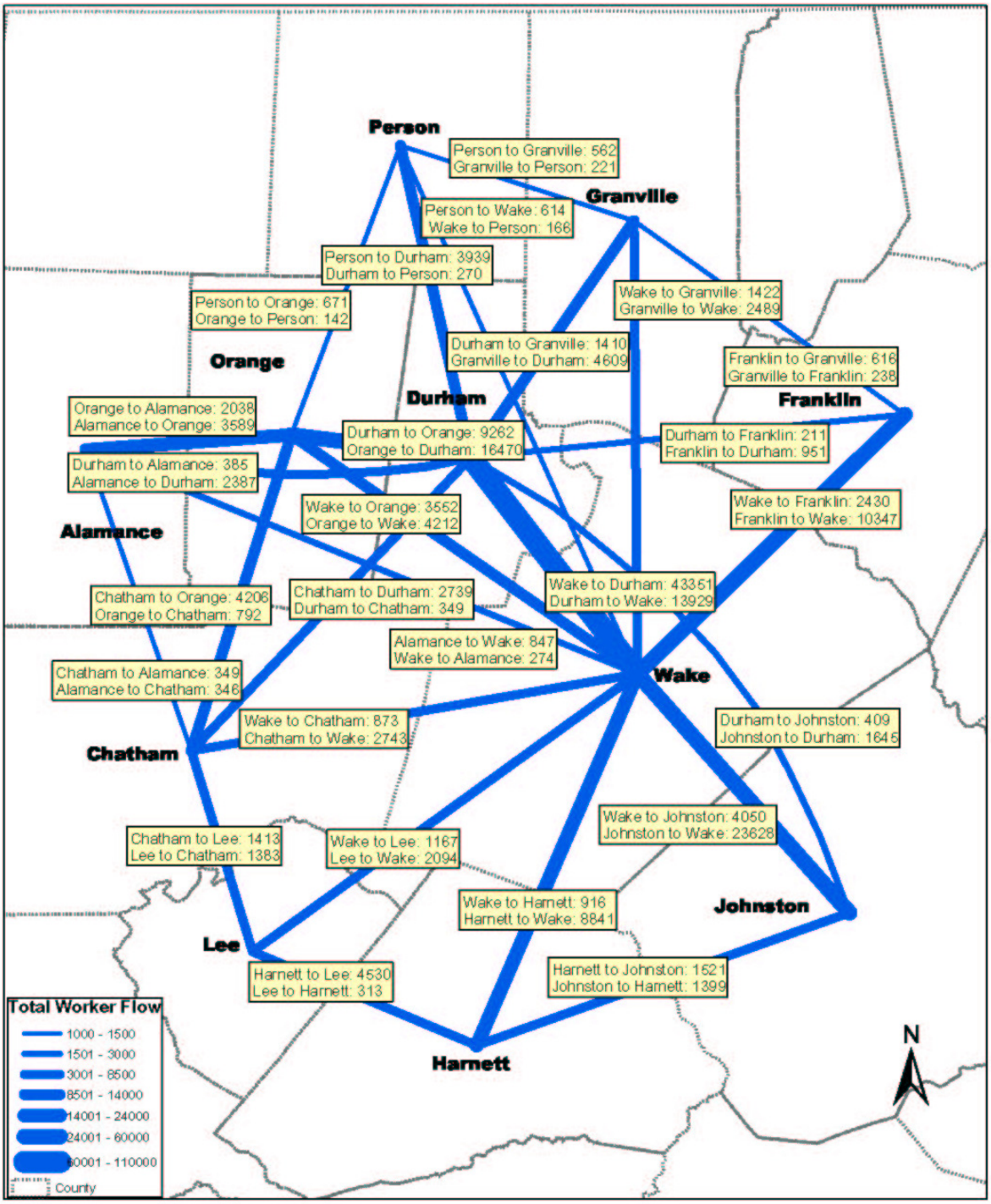
Notes and Sources:
US Census Bureau as compiled by the Orange County Commission for the Environment, "State of the Environment, 2004"

B6i) Figure: County Comparisons, Average Commute Times in Minutes, 2000



Source: US Census Bureau, 2000

B6j) Figure: County-to -County Worker Flow, Census 2000



Notes and Sources:
The width of the line indicates the volume of commuters between counties. Values are provided within the yellow boxes.
Source: US Census Bureau, 2000

B6k) Table: Commuting Trends Into Orange County by County of Workers' Residence, 1980-2000

County of Origin:	1980		1990		2000	
	#	%	#	%	#	%
Alamance	1,919	18.5%	2,722	16.0%	3,589	15.2%
Chatham	2,758	26.6%	3,671	21.6%	4,206	17.8%
Durham	4,082	39.4%	6,715	39.4%	9,262	39.2%
Person	0	0.0%	325	1.9%	671	2.8%
Wake	479	4.6%	1,462	8.6%	3,552	15.0%
All Other Couties	1,121	10.8%	2,135	12.5%	2,377	10.0%
Total Incoming	10,359	100%	17,030	100%	23,657	100%

Notes and Sources:
Note: 35,053 people (60% of labor force) live and work in Orange County.
US Census Bureau

B6l) Table: Commuting Trends Out of Orange County by County of Workers' Employment, 1980-2000

Destination County:	1980		1990		2000	
	#	%	#	%	#	%
Alamance	1,532	13.4%	2,299	12.5%	2,038	8.0%
Chatham	0	0.0%	258	1.4%	792	3.1%
Durham	7,603	66.3%	12,185	66.5%	16,470	65.0%
Person	0	0.0%	163	0.9%	142	0.6%
Wake	1,184	10.3%	2,085	11.4%	4,212	16.6%
All Other Counties	1,149	10.0%	1,334	7.3%	1,682	6.6%
Total Outgoing	11,468	100%	18,324	100%	25,336	100%

Notes and Sources:
Note: 35,053 people (60% of labor force) live and work in Orange County.
US Census Bureau

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Sub-Section C1. Population Projection Methods

C1.1 BACKGROUND

Population Projections are educated guesses or estimates of future population based on sets of assumptions about potential growth. Projections provide an important framework for estimating the extent of future impacts on human, economic and environmental conditions resulting from the increased demand for the use of land and resources. To maintain objectivity and provide different scenarios for future growth trends, alternative methods have been used for the County Profile Element, yielding a low, medium, and high projection of future population growth. Population projections are provided in {} to reflect the range of values yielded through different projection methodologies.

C1.2 METHODOLOGY

- **Adjusted Migration Model** – a sophisticated methodology based on a series of assumptions and controls as prepared by the NC Office of Budget, Planning and Management, Demographic Section. This model takes into account factors such as migration rates, births, deaths, age-cohorts, institutional effects (such as university enrollments), growth trends and growth estimates.
- **Exponential extrapolation** – uses the average annual growth rates between the decades of (1980-1990) and (1990-2000). While more sophisticated methods exist, the relatively simple extrapolation formulas have been found to be accurate in predicting future population size, particularly in fast-growing areas with sub-areas of less than 100,000 persons. A more detailed explanation can be found in the Appendix.
- **Linear extrapolation** – assumes population will change by identical increments in each interval of future time and is calculated based on the average population change in the decades (1980-2000). This method is considered to be an accurate method for moderately growing areas, at a rate of up to 25%. A more detailed explanation can be found in the Appendix.
- The Exponential and Linear population projections contained herein are based strictly on previous mathematical growth rates, and do not include adjustments for amount of developable land; economic trends or conditions; current land use policies; and/or other similar factors. The constraints of land and policy on projected populations will be factored in as coordinated land use conditions and policies unfold. An average of the Exponential and Linear population projections is provided as an example in the comparative chart.

- Although not included herein, socioeconomic data and projections based on the Triangle Regional Model (TRM) for Orange, Chatham, and Durham Counties are now available through the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization (DCHC MPO). To obtain this data, contact the Orange County Department of Planning and Inspections or one of the above mentioned member municipalities

C1.3 HIGHLIGHTS

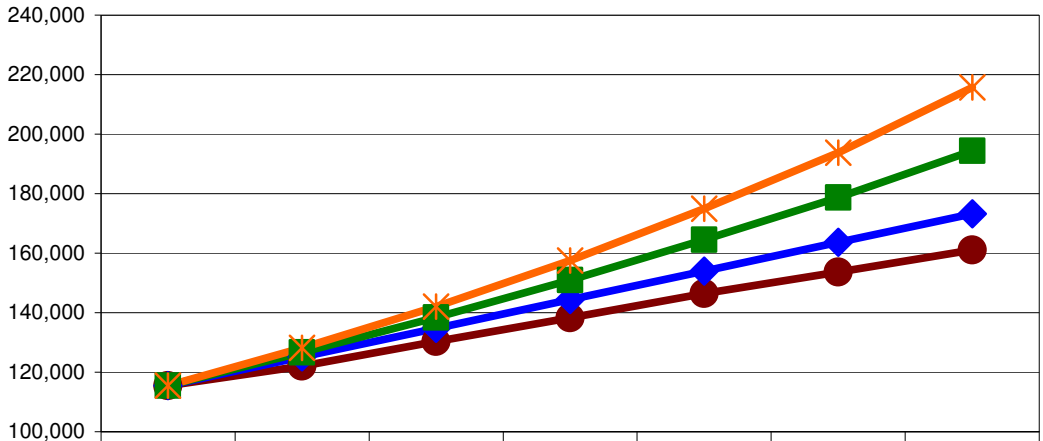
- The range of projected population growth for Orange County through 2030 is between 161,118 and 215,649, a difference of 54,431 people.
- Of the three population projection methods used to calculate Orange County's potential growth, the Exponential model yields the highest population estimates of 215,649 for the year 2030. This would correspond to an increase of 100,000 people and a growth rate of 87 percent over 20 years.
- The Linear model yields a moderate picture of growth with the county's population increasing to 173,248 by 2030. This represents a growth rate of 50 percent over 20 years.
- The Adjusted Migration model prepared by the state provides the most conservative estimate for growth in Orange County, with the population increasing to 161,118 by 2030, representing an increase of 45,587 people and a growth rate of 39.5 percent over 20 years.
- On average, Orange County can expect to add between 127-279 people per month over the next several decades until 2030.
- Orange County's growth rate is ranked in the top 25% for the state and it is the 3rd fastest growing county in the region at 2.1%.
- Growth rates for neighboring counties such as Durham and Chatham are slightly lower than Orange County when compared using Exponential and Linear methodologies, {50 and 87%} for Orange, Durham {48 and 78%} and Chatham {48 and 80%}.
- According to the Adjusted Migration Model, Orange County's growth rate of 39.5 percent is moderate compared to the projected growth in Chatham County of 74.1 percent and Durham County's growth rate at 48.3 percent.
- The nearby counties of Wake and Johnston are expected to experience triple digit growth

over the next 20 years based on Exponential and Adjusted Migration projections.

- The Town of Chapel Hill will grow by 50,000 people from 2010-2030 and unincorporated Orange will grow by greater than 55,000.
- Based on the Exponential model the population in the unincorporated portions of the county is projected to decrease from 42 percent of the population in 2000 to 36 percent in 2030. For the Linear model, this decrease is from 42 percent to 40.5 percent.

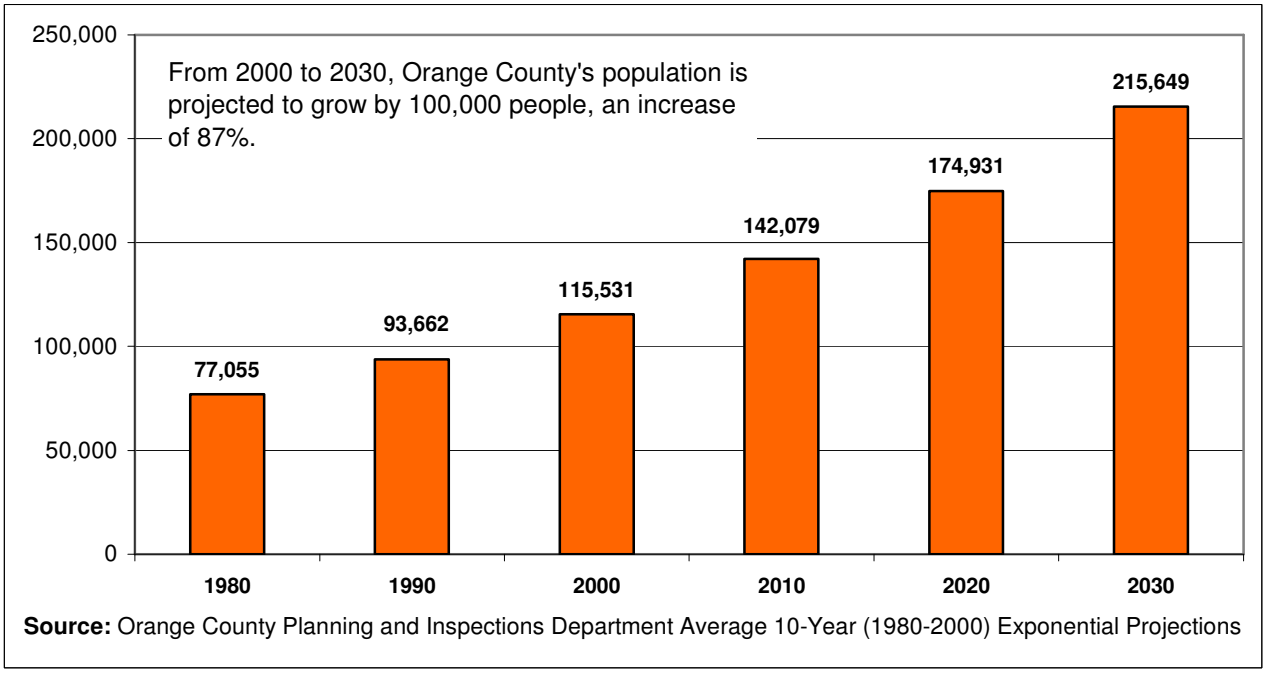
C1.4 FIGURES AND TABLES

C1a) Figure: Population Projection Comparisons for Orange County



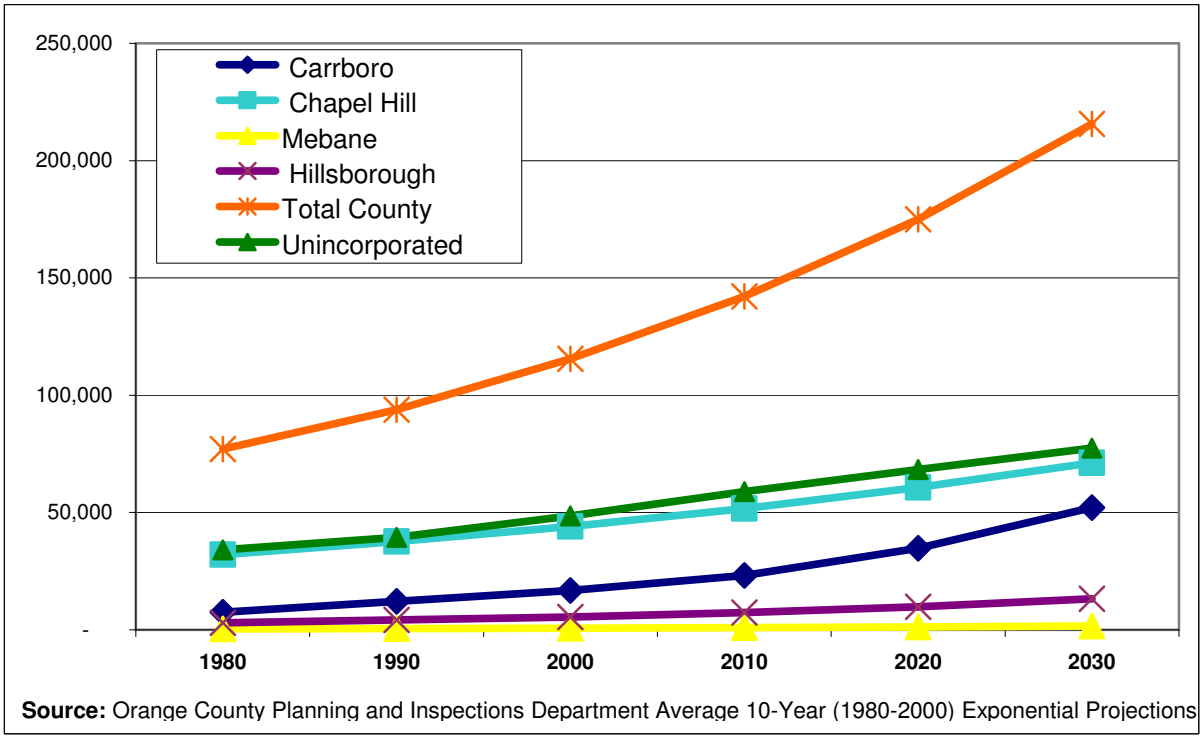
	2000	2005	2010	2015	2020	2025	2030
Age Adjusted Migration	115,531	121,992	130,375	138,272	146,458	153,626	161,118
Linear	115,531	125,150	134,770	144,389	154,009	163,628	173,248
Avg of Linear/Exponential	115,531	126,635	138,425	150,976	164,470	178,700	194,449
Exponential	115,531	128,120	142,079	157,563	174,931	193,771	215,649

C1b) Figure: Orange County Average 10 Year (1980-2000) Exponential Projections



Source: Orange County Planning and Inspections Department Average 10-Year (1980-2000) Exponential Projections

C1c) Figure: Average 10 Year Exponential Projections (1980-2000) by Municipality



Source: Orange County Planning and Inspections Department Average 10-Year (1980-2000) Exponential Projections

C1d) Table: Orange County Average 10 Year Exponential Projections (1980-2000) by Township

TOWNSHIP Municipality	POPULATION[1] 1980	1990	2000	AVG 10-YEAR GROWTH RATE[2]	POPULATION PROJECTIONS[3] 2010	2020	2030
BINGHAM	3,954	5,184	6,181	0.250	7,726	9,658	12,073
CEDAR GROVE	3,166	3,691	4,930	0.255	6,187	7,765	9,745
CHAPEL HILL	50,572	61,973	76,578	0.235	94,574	116,799	144,247
Town of Carrboro	7,517	12,134	16,782	0.499	23,210	34,783	52,127
Town of Chapel Hill[4]	32,038	37,596	44,102	0.173	51,743	60,708	71,226
Unincorporated	11,017	12,243	15,694	0.197	19,620	21,307	20,893
CHEEKS	4,821	5,422	7,064	0.210	8,547	10,342	12,514
City of Mebane[4]	379	485	675	0.336	902	1,204	1,607
Unincorporated	4,442	4,937	6,389	0.203	7,646	9,139	10,907
ENO	4,450	5,262	6,092	0.170	7,128	8,340	9,758
HILLSBOROUGH	8,599	10,136	11,639	0.165	13,559	15,796	18,402
Town of Hillsborough	3,019	4,263	5,446	0.345	7,324	9,848	13,243
Unincorporated	5,580	5,873	6,193	0.053	6,236	5,948	5,159
LITTLE RIVER	1,493	2,183	3,047	0.430	4,357	6,231	8,910
TOTAL COUNTY	**77,055**	**93,851**	**115,531**	N/A	**142,079**	**174,931**	**215,649**
Total Incorporated	42,953	54,478	67,005	N/A	83,179	106,544	138,205
Total Unincorporated	34,102	39,373	48,526	N/A	58,900	68,387	77,445

Notes and Sources:

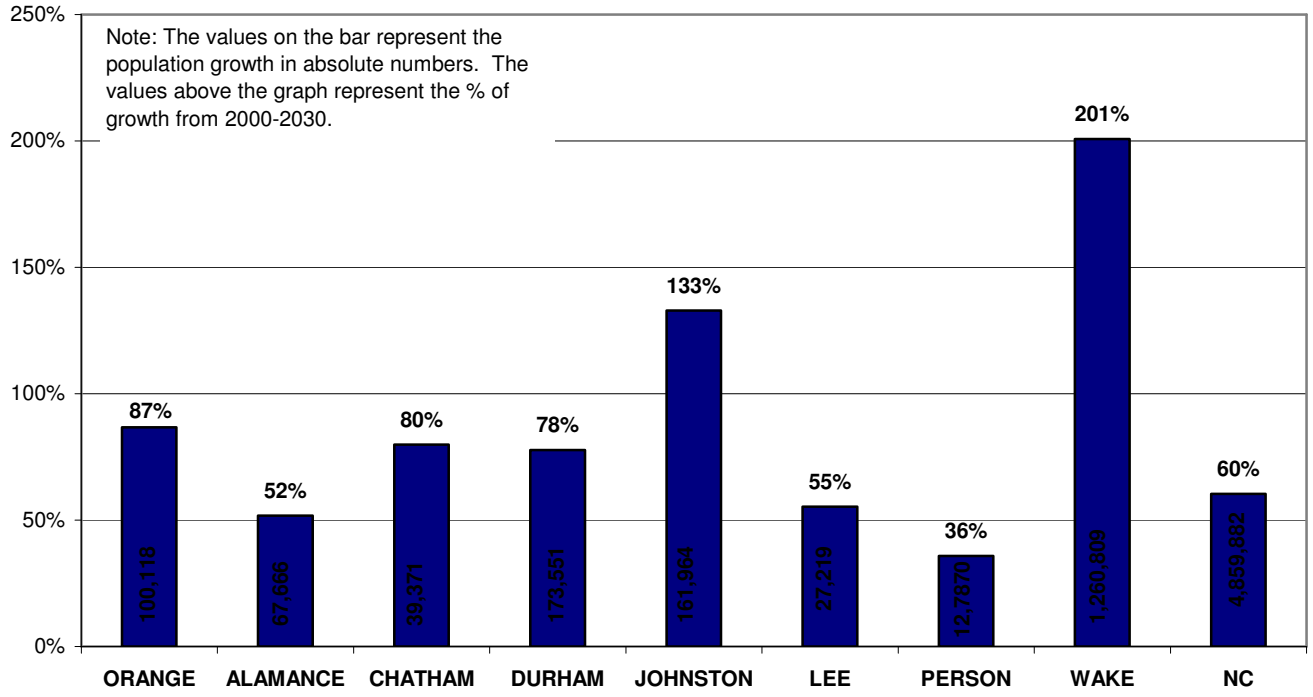
1 The Population figures for 1980, 1990, and 2000 are from the US Census Bureau.

2 The Average 10-Year Growth Rate is the average between the 1980 to 1990 and 1990 to 2000 growth rates.

3 The Township and Municipality Population Projections for 2010 to 2030 are based upon the population figure for the previous timefra multipled by the Average 10-Year Growth Rate, which is the growth figure. The growth figure is then added to the previous timeframe figu to get the projected. The Population Projections for the Unincorporated areas in Townships with Municipalities was determined by the Municipal populations from Projections for the Unincorporated areas in Townships with Municipalities was determined by subtracting the total population for the Township. The Population Projections for the County from 2010 to 2030 are based upon the sum of the population figures for each of the Townships.

4 For the municipalities, only the portions within Orange County are included. The Town of Chapel Hill's population figures do not inclu portions in Durham County, and the City Mebane's population figures do not include the portions in Alamance County.

C1e) Figure: Average 10 Year (1980-2000) Exponential Growth Rates by County



Source: Orange County Planning and Inspections Department Average 10-Year (1980-2000) Exponential Projections

C1f) Table: Average 10 Year (1980-2000) Exponential Growth Rates by County

County	POPULATION[1]			AVG 10-YEAR GROWTH RATE[2]	POPULATION PROJECTIONS[3]		
	1980	1990	2000		2010	2020	2030
ORANGE	77,055	93,662	115,531	2.1%	142,079	174,931	215,649
ALAMANCE	99,319	108,213	130,794	1.4%	150,297	172,708	198,460
CHATHAM	33,415	38,979	49,329	2.0%	59,985	72,943	88,700
DURHAM	152,235	181,844	223,314	1.9%	270,494	327,643	396,865
JOHNSTON	70,599	81,306	121,900	2.9%	161,574	214,162	283,864
LEE	36,718	41,370	49,208	1.5%	56,987	65,995	76,427
PERSON	29,164	30,180	35,623	1.0%	39,456	43,701	48,403
WAKE	301,429	426,311	627,866	3.7%	906,352	1,308,360	1,888,675
NORTH CAROLINA	5,880,095	6,632,448	8,046,491	1.6%	9,419,021	11,025,670	12,906,373

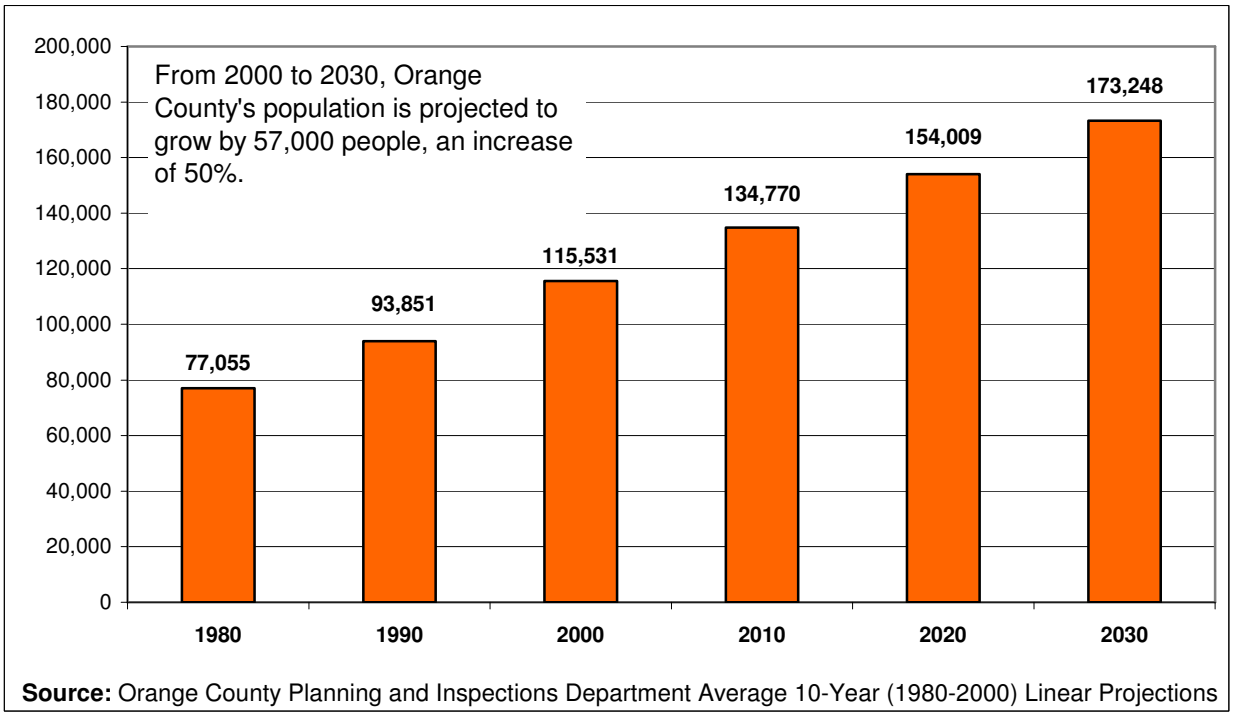
Notes and Sources:

1 The Population figures for 1980, 1990, and 2000 are from the US Census Bureau.

2 The Average 10-Year Growth Rate is the average between the 1980 to 1990 and 1990 to 2000 growth rates.

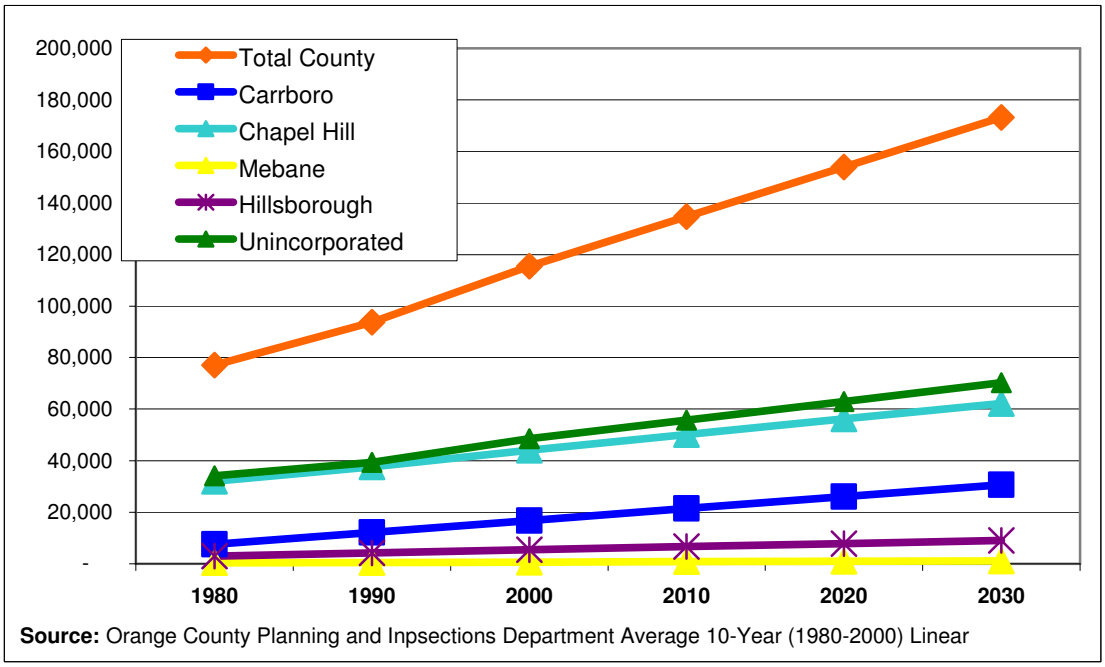
3 The Population Projections for 2010 to 2030 are based upon the population figure for the previous timeframe multipled by the Average 10-Year Growth Rate, which is the growth figure. The growth figure is then added to the previous timeframe figure to get the projected population. The Population Projections for Orange County from 2010 to 2030 are based upon the sum of the population figures for each of the Townships.

C1g) Figure: Orange County Average 10 Year (1980-2000) Linear Projections



Source: Orange County Planning and Inspections Department Average 10-Year (1980-2000) Linear Projections

C1h) Figure: Average 10 Year (1980-2000) Linear Projections by Municipality



Source: Orange County Planning and Inpsections Department Average 10-Year (1980-2000) Linear

C1i) Table: Orange County Average 10 Year (1980-2000) Linear Projection by Township

TOWNSHIP	POPULATION[1]			Average Increment[2]	POPULATION PROJECTIONS		
Municipality	1980	1990	2000		2010	2020	2030
BINGHAM	3,954	5,184	6,181	1,114	7,295	8,409	9,523
CEDAR GROVE	3,166	3,691	4,930	882	5,812	6,694	7,576
CHAPEL HILL[3]	50,572	61,973	76,578	13,003	89,581	102,584	115,587
Town of Carrboro	7,517	12,134	16,782	4,633	21,415	26,048	30,681
Town of Chapel Hill[4]	32,038	37,596	44,102	6,032	50,134	56,166	62,198
Unincorporated	11,017	12,243	15,694	2,339	18,033	20,372	22,711
CHEEKS	4,821	5,422	7,064	1,122	8,186	9,308	10,430
City of Mebane[4]	379	485	675	148	823	971	1,119
Unincorporated	4,442	4,937	6,389	974	7,363	8,337	9,311
ENO[3]	4,450	5,262	6,092	821	6,913	7,734	8,555
HILLSBOROUGH	8,599	10,136	11,639	1,520	13,159	14,679	16,199
Town of Hillsborough	3,019	4,263	5,446	1,214	6,660	7,874	9,088
Unincorporated	5,580	5,873	6,193	307	6,500	6,807	7,114
LITTLE RIVER	1,493	2,183	3,047	777	3,824	4,601	5,378
TOTAL COUNTY	**77,055**	**93,851**	**115,531**	**19,239**	**134,770**	**154,009**	**173,248**
Total Incorporated	**42,953**	**54,478**	**67,005**	**12,027**	**79,032**	**91,059**	**103,086**
Total Unincorporated	**34,102**	**39,373**	**48,526**	**7,214**	**55,740**	**62,954**	**70,168**

Notes and Sources:

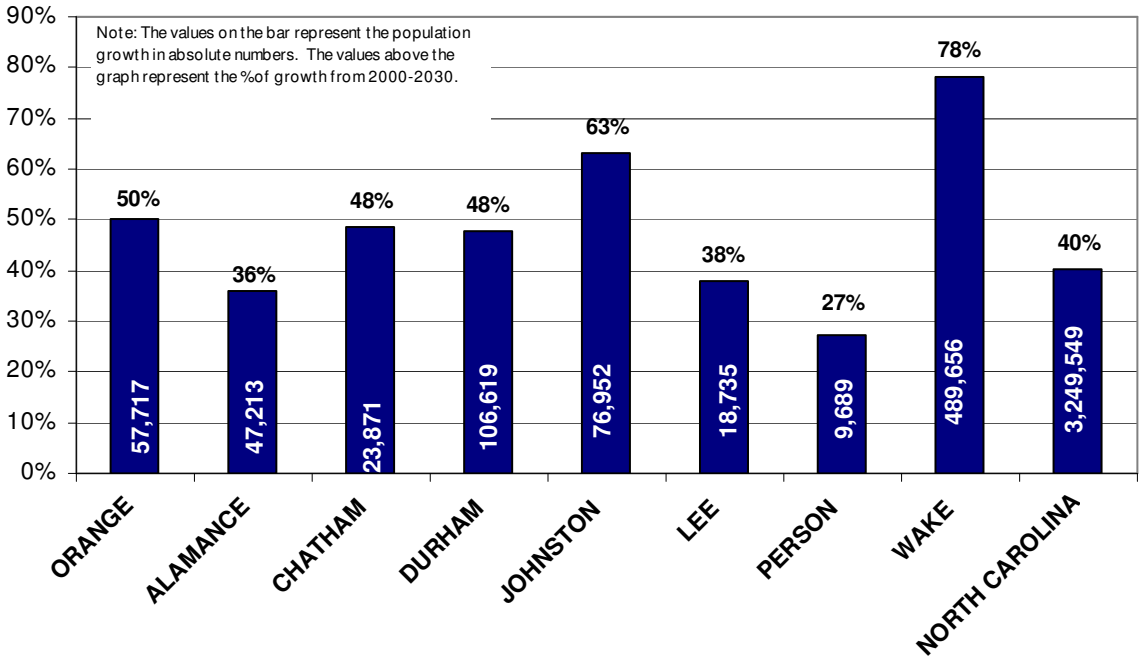
[1]The Population figures for 1980, 1990, and 2000 are from the US Census Bureau.

[2] The average increments were obtained by subtracting 1980 from 1990 and 1990 from 2000 and dividing the sum by 2. Example: ((1990-1980) + (2000-1990))/2. The projections were done by adding the average increment to the 2000 data and multiplying the result by the difference in the projection year and the most recent year of data, then dividing that result by 10 (10 year projection increments). Example Little River: (3047 + 777) * ((2010-2000)/10)
Methodology taken from URBAN LAND USE PLANNING, Fourth Edition (p.125) County Planning library.

[3]Durham City comprises two small areas of Orange County, one each in Eno and Chapel Hill Townships. The total population of both areas is 39 people. These people were included in their respective township totals.

[4] For the municipalities, only the portions within Orange County are included. The Town of Chapel Hill's population figures do not include portions in Durham County, and the City Mebane's population figures do not include the portions in Alamance County.

C1j) Figure: Average 10 Year (1980-2000) Linear Projections by County



Source: Orange County Planning and Inspections Department Average 10-Year (1980-2000) Linear Projections

C1k) Table: Average 10 Year (1980-2000) Linear Projections by County

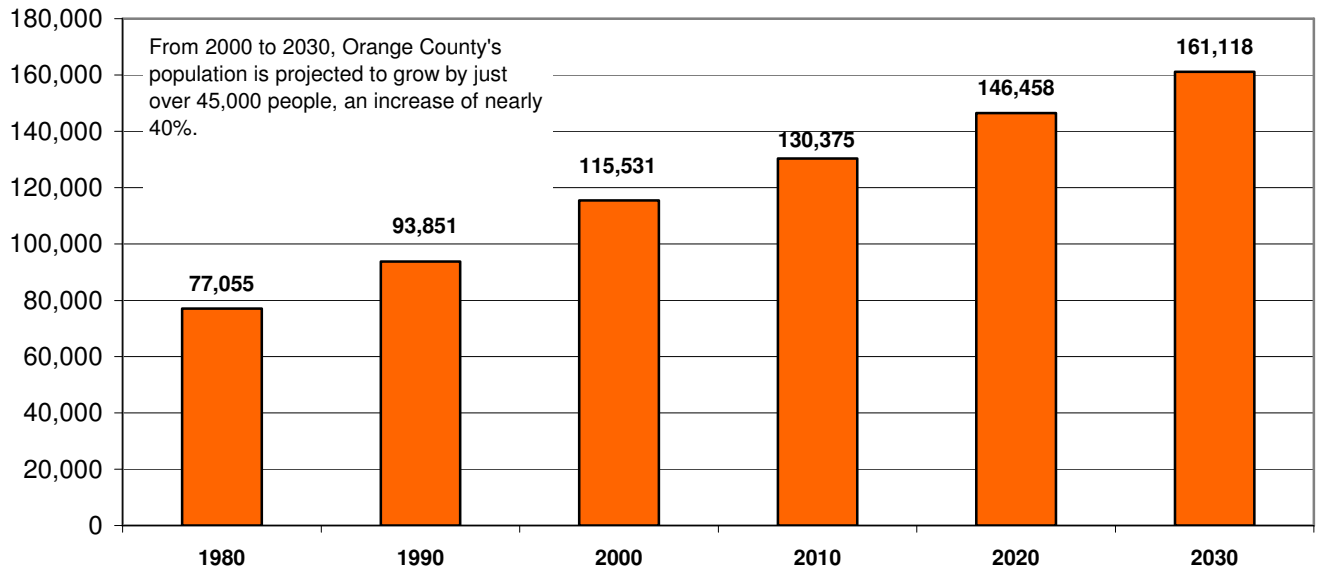
County	POPULATION[1]			Avg 10 Year Increment[2]	POPULATION PROJECTIONS		
	1980	1990	2000		2010	2020	2030
ORANGE	77,055	93,662	115,531	19,239	134,770	154,009	173,248
ALAMANCE	99,319	108,213	130,794	15,738	146,532	162,269	178,007
CHATHAM	33,415	38,979	49,329	7,957	57,286	65,243	73,200
DURHAM	152,235	181,844	223,314	35,540	258,854	294,393	329,933
JOHNSTON	70,599	81,306	121,900	25,651	147,551	173,201	198,852
LEE	36,718	41,370	49,208	6,245	55,453	61,698	67,943
PERSON	29,164	30,180	35,623	3,230	38,853	42,082	45,312
WAKE	301,429	426,311	627,866	163,219	791,085	954,303	1,117,522
NORTH CAROLINA	5,880,095	6,632,448	8,046,491	1,083,198	9,129,689	10,212,887	11,296,085

Notes and Sources:

[1]The Population figures for 1980, 1990, and 2000 are from the US Census Bureau.

[2] The average increments were obtained by subtracting 1980 from 1990 and 1990 from 2000 and dividing the sum by 2. Example: ((1990-1980) + (2000-1990))/2. The projections were done by adding the average increment to the 2000 data and multiplying the result by the difference in the projection year and the most recent year of data, then dividing that result by 10 (10 year projection increments). Example Little River: (3047 + 777) * ((2010-2000)/10)
Methodology taken from URBAN LAND USE PLANNING, Fourth Edition (p.125) County Planning library.

C1l) Figure: Orange County Population Projections, Adjusted Migration Model



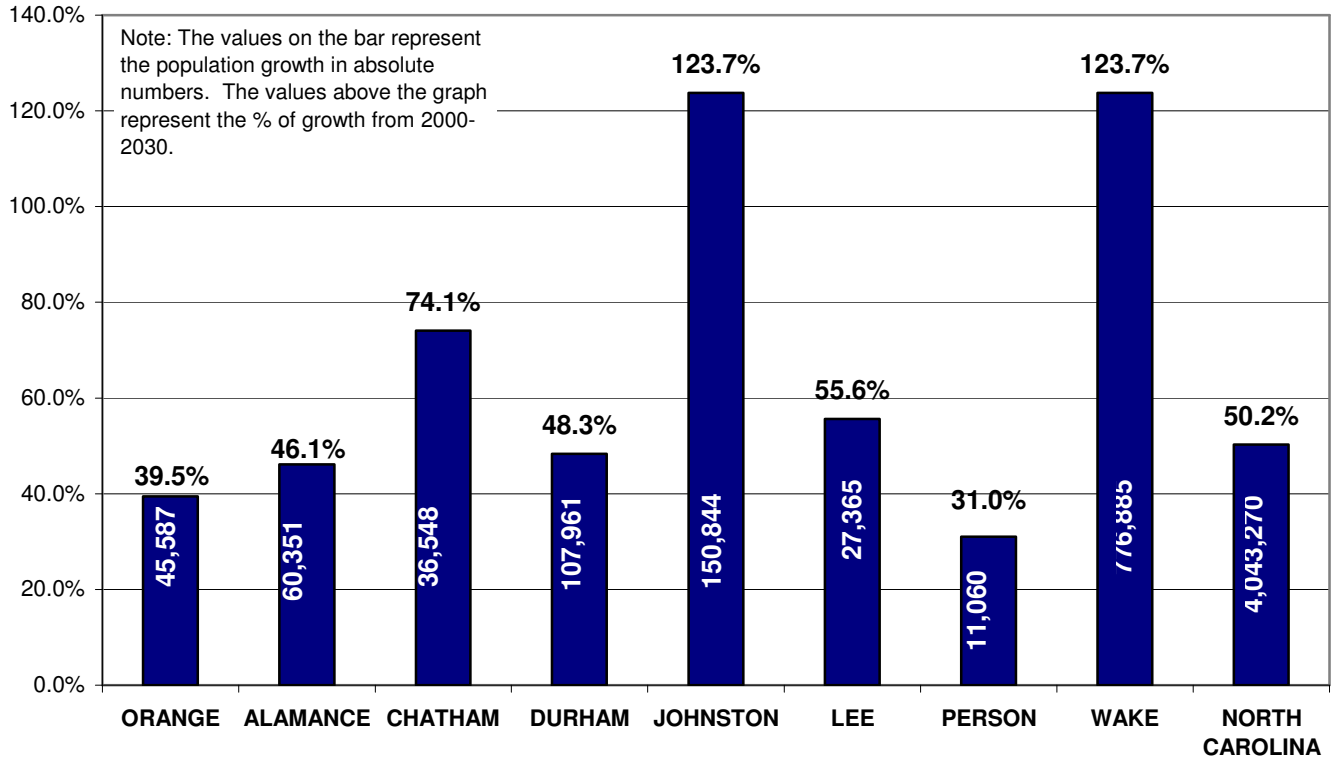
Source: NC Office of Budget, Planning, and Management, Demographics Unit. Adjusted Migration

C1m) Table: Adjusted Migration Model Projections by County

County	April 2000	July 2005	April 201	July 2015	April 2020	July 2025	April 2030
ORANGE	115,531	121,992	130,375	138,272	146,458	153,626	161,118
ALAMANCE	130,794	138,578	147,988	157,896	168,839	179,573	191,145
CHATHAM	49,329	56,090	61,635	67,678	73,617	79,850	85,877
DURHAM	223,314	242,207	258,398	276,980	294,240	313,428	331,275
JOHNSTON	121,900	146,319	169,143	193,694	218,868	245,702	272,744
LEE	49,208	53,786	58,196	62,501	67,180	71,693	76,573
PERSON	35,623	37,131	38,990	40,934	42,970	44,791	46,683
WAKE	627,866	755,053	876,643	1,004,055	1,133,110	1,269,111	1,404,751
NORTH CAROLINA	8,046,813	8,682,066	9,349,175	10,022,722	10,709,704	11,398,300	12,090,083

Notes and Sources:
NC Office of Budget, Planning and Management, Demographics Unit
Adjusted Migration Model, March 2007

C1n) Figure: Adjusted Migration Model, Growth Rates by County



Source: NC Office of Budget, Planning, and Management, Demographics Unit, Adjusted

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Sub-Section C2. Age Cohort Projections

C2.1 HIGHLIGHTS

- During the three decades (2000-2030), the effect of population growth on educational enrollment will be nominal. The school age population of students' ages (5-18) years old will remain steady around 15% of the total population between these decades.
- Children 18 and under are projected to represent 20% of the total county's population in 2030 as opposed to 24% in 1980.
- Growth rates in teens (15-18) will decline by almost two-thirds between 2010 and 2030. Likewise, growth rates for the very young (0-4) will drop by half.
- The population of young and middle age adults in Orange County has begun to decline, reversing previous decade's trends.
- The overall elderly population (ages 65 and over) increased by 1,848 (23 percent) during the decade (1990-2000), going from 8,083 in 1990 to 9,931 by the year 2000.
- During the decades (2000-2030) the elderly population will be growing both in absolute numbers as well as a percent of total population. In 2000, the 65 and over age group represented 8.6 percent of the total population, but is expected to increase its share to 16.8 percent by the year 2030.
- The elderly population (65 and over) will nearly triple during these three decades (2000-2030), increasing from 9,931 in 2000 to 26,499 by the year 2030. The very old population (85 and over) will more than double during this time period, increasing from 1,174 in 2000 to 2,909 in the year 2030.
- Orange County's Median Age has been steadily increasing from 25.7 in 1980 to 30.4 in 2000. This trend is expected to continue in the future with the "graying" of America.

C2.2 FIGURES AND TABLES

C2a) Table: Orange County Population Trends and Projections by Age Cohorts

	Actual[2]			Projected[3]			% Population Change		
Age[1]	1980	1990	2000	2010	2020	2030	(2000-2010)	(2010-2020)	2020-2030
0-4	3,994	5,440	5,854	6,608	7,098	7,541	12.9%	7.4%	6.2%
5-14	8,891	9,707	14,200	14,824	16,197	17,190	4.4%	9.3%	6.1%
15-18	5,702	5,300	6,641	7,597	8,305	8,640	14.4%	9.3%	4.0%
19-24	18,596	18,948	19,468	21,532	22,021	23,061	10.6%	2.3%	4.7%
25-34	15,537	18,059	17,887	18,569	21,461	22,636	3.8%	15.6%	5.5%
35-44	7,751	14,299	17,448	16,472	17,329	20,038	-5.6%	5.2%	15.6%
45-54	5,709	8,146	15,923	17,884	17,317	18,201	12.3%	-3.2%	5.1%
55-64	5,092	5,869	8,181	14,634	16,818	16,408	78.9%	14.9%	-2.4%
65-74	3,553	4,755	5,275	6,947	12,799	14,814	31.7%	84.2%	15.7%
75-84	1,752	2,517	3,482	3,694	5,178	9,680	6.1%	40.2%	86.9%
85+	478	811	1,174	1614	1935	2,909	37.5%	19.9%	50.3%
Total	77,055	93,851	115,533	130,375	146,458	161,118	12.8%	12.3%	10.0%

Notes and Sources:

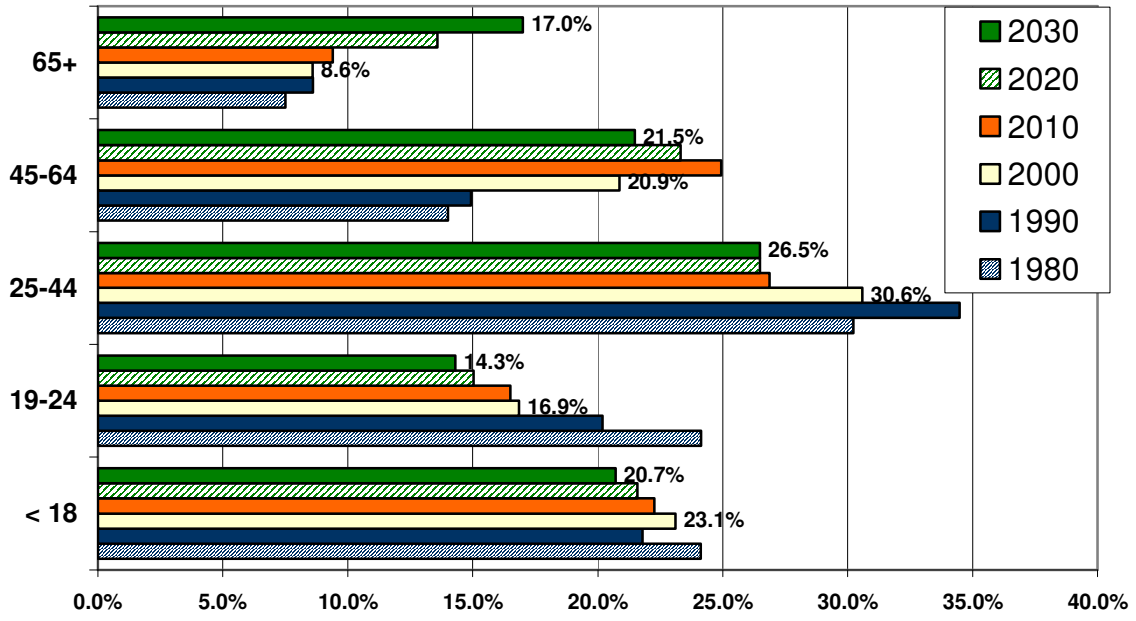
[1]Age cohorts based on 2000 Population.

[2]Population figures for 1980, 1990, and 2000 are from the US Census Bureau

[3]Adjusted Migration Projections from the NC Office of Budget, Planning and Management, Demographics Unit, as of March 2007

[4]The County's total population may differ from the sum of age cohorts due to rounding of estimates or projections.

C2b) Figure: Orange County Population Trends and Projections, Age Cohorts as a Percent of the Population



Source: NC Office of Budget, Planning, and Management, Demographics Unit, Adjusted Migration Model

C2c) Table: Orange County Children 18 and Under as a Percent of Total Population

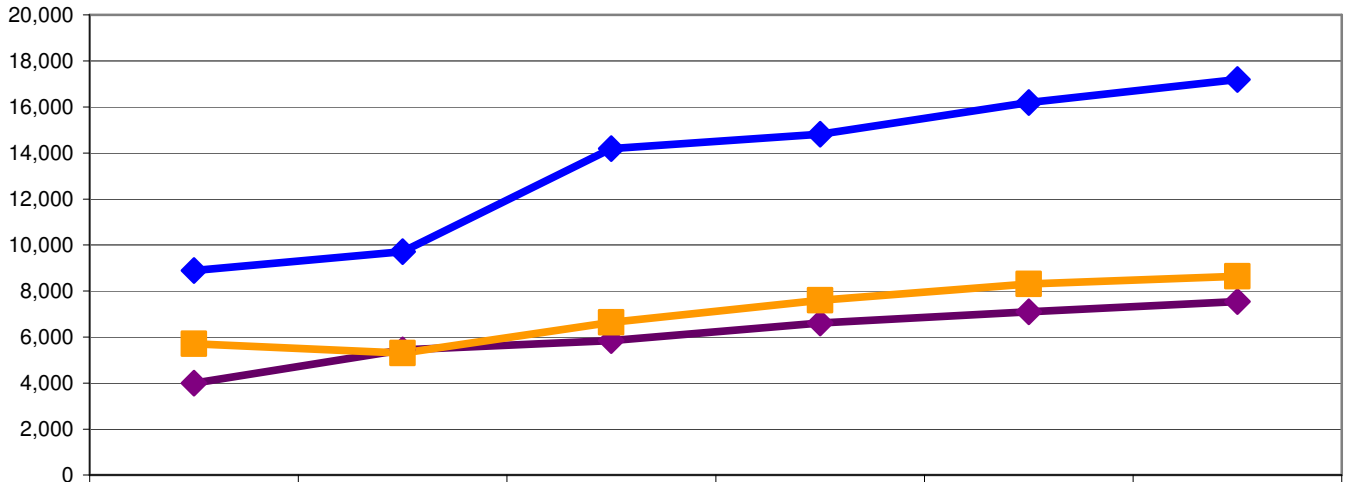
	Actual[1]			Projected[2]		
Youth	**1980**	**1990**	**2000**	**2010**	**2020**	**2030**
0-4	5.18%	5.80%	5.07%	5.07%	4.85%	4.68%
5-14	11.54%	10.34%	12.29%	11.37%	11.06%	10.67%
15-18	7.40%	5.65%	5.75%	5.83%	5.67%	5.36%
< 18	24.12%	21.79%	23.11%	22.27%	21.58%	20.71%

Notes and Sources:

[1]Population figures for 1980, 1990, and 2000 are from the US Census

[2]Adjusted Migration Projections from the NC Office of Budget, Planning and Management, Demographic Section

C2d) Figure: Orange County Population Projections for Children 18 and Under



	1980	1990	2000	2010	2020	2030
0-4	3,994	5,440	5,854	6,608	7,098	7,541
5-14	8,891	9,707	14,200	14,824	16,197	17,190
15-18	5,702	5,300	6,641	7,597	8,305	8,640

Source: NC Office of Budget, Planning, and Management, Demographics Unit, Adjusted Migration Model

C2e) Table: Orange County Persons 65 and Older as a Percent of Total Population

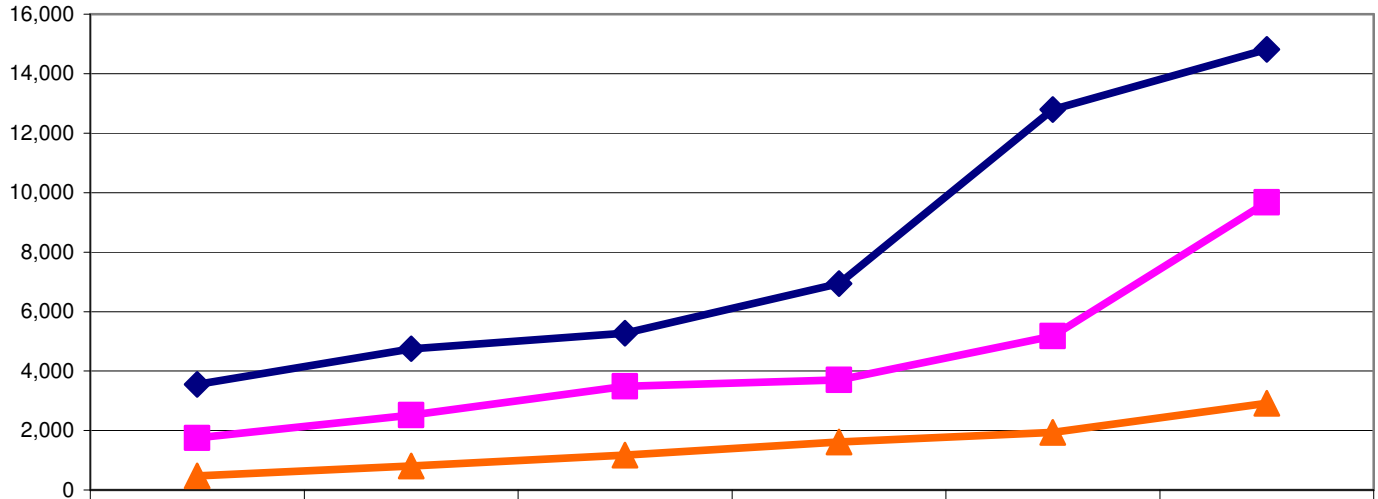
	Actual[1]			Projected[2]		
Seniors	**1980**	**1990**	**2000**	**2010**	**2020**	**2030**
65-74	4.61%	5.07%	4.57%	5.33%	8.74%	9.19%
75-84	2.27%	3.27%	4.52%	4.79%	6.72%	12.56%
85+	0.62%	1.05%	1.52%	2.09%	2.51%	3.78%
65+	7.51%	8.61%	8.60%	9.40%	13.60%	17.01%

Notes and Sources:

[1]Population figures for 1980, 1990, and 2000 are from the US Census

[2]Adjusted Migration Projections from the NC Office of Budget, Planning and Management, Demographic Section

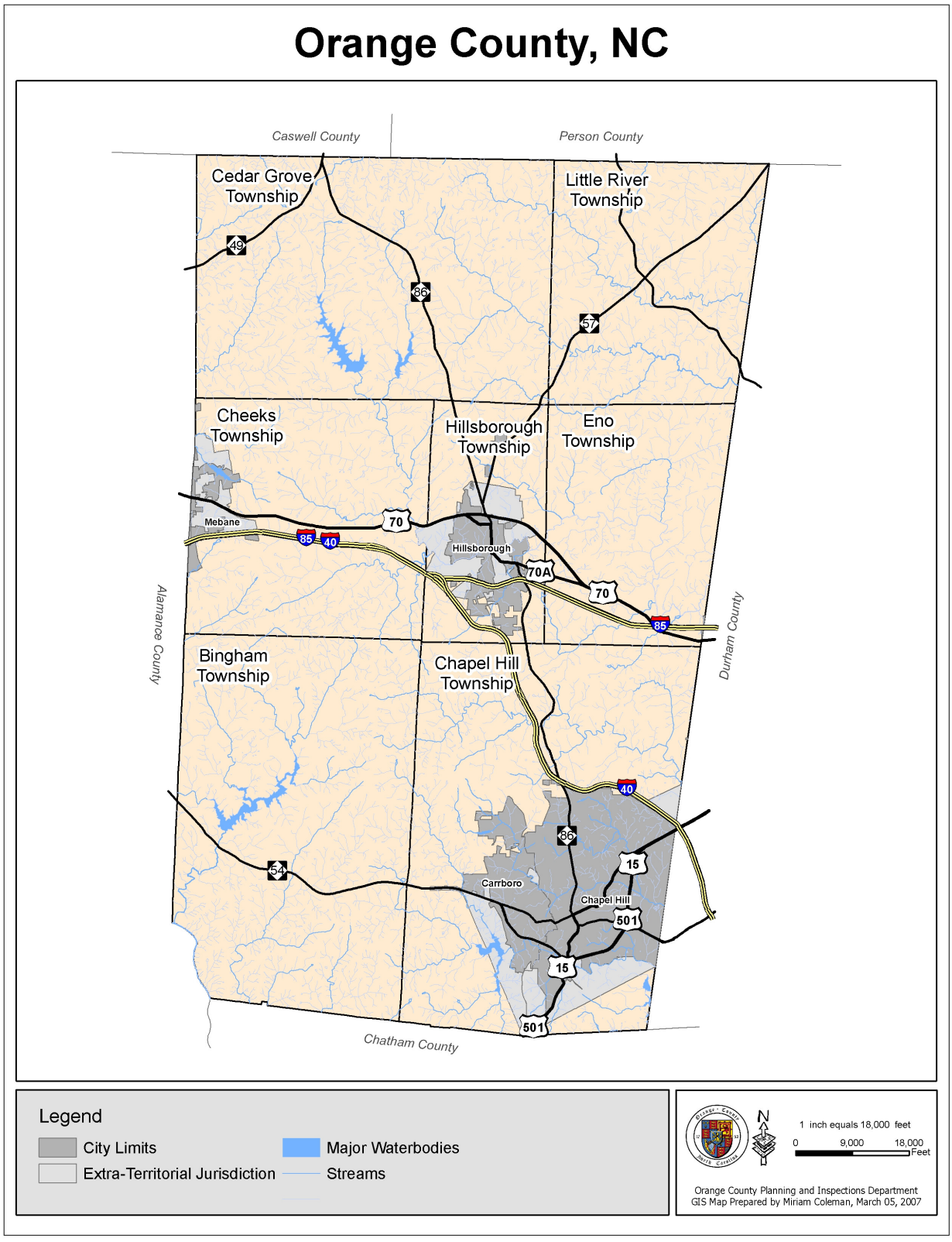
C2f) Figure: Orange County Population Projections for Persons 65 and Older



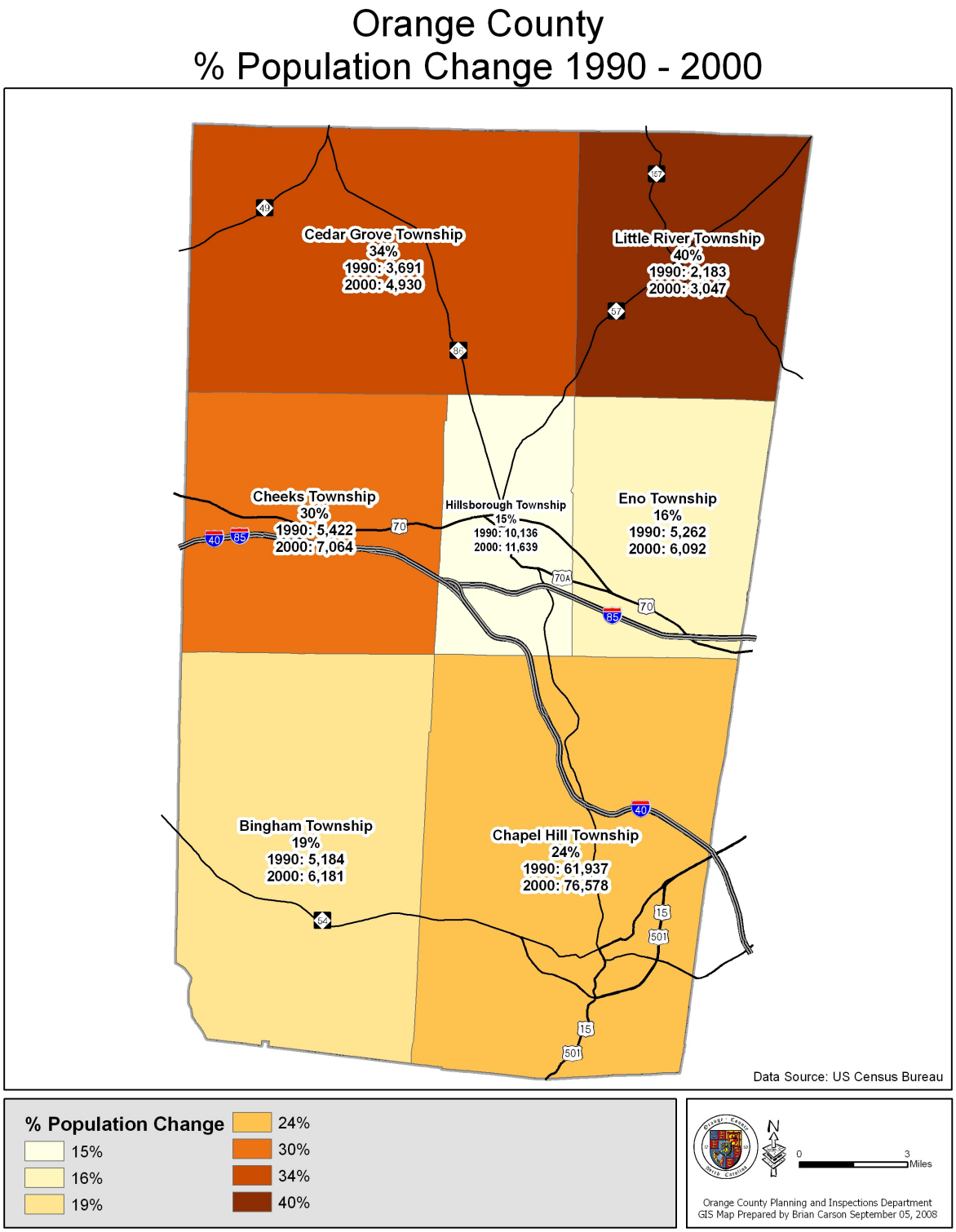
	1980	1990	2000	2010	2020	2030
65-74	3,553	4,755	5,275	6,947	12,799	14,814
75-84	1,752	2,517	3,482	3,694	5,178	9,680
85+	478	811	1,174	1614	1935	2,909

Source: NC Office of Budget, Planning, and Management, Demographics Unit, Adjusted Migration Model

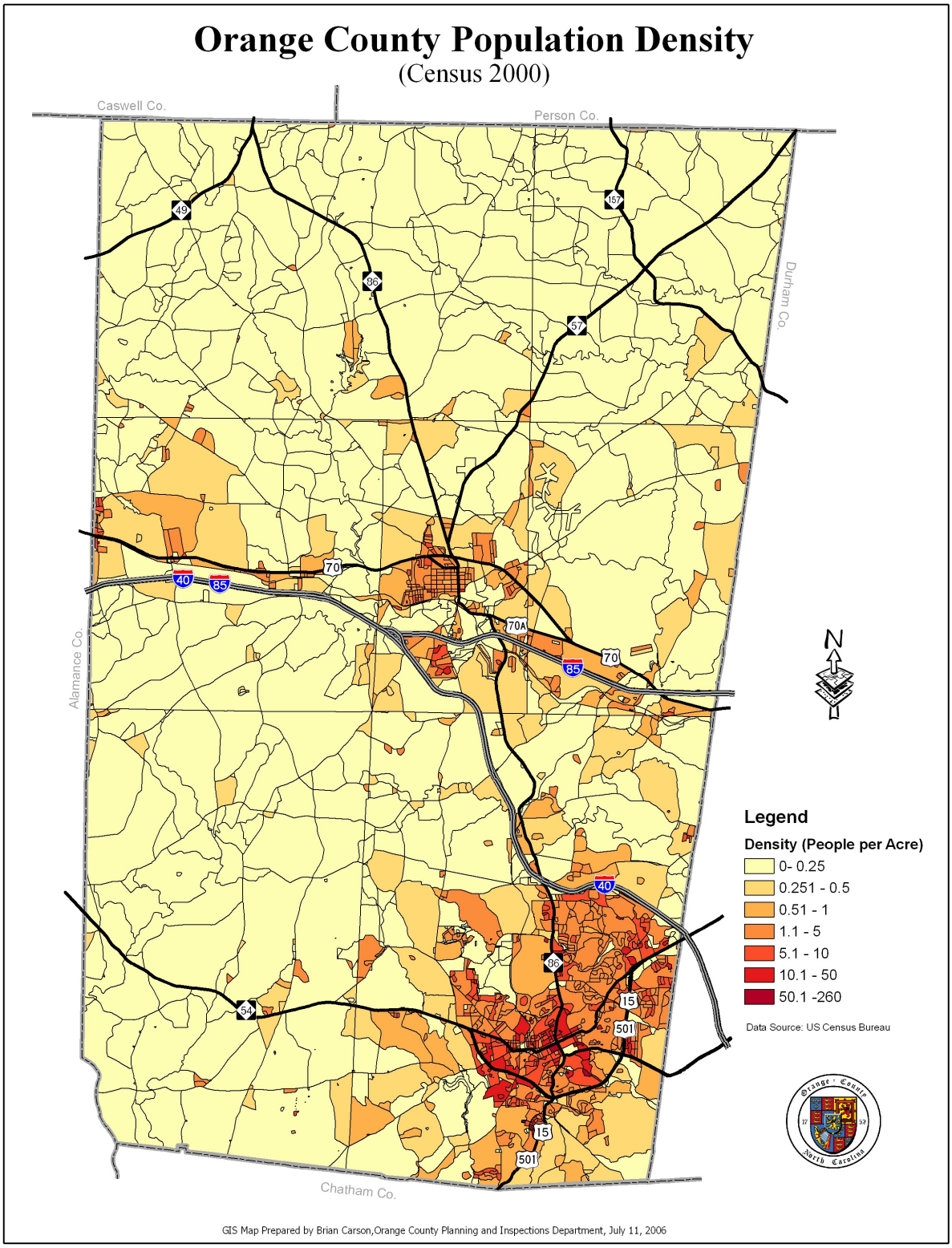
D1. Orange County, North Carolina



D2. Orange County Population Change, 1990-2000

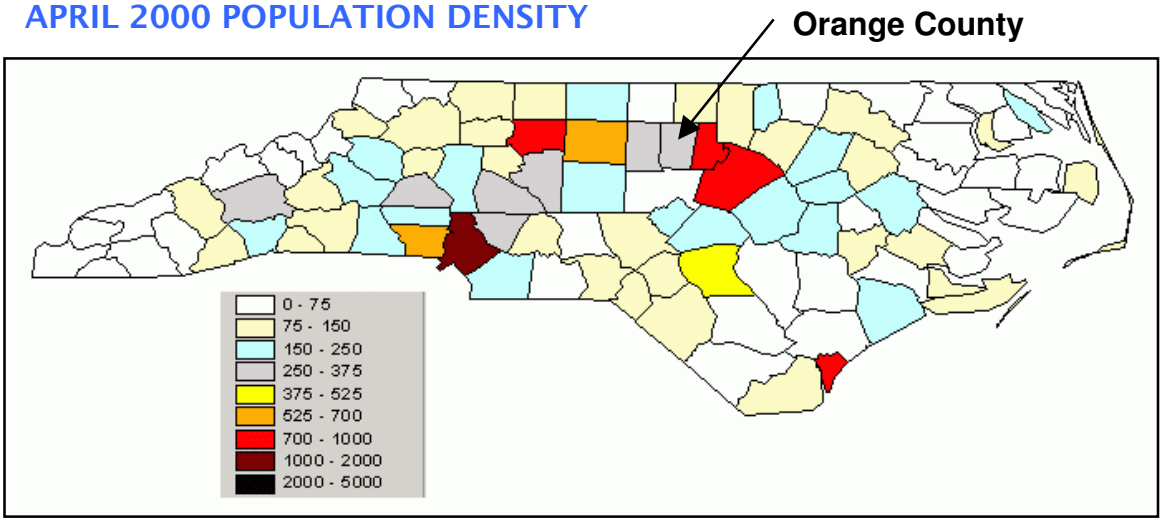


D3. Orange County Population Density, 2000

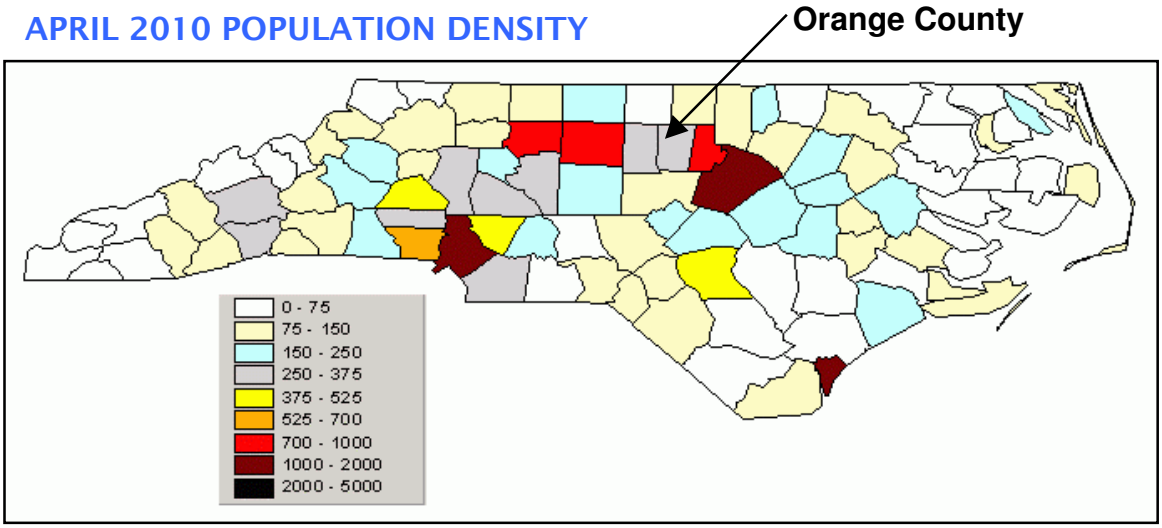


D4. Population Density Trends, North Carolina Shaded by County, 2000-2010

APRIL 2000 POPULATION DENSITY



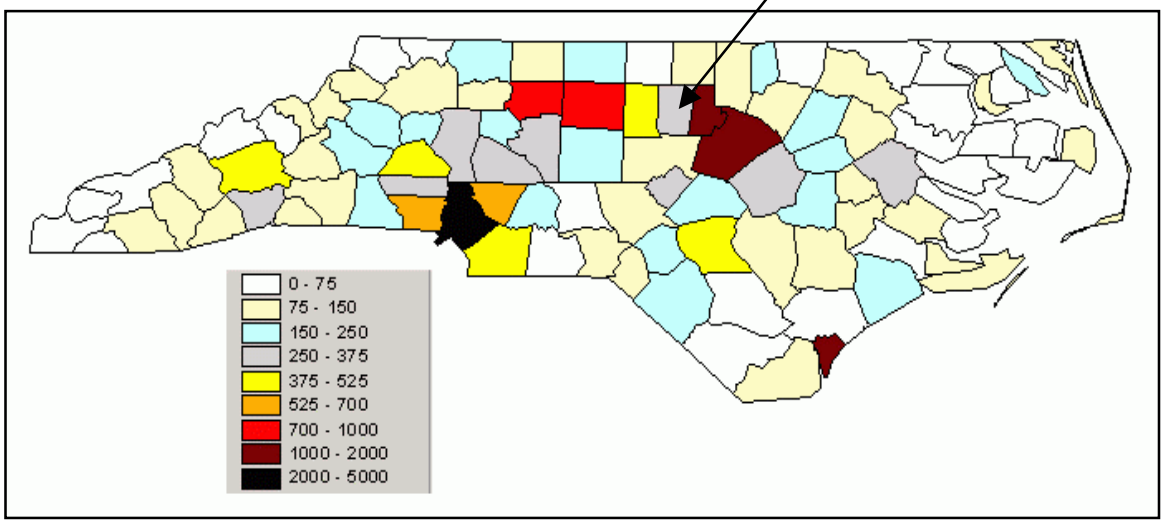
APRIL 2010 POPULATION DENSITY



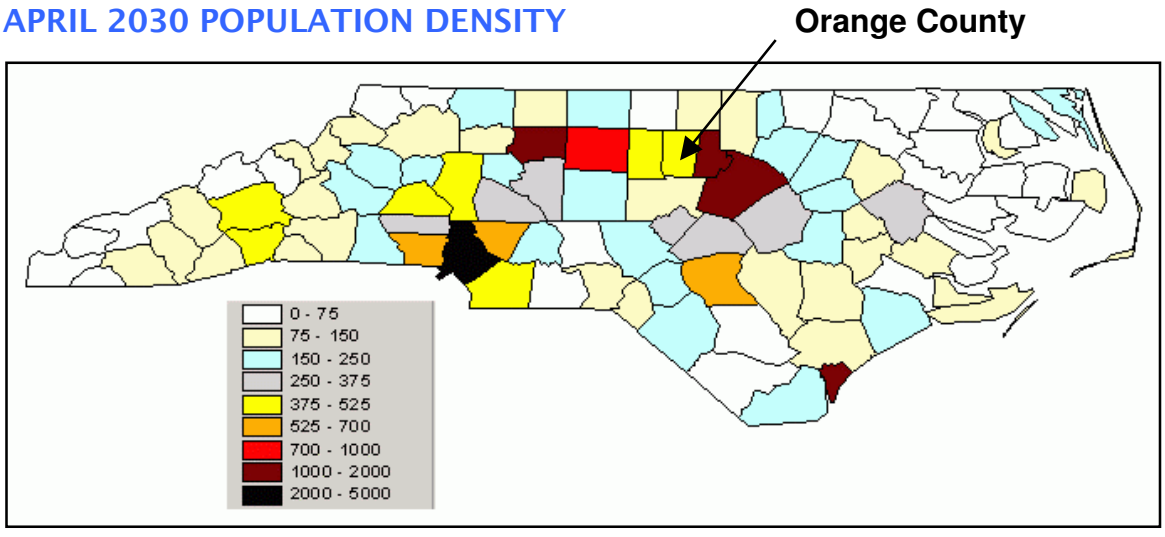
Source: NC Office of Budget, Planning and Management, Demographics Section

D5. Population Density Trends, North Carolina Shaded by County, 2020-2030

APRIL 2020 POPULATION DENSITY

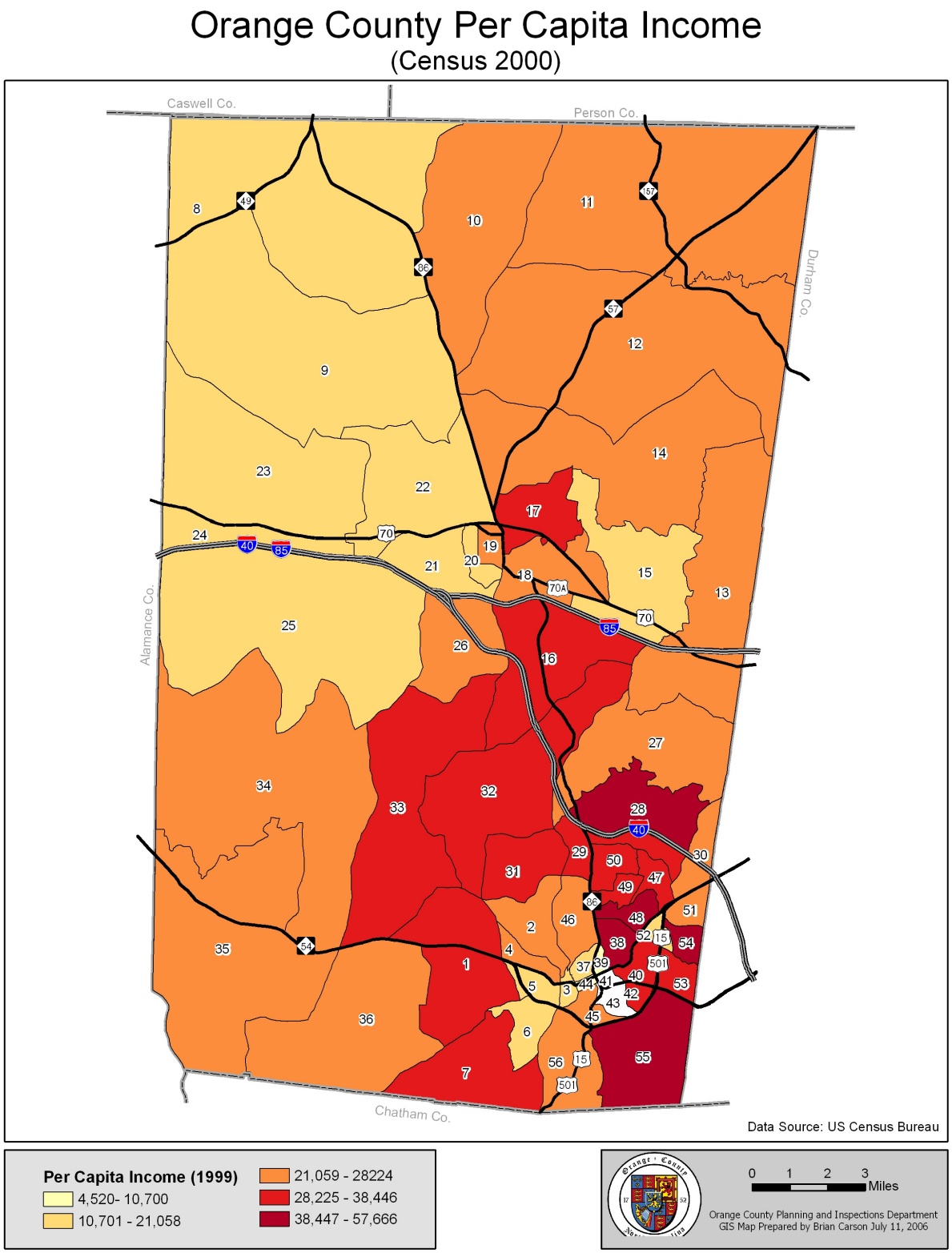


APRIL 2030 POPULATION DENSITY



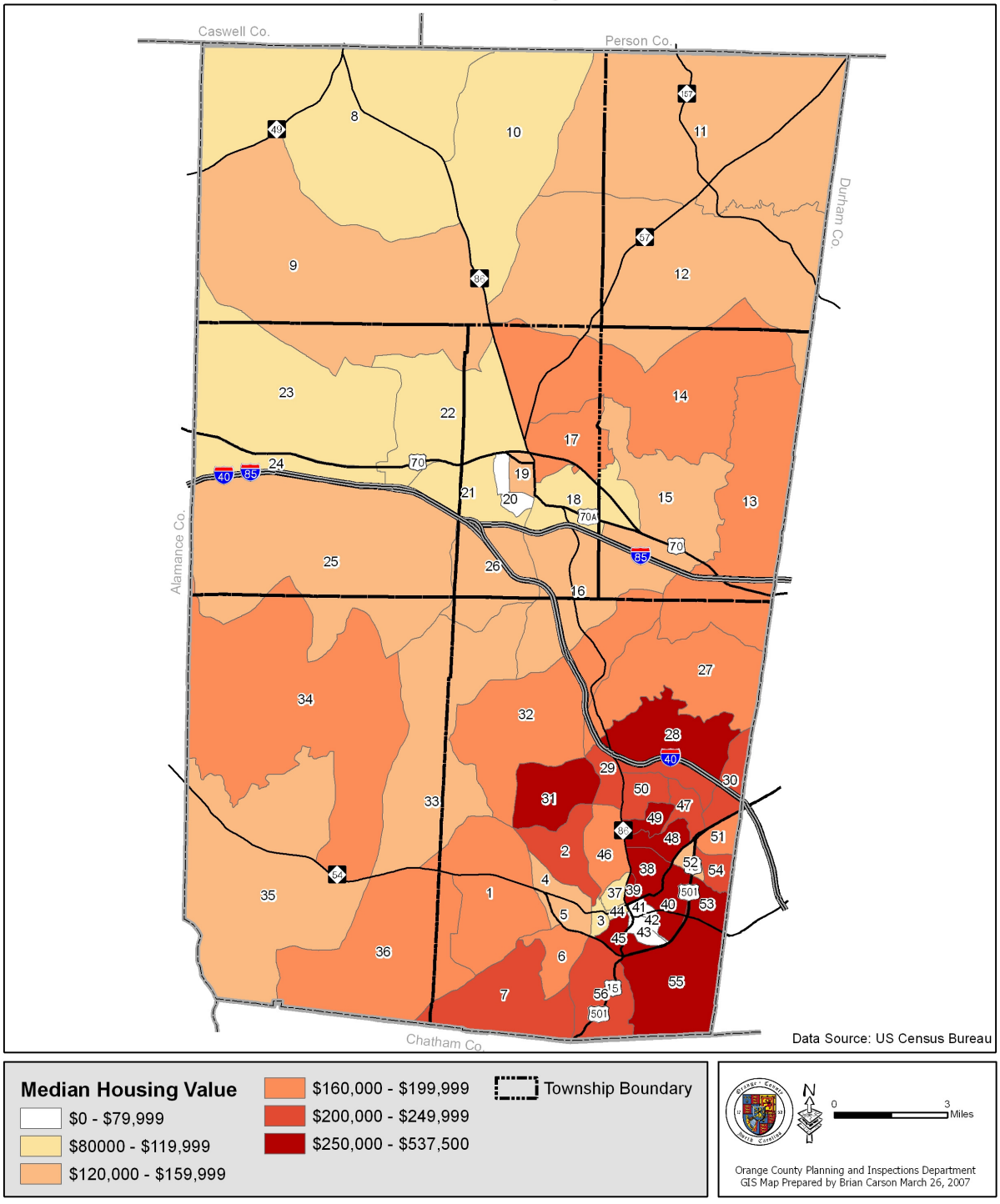
Source: NC Office of Budget, Planning and Management, Demographics Section

D6. Orange County Per Capita Income, 2000

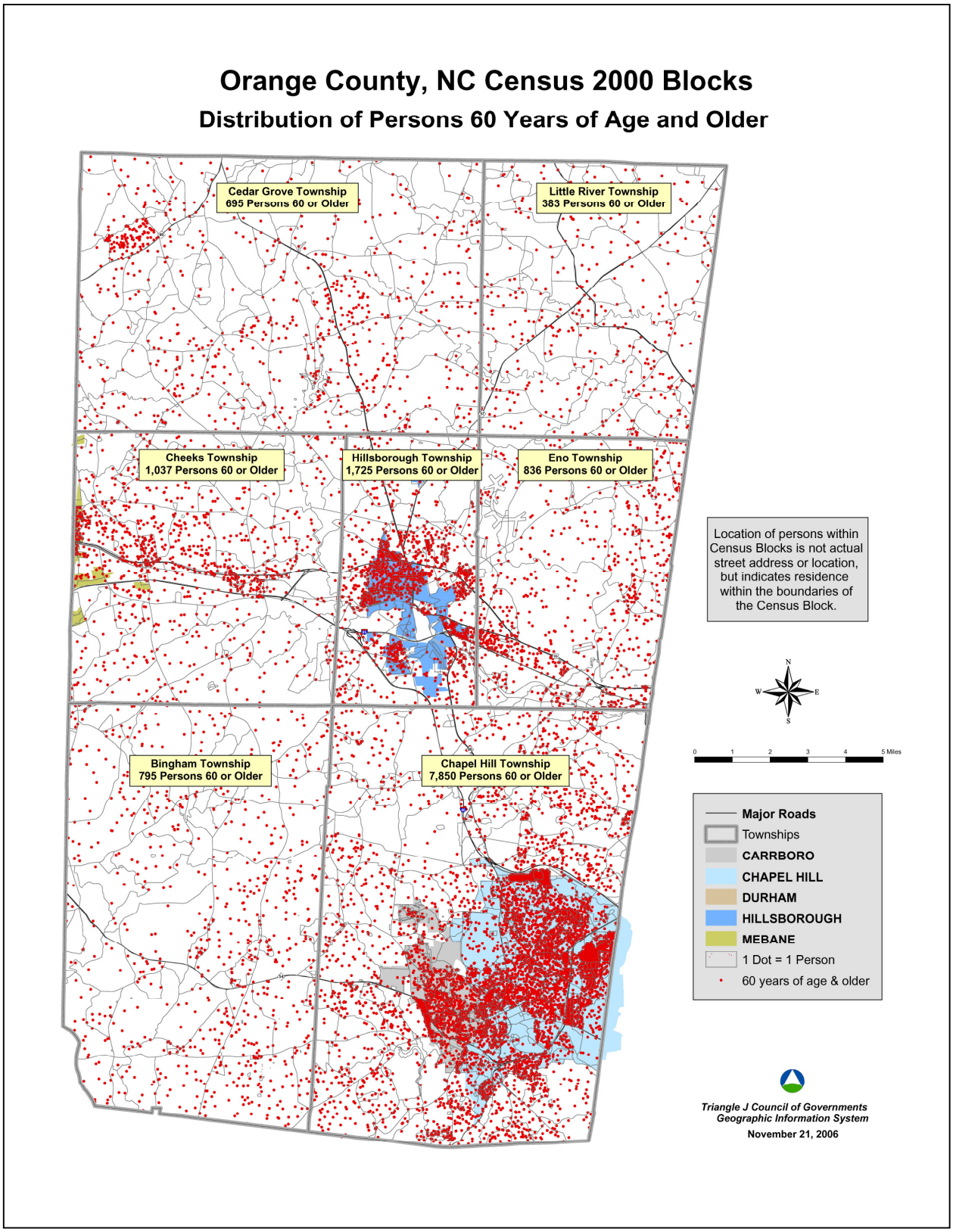


D7. Orange County Median Housing Value, 2000

Orange County Median Housing Value for Owner Occupied Housing Units (Census 2000)

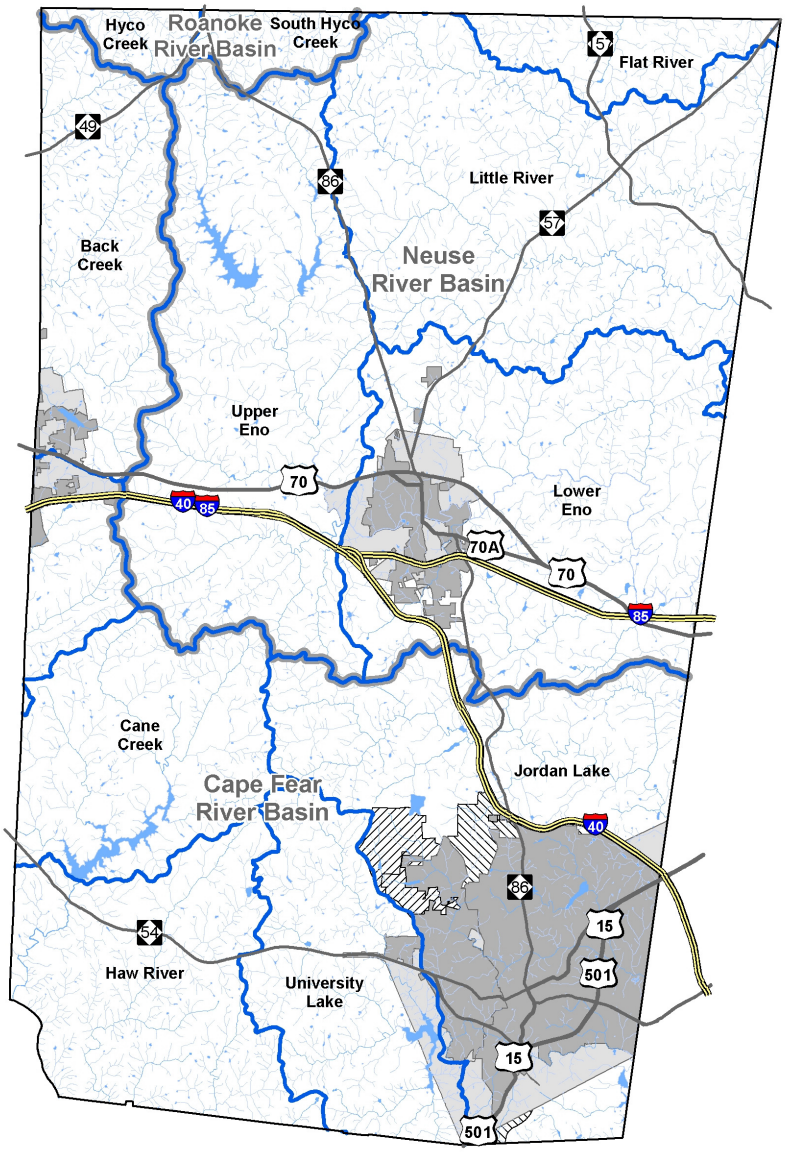


D8. Orange County Population 65+, 2000



D9. Orange County Watersheds and River Basins

Orange County Watersheds



Legend

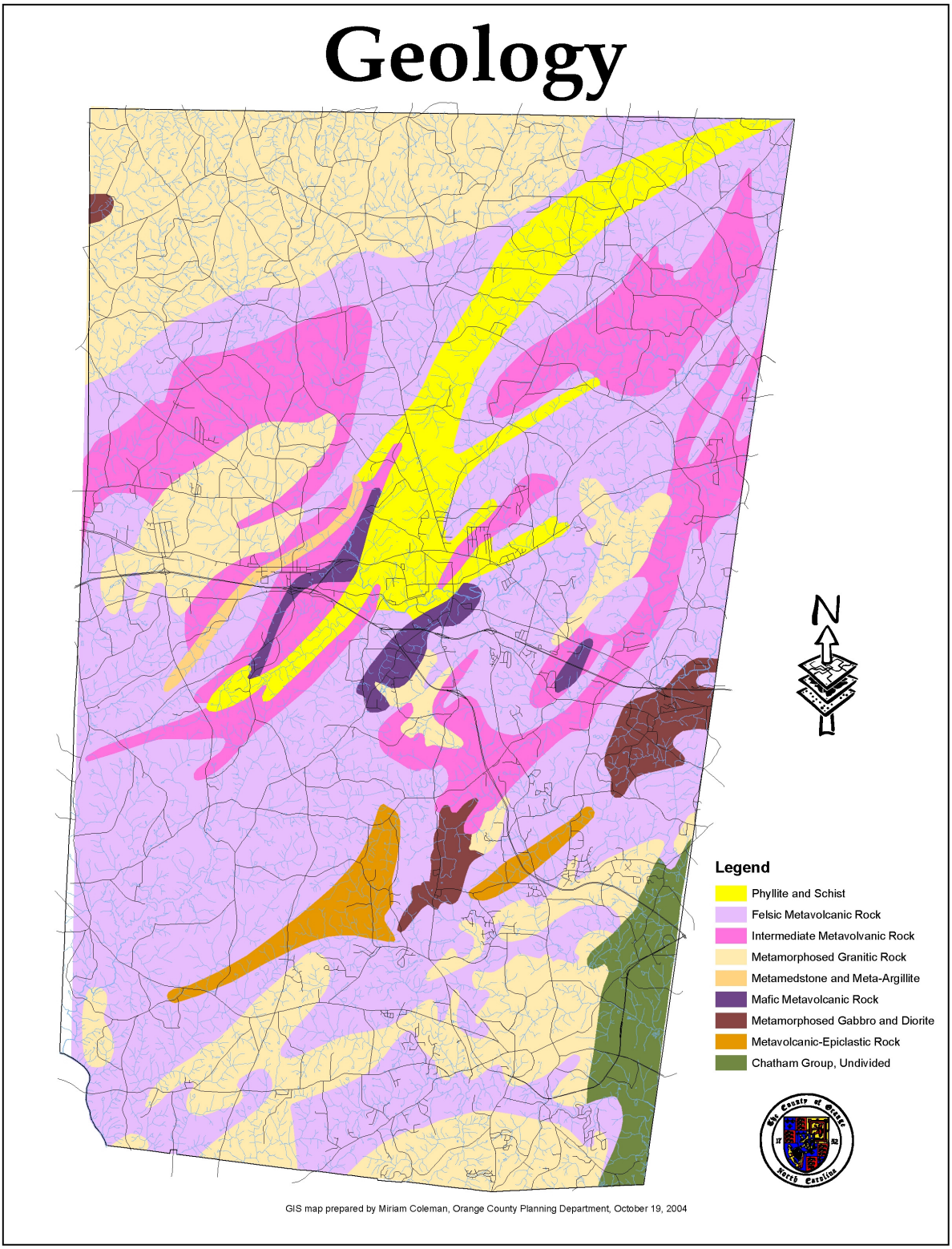
- Watershed Boundary
- River Basin Boundary

1 inch equals 18,000 feet

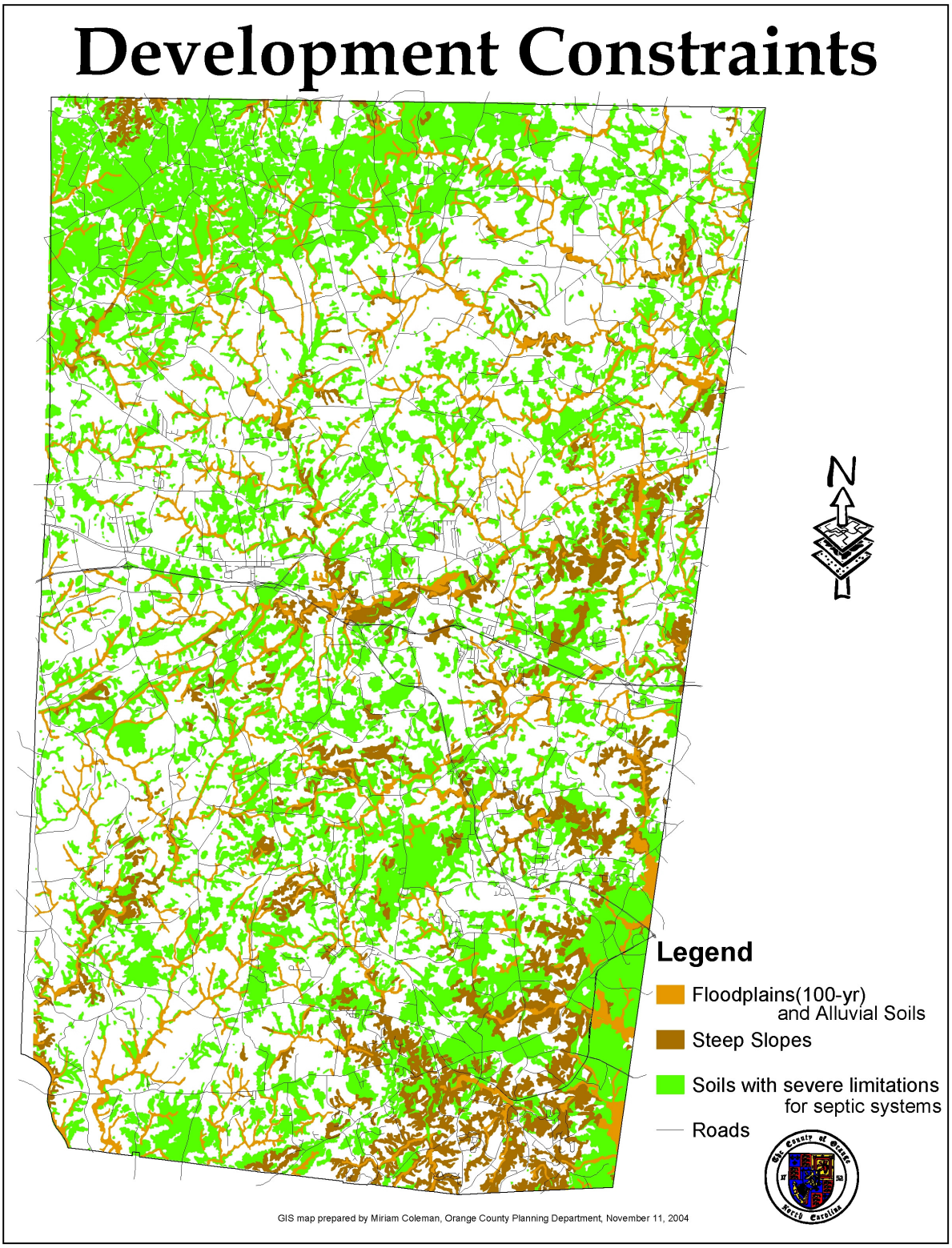
0 9,000 18,000 Feet

Orange County Planning and Inspections Department
GIS Map Prepared by Miriam Coleman, March 05, 2007

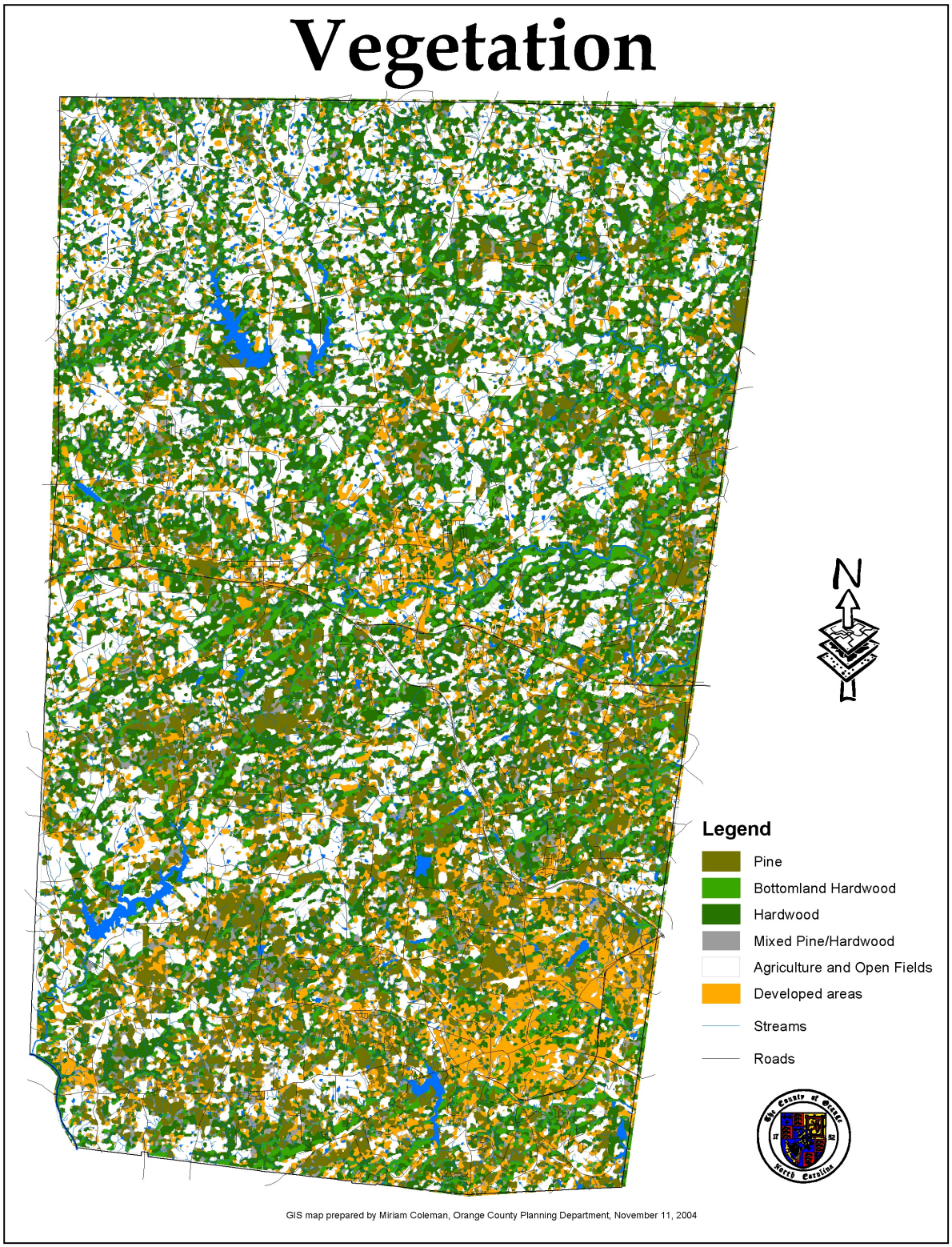
D10. Orange County Geology



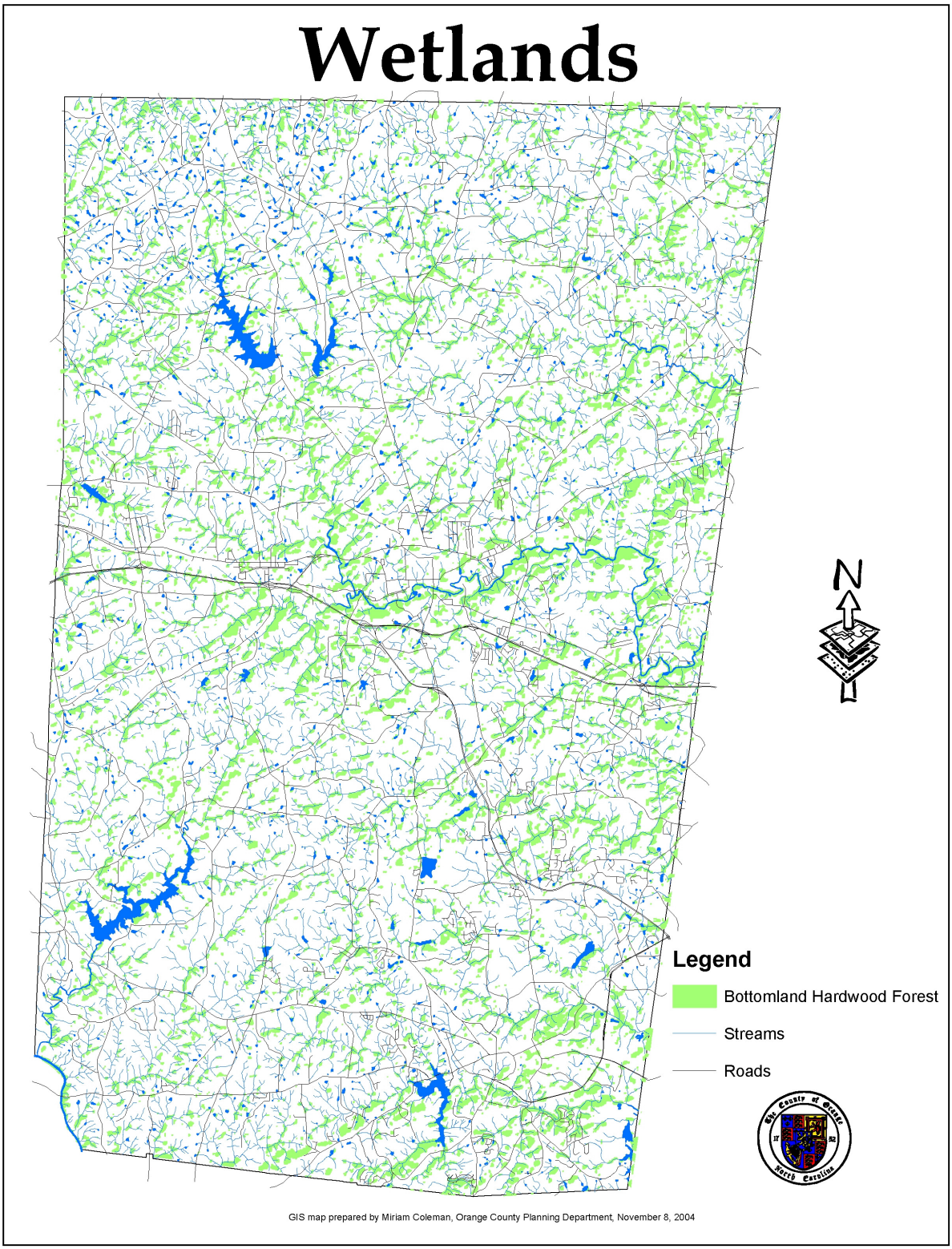
D11. Orange County Development Constraints



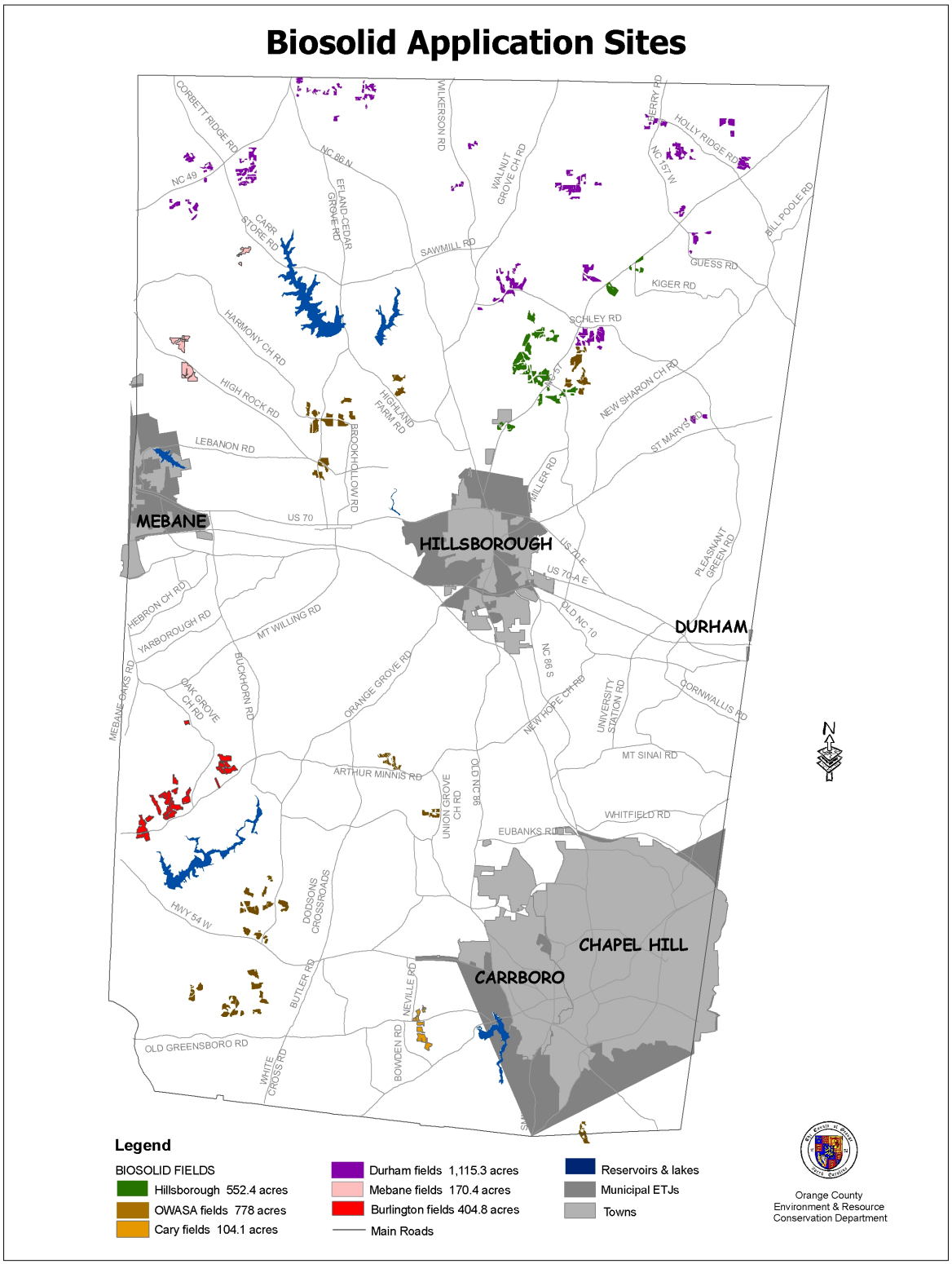
D12. Orange County Vegetation



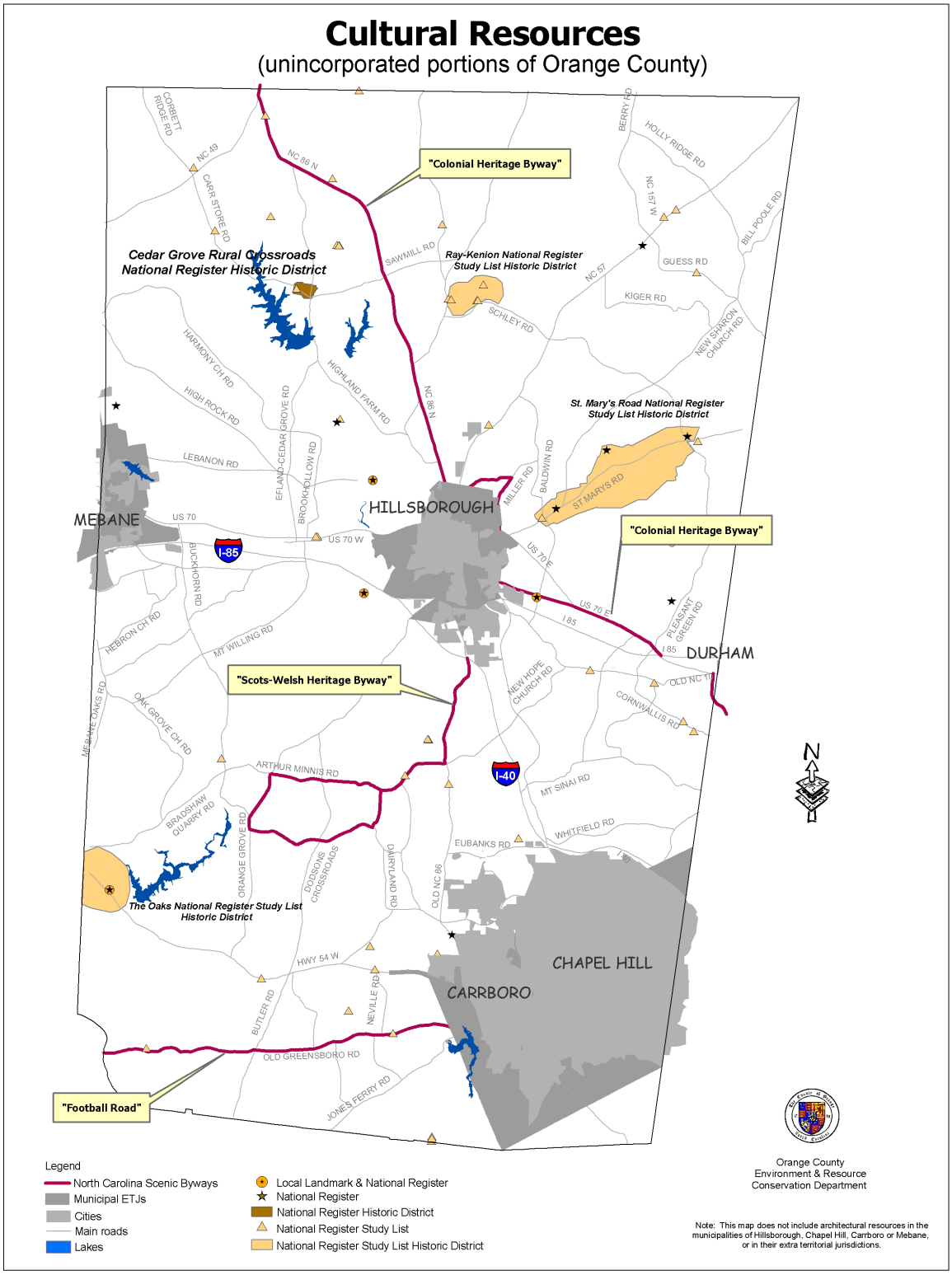
D13. Orange County Wetlands



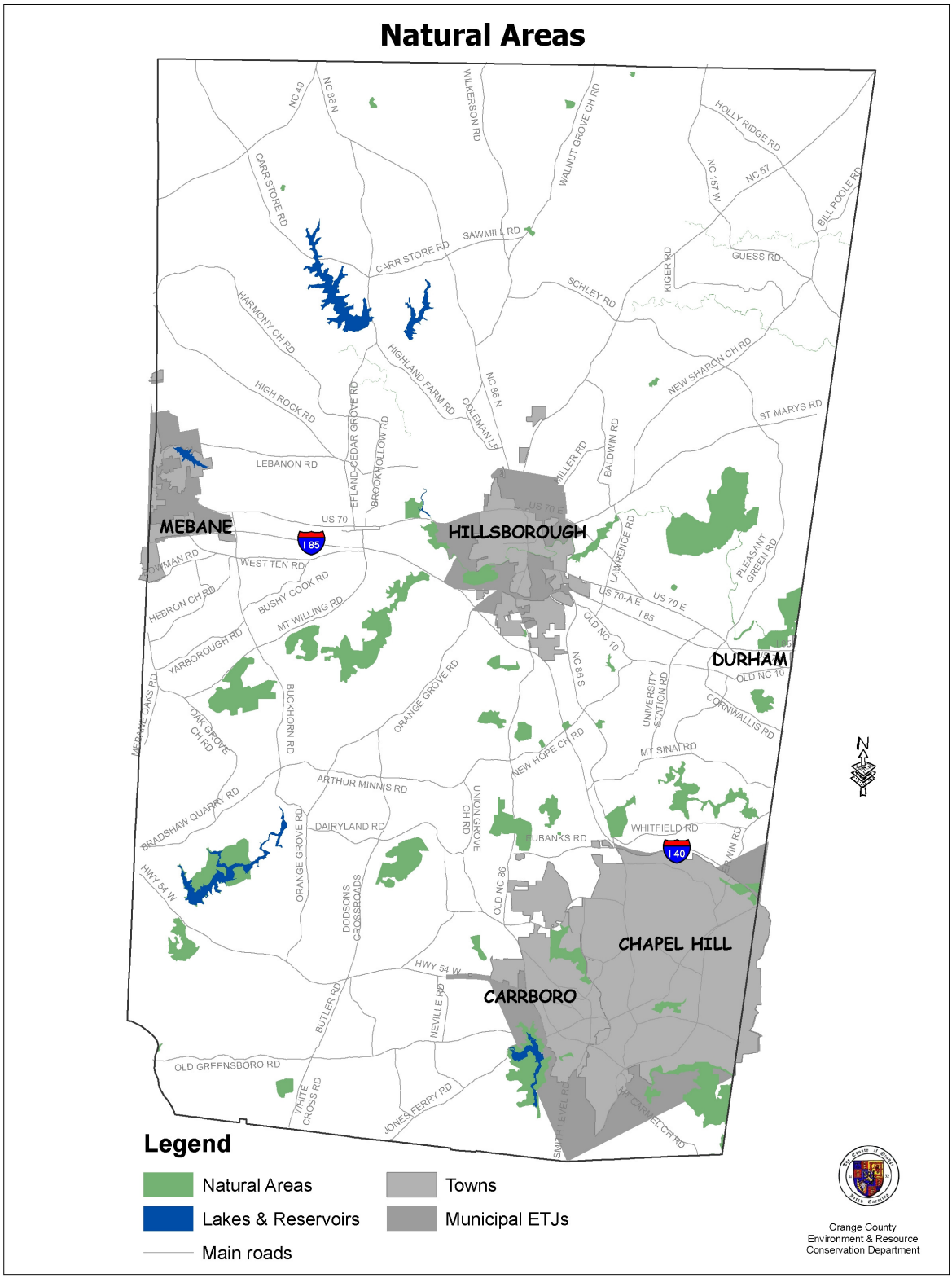
D14. Orange County Biosolid Application Sites



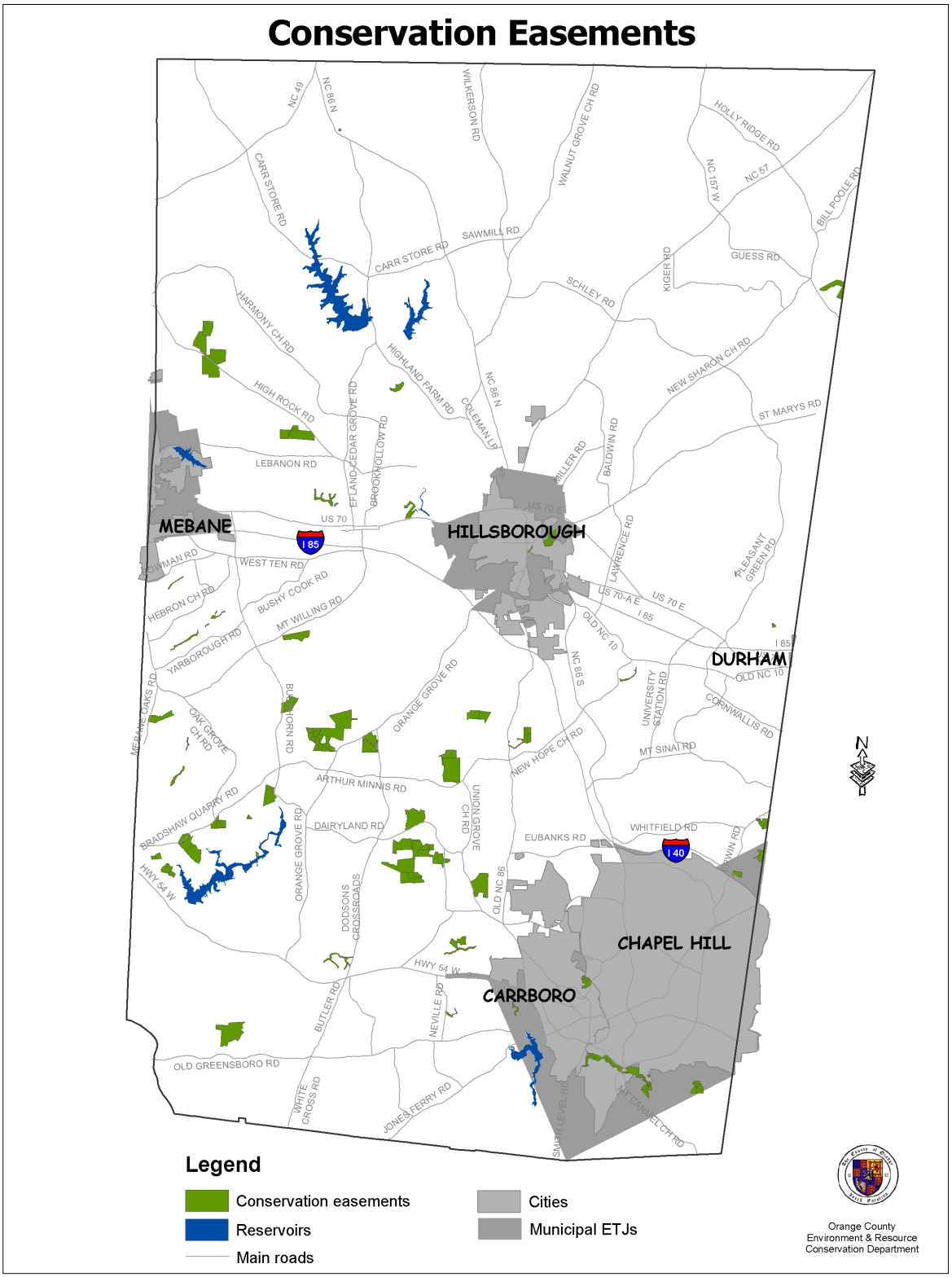
D15. Orange County Cultural Resources



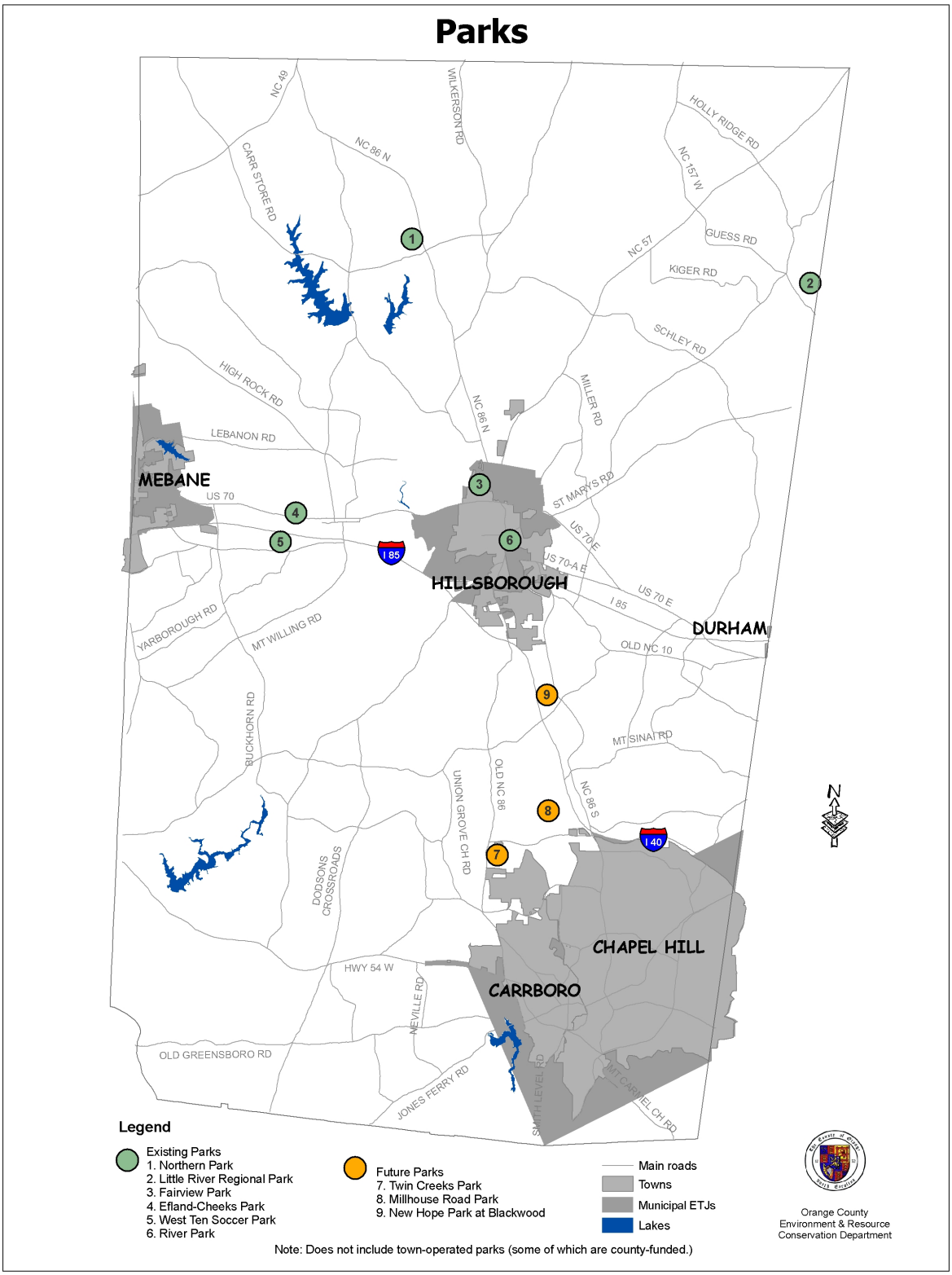
D16. Orange County Natural Areas



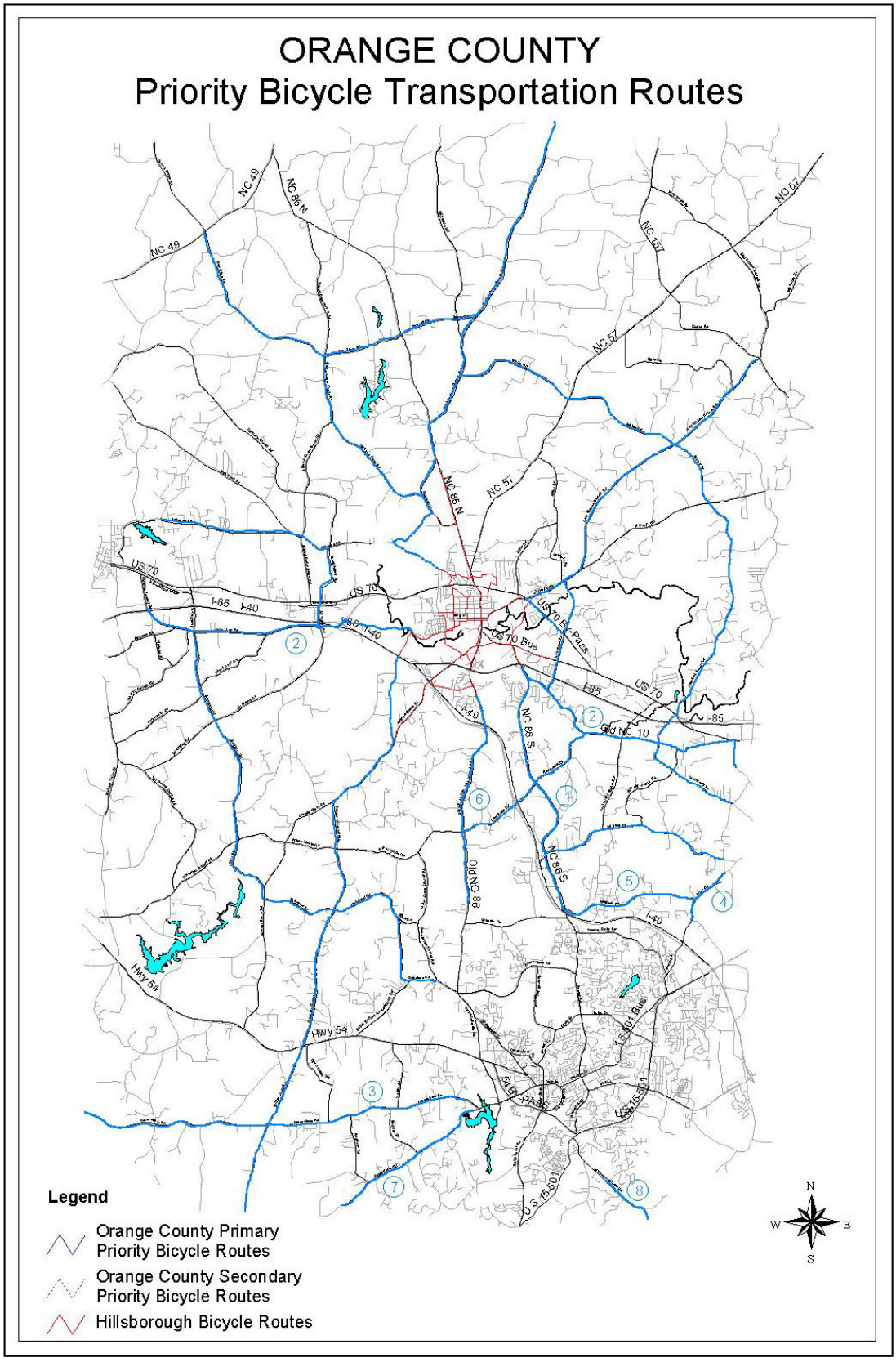
D17. Orange County Conservation Easements



D18. Orange County Parks



D19. Orange County Bicycle Routes



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Appendix B. Glossary of Terms

The following listing provides definitions for terms listed in the *2030 Orange County Comprehensive Plan.*

A

Agri-tourism
A new tourist business opportunity for farmers, and the like. This describes the business of selling tours to farms and tickets to farming events. A local example is thee annual Piedmont Farm Tour organized by the Carolina Farm Stewardship Association.

Area Sources
Small stationary sources of points source pollution such as gas stations, dry cleaners, and repair shops.

B

Biogenics
Emission sources that are living organisms such as trees, plants and cattle.

C

CO – Carbon Monoxide
A colorless, odorless gas that forms when carbon in fuel does not burn completely; can contribute to ground-level ozone

Collectors
Facilities that generally service intra-county travel. Provides the network connection between local roads and the arterial system. Shorter lengths, lower volumes, and more land access than the arterial system.

E

ETJ – Extra Territorial Jurisdiction
The legal ability of a municipal government to exercise land use planning authority beyond its normal incorporated boundaries.

G

Goal
A general direction-setter. It is an ideal future end related to the public health, safety, or general welfare. A goal is a general expression of community values and, therefore, may not be quantifiable or time-dependent. Defining goals is often the initial step of a comprehensive plan, with more specific objectives defined later. Comprehensive plans differentiate between broad, unquantifiable goals and specific objectives. The direction of change is communicated, but not the size of the change or a timeframe.

I

Inselberg
Hills of highly resistant rock.

L

Land Link
A program that partners a young prospective farmer with an experienced farmer. The experienced farmer provides hands-on training and may eventually sell the farm to the apprentice once he or she is ready to retire.

Local Road
Primarily serves as access to adjacent land use. Any traffic is local in nature; therefore volumes and length are relatively low. The major and minor local roads comprise all remaining public roads not classified as a higher function.

M

Major Local Roads
Relatively short lengths of road that provide a connection of primarily residential areas to the collector and arterial systems.

Mean Family Income
Average income of all families, including those with no income or loss, in the prior calendar year. Regional totals and other geographic aggregations are not available for this variable.

Median Family Income
Family income consists of total money income received in the calendar year by all family members 15 years old and over (14 in 1970), tabulated for all families.

Median Household Income
Household income consists of total money income received in the prior calendar year by all household members 15 years old and over (14 in 1970), tabulated for all households.

MSA – Metropolitan Statistical Area
An MSA is a metropolitan area made up of central counties that include central cities and outlying counties and meet specific population, residency and employment statistics. The Metropolitan Statistical Area standards were revised for use with Census 2000 data.

MGD – Million Gallons Per Day
Water flow is often measured in mgd.

Minor Arterials
Major traffic-carrying facilities-which combine with the principal arterials to form a network serving all cities and larger towns in the County, major traffic generators and significant inter-county travel, Trip length and travel densities generally less than principal arterials.

Mixed-Use
A type of development that combines residential, commercial, and/or office uses into one development or building. For example, a mixed-use building could have several floors. On the bottom floor, the space could be dedicated to retail or offices. The remaining two or three floors could be for apartments or condominiums.

Mobile Sources
Pollution sources that are not stationary, including automobiles and trucks.

Municipality
A city, town or community incorporated for local self-government.

N

Needs
Any data, information, policies, programs, or other needs identified during the planning process that should be addressed in future adopted implementation strategies.

NOx – Nitrogen Oxide
A gas formed when fuel is burned at hight temperatures in vehicles and industry; contributes to ground-level ozone

Non-road Mobile Sources
Equipment such as lawn mowers, outboard engines, agricultural equipment, and construction machines.

NCDOT - North Carolina Department of Transportation
The state department responsible for construction and maintenance of primary and secondary roads across the state.

O

Objective
A specific end, condition, or state that is an intermediate step toward reaching a goal. It should be achievable and, when possible, measurable and time-specific. An objective may pertain to one particular aspect of a goal or it may be one of several successive steps toward goal achievement. Consequently, there may be more than one objective for each goal. An example of an objective could be, "increase the number of affordable housing units in Orange County by 300 before June 30, 2008." This example provides a specific description of the change that is desired, including the size of the change and a timeframe for completion.

P

PM – Particulate Matter
A term for particles such as dust, dirt, soot, smoke and liquid droplets. PM is defined by the size of its diameter in micrometers. (TSP) refers to the total amount of suspended particulate matter.

Per Capita Income by Place of Residence
The total personal income of residents of an area divided by the resident population of the area.

Percent of Persons in Poverty
Percent of persons in poverty in the calendar year prior to the census. Based on persons for whom poverty status is determined.

Point Source
Large stationary sources like factories and electric power plants.

Policy
A specific statement that guides decision-making. It indicates a commitment of the legal legislative body to a particular course of action. A policy is based on and helps implement a comprehensive plan's objectives. A policy is carried out by implementation measures. For a policy to be useful as a guide to action it must be clear and unambiguous. Clear policies are particularly important when it comes to judging whether or not zoning decisions, subdivisions, public works projects, etc., are consistent with the Comprehensive Plan.

Principal Arterials
The primary traffic carrying facilities in the County; trip length and travel density characteristics of substantial inter-county travel or of serving urban-type development; typically would include rural freeways.

Principles
An assumption, fundamental rule, or doctrine guiding general plan policies, proposals, standard, and implementation measures. Principles are based on community values. In practice, principles underlie the process of developing a comprehensive plan and may or may not need to be explicitly stated in the plan itself.

R

ROG – Reactive Organic Gases
See VOC; also contributes to ground-level ozone

S

SO2 – Sulfur Dioxide
A gas that is released when fuels such as coal and oil are burned.

Sustainable Development
Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

T

Township
A subdivision of a county that may be used for voting districts or service provision. In Orange County, five of the seven current townships served as voting districts in the nineteenth century, but none have legal standing today.

Transit-Oriented
A mixed-use residential or commercial area designed to maximize access to public transport, and often incorporates features to encourage transit ridership. A transit-oriented neighborhood typically has a center with a train station, metro station,

tram stop, or bus station, surrounded by relatively high-density development with progressively lower-density development spreading outwards from the center. Transit-oriented developments are generally located within a radius of one-quarter to one-half mile from a transit stop, as this is considered to be an appropriate scale for pedestrians.

V

Value-added
Value-added refers to the process of adding financial value to a product. For example a new production process or a new marketing strategy can add more financial value to a product. Minor processing or packaging can "add value" to a raw product; farmers may make a greater profit selling apple cider or apple pies than selling apples.

VMT – Vehicle Miles Traveled
Per capita daily vehicle miles traveled are calculated by dividing the total miles driven by the population during that year.

VOC – Volatile Organic Compounds
Hydrocarbon compounds such as volatile fuels and solvents that contribute to ground-level ozone production. VOCs include many of the same compounds as ROGs, but ROGs are only those compounds active in atmospheric photochemical reactions.

W

Walkable
A walkable environment should have some of these characteristics: well-maintained and continuous wide sidewalks, well-lighted streets, high street connectivity, a safety buffer between pedestrians and motorized vehicles (such as trees, shrubs, streetside parked cars, green space between pedestrians and cars), minimal building setbacks, cleanliness, and land use patterns characterized as mixed-use.

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Appendix C. 2030 Comprehensive Plan Update Process and Schedule

In 2006, the Orange County Board of County Commissioners approved a process and schedule to update the County Comprehensive Plan. The process was separated into two phases: 1) development of the County Data Element and preparation of Plan goals, and 2) preparation of Plan Elements. Below is an outline of the approved process followed by a summary timetable.

Comprehensive Plan Update Process

PHASE I, FRAMEWORK, GUIDELINES, COUNTY PROFILE ELEMENT, AND GOALS DEVELOPED:

1) Develop Plan Framework and Guidelines

a) Planning Staff develops Comprehensive Plan Process website for posting schedule, meeting dates, work products, BOCC principles, and any other information requested by the Planning Board.

b) Planning Board/Staff develop process for updating the BOCC throughout the Comprehensive Plan development process.

c) Planning Board/Staff develops opportunities for citizen knowledge, access, and participation.

d) Planning Board/Staff define Purpose and Scope of Comprehensive Plan.

e) Planning Board/Staff review sample Comprehensive Plans from other jurisdictions to develop Table of Contents and definitions for Comprehensive Plan, reflecting sections that cross Elements, as well as sections to be addressed under each Element, and ensure comprehensiveness. Links to other comprehensive plans are provided on website.

f) Element Managers develop formatting requirements for Comprehensive Plan (i.e. font type, size, numbering scheme, etc).

g) Check-in point with BOCC.

h) Planning Board/Staff reviews the "1981 Land Use Element/Comprehensive Plan".

i) Planning Board/Staff develop guidelines for each pertinent advisory board to develop its own Draft Goals and Objectives consistent with BOCC principles in a collaborative effort.

j) Planning Board/Staff develop Process/Guidelines for the implementation of action strategies that are included in Draft Elements. Those that involve amendments to the County's land use ordinances (Land Use Element, Zoning, Subdivision, etc.) must be channeled through the Planning Board.

k) Planning Board/Staff develop Process for periodic evaluation and update of completed Comprehensive Plan.

l) BOCC endorses process/guidelines for implementation of amendments to land use ordinances (Land Use Element, Zoning, Subdivision, etc.).

2) Draft County Profile Element

a) Planning Board/Staff compile, review, and select data (e.g. demographic, socioeconomic, and agricultural) available from Planning Department, other County Depts., and other sources.

b) Planning Board/Staff interpret historical data, identify trends/assumptions, and prepare projections.

c) Planning Board/Staff develop list of tables/charts/graphs to be included in County Profile.

d) Planning Staff prepares Draft County Profile Element for Planning Board review and comment. For comparison, more than one source can be used for projections (i.e. Planning Department and State of NC) and more than one scenario can be provided (i.e. low, medium, and high growth). Planning Staff will also review historical projections to see how accurate they have been.

e) Planning Staff revise Draft County Profile Element to address Planning Board's comments.

f) Planning Staff and Planning Board forward Draft County Profile Element and guidelines for use to Element Lead Advisory Boards for preliminary review in advance of upcoming joint advisory board meeting.

g) Check-in point with BOCC.

3) Planning Board and Planning Staff (Meeting Facilitator?) Conduct Joint Advisory Board Meeting(s)

a) Present Draft Purpose and Scope

b) Present adopted process and schedule

c) Present Draft County Profile Element for feedback

d) Distribute the Planning Board's evaluation of the 1981 Land Use Element/Plan (original Comprehensive Plan)

e) Convey process for developing new Goals and Objectives, which will include independent work on behalf of pertinent advisory boards. Advisory Boards asked to designate Liaisons.

4) Element Lead Advisory Boards Develop Work Products - [a Planning Board and Planning Staff Liaison will be

available upon request to assist each advisory board through these steps.]

a) Review adopted County Principles, goal development guidelines, and other pertinent documents as determined by the Element Lead Advisory Board.
b) Each advisory board will be invited to summarize or reference its own existing reports and plans, which are forwarded to the Planning Staff for distribution to other advisory boards.
c) Each advisory board will be invited to comment on Draft County Profile Element and will develop new Goals for its individual element(s).

5) Final Draft County Profile Element, Draft Evaluation of the 1981 Land Use Element/Plan, and Goals– Completed or in the case of Goals, compiled by Planning Staff and reviewed by Planning Board.

a) Advisory Boards forward new Goals for their individual Element(s) and comments on Draft County Profile Element to Planning Board
b) Planning Staff and Planning Board accept and review submitted work products from advisory boards.
c) Planning Staff drafts proposed composite profile element, evaluation of 1981 Land Use Element/Plan, and compiles Goals submitted by Element Lead Advisory Boards.
d) Planning Board accepts and reviews draft composite profile element and Goals
e) Planning Board invites advisory boards to joint work session to review proposed draft composite profile element, share Planning Board's evaluation of 1981 Land Use Element/Plan, and compiled Goals.
f) Planning Board revises proposed draft composite profile elements appropriate and with input from Element Managers develops outreach to the public.
g) Planning Board submits proposed draft composite profile element, evaluation of 1981 Land Use Element/Plan, and compiled Goals to BOCC.
h) BOCC accepts Planning Board's submission from item g above.

6) 1st Public Hearing

a) Planning Board—with assistance from other Lead Advisory Boards—conducts outreach identified in the previous step (item 5f).
b) BOCC holds public hearing on Draft County Profile Element, Evaluation of the 1981 Land Use Element/Plan, and Goals.

c) BOCC conveys any required changes to the Draft County Profile Element and Evaluation of the 1981 Land Use Element/Plan to the Planning Board. Any changes to Goals will be conveyed to respective Element Managers and Lead Advisory Boards for revisions.

d) Planning Board provides recommendations to BOCC on Draft County Profile Element, Evaluation of the 1981 Land Use Element/Plan, and Goals.

e) BOCC may also invite additional county advisory boards to provide recommendations.

f) BOCC adopts Draft County Profile Element, Evaluation of the 1981 Land Use Element/Plan, and Goals.

END OF PHASE I

PHASE II, REMAINING ELEMENTS DEVELOPED:

1) Planning Board and Planning Staff (Meeting Facilitator?) Conduct Joint Advisory Board Meeting to Review Advisory Board Roles and Work Products to be Completed during this Phase.

2) Respective Departments and Element Lead Advisory Board(s) Develop Draft Elements

   a) Draft Elements, including Objectives to reach Goals, are prepared by the appropriate advisory boards working from adopted County Profile Element and Goals (A Planning Board and Planning Staff Liaison will be available upon request to provide assistance to each advisory board).

   b) Within respective areas of expertise, Contributing Departments review pertinent sections of draft text for accuracy.

   c) Advisory Boards will provide for appropriate public access and awareness using Comprehensive Plan website.

   d) Each advisory board may review staff and advisory board reports and other pertinent documents such as Shaping Orange County's Future Report and Rural Character Study.

   e) Element Lead Advisory Boards exchange their Draft Elements.

3) Element Lead Advisory Boards Exchange Draft Elements and Planning Board Reviews in Preparation for Public Information Session

a) Element Managers, Planning Staff Liaisons, Planning Board Liaisons, and Element Lead Advisory Boards highlight and summarize any inconsistencies between and/or among Elements and forwards to Planning Board.

b) Planning Board accepts and reviews ideas from Element Managers, Planning Staff Liaisons, and Element Lead Advisory Boards on reconciliation of any inconsistencies identified during the preceding step. Any minor inconsistencies that can be reconciled to the satisfaction of the Element Lead Advisory Board are addressed.

c) Check-in point with BOCC

4) Planning Board -- With Assistance from other Lead Advisory Boards -- Conducts Public Information Meeting(s) – Planning Board drafts agenda with input from other Lead Advisory Boards

5) Planning Board Develops Recommendations on Reconciliation of Any Remaining Inconsistencies between and/or among Elements and Forwards to BOCC and Element Lead Advisory Boards.

6) 2nd Public Hearing

a) BOCC holds public hearing.

b) BOCC conveys any required changes, including reconciliation of any remaining inconsistencies, to Element Managers and Lead Advisory Boards for incorporation into their respective sections of the draft text.

c) Planning Board provides recommendations to BOCC on entire Comprehensive Plan.

d) BOCC may also invite additional county advisory boards to provide recommendations on their respective Element.

e) BOCC adopts Comprehensive Plan.

END OF COMPREHENSIVE PLAN UPDATE

The following are to occur after completion of Comprehensive Plan Update:

- Implementation: Implementation consistent with process/guidelines adopted at 1st Public Hearing
- Evaluation and Update: According to process developed by the Planning Board during Phase I, Part 1 and later adopted by BOCC.

FIGURE C-1: TIMETABLE FOR ORIGINAL BOCC APPROVED PROCESS

Comprehensive Plan Update Timetable ATTACHMENT 1
Revised 11/06/06

Process	2006			2007											2008												2009	
Task	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f
Phase 1																													
Adoption of Process	X																												
Contract with Consultant ("Meeting Facilitator")		X																											
Planning Board Framework and Guidelines			X	X																									
Joint Board Mtg.*				X																									
Planning Board Evaluation and Appraisal of 1981 Plan				X	X																								
Contract with Consultant ("Synthesizer")			X	X																									
Preparation of County Profile Element				X	X	X																							
Joint Board Mtg.*							X																						
Preparation of Goals								X	X																				
Approval of Legal Ad for Public Hearing									X																				
Outreach (not defined)										X																			
Qtr. Public Hearing- Evaluation & Appraisal of 1981 Plan, Goals, and County Profile Element											X																		
Advisory Board(s) Recommendation(s)												X																	
BOCC Adoption												X																	
Phase 2																													
Joint Board Mtg.*													X																
Element Preparation													X	X	X	X	X												
Formating/Assembling Comprehensive Plan																	X	X											
Advisory Boards Receive Draft Comprehensive Plan																		X	X										
Outreach (not defined)																			X										
Planning Board develops recommendations on any reconciliation																			X										
Approval of Legal Ad for Public Hearing																			X										
Expanded Advertisement																				X									
Qtr. Public Hearing																				X									
Advisory Board(s) Recommendation(s)																					X	X							
BOCC Adoption																							X						
Qtr. Public Hearing to Adopt Regulatory Policies and Programs																													X

*To include BOCC and Advisory Boards

Appendix C: Comprehensive Plan Update Process and Schedule

In 2007, the Orange County Board of County Commissioners approved an amendment to Phase II of the process. Below is an outline of the revised process followed by the revised timeline.

Orange County Comprehensive Plan Update Process - Phase II
As Amended by Board of County Commissioners (BOCC) on August 21, 2007

PHASE II, REMAINING ELEMENTS DEVELOPED:

1) Consultant Reconnaissance/Data Collection (July-Sept. '07)

   a) Interview Element Managers and collect documents for synthesizing.

   b) Identify any gaps in data or information and develop detailed draft table of contents for each Element.

   c) Discuss and identify the specific roles and responsibilities of the consultant and Element Manager(s) for the creation of each respective Plan element. This will include an understanding of how the consultant will partner with the Element Manager(s) to prepare each respective draft Element.

2) Planning Board, Planning Staff, Meeting Facilitator, and Consultant Conduct Joint Advisory Boards Meeting to "Kick-off" Phase II by Reviewing Advisory Board Roles and Work Products to be Completed during this Phase (Oct. '07)

3) Consultant Meetings with Element Lead Advisory Boards (Max. of 7-meetings, Oct.-Nov. '07)

The Consultant will:

   a) Present a detailed draft Table of Contents for each Board's respective Element.

   b) As a partner with Element Managers, convey gaps and recommendations for filling them.

   c) Prepare a memorandum summarizing feedback provided by each Board and revise draft Tables of Contents as directed by Element Manager(s), taking advisory board feedback into consideration.

   d) Convey ELABs preferences for filling gaps to Project Management Team.

4) Staff and Consultant Check-in Point with BOCC (Dec. '07)

5) Consultant Meetings with Planning Board to provide updates, particularly on the Elements in which the Board

does not play a lead role (Max. of 3-meetings, Oct.-Nov. '07)

6) Consultant Formats/Assembles and Drafts Comprehensive Plan with Element Managers (Completed by end of Feb. '08)

   a) Work with Element Managers to draft the Comprehensive Plan, including all Elements. The drafting of the Elements, including objectives to reach the adopted Goals, are prepared by the Consultant, or by the Element Manager and staff with assistance from the Consultant, working from adopted BOCC Principles, County Profile Element and Goals, detailed tables of contents (presented and revised during Step 3), previously identified studies and reports, and Element Lead Advisory Board discussions.

   b) Consultant delivers copies of the Draft Comprehensive Plan to Element Managers for delivery to Element Lead Advisory Boards, supporting staff, and Contributing Departments for their review.

   c) Within respective areas of expertise, Contributing Departments review pertinent sections of draft text for accuracy.

7) With Element Managers, Consultant Presents Draft Comprehensive Plan to Element Lead Advisory Boards and makes revisions (Max. of 7-meetings, completed by mid-April 2008)

   a) Advisory Boards will provide for appropriate public access and awareness using Comprehensive Plan website.

   b) Each advisory board may review staff and advisory board reports and other pertinent documents such as Shaping Orange County's Future Report and Rural Character Study.

8) Element Lead Advisory Boards and Planning Board Reviews Draft Plan in Preparation for Public Information Sessions (March-April '08)

   a) Element Managers, Planning Staff Liaisons, Planning Board Liaisons, and Element Lead Advisory Boards highlight and summarize any inconsistencies between and/or among Elements and forwards to Planning Board.

   b) Planning Board accepts and reviews ideas from Element Managers, Planning Staff Liaisons, and

Element Lead Advisory Boards on reconciliation of any inconsistencies identified during the preceding step. Any minor inconsistencies that can be reconciled to the satisfaction of the Element Lead Advisory Board are addressed.

c) Staff and consultant check-in point with BOCC (early-March '08)

9) Planning Board -- With Assistance from other Lead Advisory Boards -- Conducts Public Information Meeting(s) (April '08) – Planning Board drafts agenda with input from other Lead Advisory Boards.

10) Staff and Consultant Check-in Point with BOCC for Legal-Ad Approval (April '08)

11) Planning Board Develops Recommendations on Reconciliation of Any Remaining Inconsistencies between and/or among Elements and Forwards to BOCC, Element Lead Advisory Boards, and Consultant (April-May '08)

12) 2nd Public Hearing and Plan Adoption

a) BOCC holds public hearing (May '08).

b) BOCC may convey any required changes, including reconciliation of any remaining inconsistencies, to Element Managers, Lead Advisory Boards, and Consultant for incorporation into their respective sections of the draft text.

c) Planning Board provides recommendations to BOCC on entire Comprehensive Plan.

d) BOCC may also invite additional county advisory boards to provide recommendations on their respective Element.

e) Staff makes final revisions to Comprehensive Plan as directed by BOCC.

f) BOCC adopts Comprehensive Plan.

END OF COMPREHENSIVE PLAN UPDATE

The following are to occur after completion of Comprehensive Plan Update:

- Implementation: Implementation, evaluation, and update consistent with process/guidelines included in adopted Comprehensive Plan.

FIGURE C-2: TIMETABLE FOR REVISED PROCESS

Comprehensive Plan Update Timetable
As Amended by Board of County Commissioners (BOCC) on August 21, 2007

	Process	2006			2007											2008											2009	
	Task	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f
	Phase 1																													
1.	Adoption of Process	X																												
2.	Contract with Consultant ("Meeting Facilitator")		X																											
3.	Planning Board Framework and Guidelines			X	X	X	X	X	X																					
4.	Joint Board Mtg.				X																									
5.	Planning Board Evaluation and Appraisal of 1981 Plan				X	X																								
6.	Contract with Consultant ("Synthesizer")			X	X	X	X	X	X																					
7.	Preparation of County Profile Element				X	X	X	X	X	X																				
8.	Joint Board Mtg.							X																						
9.	Preparation of Goals								X	X																				
10.	Joint Board Mtg.									X																				
11.	Approval of Legal Ad for Public Hearing									X																				
12.	Outreach - Open House										X																			
13.	Outreach - Countywide Mtg.											X																		
14.	Qtr. Public Hearing- Evaluation & Appraisal of 1981 Plan, Goals, and County Profile Element											X																		
15.	Advisory Board(s) Recommendation(s)												X																	
16.	BOCC Adoption												X																	
	Phase 2																													
17.	Joint Board Mtg.													X																
18.	Consultant Data Collection										X	X	X																	
19.	Consultant Meets With Advisory Boards													X	X															
20.	Formating/Assembling Comprehensive Plan															X	X	X												
21.	Advisory Boards Receive Draft Comprehensive Plan																		X											
22.	Consultant Meets With Advisory Boards																		X											
23.	Advisory Boards Review Draft																		X	X										
24.	Consultant Revises Draft																			X										
	Process	2006			2007												2008											2009	
	Task	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f	m	a	m	j	j	a	s	o	n	d	j	f
25.	Outreach																			X										
26.	Planning Board develops recommendations on any reconciliation																			X										
27.	Approval of Legal Ad for Public Hearing																			X										
28.	Expanded Advertisement																				X									
29.	Qtr. Public Hearing																				X									
30.	Advisory Board(s) Recommendation(s)																					X	X							
31.	BOCC Adoption																							X						
32.	Qtr. Public Hearing to Adopt Regulatory Policies and Programs																													X

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Orange County Comprehensive Plan Update Timetable, June - October 2008

Authorized by Board of County Commissioners (BOCC) June 10, 2008

1. June 3rd Letter from BOCC Chair to Mayors of Carrboro, Chapel Hill, Durham, Hillsborough, and Mebane inviting comments on draft Plan

2. June 4th Regular Planning Board Meeting (7:30 PM) – Review and develop draft Timetable

3. June 9th BOCC Legal Ad Abstract due for Aug. 25th Public Hearing

4. June 10th BOCC Work Session (Planning Board encouraged to attend) – Review and approve Timetable and comment on draft Comprehensive Plan

5. June 24th BOCC Legal Ad approval and Clarion Assoc. Contract extension to incorporate final revisions between Oct. 13 – Nov. 17th

6. July 9th Regular Planning Board Meeting (6:30-7:30 PM) – Review comments from June 10th BOCC Work Session, Element Lead Advisory Boards (ELAB), and the public and begin developing list of suggested revisions

   ELABs and public are encouraged to submit any written comments for preliminary Planning Board review

7. Aug. 1st Requested deadline for any courtesy review comments (Carrboro, Chapel Hill, Durham, Hillsborough, and Mebane)

8. Aug. 6th Regular Planning Board Meeting (6:30-7:30 PM) – Continue review of comments, including any courtesy review comments received, and continue developing list of suggested revisions

9. Aug. 13th ELAB and public deadline to submit any written comments for inclusion in the Aug. 25th Public Hearing agenda packet

10. Aug. 25th 2nd Public Hearing on Draft Comprehensive Plan (Same Draft presented at May 19th Public Hearing)

11. Sept. 3rd Regular Planning Board Meeting (6:30-7:30 PM) – Continue review of comments and development of list of suggested revisions

12. Sept. 10th Special Planning Board Meeting (6:30-9:00 PM) – Complete review, finalize list of suggested revisions, and develop recommendation to BOCC

13. Sept. 22nd Draft abstracts due for the Oct. 7th BOCC Meeting.

14. Oct. 7th BOCC receives Planning Board's recommendation and list of suggested revisions and adopts Comprehensive Plan to include revisions or amends

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Oct. 13th – Nov. 17th Clarion Assoc. incorporates final revisions and delivers hard copies and electronic files to the County

Appendix D. 1981 Land Use Element Policies

1981 LAND USE ELEMENT POLICIES

CATEGORY: NATURAL ENVIRONMENT, RESOURCES CONSERVATION AND ENERGY

1.1 Protect the following significant Public Interest Districts and Resource Protection Areas from adverse development impacts and require management of these areas in ways that will prevent internally generated negative impacts from affecting surrounding land:

- Wetlands;
- Floodplains and alluvial soils;
- Steep slopes;
- Natural Areas, and wildlife corridors and habitats;
- Historic and archaeological sites, including:
  - ◊ sites listed on the National Register of Historic Places;
  - ◊ sites included on the State's National Register study lists;
  - ◊ sites designated as a local historic landmark;
  - ◊ areas designated as a local historic district; and
  - ◊ areas identified as having a high potential for archaeological remains.
- Publicly owned parkland (Eno River State Park);
- Water reservoir buffer land (lands around University Lake and Cane Creek Reservoir);
- Research oriental lands (Duke Forest); and
- Lands placed by individual property owners into conservation easements.

1.2 Restrict or prohibit uses in flood hazard areas which are dangerous to health, safety and property due to flood heights or velocities. Protect the function of the floodway to provide passage for the 100-year flood without increasing flood levels upstream.

2.1 Maintain and protect land which contains valuable renewable resources such as productive agricultural areas, managed forest areas and potential reservoir sites by directing incompatible development away from these areas.

2.2 Protect non-renewable resource lands from incompatible development and allow their use in a safe and reasonable manner according to performance standards designed to ensure a sufficient level of environmental protection.

3.1 Encourage site planning and design alternatives for building development which reduce the demand for artificial heating, cooling, ventilation and lighting.

3.2 Modify land development regulations to eliminate impediments to the introduction of more energy- efficient design and construction.

3.3 Encourage energy-efficient industry to locate or expand in the County in the appropriately designated land use plan areas.

3.4 Encourage the design, sitting, construction and management of public buildings and public housing in a manner which conserves energy and/or uses non- polluting renewable energy sources when economically feasible.

3.5 Develop educational and public information programs to increase awareness of the potential for the design, construction and rehabilitation of commercial and residential structures which are energy efficient and/or use non-polluting renewable energy sources.

4.1 Facilitate the use of non-polluting renewable sources of energy by removing local administrative and legal barriers to their use.

CATEGORY: GROWTH

5.1 Utilize the following locational criteria to designate the most appropriate location for the various Land Use Plan Categories: natural environment constraints (land slope, hydrology, flora and fauna, soil conditions); availability of public services and utilities; transportation system access and capacity; impact on energy resources; existing land uses; presence of productive agricultural or forested land; appropriate population densities; and the presence of historic or cultural features.

5.2 Guide growth to achieve a maximum amount of infill development in the urbanizing areas of the County while maintaining the integrity of the existing and future open space and recreational system. The purpose of infill will be to minimize sprawl development and promote a more compact urban form. Secondary purposes will be to reduce transportation energy costs in addition to reducing public services costs. The Chapel Hill Township component of the Land Use Plan will be based on the assumption that 75% of the suitable vacant land in the Towns' existing urban area will be developed; however, the goal will be to achieve 100% infill.

5.3 Direct intensive land uses to existing urban areas designated Transition areas and away from areas which are suitable for

continued agricultural uses and which are protected as water supply watersheds and water quality critical areas.

5.4 Maintain the unique identity and character of rural crossroad communities in Orange County. Allow development at these locations which is appropriate for each community and will not exceed the capacity of the natural or man-made systems to support it. The following crossroad communities have locational attributes which make them suitable to accommodate new commercial and residential growth at a limited, community scale: Caldwell, Schley, the Village, Carr and White Cross.

5.5 Designate land in areas changing from rural to urban in character which could reasonably be developed to accommodate urban-type densities, but are currently not completely served by urban systems such as water and sewer lines, as Transition areas. These areas will be further classified into 10-Year and 20-Year Transition areas to reflect the most appropriate sequence of development as this area changes from rural to urban and services are extended.

5.6 Allocate development in areas designated Ten and Twenty Year Transition Areas proportional to land requirements projections.

In Cheeks and Hillsborough Townships, the ratio of areas designated Ten and Twenty Year Transition to land requirements projections for residential acreage is approximately 2.5:1.

In Eno Township, the ratio of areas designated Ten and Twenty Year Transition to land requirements projections for residential acreage is 4:1.

In Chapel Hill Township, land designated Ten and Twenty Year Transition outside the planning jurisdictions can accommodate 25% of the projected population increase during the plan period.

5.7 Designate the rural, low density land surrounding the urban areas, but beyond the Transition Areas, as Rural Buffer. This area will remain rural in character, will not require urban services and will maintain farming or rural non-farm residential development as the most appropriate land use. Future consideration will be given to designating Rural Buffer areas around other Towns in the County.

5.8 Designate land in the rural areas suitable for low-density residential development, but not particularly suitable for agricultural uses, that is not dependent on urban services and to which urban services will not be extended within the next twenty years as Rural Residential.

5.9 Allocate development in areas designated Rural Residential proportional to land requirements projections for the respective townships.

In Little River, Cheeks, Hillsborough, Eno and Bingham Townships, the ratio of areas designated Rural Residential to land requirements projections for residential acreage is 2:1.

In Chapel Hill Township, land designated Rural Residential can accommodate 9% of the projected population increase during the plan period.

5.10 Designate land in areas where the prevailing land use activities consist of agriculture and forestry and which should continue in these uses as Agricultural Residential.

5.11 Designate activity nodes of various types and functions at the intersections of major arterials and/or collectors in order to accommodate different intensity levels of commercial and industrial development.

These nodes include both existing and proposed nodes. New activity nodes will be located using the locational criteria specified in Policy 5.1, in response to proposed development activity.

5.12 Utilize activity nodes to promote clustered development and to discourage strip development.

5.13 Identify activity nodes as the only places appropriate for non-farm related commercial and industrial development.

5.14 Designate existing and proposed Urban activity nodes in urban areas. In the Towns of Chapel Hill and Carrboro these nodes will correspond with the "activity centers" identified by the Towns.

5.15 Designate two types of nodes in the Transition areas: Commercial Transition and Commercial-Industrial Transition.

5.16 Designate Rural Community, Rural Industrial and Rural Neighborhood activity nodes in Rural Residential and Agricultural-Residential areas.

5.17 Designate land focused on designated road intersections within Rural Residential or Agricultural-Residential areas that is appropriate for small scale commercial uses as Rural Neighborhood activity nodes.

5.18 Designate land focused on designated road intersections within Rural Residential or Rural Agricultural Areas that is appropriate for industrial activities and which has good access as Rural Industrial activity nodes.

5.19 Designate land in water supply watersheds which encircles the water supply impoundment and which drains directly into the impoundment and into the main channels of trunk streams feeding the impoundment as Water Quality Critical Areas, not suitable for moderate to high density residential development or non-residential development.

6.1 Provide for a sufficient amount of suitable land to accommodate the expansion and growth of commercial and industrial uses in the County.

6.2 Select industrial sites in the Transition Areas on the basis of the capacity of supporting systems, such as water and sewer lines and good highway or rail access, and the absence of detrimental environmental or social impacts.

6.3 Locate industrial sites in the Rural Residential and Agricultural-Residential areas along the U.S. 70/I-85 highway and rail corridor to take advantage of the corridor's locational attributes. A limited number of small scale industrial nodes, not requiring urban-type services, are appropriate elsewhere in the County where good access exists.

6.4 Prohibit new industrial uses in the area designated Rural Buffer.

6.5 The Economic Development zoning district is not appropriate in the area designated Rural Buffer.

6.6 The following areas in the County are identified as appropriate for commercial uses and have been designated as Commercial Transition Activity Nodes: Timberlyne (CHT-1); North Office Park (CHT-2); Homestead Road (CHT-3); Weaver Dairy (CHT-4); St. Mary's (HB-3); Harmon-Young (HB-4); and Duke Forest (Eno-3).

6.7 The following areas in the County are identified as appropriate for industrial uses and have been designated as Commercial-Industrial Nodes: Efland Center (CK-1); Miles North (CK-2); Miles South (CK-3); and Harmon Young (HB-4).

6.8 Five Rural Community activity nodes have been designated: White Cross (BH-2); Caldwell (LR-1); Schley (LR-2); Carr (CG-1); and Village (CG-2).

6.9 The following Rural Neighborhood Activity Nodes have been designated: Toler's Store (CG-3); Villine's Store (LR-3); Walnut Grove (CG-5); Underwood's Store (LR-3); Fairfield (CK-4); Coleman Loop (HB-1); Law's Store (ENO-1); Adam and Eve (BH-1); Oak Grove (BH-3); and Calvander and Blackwood Station as part of the Orange County-Chapel Hill-Carrboro Joint Planning Area Land Use Plan.

6.10 The following Rural Industrial activity nodes have been designated: Major Business Forms (HB-2) and Prospect Hill (CG-6).

6.11 The following Economic Development (Transition) Activity Nodes have been designated: I-40/Old NC 86 (HB-5); I-85/Buckhorn (CK-5); and I-85/US 70 (ENO-2).

7.1 Protect and maintain the public economic, social and environmental benefits provided by a vital farming community. Address the problem of increasing tax burdens on agricultural lands through property tax relief to farmers under the Use Value Law.

7.2 Minimize the negative impacts of proposed public projects on farming operations and on productive farmland. Public review of projects proposed by entities which have the power

of eminent domain should include explicit consideration of the impact of such actions on agricultural activity.

7.3 Minimize the relocation of bonafide farming operations caused by non-farm development.

7.4 Provide adequate amounts of available vacant land in and near existing urban areas for intensive land uses to minimize the need for farmland consumption and direct such uses away from viable farming operations and concentrations of prime farmland.

7.5 Direct residential, commercial and industrial growth away from farming areas to minimize inflation of rural land values and tax assessment which can price farmers out of the land market.

7.6 Discourage the location of new non-farm development, particularly more intensive residential development, within farming areas to minimize the incidence of complaints and nuisance suits against farm operations.

7.7 Provide adequate amounts of vacant land at activity nodes accessible to farming areas for commercial land uses serving the existing and future commercial needs of the farming community.

7.8 Encourage more effective forest management practices with consideration to discouraging inappropriate clear-cutting, providing renewable energy resources and protecting wildlife habitats.

7.9 Encourage agricultural related commercial and industrial uses consistent with the zoning district Agricultural-Services (AS) to locate at activity nodes, but allow their occurrence anywhere in the Agricultural-Residential plan areas.

CATEGORY: HOUSING

8.1 Encourage the construction and rehabilitation of a diverse range of housing types in response to the needs of various household sizes and incomes.

8.2 Encourage the location of various housing types according to the accessibility of public services and commercial uses. Multi-family housing should be built in Urban and Transition Areas where urban-type services are available. Lower density (a minimum of one dwelling unit per acre) non-farm housing is most appropriate in rural and community areas outside of productive farmland areas.

8.3 Encourage the provision of a range of affordable and suitable low-income housing by means of development incentives in order to provide a balanced housing stock for the residents of Orange County.

8.4 Support the provision of housing assistance for households in need through technical assistance and coordination with public organizations responsible for housing in the County.

8.5 Recognize the Areawide Housing Opportunity Plan as the basic guide for the allocation of assisted housing to the County. The Housing Assistance Plans for the County and for the Towns will serve as the guide for the allocation and distribution of housing within the County.

8.6 Assist the Orange County Community Development Block Grant Program in concentrating its efforts and resources in those areas of the County occupied by low and moderate-income households and having the most severe housing and community development needs.

8.7 Support the use of individual mobile homes as a useful housing resource in the County by affording these homes the same locational opportunities as single-family units meeting the State Building Code.

8.8 Require that all new housing built or located in Orange County meet the minimum standards specified in the State of North Carolina Building Code, as well as Department of HUD and FmHA standards when required.

8.9 Encourage the location of high density housing within one-half mile of the center of the activity nodes in the Chapel Hill 10 and 20 Year Transition areas.

8.10 Discourage medium and higher density residential development in the rural areas of the County.

CATEGORY: COMMUNITY FACILITIES AND SERVICES

9.1 Develop and implement a cooperative joint planning process among the County municipalities and those organizations responsible for water and sewer lines to guide the extension of lines in accordance with the land use plans and policies of the affected jurisdictions.

9.2 Establish Urban Service Areas for Chapel Hill, Carrboro, Hillsborough, Mebane and Durham which will correspond with the 10-year and 20-year Transition Areas. Water and sewer lines should be directed to those areas which contain and are appropriate for higher density levels of residential, commercial and industrial development.

9.3 Prohibit the establishment of public water and sewer services in the areas designated Water Quality Critical Area, except to address emergency situations.

10.1 Manage Orange County's water supplies so that available resources are balanced with existing and projected needs.

10.2 Adopt and implement policies which specify land use patterns and intensities of development in water supply watershed and

watershed critical areas that will minimize potential adverse impacts on water quality.

10.3 Designate prime reservoir sites, based on an evaluation of water resources throughout the County, to protect those areas from adverse development impacts and to insure that inappropriate restrictions are not placed on a large population of the land area and land resources of the County.

10.4 Support programs which help to protect water quality, such as the Soil

Conservation Service and the County's Erosion Control programs.

10.5 Encourage efforts to monitor the quality of water in Orange County streams.

10.6 Cooperate with other public and private bodies in promoting water quality legislation programs.

10.7 Support educational efforts which serve to increase citizen understanding of water quality problems and the need for water conservation.

10.8 To minimize further degradation of University Lake water quality, commercial and industrial land uses should not be permitted in the University Lake watershed. Industrial uses are also inappropriate in the Cane Creek watershed, and any commercial uses in the Cane Creek watershed should be small-scale in nature, designed to provide basic services to residents of the immediate area, and located outside of the watershed critical area to minimize potential adverse impacts on water quality.

There shall be no more than one Rural Neighborhood Activity Node, and no Activity Nodes of any other type, established in the Cane Creek watershed.

10.9 Direct urban development pressures in the I-85/US 70 corridor within the Upper Eno watershed in Cheeks Township to the areas designated

Ten and Twenty-Year Transition, and away from the areas designated

Watershed Critical Area. Non-residential and higher-density residential development in the Transition Areas should utilize Best Management Practices (BMP's) for stormwater control, in order to minimize potential adverse impacts on the water quality of existing and proposed reservoir sites in this watershed.

11.1 Identify the type of sewage disposal facilities appropriate for an area as a function of the magnitude of present and future demand; the distribution of users; and the capacity of the natural environment to absorb the impact.

11.2 Identify service by centralized water and sewer systems (Towns of Hillsborough and Mebane, Orange-Alamance Water Systems Incorporated and Orange Water and Sewer Authority)

as most appropriate at the higher-density levels which occur in the Urban and Transition Areas.

11.3 Develop a process to ensure that buyers of property in the County are fully informed about the on-site sewage disposal characteristics of the site on their property.

11.4 Allow on-site disposal in low-density and rural areas where soil conditions are acceptable. In rural areas with unacceptable soils, state-approved on-site sewage disposal systems will be required.

11.5 Facilitate the use of alternatives to the traditional septic system on land unsuitable for septic tanks and not served by public sewer. Elimination of administrative and informational barriers to the use of safe, sanitary alternative on-site-disposal systems within the County should be encouraged.

11.6 Allow ground absorption sewage disposal systems of 30000 gallons per day or more design capacity and package sewage treatment plants with a design capacity of 3000 gallons per day or less as appropriate only in the areas designated Ten and Twenty Year Transition and Rural Residential.

11.7 Develop and implement a process whereby the responsibilities and duties adjunct to the operation and management of package sewage treatment plants are specified as a requirement to the permitting process for such facilities.

11.8 Prohibit package sewage treatment plants in the areas designated Water Supply Watershed.

11.9 Establish an on-site wastewater treatment inspection program within the portions of water supply watersheds designated as Water Quality Critical Areas.

12.1 Improve and promote the use of existing highway and transportation facilities as opposed to developing extensive new conventional transportation systems.

12.2 Encourage arrangements of land uses that facilitate the expanded use of non-auto modes of travel, the increased occupancy of autos and the development and utilization of an energy-efficient transport system.

12.3 Develop alternative, safe, energy-efficient transportation systems to discourage dependence on automobiles. Encourage the provisions of bikeways, walkways and supportive facilities such as bicycle parking zones. Wherever feasible, acquire pedestrian and bikeway easements with public utility easements as long as the primary use of the easement will remain intact.

12.4 Improve transportation services for human service agency clients in the County through coordination and utilization of available resources, while maintaining or reducing present system costs. Encourage the use of private transportation

providers as part of the human services system in addition to serving the needs of the general public.

12.5 Encourage DOT to reassess the need for I-40 and the corridor selected with respect to its human and natural environmental impact on the County.

12.6 Undertake a feasibility study to (1) determine the level of need for a general aviation facility to serve the County and (2) examine locational alternatives for a facility given a determination of sufficient need.

12.7 Develop a Highway Classification System to classify major roads by function for purposes of effective long range planning including the evaluation of highway capacity. The functional classification includes: Interstate, arterial, collector, subcollector, minor, local, private and alley.

12.8 Encourage the use of loop roads and cul-de-sacs and discourage the use of cross connectors in the Chapel Hill joint planning area in accordance with the Town of Chapel Hill's policies respecting residential neighborhood integrity.

13.1 Locate parks and recreational facilities close to residential areas to reduce long trips for recreational purposes.

13.2 Encourage the multiple use of existing public and institutional buildings and grounds for recreation as well as their primary uses.

13.3 Require developers to provide for adequate open space suitable for active/passive recreation in residential developments.

14.1 Develop a process for the coordination of planning activities by the School Board, Planning Board and Planning Department to provide for the future space needs and appropriate location of schools to meet the long-term education needs of Orange County residents.

14.2 Require residential developers to set aside an adequate amount of acreage to meet future school facility needs.

15.1 Evaluate the solid waste collection system presently used by the County in terms of effectiveness and efficiency. Recommend alternative systems or means to improve the existing system based on this evaluation.

15.2 Encourage the recycling of solid waste when feasible.

15.3 Acknowledge the value of solid waste as an energy resource and encourage recovery measures when feasible.

16.1 Ensure the provision of adequate public safety protection standards for residential, commercial and industrial development.

16.2 Include in applied site design standards for residential, commercial and industrial development appropriate road

design standards to ensure adequate emergency vehicle access to the development.

16.3 Insure that all state roads in the County receive non-duplicated names to be posted on signs at intersections and that all houses are numbered in order to improve the response time of emergency vehicles.

17.1 Undertake a comprehensive effort to inform and involve the citizens of Orange County in the land use planning process. The basic components of this process include: regular and special public hearings; direct citizen input to the Board of County Commissioners and Planning Board; special citizen task forces and committees to work on certain problems; and the Township Advisory Councils to advise the Planning Board on land use planning matters at the Township level. It will also include a systematic effort to inform and notify the general public, through special news features as well as public meeting notices in newspapers of local circulation, of significant planning activities.

17.2 Develop and implement a cooperative joint planning process among the County municipalities and those organizations responsible for the provision of water and sewer services to provide for the orderly transition from rural to urban development around the municipalities.

17.3 Adopt the Orange County Land Use Plan and Map as the long-range planning framework and guide to development in the County.

17.4 Review the Orange County Land Use Plan periodically to assure that it remains an up-to-date and workable framework for land use development.

17.5 Provide an annual status report on the implementation of the Plan to the Planning Board and the Board of Commissioners for Orange County.

17.6 Develop and implement a process for complete review of the Plan on a two-year basis which will include land use and demographic data collection and analysis, a progress report and citizen involvement to evaluate the effectiveness of the Plan and proposed amendments as appropriate.

17.7 Implement the Orange County Zoning Ordinance in accordance with the Goals, Policies and proposed Land Use Plan Map contained in the Plan.

17.8 Review of proposed amendments to the Goals, Policies and Map of the Land Use Plan and implementing ordinances will be by the Planning Board and Board of Commissioners and involve citizen participation procedures.

17.9 Develop a process to deal with requests for modification of the Plan. The burden of proof for such a change should be placed upon the petitioner seeking such action. The applicant must show that the requested change is (1)

consistent with the Goals and Policies, (2) compatible with the land use pattern, and (3) in the public interest.

Appendix E. Orange County-Chapel Hill-Carrboro Joint Planning Agreement

The following pages contain the 1987 Orange County-Chapel Hill-Carrboro Joint Planning Agreement.

September 22, 1987
Amended April 2, 1990
Amended September 30, 1998
Amended February 2, 1999
Amended August 20, 2002
Amended June 24, 2003

JOINT PLANNING AGREEMENT

THIS AGREEMENT, made and entered into this 2nd day of November, 1987, by and between the COUNTY OF ORANGE, a political subdivision of the State of North Carolina, the TOWN OF CHAPEL HILL, and the TOWN OF CARRBORO, municipal corporations duly created and existing under the laws of North Carolina.

WITNESSETH:

In consideration of the public benefits expected to flow from the cooperative efforts of the parties in establishing a coordinated and comprehensive system of planning within their respective areas of public concern, the parties to this Agreement hereby mutually agree as follows:

ARTICLE 1. PURPOSE, DEFINITIONS, EFFECTIVE DATE, LINKAGE

Section 1.1 Purpose of the Agreement

The purpose of this Agreement is to establish a method of coordinated and comprehensive planning in the Orange County-Chapel Hill-Carrboro Joint Planning Area, as defined herein.

Section 1.2 Definitions

A. Joint Planning Area. The area within the Rural Buffer and Transition Areas designated on the Joint Planning Area Land Use Map lying outside the extraterritorial planning jurisdiction of Chapel Hill and Carrboro.

B. Joint Planning Area Land Use Plan. The Orange County-Chapel Hill-Carrboro Joint Planning Land Use Plan dated April, 1986, adopted by Orange County August 19, 1986 (revised October 13, 1986), amended May 4, 1987 and as it may be amended from time to time.

C. Joint Planning Area Land Use Map. The Orange County-Chapel Hill-Carrboro Joint Planning Area Land Use Map, adopted August 19, 1986 (revised October 13, 1986) and as it may be amended from time to time.

D. Carrboro Joint Development Review Area (CJDA). The area lying generally west of a division of the Joint Planning Area and shown as such on the copy of the Joint Planning Area Land Use Map attached to this Agreement, labeled Exhibit A, and incorporated herein by reference. Exhibit A is appended to this Agreement solely for the purpose of indicating the CJDA and the CHJDA boundary. Exhibit A is an accurate copy of the Joint Planning Area Land Use Map as of the effective date of this agreement. However, it will only be changed as the Joint Planning Area Land Use Map is amended if the Map amendments change the location of either the CJDA or the CHJDA.

E. Chapel Hill Joint Development Review Area (CHJDA). The area lying generally east of a division of the Joint Planning Area and shown as such on the copy of the Joint Planning Area Land Use Map attached to this Agreement, labeled Exhibit A, and incorporated herein by reference. Exhibit A is appended to this Agreement solely for the purpose of indicating the CJDA and the CHJDA boundary. Exhibit A is an accurate copy of the Joint Planning Area Land Use Map as of the effective date of this

agreement. However, it will only be changed as the Joint Planning Area Land Use Map is amended if the Map amendments change the location of either the CJDA or the CHJDA.

F. Joint Courtesy Review Area. A portion of the northern Rural Buffer Area bounded on the east by I-40 and shown as such on Exhibit A.

G. Rural Buffer. That portion of the Joint Planning Area designated on the Joint Planning Area Land Use Map as such and designated in the Joint Planning Area Land Use Plan as Rural Residential, Agricultural, Public/Private Open Space, Resource Conservation, Extractive/Disposal Use and the overlay district designated University Lake Watershed Area. This area is further defined as being a low-density area consisting of single-family homes situated on large lots having a minimum size of two (2) acres. The Rural Buffer is further defined as land which, although adjacent to an Urban or Transition area, is rural in character and which will remain rural, contain low-density residential uses and not require urban services (public utilities and other town services).

H. Transition Area. That portion of the Joint Planning Area designated on the Joint Planning Area Land Use Map as such. This area is further defined as being in transition from rural to urban or already urban in density. Urban services (public utilities and other town services) are now provided to this area or are projected to be provided to this area. The portion of the Transition Area located in the CJDA shall be further divided into Transition Area I and Transition Area II on the Joint Planning Area Land Use Map. The Joint Planning Area Land Use Plan shall provide that, within

Transition Area II, no tract may, after the effective date of this Agreement, be approved for development at a density that exceeds one (1) housing unit per gross acre until at least 75% of the gross land area of Transition Area I consists of any combination of:

1. lots containing one acre or less;
2. residential developments approved for development at a density of at least one unit per acre;
3. streets, roads and utility easements located outside of lots containing one acre or less;
4. lots or tracts that are used for commercial, industrial, institutional or governmental purposes;
5. tracts that are owned by the University of North Carolina or other non-profit entities and that are not available for development.

This density limitation does not apply to Village Mixed Use districts or Office/Assembly districts as provided for in the Facilitated Small Area Plan for Carrboro's Northern Study Area.

I. Development Permit. Major subdivision preliminary plat approval and any discretionary permit (whether called conditional or special use permit or some other term) issued by the Orange County Board of Commissioners, the Chapel Hill Town Council, or the Carrboro Board of Aldermen.

J. Involuntary Annexation. Annexation authorized or undertaken pursuant to G.S. 16OA-31, Article 4A, Part 3.

K. Voluntary Annexation. Annexation authorized or undertaken pursuant to G.S. Chapter 16OA-31 or G.S. Chapter 160A, Article 4A, Part 4.

Section 1.3 Effective Date and Duration

A. This Agreement, except as provided below, shall become effective on the effective date of an Orange County ordinance (1) adopting this Agreement (after it has been approved by Chapel Hill and Carrboro); (2) amending Orange County's Zoning Ordinance (including Zoning Atlas) and Subdivision Regulations as prescribed in Section 2.1 of this Agreement; (3) amending the Joint Planning Area Land Use Plan to reflect the existence of Transition Area I and Transition Area II; and (4) amending the Joint Planning Area Land Use Map to show the location of Transition Area I and Transition Area II as indicated on Exhibit A. Any previously adopted Agreements shall become null and void upon this date. The Appendix to this Agreement shall become effective upon the execution of this Agreement.

B. This Agreement, including any Appendix hereto, shall remain in effect until terminated by mutual agreement or by withdrawal of any party. Subject to termination provisions of this Agreement, annexation provisions of this Agreement shall be valid for not more than 20 years and may thereafter be renewed. A party may not withdraw until it holds a public hearing on the proposed withdrawal followed by written notices to the other parties within thirty (30) days of the public hearing. The withdrawal shall be effective one (1) year following receipt by the other party of the written notice. Withdrawal of one party shall not invalidate the Agreement with respect to remaining parties.

C. Upon execution of this Agreement, the parties agree that each will take, in a timely manner and without unnecessary delay, all steps (including but not limited to preparation and adoption of Zoning maps, appointment of Transition Area representatives to Planning Boards and Boards of Adjustment, and all required land use ordinance amendments) required to cause this Agreement to become effective, and will notify the other parties when those steps have been taken. Orange County will notify the Towns by resolution when this Agreement becomes effective. This Agreement may become effective as to two parties pending completion of steps necessary to make effective a 3-party Agreement.

Section 1.4 Linkage with the Water and Sewer Management, Planning and Boundary Agreement

The Water and Sewer Management, Planning and Boundary Agreement (hereinafter WSMPBA) is incorporated into this agreement by reference. A copy of the WSMPBA is Exhibit B to this agreement. Termination of the WSMPBA does not terminate this agreement. The withdrawal by a party from the WSMPBA does not constitute withdrawal from this agreement. Termination of this agreement or withdrawal from this agreement can only be accomplished as provided in this agreement.

ARTICLE 2. ADOPTION, ADMINISTRATION AND AMENDMENT OF STANDARDS

Section 2.1 Standards Within the Transition Area

A. Chapel Hill shall prepare a Zoning Map for that portion of the Transition area that lies within the CHJDA and shall recommend its adoption by Orange County which, upon

approval and adoption as prescribed in Subsection C of this Section, shall become part of the Orange County Zoning Ordinance. The Zoning Map shall be prepared using zoning districts which correspond to the text of the Chapel Hill Land Development Ordinance and which correspond with the density designations and plan classifications as prescribed in the adopted Joint Planning Area Land Use Plan and the adopted Joint Planning Area Land Use Map for the CHJDA.

B. Carrboro shall prepare a Zoning Map for that portion of the Transition area that lies within the CJDA and shall recommend its adoption by Orange County, which upon approval and adoption as prescribed in Subsection C of this Section, shall become part of the Orange County Zoning Ordinance. The Zoning Map shall be prepared using zoning districts which correspond with the density designations and plan classifications as prescribed in the adopted Joint Planning Area Land Use Plan and the adopted Joint Planning Area Land Use Map for the CJDA. Transition Area II shall have density limited pursuant to Section 1.2H.

C. Upon completion of the Zoning Maps referred to in Section 2.1A and B above, Orange County shall amend its Zoning Atlas in accordance with said Maps. Orange County shall also adopt by reference (i) the Chapel Hill Land Development Ordinance and make its provisions applicable to that portion of the Transition area located within the CHJDA, and (ii) the Carrboro Land Use Ordinance and makes its provisions applicable to that portion of the Transition area located within the CJDA.

Section 2.2 Standards Within the Rural Buffer

Within the Rural Buffer, the Orange County Zoning Ordinance (including Zoning Atlas) and Subdivision Regulations that are in effect on the effective date of this Agreement shall remain in effect unless amended in accordance with Section 2.6 of this Agreement.

Section 2.3 Permit Administration Within the Transition Area

A. Except as otherwise provided in Sections 2.5 and 2.6, the Town of Chapel Hill and the Town of Carrboro, respectively, shall perform all functions related to the administration of the ordinances referenced in Section 2.1C. Subject to the remainder of this Section, Chapel Hill and Carrboro shall administer the referenced ordinances just as if the land were located within the respective Towns' planning jurisdictions. Administration shall include, but not be limited to, the following:

1. Receipt and processing of applications;
2. Issuance of any required permits and certifications;
3. Review and approval of required site/construction plans;
4. Conducting necessary site/building inspections;
5. Enforcement of all standards;
6. Any other acts or things necessary to administer the Ordinances;

and shall be carried out in a manner so as to insure that a developer complies with all applicable ordinance requirements and the terms and conditions of any permit issued by the respective towns. The towns may also charge fees for processing applications, conducting site/construction plan reviews, and carrying out site/building inspections in accordance with fee schedules applicable within their respective planning jurisdictions.

B. Whenever Chapel Hill or Carrboro receives an application for a development permit as defined in this Agreement relating to land within their respective portions of the Transition area, it shall forward copies of the application to Orange County for review. The towns shall establish timetables to insure that Orange County has an opportunity to make recommendations regarding such applications within the framework of the County's regularly scheduled meeting dates. To the extent possible, the timetables of the County and the towns shall provide for simultaneous review to expedite application processing; provided, however, the towns may not vote to issue or deny a permit until they have received the recommendations of Orange County or until the expiration of forty-five (45) days after orange County has received the application, whichever comes first.

C. From time to time a development moratorium is appropriate in order to address exigent circumstances or the results of a study of density designations, plan classifications or other matters prescribed by the adopted Joint Planning Area Land Use Plan, the Joint Planning Area Land Use Map or any of the land use ordinances of the Town of Chapel Hill or the Town of Carrboro. To preserve the status quo pending the consideration of a land use ordinance amendment designed to address exigent circumstances or the results of a study, the Town of Carrboro or the Town of Chapel Hill may propose the adoption of a development moratorium pending consideration of the ordinance amendment. With respect to the CJDA, any proposed moratorium shall not be effective until adopted by the Town of Carrboro and approved by Orange County following a public hearing conducted by the Town of Carrboro. With respect to the CHJDA, any proposed moratorium shall not be effective until adopted by the Town of Chapel Hill and approved by Orange County

following a public hearing conducted by the Town of Chapel Hill. Any such adopted and approved moratorium shall initially be no more than six months in duration and may be extended one time for no more than six months for the reasons and following the procedures prescribed here.

Section 2.4 Permit Administration in the Rural Buffer

A. Except as otherwise provided in Section 2.6 and the remaining provisions of this Section, Orange County shall perform all functions related to the administration of the ordinances referenced in Section 2 .2 in the same manner as if the land were located outside the Joint Planning Area.

B. Whenever Orange County receives an application for a development permit relating to land located within the CHJDA Rural Buffer or the Joint Courtesy Review Area, it shall forward copies of the application to Chapel Hill for review. Similarly, whenever Orange County receives an application for a development permit relating to land located within the CJDA Rural Buffer or the Joint Courtesy Review Area, it shall forward copies of the application to Carrboro for review. The County shall establish timetables to insure that the towns have an opportunity to make recommendations regarding such applications within the framework of their respective regularly scheduled meeting dates. To the extent possible, the timetables of the respective towns and the County shall provide for simultaneous review to expedite application processing; provided, however, Orange County may not vote to issue or deny a permit until it has received the recommendations of the respective Towns or until the expiration of forty-five (45) days after the respective towns have received the application, whichever occurs first.

C. From time to time a development moratorium is appropriate in order to address exigent circumstances or the results of a study of density designations, plan classifications or other matters prescribed by the adopted Joint Planning Area Land Use Plan, the Joint Planning Area Land Use Map or any of the land use ordinances of Orange County. To preserve the status quo pending the consideration of a land use ordinance amendment designed to address exigent circumstances or the results of a study, Orange County may propose the adoption of a development moratorium pending consideration of the ordinance amendment. Any proposed moratorium shall not be effective until adopted by Orange County following a public hearing conducted by Orange County. Any such adopted moratorium shall initially be no more than six months in duration and may be extended one time for no more than six months for the reasons and following the procedures prescribed here.

Section 2.5 Enforcement Remedies.

A. Permit revocation, if necessary and authorized by ordinance, shall be handled by the same individual or board authorized to issue the original permit.

B. Within those portions of the Joint Planning Area where the ordinances specified in Section 2.lC are administered by the respective towns, enforcement efforts through the use of civil penalties, criminal penalties or injunctive relief shall be initiated by the respective towns. The towns shall have the duty to defend at their own expense and shall indemnify and hold harmless, to the extent they can legally do so, Orange County, its Board of Commissioners, its advisory boards, its staff and all members of its boards and staffs, in their official and individual capacities, from any and all claims, actions, proceedings,

expenses, damages or liabilities, including attorneys' fees and courts costs, resulting from the towns' administration of the ordinances specified in Sections 2.1(C).

C. Orange County shall notify the respective towns and the towns shall notify Orange County as soon as practicable thereafter of any such claim, action or proceeding.

Section 2.6 Text and Map Amendments

A. Proposed amendments to the Joint Planning Area Land Use Plan and/or the Joint Planning Area Land Use Map may be initiated by (i) Orange County or (ii) the Towns or any other party by filing a request for such an amendment with Orange County. Any petition or request to amend the Joint Planning Area Land Use Plan received by the County shall be referred to the respective Towns. No such amendment may become effective until after it has been adopted by Orange County, Chapel Hill and Carrboro following a joint public hearing by all three governing bodies.

B. Except as provided herein, proposed amendments to the text of the Orange County Zoning and Subdivision Ordinances that are applicable within the Rural Buffer as well as proposed changes in zoning district classifications (i.e., zoning map changes) that affect property within the Rural Buffer shall be initiated and adopted in accordance with the procedures set forth in those County ordinances. All such proposals that affect the CHJDA shall be referred to Chapel Hill for review and recommendation, and all such proposed amendments that affect the CJDA shall be referred to Carrboro for review and recommendation. Orange County may not adopt such proposed amendments until the respective Towns have made their recommendations, or until the expiration of thirty (30) days following such referral, whichever occurs first.

C. Whenever Chapel Hill proposes to amend the text of its Land Development Ordinance, and whenever Carrboro proposes to amend the text of its Land Use Ordinance, the respective towns shall deliver a copy of the full text of the proposed amendment to Orange County not later than thirty (30) days before the date of the public hearing on any such amendment. However, with the written consent of the Orange County Manager or his designate, this thirty (30) day period may be reduced to not less than ten (10) days. Unless Orange County files with the respective towns a written objection on or before the date of the public hearing on the proposed ordinance amendment, then adoption of the amendment by the respective town shall automatically effect a corresponding amendment to the applicable ordinance adopted by reference by Orange County as provided in Section 2.1C. Any such objection shall be based on a determination by Orange County that the proposed amendment is inconsistent with the adopted Joint Planning Area Land Use Plan. If a town adopts an amendment despite Orange County's objection, then it shall refer such amendment to Orange County with a request that the County make corresponding changes as expeditiously as reasonably possible so that the town may continue to enforce within its portion of the Transition area the same standards that it enforces within its own planning jurisdiction. In the event of objection by Orange County as provided herein, no such amendment shall be effective within the Joint Planning Area until it is adopted by Orange County.

D. Orange County may not unilaterally amend the text of its zoning or subdivision ordinances applicable to the Transition areas (i.e., those ordinances adopted by reference pursuant to Section 2.1C). Amendments to the ordinances referenced in Section 2.1C by Orange

County may be accomplished only pursuant to subsection C above (including adoption by Orange County following a request to do so by the applicable town). Any petitions or request to amend these ordinances received by the County or initiated by the County shall be referred to the respective Towns.

E. With respect to property that is located within the CHJDA Transition area, changes in zoning classifications may not be made unless and until an ordinance approving such zoning map amendment has been approved both by Orange County and Chapel Hill following a joint public hearing by the two governing bodies. With respect to property that is located within the CJDA Transition area, changes in zoning classifications, including the creation of or changes to the 'floating' conditional use districts designed to implement the recommendations of the 'Facilitated Small Area Plan for Carrboro's Northern Study Area' (Village Mixed Use conditional use districts or Office/Assembly conditional use districts) may not be made unless and until an ordinance approving such zoning map amendment has been approved both by Orange County and Carrboro following a joint public hearing by the two governing bodies. Requests for rezonings within the Transition areas that are filed with the County shall be referred to the respective towns to initiate the amendment process.

F. Proposed amendments to the text of this Agreement shall not become effective until approved by the towns and an Orange County ordinance adopting the amendment is adopted by Orange County.

Section 2.7 Representation of Transition Area Residents

Chapel Hill shall revise its Land Development Ordinance and Carrboro shall revise its Land Use Ordinance to provide that at least one resident of each town's respective Transition area shall be appointed to each town's respective planning board and board of adjustment, in the same manner as representation of extraterritorial planning area residents is provided for in each Town's ordinance.

ARTICLE 3. LIMITATIONS ON ANNEXATIONS

Section 3.1 No Annexation Into Rural Buffer

Except pursuant to the written consent of all parties to this Agreement, neither Chapel Hill nor Carrboro may annex into the Rural Buffer (whether by voluntary or involuntary annexation or any other method authorized by law) nor shall any party seek special legislation accomplishing such annexation.

Section 3.2 No Annexation by One Town Into Another Town's Transition Area

Except pursuant to the written consent of the other town, neither Chapel Hill nor Carrboro may annex into the other's Transition area (whether voluntary or involuntary annexation) or any other method authorized by law, nor shall either Town seek special legislation accomplishing such annexation.

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THIS AGREEMENT entered into this 2nd day of November, 198 7.

Chair, Orange County Board of Commissioners

Attest:

Clerk to the board of Commissioners

Mayor, Town of Chapel Hill

Attest:

Town Clerk

Mayor, Town of Carrboro

Attest:

Town Clerk

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Appendix F. Relationships Between Land Use Classifications and Zoning Districts

Per the Orange County Unified Development Ordinance, zoning districts are applied to Land Use classifications and overlays in accordance with this appendix. A matrix is provided at the end of this appendix that links the zoning districts to the land use classifications and overlays listed.

TRANSITION LAND USE CLASSIFICATIONS

CHAPEL HILL AND CARRBORO TRANSITION

On November 2, 1987, a Joint Planning Agreement was adopted by Orange County and the Towns of Chapel Hill and Carrboro. The Agreement became effective on November 14, 1988, following the adoption, by Orange County, of zoning plans prepared by the two municipalities for their respective Transition Areas. The applied zoning districts are those contained in the Chapel Hill Land Development Ordinance and the Carrboro Land Use Ordinance, and are consistent with the land use plan categories contained in the Orange County Chapel Hill Carrboro Joint Planning Land Use Plan. Reference should be made to the appropriate municipal ordinance and zoning map for a description of the districts and applicable development standards. Under the terms of the Joint Planning Agreement, the Towns of Chapel Hill and Carrboro are responsible for permit administration within their respective Transition Areas.

10-Year Transition

Identifies areas changing from rural to urban in form and density. All densities of residential development would be appropriate. Non-residential uses implemented in accordance with small area plans and/or overlay districts may be appropriate. The applied zoning districts include: R-1 (Rural Residential); R-2 (Low Intensity Residential), R-3 (Medium Intensity Residential), and R-4 (Medium Intensity Residential); and R-5 (High Intensity Residential), R-8 (High Intensity Residential), and R-13 (High Intensity Residential) residential uses, and Zoning Overlay Districts.

20-Year Transition

Identifies areas changing from rural to urban in form and density. All densities of residential development would be appropriate. The applied zoning districts include: R-1 (Rural Residential); R-2 (Low Intensity Residential), R-3 (Medium Intensity Residential), and R-4 (Medium Intensity Residential); and R-5 (High Intensity Residential), R-8 (High Intensity Residential), and R-13 (High Intensity Residential) residential uses.

COMMERCIAL TRANSITION ACTIVITY NODE

Identifies areas changing from rural to urban in form and density. A full range of intensities of commercial development would be appropriate. The applied zoning districts include: LC-1 (Local Commercial); NC-2 (Neighborhood Commercial); CC-3 (Community Commercial); GC-4 (General Commercial); and O/RM (Office/Research and Manufacturing).

COMMERCIAL INDUSTRIAL TRANSITION ACTIVITY NODE

Identifies areas changing from rural to urban in form and density. A full range of commercial and industrial activities would be appropriate and allowed. The applied zoning districts include: I-1 (Light Industrial); I-2 (Medium Industrial); I-3 (Heavy Industrial); LC-1 (Local Commercial); NC-2 (Neighborhood Commercial); CC-3

(Community Commercial); GC-4 (General Commercial); and O/RM (Office/Research and Manufacturing).

ECONOMIC DEVELOPMENT TRANSITION ACTIVITY NODE
Identifies areas along major transportation corridors that may be in proximity to 10-Year or 20-Year Transition areas of the County which have been specifically targeted for economic development activity consisting of light industrial, distribution, flex space, office, and service/retail uses. Such areas are located adjacent to interstate and major arterial highways, and subject to special design criteria and performance standards. The applied zoning districts are EDB-1 (Economic Development Buckhorn Lower Intensity), EDB-2 (Economic Development Buckhorn Higher Intensity), EDE-1 (Economic Development Eno Lower Intensity), EDE-2 (Economic Development Eno Higher Intensity), EDH-1 (Economic Development Hillsborough Linear Office), EDH-2 (Economic Development Hillsborough Limited Office), EDH-3 (Economic Development Hillsborough Limited Office with Residential), EDH-4 (Economic Development Hillsborough Office), and EDH-5 (Economic Development Hillsborough Office/Flex).

RURAL LAND USE CLASSIFICATIONS

RURAL BUFFER
Only very low density residential, agricultural uses exempt from zoning regulations, and low-intensity agricultural support uses are appropriate in the Rural Buffer. The applied zoning district is RB (Rural Buffer).

RURAL RESIDENTIAL
Identifies rural areas to be developed as low intensity and low density residential. The applied zoning district is R-1 (Rural Residential).

AGRICULTURAL RESIDENTIAL
Agricultural activities and associated residential and commercial uses predominate. The applied zoning districts reflect this primary land use and include: AR (Agricultural Residential) and AS (Agricultural Services).

RURAL COMMUNITY ACTIVITY NODE
Identifies rural crossroads communities throughout the County where small scale commercial activities serving the community and surrounding area are appropriate. The applied zoning districts include: LC-1 (Local Commercial) and NC-2 (Neighborhood Commercial).

RURAL NEIGHBORHOOD ACTIVITY NODE
Identifies areas in the County where small scale commercial uses serving the population in the surrounding area are appropriate. The applied zoning districts include: LC-1 (Local Commercial) and NC-2 (Neighborhood Commercial).

RURAL INDUSTRIAL ACTIVITY NODE
Identifies rural areas in the County where small scale industrial activities would be appropriate. The applied zoning district is I-1 (Light Industrial).

OVERLAYS

PUBLIC INTEREST AREA
These lands are considered valuable for recreational and research purposes and are afforded special treatment. The applied zoning district is PID (Public Interest District).

	Land Use Classifications & Overlays	ZONING DISTRICTS																								
		RB	AR	R-1	R-2	R-3, R-4	R-5, R-8, R-13	LC-1	NC-2	CC-3	GC-4	EC-5	O/RM	I-1	I-2	I-3	EI	EDB-1, EDB-2, EDE-1, EDE-2, EDH-1, EDH-2, EDH-3, EDH-4, EDH-5	AS	Special Zoning Overlay District	PID	ASE-CD	MPD-CD	HP-CD	R-CD	NR-CD
Transition	Chapel Hill Transition	Permit Administration by Municipalities under the provisions of the Joint Planning Agreement- Contact appropriate Municipality for applicable Zoning Standards																								
	Carrboro Transition																									
	10-Year Transition			◆	◆	◆	◆													◆			◆	◆	♦	♦
	20-Year Transition			◆	◆	◆	◆													◆			◆	◆	♦	♦
	Commercial Transition Activity Node							◆	◆	◆	◆		◆							◆		◆	◆			♦
	Commercial-Industrial Transition Activity							◆	◆	◆	◆		◆	◆	◆	◆				◆		◆	◆			♦
	Economic Development Transition Activity Node																	◆		◆			◆			♦
Rural	Rural Buffer	◆																				◆		◆	♦	♦
	Rural Residential			◆																		◆		◆	♦	♦
	Agricultural Residential		◆																◆			◆		◆	♦	♦
	Rural Community Activity Node							◆	◆													◆	◆		♦	♦
	Rural Neighborhood Activity Node							◆	◆													◆			♦	♦
	Rural Industrial Activity Node													◆								◆			♦	♦
Overlay	Public Interest Area																				◆					

Amended 5-18-21

Appendix G. Land Use Classification and Overlay Locational Criteria

The land use classifications and overlays are determined by a set of locational criteria specific to each classification. Land in the County was evaluated using the following set of criteria in order to determine the suitability of certain locations to contain various land uses. The locational criteria include:

- Land/Slope
- Hydrology
- Flora and Fauna
- Soil Conditions
- Public Services/Utilities
- Transportation System
- Energy Use
- Placement
- Agriculture and Forestry
- Population Density
- Historic and Cultural Features

Table G-1 provides the specific locational criteria for each land use classification.

TABLE G-1: LAND USE CLASSIFICIATION AND OVERLAY LOCATIONAL CRITERIA

Land Use Classifications and Overlays		Locational Criteria
Developed	**Urban**	▪ **Land/Slope:** No evaluation. ▪ **Hydrology:** No evaluation. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** Located in areas which are or could be reasonably and effectively served by centralized public services and utilities. ▪ **Transportation System:** No evaluation ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located within the municipal boundaries or Extra-Territorial Jurisdiction (ETJ) of the Towns of Chapel Hill, Carrboro, Hillsborough, or the City of Mebane. ▪ **Agriculture and Forestry:** No evaluation. ▪ **Population Density:** No evaluation. ▪ **Historic and Cultural:** No evaluation.

Land Use Classifications and Overlays		Locational Criteria
Transition	**10-Year Transition & 20-Year Transition Areas**	▪ **Land/Slope:** No significant slope or topography problem that would unreasonably increase the cost of extending water and sewer lines. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by the Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for urban uses because of good drainage characteristics and load bearing capacity for site development. ▪ **Public Services/Utilities:** Located in areas which are or could be reasonably and efficiently served by centralized public services and utilities. ▪ **Transportation System:** Located in areas that have very good road access, as well as service by rail lines. These areas should have the most complete transportation network in the county's planning jurisdiction. ▪ **Energy Use:** Located within less than a 5-minute commuting time from small-scale commercial uses and a 5-10 minute commuting time from major commercial uses or an Urban area. ▪ **Placement:** Located in areas which are in transition from rural or low-density uses to urban or higher density uses. ▪ **Agriculture and Forestry:** Located away from areas where development would have a detrimental impact on productive agricultural uses and managed forest land. ▪ **Population Density:** Located in areas with moderate to high population densities. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or county identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Transition	**Commercial Transition Activity Node**	▪ **Land/Slope:** Located on land with slopes of less than 15% grade. Where slopes of 15% or greater are present, protection shall be provided through proper site design and construction practices. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for urban uses because of good drainage characteristics and load bearing capacity for site development. ▪ **Public Services/Utilities:** Located in areas which are or could be reasonably and efficiently served by centralized public services and utilities. ▪ **Transportation System:** Located at the intersection of arterial and/or collector highways or in proximity to other major transportation networks. ▪ **Energy Use:** Located within less than a 10 minute commute from an Urban area. ▪ **Placement:** Located in areas near major transportation routes that could be provided with public water and wastewater services and is appropriate for retail and other commercial uses. ▪ **Agriculture and Forestry:** Located away from areas where development would have a detrimental impact on productive agricultural uses and managed forest land. ▪ **Population Density:** Located in areas with moderate to high population densities. **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Transition	**Commercial-Industrial Transition Activity Node**	▪ **Land/Slope:** Located on land with slopes of less than 15% grade. Where slopes of 15% or greater are present, protection shall be provided through proper site design and construction practices. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for urban uses because of good drainage characteristics and load bearing capacity for site development. ▪ **Public Services/Utilities:** Located in areas which are or could be reasonably and efficiently served by centralized public services and utilities. ▪ **Transportation System:** Located at the intersection of arterial and/or collector highways or in proximity to other major transportation networks. ▪ **Energy Use:** Located within less than a 10 minute commute from an Urban area. ▪ **Placement:** Located in areas near major transportation routes that could be provided with public water and wastewater services, which are appropriate for non-residential and higher density residential uses. ▪ **Agriculture and Forestry:** Located away from areas where development would have a detrimental impact on productive agricultural uses and managed forest land. ▪ **Population Density:** Located in areas with moderate to high population densities. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Transition	**Economic Development Transition Activity Node**	▪ **Land/Slope:** Located on land with slopes of less than 15% grade. Where slopes of 15% or greater are present, protection shall be provided through proper site design and construction practices. ▪ **Hydrology:** Located outside of 100-year flood areas and areas where wetlands are present. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located in areas where detrimental development impacts on local, state, or federally-acknowledged unique or endangered species, and wildlife habitats and corridors can be mitigated through proper site design and construction practices. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for development because of good drainage characteristics and load-bearing capacity for development. ▪ **Public Services/Utilities:** Located in areas which are or could be reasonably and efficiently served by centralized public services and facilities. When located in areas where such services and facilities are not present or planned, general soil conditions must be suitable for on-site sewage disposal systems. ▪ **Transportation System:** Located in areas adjacent to interstate and major arterial highways, particularly those with the potential for providing access to public transit facilities. ▪ **Energy Use:** Located within 10 minutes commuting time from an Urban area and designed so that business uses provided within developments limit the number of short distance commutes for goods and services. ▪ **Placement:** Located in areas adjacent to interstate highways and other major transportation routes specifically targeted for economic development activity, such as light industrial, distribution, and retail uses. ▪ **Agriculture and Forestry:** Located away from areas where development would have a detrimental impact upon productive agricultural uses and managed forest land, and/or where the existing landscape character can be maintained through proper site design and construction practices. ▪ **Population Density:** Located in areas with moderate to high population densities. ▪ **Historic and Cultural:** Located in areas where detrimental development impacts on local, state, or federally-acknowledged historic, cultural, and/or archaeological sites, or county-designated Public Interest Areas does not exist or can be mitigated through proper site design and construction practices.

Land Use Classifications and Overlays		Locational Criteria
Rural	**Rural Buffer**	▪ **Land/Slope:** No evaluation. ▪ **Hydrology:** No evaluation. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for on-site sewage disposal and agricultural uses. ▪ **Public Services/Utilities:** Located in areas that will not require urban-type services. ▪ **Transportation System:** No evaluation. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas directly outside of Transition and Urban areas where prevailing uses are rural residential and agricultural in nature. ▪ **Agriculture and Forestry:** See **Placement**. ▪ **Population Density:** Located in areas with a very low-density rural population. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.
Rural	**Rural Residential**	▪ **Land/Slope:** Located on land with an overall slope of less than 15% grade. Where slopes of 15% or greater are present, protection shall be provided through proper site design and construction practices. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by the Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for on-site sewage disposal systems. ▪ **Public Services/Utilities:** Located in areas that will not require urban-type services. ▪ **Transportation System:** No evaluation. ▪ **Energy Use:** Located in areas at least 5 minutes commuting time from an activity node. ▪ **Placement:** Located in association with other low-density rural residential uses in general proximity to developed or developing activity nodes. ▪ **Agriculture and Forestry:** Located away from areas that would, if developed, have a detrimental impact on productive agricultural and managed forest land. ▪ **Population Density:** Located in areas of rural population density, generally one dwelling unit per acre. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Rural	**Agricultural-Residential**	▪ **Land/Slope:** No evaluation. ▪ **Hydrology:** No evaluation. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** Located in areas where general soil conditions are good for agriculture production. ▪ **Public Services/Utilities:** Located in areas where urban-type services, especially water and sewer lines, are not needed and should be discouraged. ▪ **Transportation System:** No evaluation. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas where the prevailing activity is agriculture or forestry and which is outside of non-farm clusters of population. ▪ **Agriculture and Forestry:** See **Placement**. ▪ **Population Density:** Located in areas of very low population density which is dispersed in a manner typical of agriculturally productive areas. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.
Rural	**Rural Community Activity Node**	▪ **Land/Slope:** Located on land with slopes of less than 15% grade. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for on-site sewage disposal systems. ▪ **Public Services/Utilities:** Located in areas that will not require urban-type services. ▪ **Transportation System:** Focused on the intersection of arterial and/or collector highways and extending 0.5miles beyond such intersections. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Location characterized by a cross-road that serves as a focal area for the surrounding rural and farm population and contains three or more commercial or institutional land uses. ▪ **Agriculture and Forestry:** Located at sites within rural areas that would not unreasonably intrude upon the existing landscape character. ▪ **Population Density:** Located in areas which would serve the surrounding low-density rural and agricultural population, generally 1,000-5,000 persons. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Rural	**Rural Neighborhood Activity Node**	▪ **Land/Slope:** Located on land with an overall slope of less than 15% grade. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by the Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for on-site sewage disposal systems. ▪ **Public Services/Utilities:** Located in areas that will not require urban-type services. ▪ **Transportation System:** Focused on the intersection of arterial and/or collector highways and extending 0.25 miles beyond such intersections. ▪ **Energy Use:** Located at least two miles from another Rural Neighborhood Activity Node. ▪ **Placement:** Located in an area surrounded by rural or agricultural residential uses and containing one or two commercial uses. ▪ **Agriculture and Forestry:** Located at sites within rural areas that would not unreasonably intrude upon the existing landscape character. ▪ **Population Density:** Located in areas which would serve the surrounding low-density rural and agricultural population, generally less than 1,000 persons. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.

Land Use Classifications and Overlays		Locational Criteria
Rural	**Rural Industrial Activity Node**	▪ **Land/Slope:** Located on land with an overall slope of less than 15% grade. ▪ **Hydrology:** Located outside of 100-year flood areas as identified by the Corps of Engineers. Where special flood hazard areas and wetlands exist, protection shall be provided through proper site design and construction practices in accordance with County, State and Federal requirements. ▪ **Flora and Fauna:** Located away from sites that would, if developed, create a threat to unique or endangered species as identified by the state or federal government. ▪ **Soil Conditions:** Located in areas where general soil conditions are suitable for on-site sewage disposal systems. ▪ **Public Services/Utilities:** Located in areas that will not require urban-type services. ▪ **Transportation System:** Focused on the intersection of arterial and/or collector highways and extending 0.5 miles beyond such intersections. ▪ **Energy Use:** Located at least five miles from another Rural Industrial Activity Node. ▪ **Placement:** Located in an area surrounded by rural, very low-density residential uses, or agricultural uses. ▪ **Agriculture and Forestry:** Located at sites within rural areas that would not unreasonably intrude upon the existing landscape character. ▪ **Population Density:** Located in areas with a very low-density rural population. ▪ **Historic and Cultural:** Located away from areas where development would have a detrimental impact on state or federally acknowledged historic-cultural sites or County identified Public Interest Areas.
Overlay	**Public Interest Area**	▪ **Land/Slope:** No limitation. ▪ **Hydrology:** Located in areas that may be within 100-year flood areas. ▪ **Flora and Fauna:** Located in areas that may contain unique and endangered species as identified by state or federal government. ▪ **Soil Conditions:** No limitation. ▪ **Public Services/Utilities:** Located in areas where urban-type services, especially water and sewer lines, are not needed and should be discouraged. ▪ **Transportation System:** Located in areas where arterial or collector highways would not exist or be needed. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas containing specialized uses, generally owned by public or quasi-public institutions. ▪ **Agriculture and Forestry:** No limitations. ▪ **Population Density:** Located in areas which by their nature would have an extremely low-density population or contain no permanent residential population. **Historic and Cultural:** Located in areas that may have historic or cultural values as identified by state or federal governments or the county.

Land Use Classifications and Overlays		Locational Criteria
Overlay	**Water Supply Watershed**	▪ **Land/Slope:** No limitation. ▪ **Hydrology:** Integral to Land Use Overlay. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** Located in areas where urban-type services especially water and sewer lines should be discouraged unless a 10-Year or 20-Year Transition area is present. ▪ **Transportation System:** No evaluation. ▪ **Agriculture and Forestry:** No evaluation ▪ **Population Density:** No evaluation. ▪ **Historic and Cultural:** No evaluation.
Overlay	**Watershed Critical Area**	▪ **Land/Slope:** No evaluation. ▪ **Hydrology:** Located in areas which drain directly to a water supply impoundment by overland flow and interflow or which drain directly to the main channel of trunk stream feeding the impoundment. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** Located in areas characterized by low-density residential minimal non-residential development. ▪ **Transportation System:** No evaluation. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas which are characterized by a low density residential and minimal non-residential development. ▪ **Agriculture and Forestry:** No evaluation. ▪ **Population Density:** Located in areas with low population densities. ▪ **Historic and Cultural:** No evaluation.
Overlay	**Reservoir, Class I**	▪ **Land/Slope:** No limitation. ▪ **Hydrology:** Located where a body of water, such as a pond or lake, confined by a dam or other barrier, is to be used for public water supply from which water flows by gravity or is pumped directly to a treatment plant or to a small intervening storage basin and thence to a treatment plant. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** Located in areas where urban-type services especially water and sewer lines should be discouraged unless a 10-Year or 20-Year Transition area is present. ▪ **Transportation System:** No evaluation. ▪ **Placement:** Located where a body of water, such as a pond or lake, confined by a dam or other barrier, is to be used for public water supply ▪ **Agriculture and Forestry:** No evaluation ▪ **Population Density:** No evaluation. ▪ **Historic and Cultural:** No evaluation.

Land Use Classifications and Overlays		Locational Criteria
Overlay	**Reservoir, Class II**	▪ **Land/Slope:** No limitation. ▪ **Hydrology:** Located where a body of water, such as a pond or lake, confined by a dam or other barrier, is to be used for public water supply from which water flows by gravity or is pumped to a Class I reservoir prior to final entrance to a water treatment plant ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** Located in areas where urban-type services especially water and sewer lines should be discouraged unless a 10-Year or 20-Year Transition area is present. ▪ **Transportation System:** No evaluation. ▪ **Placement:** Located where a body of water, such as a pond or lake, confined by a dam or other barrier, is to be used for public water supply ▪ **Agriculture and Forestry:** No evaluation ▪ **Population Density:** No evaluation. ▪ **Historic and Cultural:** No evaluation.
Overlay	**Resource Protection Area**	▪ **Land/Slope:** May be located in areas where slopes are 15% or greater. ▪ **Hydrology:** May be located in areas with wetlands and 100-year floodplain along drainage tributaries or adjacent to steep slopes. ▪ **Flora and Fauna:** Located in areas that contain significant and natural areas and wildlife habitats, including connecting wildlife corridors, as identified by local, state, or federal inventories. ▪ **Soil Conditions:** Located in areas that contain alluvial and/or hydric (wet soils). ▪ **Public Services/Utilities:** Located in areas where urban-type services will not be required and should be discouraged. ▪ **Transportation System:** Located in areas where arterial or collector highways would not exist or be needed. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas that are best left undeveloped because of their limitations or unsuitability for development, and/or preserved because of the presence of environmentally sensitive features and/or historically significant sites. ▪ **Agriculture and Forestry:** See **Placement**. ▪ **Population Density:** Located in areas which by their nature would have no permanent residential population. ▪ **Historic and Cultural:** Located in areas containing historic and/or archaeological sites listed on the National Register of Historic Places, included on the National Register Study List, designated as a local historic district or landmark, and/or identified as having a high potential for archaeological remains.

Land Use Classifications and Overlays		Locational Criteria
Overlay	**New Hope Creek Corridor Open Space** (refer to the *New Hope Corridor Open Space Master Plan* for details.)	▪ **Land/Slope:** Located in areas where slope varies from gradual along floodplains to 20% and above. ▪ **Hydrology:** Located primarily along New Hope Creek and its tributaries, including the 100-year floodplain. Designated as "Important Regional Wetland" by the U.S. Fish and Wildlife Service. ▪ **Flora and Fauna:** Located in areas which contain great diversity, including regionally rare plant species, hardwood trees of size and number uncommon for their location, and important wildlife habitat. ▪ **Soil Conditions:** Located in areas where soils vary from well-drained, moderately steep firm clay to nearly level alluvial soils subject to flooding. ▪ **Public Services/Utilities:** Located in areas where urban-type services will not be required and should be discouraged. ▪ **Transportation System:** Located in areas where the principal form of transportation will be bike paths and pedestrian trails located adjacent to the rights-of-way of interstate highways and minor arterials. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located in areas that are generally undeveloped due to slope or soil limitations, in addition to specialized use areas in Duke Forest, and paths/trails adjacent to or within road rights-of-way. Located primarily along New Hope Creek and its tributaries, including the 100-year floodplain. ▪ **Agriculture and Forestry:** Located in areas which may be suitable for agriculture and forestry, with the exception of steep slopes. See also **Placement**. ▪ **Population Density:** Located in areas which by their nature would be very low density residential areas. Portions in Duke Forest are not for residential use. ▪ **Historic and Cultural:** Located in areas which may have sites and/or structures of historic or cultural value as identified by federal, state, or county government.
Overlay	**Stoney Creek Basin** (refer to the Spring 1995 UNC Students' Report – "Three Development Options: Conventional, Density-Neutral, Neo-Traditional" and the *Stoney Creek Basin Small Area Plan* for more details.)	▪ **Land/Slope:** No evaluation. ▪ **Hydrology:** Located within the boundaries of the 4,696 acre Stoney Creek Drainage Basin southeast of the Town of Hillsborough in portions of Hillsborough, Eno, and Chapel Hill Townships. ▪ **Flora and Fauna:** No evaluation. ▪ **Soil Conditions:** No evaluation. ▪ **Public Services/Utilities:** No evaluation.. ▪ **Transportation System:** No evaluation. ▪ **Energy Use:** No evaluation. ▪ **Placement:** Located within the boundaries of the 4,696 acre Stoney Creek Drainage Basin southeast of the Town of Hillsborough in portions of Hillsborough, Eno, and Chapel Hill Townships. ▪ **Agriculture and Forestry:** No evaluation. ▪ **Population Density:** No evaluation. ▪ **Historic and Cultural:** No evaluation.

Appendix H. National Register Criteria for Evaluation

U.S. Department of the Interior, National Park Service
NATIONAL REGISTER CRITERIA FOR EVALUATION

Criteria for Evaluation

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or

B. That are associated with the lives of significant persons in or past; or

C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. That have yielded or may be likely to yield, information important in history or prehistory.

Criteria Considerations

Ordinarily cemeteries, birthplaces, graves of historical figures, properties owned by religious institutions or used for religious purposes, structures that have been moved from their original locations, reconstructed historic buildings, properties primarily commemorative in nature, and properties that have achieved significance within the past 50 years shall not be considered eligible for the National Register. However, such properties will qualify if they are integral parts of districts that do meet the criteria or if they fall within the following categories:

a. A religious property deriving primary significance from architectural or artistic distinction or historical importance; or

b. A building or structure removed from its original location but which is primarily significant for architectural value, or which is the surviving structure most importantly associated with a historic person or event; or

c. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or

d. A birthplace or grave of a historical figure of outstanding importance if there is no appropriate site or building associated with his or her productive life; or

e. A reconstructed building when accurately executed in a suitable environment and presented in a dignified manner as part of a restoration master plan, and when no other building or structure with the same association has survived; or

f. A property primarily commemorative in intent if design, age, tradition, or symbolic value has invested it with its own exceptional significance; or

g. A property achieving significance within the past 50 years if it is of exceptional importance.

Appendix I. Standards for Rehabilitation

The Secretary of the Interior's Standards for Rehabilitation

The Secretary's Standards, as they are often referred to, are listed below in their most current version (1992).

1. A property shall be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces, and spatial relationships.
2. The historic character of a property shall be retained and preserved. The removal of distinctive materials or alteration of features, spaces, and spatial relationships that characterize a property shall be avoided.
3. Each property shall be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties shall not be undertaken.
4. Changes to a property that have acquired historic significance in their own right shall be retained and preserved.
5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.
6. Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and, where possible, materials. Replacement of missing features shall be substantiated by documentary and physical evidence.
7. Chemical or physical treatments, if appropriate, shall be undertaken using the gentlest means possible. Treatments that cause damage to historic materials shall not be used.
8. Archaeological resources shall be protected and preserved in place. If such resources must be disturbed, mitigation measures shall be undertaken.
9. New additions, exterior alterations, or related new construction shall not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and shall be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction shall be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

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Appendix J. Lists of Significant Plant and Animal Species in Orange County

The following lists the Significant Plant and Animal Species found in Orange County.

SIGNIFICANT PLANT SPECIES

Endangered:	
*Rhus michauxii	Michaux's Sumac
*Echinacea laevigata	Smooth Coneflower
Isotria medeoloides	Small Whorled Pogonia
Threatened:	
*Baptisia minor	Prairie Blue Wild Indigo
Significantly Rare:	
Anemone berlandieri	Southern Anemone
*Asplenium bradleyi	Bradley's Spleenwort
Berberis canadensis	American Barberry
*Buchnera americana	American Bluehearts
Cardamine douglassii	Douglass's Bittercress
Carex bushii	Bush's Sedge
*Carex woodii	Wood's Sedge
*Collinsonia tuberose	Piedmont Horsebalm
*Desmodium ochroleucum	Creamy Tick-trefoil
*Dichanthalium annulum	a witch grass
*Dodecatheon meadia var meadia	Eastern Shooting Star
*Enemion biternatum	Eastern Isopyrum
Eupatorium godfreyanum	Godfrey's Thoroughwort
Fothergilla major	Large Witch-Alder
*Gnaphalium helleri var helleri	Heller's Rabbit Tobacco
Hexastylis lewisii	Lewis' Heartleaf
Hexalectris spicata	Crested Coralroot
*Liatris squarrulosa	Earle's Blazing Star
*Matelea decipiens	Glade Milkvine
Monotropsis odorata	Sweet Pinesap
*Panicum flexile	Wiry Panic Grass
*Parthenium auriculatum	Glade Wilde Quinine
Platanthera peramoena	Purple Fringeless Orchid
*Porteranthus stipulatus	Indian Physic
Pycnanthemum torrei	Torrey's Mountain-mint
*Ranunculus ambigens	Water-plantain Spearwort
*Reullia purshiana	Pursh's Wild-petunia
*Scutellaria australis	Southern Skullcap
*Scutellaria leonardii	Shale-barren Skullcap
*Thermopsis mollis sensu stricto	Appalachian Golden-banner
*Hygrohypnum closteri	Closter's Brook-hypnum

* Historical record exists for Orange County, but not documented within the last 20 years.

SIGNIFICANT ANIMAL SPECIES

Endangered:

Alasmidonta heterodon	Dwarf Wedgemussel
Alasmidonta varicosa	Brook Floater [mussel]
Fusconaia masoni	Atlantic Pigtoe [mussel]
Lampsilis cariosa	Yellow Lampmussel
Lasmigona subviridis	Green Floater [mussel]
Picoides borealis	Red-cockaded Woodpecker
Toxolasma pullus	Savannah Lilliput [mussel]

Threatened:

Haliaeetus leucocephalus	Bald Eagle
Alasmidonta undulata	Triangle Floater [mussel]
Lampsilis radiate conspicua	Carolina Fatmucket [mussel]
Strophitus undulates	Creeper [mussel]

Special Concern:

Etheostoma collis	Carolina Darter
Hemidactylium scutatum	Four-toed Salamander
Necturus lewisi [amphibian]	Neuse River Waterdog
Tachopteryx thoreyi	Gray Petaltail [dragonfly]
Villosa constricta	Notched Rainbow [mussel]

Significantly Rare:

Accipiter striatus	Sharp-shinned Hawk
Ambloplites cavifrons	Roanoke Bass
Lythrurus matutinus	Pinewoods Shiner
Vireo gilvus	Warbling Vireo
Diacyclops jeanneli putei	Carolina Well Diacyclops
Cambarus davidi	Carolina Ladle Crayfish

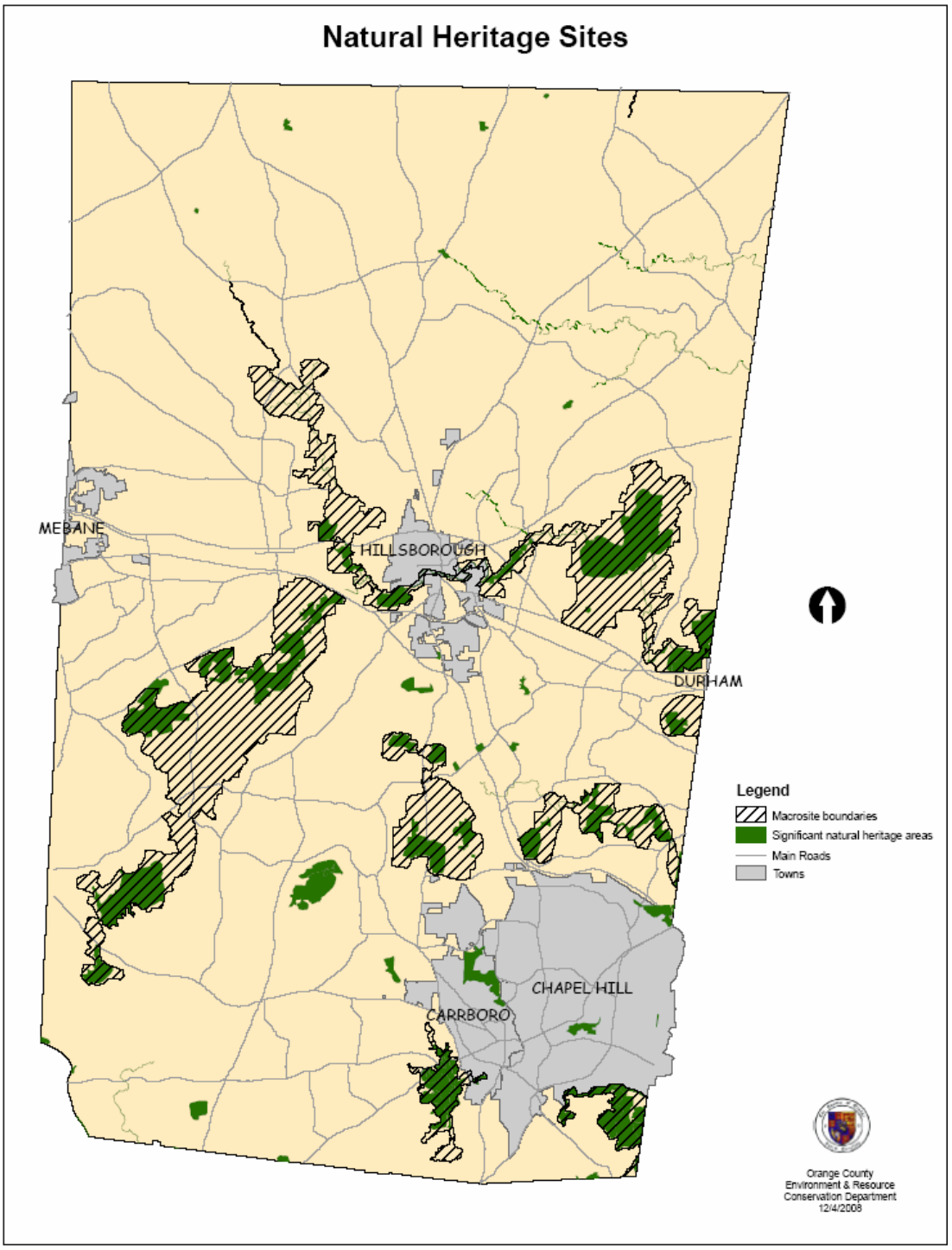
Regionally Rare:

Acantharchus pomotis	Mud Sunfish
Allothrombium sp.	Sumo Mite
Amblyscirtes hegon	Pepper and Salt Skipper
Ameiurus brunneus	Snail Bullhead
Amia calva	Bowfin
Ammodramus savannarum	Grasshopper Sparrow
Anolis carolinensis	Green Anole
Bombycilla cedrorum	Cedar Waxwing
Buteo lineatus	Red-shouldered Hawk
Buteo platypterus	Broad-winged Hawk
Callophrys augustinus	Brown Elfin
Callophrys henrici	Henry's Elfin
Callophrys niphon	Eastern Pine Elfin
Centrarchus macropterus	Flier [fish]
Chlosyne nycteis	Silvery Checkerspot [butterfly]
Dendroica petechia	Yellow Warbler
Elaphe guttata	Corn Snake

Enneacanthus gloriosus	Bluespotted Sunfish
Enneacanthus obesus	Banded Sunfish
Erynnis brizo	Sleepy Duskywing [butterfly]
Etheostoma fusiforme	Swamp Darter
Etheostoma serrifer	Sawcheek Darter
Eumeces inexpectatus	Southeastern Five-lined Skink
Eumeces laticeps	Broadhead Skink
Falco sparverius	American Kestrel
Helmitheros vermivorus	Worm-eating Warbler
Limnothlypis swainsonii	Swainson's Warbler
Lontra canadensis	Northern River Otter
Lynx rufus	Bobcat
Melanerpes erythrocephalus	Red-headed Woodpecker
Meleagris gallopavo	Wild Turkey
Mephitis mephitis	Striped Skunk
Mesomphix sp.	(land snail)
Mniotilta varia	Black-and-white Warbler
Mustela frenata	Long-tailed Weasel
Mustela vison	American Mink
Necturus punctatus	Dwarf Waterdog
Nerodia erythrogaster	Redbelly Water Snake
Plethodon cinereus	Northern Redback Salamander
Pontia protodice	Checkered White [butterfly]
Protonotaria citrea	Prothonotary Warbler
Pseudemys concinna	Eastern River Cooter
Scaphiopus holbrookii	Eastern Spadefoot [toad]
Setophaga ruticilla	American Redstart
Sylvilagus palustris	Marsh Rabbit
Tantilla coronata	Southeastern Crowned Snake
Trachemys scripta	Yellowbelly Slider
Tyto alba	Barn Owl
Vanessa cardui	Painted Lady [butterfly]

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Appendix K. Map of Natural Areas and Macrosites



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Appendix L. Lists of Rare Plant and Animal Species in Orange County

The following pages list the Rare Plant and Animal Species found in Orange County.

Status of Rare Plants in Orange County[1] (Page 1 of 2)

Common Name	Scientific Name	Federal Status	State Status	Last Observed[2]
Vascular Plants				
Southern Anemone	*Anemone berlandieri*		Significantly Rare	Current
Bradley's Spleenwort	*Asplenium bradleyi*		Significantly Rare	Current
Prairie Blue Wild Indigo	*Baptisia minor*		Threatened	Obscure
American Barberry	*Berberis canadensis*		Significantly Rare	Historic
American Bluehearts	*Buchnera americana*		Significantly Rare	Historic
Douglass's Bittercress	*Cardamine douglassii*		Significantly Rare	Obscure
Bush's Sedge	*Carex bushii*		Significantly Rare	Current
Wood's Sedge	*Carex woodii*		Significantly Rare	Historic
Piedmont Horsebalm	*Collinsonia tuberosa*		Significantly Rare	Historic
Creamy Tick-trefoil	*Desmodium ochroleucum*	Species of Concern	Significantly Rare	Historic
a witch grass	*Dichanthalium annulum*		Significantly Rare	Historic
Eastern Shooting Star	*Dodecatheon meadia var meadia*		Significantly Rare	Historic
Smooth Coneflower	*Echinacea laevigata*	Endangered	Endangered	Historic
Eastern Isopyrum	*Enemion biternatum*		Significantly Rare	Historic
Godfrey's Thoroughwort	*Eupatorium godfreyanum*		Significantly Rare	Historic
Large Witch-alder	*Fothergilla major*		Significantly Rare	Current
Heller's Rabbit Tobacco	*Gnaphalium helleri var helleri*		Significantly Rare	Historic
Crested Coralroot	*Hexalectris spicata*		Significantly Rare	Current
Lewis's Heartleaf	*Hexastylis lewisii*		Significantly Rare	Current
Small Whorled Pogonia	*Isotria medeoloides*	Threatened	Endangered	Historic
Earle's Blazing Star	*Liatris squarrulosa*		Significantly Rare	Historic
Glade Milkvine	*Matelea decipiens*		Significantly Rare	Historic
Sweet Pinesap	*Monotropsis odorata*	Species of Concern	Significantly Rare	Current
Wiry Panic Grass	*Panicum flexile*		Significantly Rare	Historic
Glade Wilde Quinine	*Parthenium auriculatum*		Significantly Rare	Historic
Purple Fringeless Orchid	*Platanthera peramoena*		Significantly Rare	Current
Indian Physic	*Porteranthus stipulatus*		Significantly Rare	Historic
Torrey's Mountain-mint	*Pycnanthemum torrei*	Species of Concern	Significantly Rare	Current
Water-plantain Spearwort	*Ranunculus ambigens*		Significantly Rare	Historic
Michaux's Sumac	*Rhus michauxii*	Endangered	Endangered	Historic
Pursh's Wild-petunia	*Reullia purshiana*		Significantly Rare	Historic
Southern Skullcap	*Scutellaria australis*		Significantly Rare	Historic
Shale-barren Skullcap	*Scutellaria leonardii*		Significantly Rare	Current
Appalachian Golden-banner	*Thermopsis mollis sensu stricto*		Significantly Rare	Historic
Glade Bluecurls	*Trichostema brachiatum*		Significantly Rare	Historic
Nonvascular Plants				
Closter's Brook-hypnum	*Hygrohypnum closteri*		Significantly Rare	Historic

[1] List compiled from NC Natural Heritage Program in November 2004. For current listings, consult the "Heritage Data" on the NC Natural Heritage Program web site at http://www.ncnhp.org/

[2] "Historic" species were last observed more than 20 years ago; "Current" species have been spotted within the past 20 years; and "obscure" indicates the date the species was last observed is uncertain.

Status of Rare Animals in Orange County[3] (Page 2 of 2)

Common Name	Scientific Name	Federal Status	State Status	Last Observed[4]
Vertebrates				
Fishes				
Roanoke Bass	*Ambloplites cavifrons*		Significantly Rare	Current
Carolina Darter	*Etheostoma collis pop*	Species of Concern	Special Concern	Historic
Pinewoods Shiner	*Lythrurus matutinus*	Species of Concern	Significantly Rare	Current
Amphibians				
Four-toed Salamander	*Hemidactylium scutatum*		Special Concern	Current
Neuse River Waterdog	*Necturus lewisi*		Special Concern	Current
Birds				
Sharp-shinned Hawk	*Accipiter striatus*		Significantly Rare	Historic
Bald Eagle	*Haliaeetus leucocephalus*	Threatened	Threatened	Current
Red-cockaded Woodpecker	*Picoides borealis*	Endangered	Endangered	Historic
Warbling Vireo	*Vireo gilvus*		Significantly Rare	Current
Invertebrates				
Crustaceans				
Carolina Well Diacyclops	*Diacyclops jeanneli putei*		Significantly Rare	Historic
Carolina Ladle Crayfish	*Cambarus davidi*		Significantly Rare	Current
Insects				
Golden Banded-skipper	*Autochton cellus*		Significantly Rare	Historic
Northern Oak Hairstreak	*Fixsenia favonius ontario*		Significantly Rare	Current
Giant Swallowtail	*Papilio cresphontes*		Significantly Rare	Historic
Mollusks				
Dwarf Wedgemussel	*Alasmidonta heterodon*	Endangered	Endangered	Current
Triangle Floater	*Alasmidonta undulata*		Threatened	Current
Brook Floater	*Alasmidonta varicosa*	Species of Concern	Endangered	Current
Atlantic Pigtoe	*Fusconaia masoni*	Species of Concern	Endangered	Current
Yellow Lampmussel	*Lampsilis cariosa*	Species of Concern	Endangered	Current
Carolina Fatmucket	*Lampsilis radiata conspicua*		Threatened	Current
Green Floater	*Lasmigona subviridis*	Species of Concern	Endangered	Current
Creeper	*Strophitus undulatus*		Threatened	Current
Savannah Lilliput	*Toxolasma pullus*	Species of Concern	Endangered	Current
Notched Rainbow	*Villosa constricta*		Special Concern	Current

[3] List compiled from NC Natural Heritage Program in November 2004. For current listings, consult the "Heritage Data" on the NC Natural Heritage Program web site at http://www.ncnhp.org/

[4] "Historic" species were last observed more than 20 years ago (before 1984); "Current" species have been spotted within the past 20 years (since 1984).

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Appendix M. Comprehensive Park and Recreational Facilities Listing

Table I-1 provides a comprehensive listing of all parks and recreational facilities in Orange County, including those parks in municipal jurisdictions.

TABLE M-1: COMPREHENSIVE LISTING OF PARKS AND RECREATIONAL FACILITIES IN ORANGE COUNTY (ALL JURISDICTIONS)

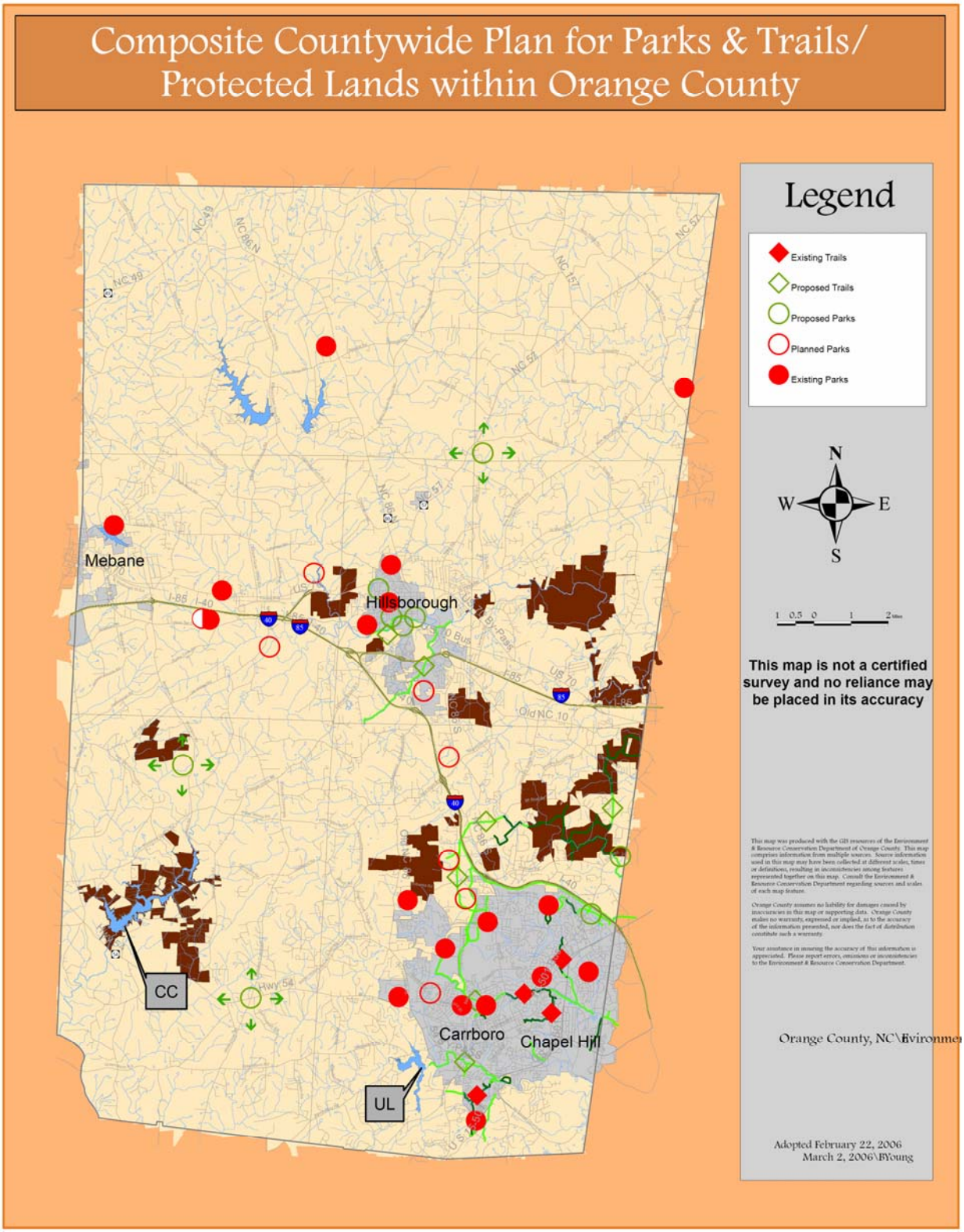
Park	General Park Type	Jurisdiction	Description
Burlington Park	Neighborhood Park	Chapel Hill	Play area and picnic facilities.
Cedar Falls Park	Community Park	Chapel Hill	66.5-acre, tennis courts, play area, picnic facilities, softball/baseball fields, trails
Community Center Park	Community Park	Chapel Hill	12.8-acre, gymnasium, meeting room, pool, climbing wall, playground, picnic area, basketball court, volleyball, rose garden, trails
Ephesus Park	Community Park	Chapel Hill	10-acre, tennis courts, softball/baseball field
Hargraves Park	Community Park	Chapel Hill	6.8-acre, softball/baseball field, gymnasium, meeting rooms, community center, pool, playground, picnic area, tennis and basketball courts
Homestead Park	Community Park	Chapel Hill	40-acre, athletic fields, baseball/softball fields, playground, picnic area, play area, basketball court, dog park, skate park, batting cages
Jones Park	Neighborhood Park	Chapel Hill	10-acre, play area and picnic facilities
Lincoln Center	Community Facility	Chapel Hill	Gymnasium and art studio.
Battle Branch Trail	Trail	Chapel Hill	1.5-mile natural surface trail
Bolin Creek Trail and planned extensions	Trail	Chapel Hill	1.5-mile paved trail
Lower Booker Creek Trail and planned extension	Trail	Chapel Hill	0.85-mile paved trail
North Forest Hills Park	Neighborhood Park	Chapel Hill	9.4-acre, play area, picnic facilities, shelter, basketball court
Oakwood Park	Neighborhood Park	Chapel Hill	Tennis court, play area, picnic facilities
Umstead Park	Community Park	Chapel Hill	19.5-acre, tennis court, play area, picnic facilities, baseball field, outdoor basketball court, volleyball
Westwood Park	Neighborhood Mini-Park	Chapel Hill	Play area
Dry Creek Park	Community Park	Chapel Hill	32-acre, future park site

Appendix M: Comprehensive Park and Recreational Facilities Listing

Park	General Park Type	Jurisdiction	Description
Homestead Park Aquatic Center	Community Facility	Chapel Hill	27,000sf facility with pools, locker rooms, classrooms, and offices
Meadowmont Park	Community Facility (shared with Rashkis School)	Chapel Hill	68.7-acre, gymnasium, athletic fields, pond, trails, trailhead
Dry Creek Trail and planned extension	Trail	Chapel Hill	1.25-mile natural surface trail
Fan Branch Trail and planned extension	Trail	Chapel Hill	1.2-mile paved trail
Meadowmont Trail	Trail	Chapel Hill	1-mile paved trail
Meadowmont Nature Trails	Trail	Chapel Hill	0.5-mile natural surface trail
Morgan Creek Trail	Trail	Chapel Hill	Planning for 1-mile long paved trail
Pritchard Park Nature Trail	Trail	Chapel Hill	1-mile natural surface trail loop
Southern Community Park	Community Park	Chapel Hill	70-acre, planned park to include athletic facilities, fields, picnic area, courts, meadow, dog park, trails, disc golf course
Henry Anderson III Park	Community Park	Carrboro	55-acre, fields, courts, trails, picnic area, restrooms
Adams Tract	Trail System	Carrboro	27.28-acre open space and trail system
Baldwin Park	Neighborhood Mini-Park	Carrboro	2.5-acre, playground equipment, one field, picnic facilities
Brewer's Lane Mini Park	Neighborhood Mini-Park	Carrboro	1-acre, open space and basketball court
Carrboro Elementary School Park	Community Park	Carrboro	3-acre, basketball court, baseball field, track, play areas, picnic area
Simpson Street Mini-Park	Neighborhood Mini-Park	Carrboro	1-acre, play equipment, picnic area, open space
Smith Soccer Field	Community Park	Carrboro, Orange County, CHCCS, UNC	2-acre, soccer fields
Town Commons Plan Area and Pavilions	Community Park	Carrboro	1.7-acre, play equipment, open space, pavilion, bandstand
Wilson Park	Community Park	Carrboro	8.5-acre, play equipment, baseball field, tennis courts, picnic area, restrooms
Martin Luther King, Jr. Park	Community Park	Carrboro	10.16-acre, park development in progress
Murray Street Park	Neighborhood Park	Hillsborough	1-acre, play area, bridge and natural area
Turnip Patch Park	Neighborhood Park	Hillsborough	Planned tot lot and natural area
Cates Creek Greenway/Waterstone Linear Park	Greenway/Linear Park	Hillsborough	Planned greenway.
Hillsborough Heights Park	Neighborhood Park	Hillsborough	Planned park.
Riverwalk	Trail	Hillsborough	Planned 1.6-mile trail

Park	General Park Type	Jurisdiction	Description
Waterstone Community Park	Neighborhood Park	Hillsborough	Planned park to include soccer field and playground.
Gold Park		Hillsborough	Future park
Kings Highway Park		Hillsborough	Future park
Lake Michael Park	Community Park	Mebane	Planned 200-acre park with nature trails, picnic areas, restroom facilities, boat rental, tot play area, shelters, 59-acre lake with fishing access
Central Recreation Center and Park	Recreation Center	Orange County	Multi-purpose field, children's playground, picnic area
Efland-Cheeks Park	Community Park and Center	Orange County	11-acre, multi-purpose field, picnic shelters, playground, community center, basketball courts, nature trail
Fairview Park and planned expansions	Neighborhood Park	Orange County	Baseball field, picnic area, playground. Expansion underway.
Little River Regional Park and Natural Area	Regional Park and Trails	Orange County	391-acre, hiking trails, playground, picnic shelters, bike trails, planned horse trails
Skills Development Center Pocket Park	Neighborhood Park	Orange County	
Triangle Sportsplex	Recreation Center	Orange County	Indoor center with two pools, ice rink, exercise room and other amenities.
Northern Park and planned expansion	Community Center	Orange County	48-acre, gymnasium, playgrounds, meeting rooms, art and pottery rooms, ball fields
New Hope Park at Blackwood Farm	Community Park	Orange County	Planned park.
New Hope Preserve	Trails	Orange County	72-acre preserve with trail system and other low impact recreation uses
RiverPark	Neighborhood Park	Orange County	6-acre, open space, trails, picnic area, performance stage, public market
Twin Creeks District Park	District Park	Orange County	Planned 96-acre park, co-located with school campus, picnic area, trails, soccer fields, tennis and basketball courts, softball/baseball fields, concession area, senior activity area
West Ten Soccer Center	Soccer Park	Orange County	Planned, soccer fields, concession area
Northeast Orange Park	District Park	Orange County	Unplanned, land-banked for future use (Hawkins)

Map I-1, shown below, illustrates the locations of all existing and future park and recreational facilities and trails in Orange County.



MAP I-1: EXISTING AND FUTURE COUNTYWIDE PARKS AND TRAILS.

Appendix N. Water and Sewer Management, Planning and Boundary Agreement

The following pages contain the 2001 Water and Sewer Management, Planning and Boundary Agreement between Orange County, Chapel Hill, Carrboro and Hillsborough.

WATER AND SEWER MANAGEMENT, PLANNING AND BOUNDARY AGREEMENT

THIS AGREEMENT, made and entered into this 3rd day of December, 2001, by and between the COUNTY OF ORANGE, a political subdivision of the State of North Carolina; the TOWN OF CARRBORO, the TOWN OF CHAPEL HILL, and the TOWN OF HILLSBOROUGH, municipal corporations duly created and existing under the laws of North Carolina; and the ORANGE WATER AND SEWER AUTHORITY, a public water and sewer authority duly created and existing under Chapter 162A, Article 1 of the North Carolina General Statutes.

WITNESSETH:

In consideration of mutual benefits regarding the definition of water and sewer service boundaries and the management and planning thereof, the parties to this agreement hereby mutually agree as follows:

I. PREAMBLE

A. Charge to the Water and Sewer Boundary Task Force

Since the mid-1980's, several attempts to define water and sewer service boundaries for Orange County and the municipalities of Chapel Hill, Carrboro and Hillsborough have been undertaken. In 1994, a Task Force was formed consisting of elected officials from Carrboro, Chapel Hill, Hillsborough and Orange County, as well as two members of the Orange Water and Sewer Authority Board of Directors. The charge to the Water and Sewer Service Boundary Task Force is attached as Appendix B.

B. Purpose of Water and Sewer Boundary Agreement

1. To provide a comprehensive, County-wide system of service areas for future utility development and interest areas for dealing with private water and wastewater system problems in areas without public water and sewer service.

2. To complement growth management objectives, land use plans and annexation plans in existing agreements, such as the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and Joint Planning Area Land Use Plan

3. To resolve in advance and preclude future conflicts about future service areas and annexation areas.

4. To provide for predictable long-range water and sewer capital improvement planning and financing.

5. To provide for limitations on water and sewer service in certain areas, as defined.

II. HOW THE AGREEMENT WORKS

A. Effective Date of the Agreement

This agreement shall become effective upon execution by all of the parties and signature by the chief elected or appointed official.

B. Term of Agreement

This agreement shall remain in effect for ten (10) years from its execution, and shall be renewable as provided in the following subsection.

C. Procedure for renewal

At the end of each ten year term, the agreement shall renew automatically, unless written notice is provided of intent to withdraw as noted in subsection E below.

D. Procedure for proposing and acting on changes in agreement including boundaries

1. Any change to the agreement (including boundaries) requires approval of all parties to the agreement.

2. The addition of other parties to this agreement shall be by consent of the current parties.

E. Procedure for withdrawal from/decision not to renew the agreement

1. A party may not withdraw from the agreement, until it holds a public hearing on the proposed withdrawal followed by written notice to the other parties within 30 days of the public hearing. The withdrawal shall be effective one (1) year following receipt by the other parties of the written notice.

2. If a party to the agreement withdraws as provided above, the agreement remains in effect as to the other parties until all but one party withdraws in the manner provided for the in this agreement.

F. Accountability of Future Parties

Future utility providers that wish to become parties of this agreement must be financially and technically capable of providing water/sewer service to address public health emergencies or other identified public facility needs, as defined by the parties of the boundary agreement. The provider must have adequate system capacity, technical capability and financial assets to address system problems within its interest area without compromising service to current customers.

G. Courtesy Review of Development Proposals Within Service and Interest Areas

The water and sewer providers that are parties to this agreement will be provided courtesy review and the right to provide written input into utility design and the provision of easements for all new major subdivisions and other residential and non-residential site plan approvals within their service area and

interest area. The party to this agreement with development plan review authority shall retain approval authority for all development proposals within its planning jurisdiction.

H. Linkage with the Orange County-Chapel Hill-Carrboro Joint Planning Agreement and other future agreements

This agreement shall be made part of the Orange County-Chapel Hill-Carrboro Joint Planning Agreement, by reference, and to any future cooperative planning agreements that may be entered into among some or all of the parties. Termination of the Joint Planning Agreement or any other cooperative planning agreement does not terminate this agreement. Termination of this agreement can only be accomplished as provided in this agreement. Similarly, the withdrawal of a party from the Joint Planning Agreement or from any other cooperative planning agreement does not constitute withdrawal from this agreement. Withdrawal from this agreement can only be accomplished as provided in this agreement.

III. DEFINITIONS

Primary Service Area: An area (as shown on the Water and Sewer Service Boundary Map, which is Appendix A) where water and/or sewer service is now provided, or might reasonably be provided in the future, according to adopted plans and future amendments to adopted plans (hereinafter referred to as "service area")[2].

2. *As per the map in Appendix A, the Town of Hillsborough Long-Term Interest Area and Primary Service Area are combined and for purposes of this agreement is its Primary Service Area.*

OWASA Long-Term Interest Area: An area (as shown on the Water and Sewer Service Boundary Map, which is Appendix A) within which public water and/or sewer service is not anticipated to be made, but if such services are to be provided, OWASA will be the responsible utility service provider. Long-Term Interest Areas are not service areas, and do not include areas outside of Orange County.

OWASA's Long-Term Interest Area is hereinafter referred to as OWASA's "interest area."

Orange County Long-Term Interest Area: The areas of Orange County planning jurisdiction (as shown on the Water and Sewer Service Boundary Map, which is Appendix A) not part of a Primary Service Area or another Long-Term Interest Area within which public water and/or sewer service is not anticipated to be made, but if such services are to be provided, Orange County will be responsible for coordinating the provision of utility service. Long-Term Interest Areas are not service areas, and do not include areas outside of Orange County. Orange County's Long-Term Interest Area is hereinafter referred to as Orange County's "interest area."

Essential Public Facility: A publicly-owned facility, or a facility wholly financed by Federal, State or local government (or a combination thereof) that provides a service for the health, safety and general welfare of County residents (for example, a school, fire station, public safety substation or solid waste convenience center).

Adverse Public Health Condition: An Adverse Public Health Condition exists in the case of a wastewater system(s) when it is (1) failing, (2) documented to be failing by the Orange County Health Department, and (3) no on-site repair is approvable or recommended by the Orange County Health Department; or, in the case of a well water supply system, it meets all of the following criteria:

- the well water supply system is contaminated with a microbial, chemical or other agent which is known to cause disease or other serious health effects;
- the well water supply system is not reparable to the point where the contamination can be eliminated;
- the water from the well water supply system is not treatable prior to withdrawal to the point where the threat of disease or serious health effects is eliminated;
- there is no alternate location on-site for a new well water supply system which can be permitted under Orange County Health Department regulatory

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criteria in effect at the time of the contamination or an alternative site is unacceptable because widespread existence of contamination or because of the potential of contaminant migration to the alternate site.

A description of these terms and their application is provided in Section VI of this Agreement.

Public Water or Public Sewer Service: The provision of water and/or sewer service by a party to this agreement. This definition does not include consulting services and/or technical assistance services.

Emergency Water Transfer: Any short-term transfer of raw water supply or finished drinking water supply from one service provider to assist another service provider in meeting water needs during:

a) unanticipated disruptions or emergencies relating to raw or finished water supply. Such disruptions or emergencies may result from events including, but not limited to: (i) human error; ii) equipment or power failure; iii) supply contamination; iv) major fires, floods, droughts or other disasters; and v) operations or facility maintenance activities, or

b) periods when temporary, short-term disruption of water supply or finished water service may occur as a result of planned or unplanned maintenance of major water supply, pumping, transmission, treatment, or storage facilities.

Non-Emergency Water Transfer: Any transfer from one water service provider to another water service provider of raw water supply or finished drinking water supply which is not an emergency water transfer.

Wastewater Transfer: Any transfer from one wastewater service provider to another wastewater service provider.

Water and/or Sewer Provider: A municipal corporation, county, private non-profit water system, or public water and sewer authority

under the N.C. General Statutes that provides water and/or sewer service to the public.

IV BOUNDARIES

A. Service Areas and Interest Area Boundaries

The service area and interest area boundaries are as shown in Appendix A.

B. Adherence to Boundaries

1. The boundaries on the map (Appendix A) define the areas in which the parties may provide water and sewer service, and no party to this agreement shall extend service beyond the designated boundaries, except as provided in this agreement. In no case shall service be extended beyond the boundaries of Orange County without the approval of the elected boards which exercise planning jurisdiction on either side of the County boundary. Any extension of lines or service into Chatham County requires the approval of Orange County, Chapel Hill or Carrboro, and OWASA.

2. OWASA presently provides water and sewer service outside of the OWASA Service Area shown on Appendix A as follows:

location	service provided
Heritage Hills Subdivision	water and sewer
Rangewood Subdivision	water and sewer
Piney Mountain Subdivision	sewer only

OWASA may continue to provide water and sewer service and may extend water and sewer service within these subdivisions provided it does so consistent with OWASA policies and interlocal agreements related to these services that exist on the effective date of this agreement. Any change to those policies and interlocal agreements after the effective date of this agreement can only be accomplished by an amendment to this agreement.

V. PROCEDURES FOR PROVIDING SERVICE

A. Policy Issues

Planning and growth management issues are influenced by the location of water and sewer. This agreement is not intended to supersede other land use agreements made by the local governments.

B. Procedures for the provision of service within the Service Areas and Interest Areas

1. When water and sewer service provision is required to address an adverse public health condition, or to provide service to an essential public facility, the designated provider for the service area or interest area shall have the right of first refusal to provide such service.

2. Within the service areas and interest areas, the water and sewer provider will agree to provide service, as defined in this agreement, as system capacity, financial resources, and other reasonable utility considerations allow, and as provided in this agreement.

C. Policy of "first-refusal"

1. The designated water and sewer provider within a service area or interest area has first right to provide service if an adverse public health condition or essential public facility service need is established, and public water or public sewer service is determined to be required to address the adverse public health condition.

2. If the designated water and sewer provider declines to provide service, it must notify the other parties to the agreement with a statement of rationale.

3. The designated water and sewer provider may contract with another service provider to address the situation, in the manner prescribed in Section VI of this agreement, upon consultation with other jurisdictions.

4. If no other water and sewer provider is available, Orange County retains the right to address the adverse public health condition or essential public facility need in the manner prescribed in Section VI of this agreement.

VI. LIMITATIONS ON SERVICE

A. Prohibitions and Limitations on Extension Into Interest Areas

The development of land within interest areas is not projected to occur at urban densities, and therefore, public water and sewer service shall be prohibited in these areas, except as provided in this agreement {Section VI.B, VI.C, VI.D, VI.F, VII.A, VII.B, VII.C}[3]. Individual on-site and small/community-scale alternative water supply and wastewater treatment systems not physically connected to central systems will be the primary methods of meeting the water and sewer service needs of existing and future development.

3. ibid.

B. Adverse Public Health Conditions

An exception to the prohibition of public water and sewer service in interest areas may be made to allow the extension of lines in the event the Orange County Health Department documents an "adverse public health condition."

An adverse public health condition exists where:

1. In the case of existing wastewater system(s), it meets all of the following criteria:
   - the wastewater system is failing;
   - the wastewater system is documented to be failing by the Orange County Health Department;
   - there is no on-site repair approvable or recommended by the Orange County Health Department.

   The following terms used in the criteria above mean:

   Failing Wastewater System: A wastewater system is failing when sewage or effluent is seeping or discharging to the ground surface or to surface waters. A permitted, properly-functioning non-discharge wastewater system (e.g., a spray-irrigation system) and a permitted, properly-functioning discharge system are not failing wastewater systems.

   Approvable On-Site Repair: An approvable on-site wastewater system repair that can be completed in a designated repair area which is approvable under Orange County Health Department regulatory soil/site criteria in effect at the time of the needed repair.

   Recommended On-Site Repair: A recommended on-site repair is one that is not an approvable on-site repair, but is one that in the best professional judgment of the Orange County Health Department will reasonably enable the system to function properly. A recommended on-site repair may incorporate engineered design (a design certified by an engineer to overcome all soil/site limitations in the particular situation), site

or system modification, flow reduction or other measures calculated to improve functionality of the system.

2. In the case of an existing well water supply system(s), it meets all of the following criteria:

- the well water supply system is contaminated with a microbial, chemical or other agent which is known to cause disease or other serious health effects;
- the well water supply system is not reparable to the point where the contamination can be eliminated;
- the water from the well water supply system is not treatable prior to withdrawal to the point where the threat of disease or serious health effects is eliminated;
- there is no alternate location on-site for a new well water supply system which can be permitted under Orange County Health Department regulatory criteria in effect at the time of the contamination or an alternative site is unacceptable because widespread existence of contamination or because of the potential of contaminant migration to the alternate site.

The following terms used in the criteria above mean:

Well: A well is any excavation that is cored, bored, drilled, jetted, dug or otherwise constructed for the purpose of locating, testing, developing, draining or recharging any ground water reserves or aquifer, or that may control, divert, or otherwise control the movement of water from or into any aquifer.

Well Water Supply System: A well water supply system is any well that is intended for use or is usable as a source of water supply for domestic use (including household purposes, farm livestock, or gardens) and the pump and

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pipe used in connection with or pertaining thereto, including well pumps, distribution pipes, plumbing pipes, tanks, fittings, and water treatment devices.

The Orange County Health Department shall make the determination as to whether an adverse public health condition exists, and shall make a recommendation on the appropriate remedy to the governmental entity(ies) in the appropriate interest area.

The final decision to use any particular means or tool for rectifying any particular adverse public health condition remains, through zoning regulations or other land use ordinances, with the governmental entity or entities having zoning or planning jurisdiction over the area where the adverse public health condition exists. In the Orange County-Chapel Hill-Carrboro Joint Planning Area, the Joint Development Review Areas shall be used to determine which of the JPA parties shall jointly decide on the appropriate means or tool for rectifying an adverse public health condition. Public water or public sewer lines extended to provide service to an adverse public health condition or essential public facility cannot be used for other purposes or other parties, except as provided in Section VI.D.

C. Sizing of Lines Extended Into Interest Areas

The extension of public water or public sewer lines into an interest area shall be sized so as to comply with State technical and engineering regulations and only to serve the intended use, as defined in this agreement. However, in the case of a public water line extension, provisions shall be made to address adequate line sizing for pressure and volume considerations.

D. Controlling Access to Lines In Interest Areas

Public water or public sewer lines extended to provide service to an adverse public health condition or essential public facility cannot be used for other purposes or other parties, except to remedy another adverse public health condition.

E. Siting of Essential Public Facilities Within Interest Areas

The location of some essential public facilities, particularly schools, requires special consideration for access to public water and sewer lines.

Where possible, schools shall be sited in a manner that promotes the efficient use of existing water and sewer service. Preferably, a set of criteria governing such situations would be developed based on consultations between the appropriate school boards and the elected officials of affected jurisdictions, and applied as necessary.

Publicly-owned facilities other than a public school shall be located in a manner that promotes the orderly provision of water and sewer service. The preferred method of connection is to lines that already exist, or in a manner that would minimize the need to extend existing lines.

F. Water and Sewer Service Into/Out of Orange County

Water and sewer service of any of the service providers that are parties to this agreement shall not be extended outside of the boundaries of Orange County without the approval of the elected boards which exercise planning jurisdiction on either side of the County boundary. Any extension of lines or service into Chatham County requires the approval of Orange County, Chapel Hill or Carrboro, and OWASA. This approval is not required when water and sewer service is required as a condition of annexation by the towns of Chapel Hill or Carrboro.

VII. WATER TRANSFERS AND WASTEWATER TRANSFERS

A. Emergency Water Transfers (This subsection shall not apply to any system operated by a municipality)

Emergency water transfers are transfers that:

1. Are made for short-term duration. For the purpose of this Agreement, short-term duration shall be reviewed at 30 days, 60 days and 90 days, with subsequent 90-day intervals up to one year, as per the following process:

   a. After 30 days duration, a memo from the chief administrative officials of the service providers will be sent to the managers of the jurisdictions that are parties to this Agreement. The memo shall document the emergency, steps being taken to address the situation, and notify the managers of the potential for a longer period of the emergency water transfer.

   b. At 60 days, the service provider sending the water shall notify its elected board (or, in the case of OWASA, the member government elected boards) on the status of the emergency and provide opportunity for the boards to review and comment on the situation. The receiving provider shall provide similar information.

   c. Between 60 days and 90 days from inception of transfer, the elected boards which exercise planning jurisdiction on either side of the boundary in which the service is provided shall review and approve or not approve the continuation of the transfer beyond 90 days. If continuation of the transfer is approved, it may continue for an additional 90-day period. Approval shall be required for each subsequent 90-day period, with a maximum emergency water transfer duration of 365 days from inception. Lack of action by the elected boards as provided in this subsection

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constitutes approval for the subsequent 90-day period.

d. At the 30-day point, the service provider shall determine that adequate water and other resources and facility capacities are available to support the extended emergency transfer without adversely affecting the quality and quantity of water supply and services to customers within its service area, and without adversely affecting environmental quality within its service area;

AND

2. Are not intended to provide raw or finished water supply necessary to support new growth and development within the service area of the service provider receiving the transfer. Neither party shall, in planning for future growth and associated increases in water supply needs, rely upon water from the other party supplied under this agreement to serve such growth.

a. A service provider experiencing a water emergency and receiving emergency water transfers must agree to act expeditiously and adequately to mitigate and remove the causes of the emergency conditions.

B. Non-Emergency Water Transfers (This subsection shall not apply to the Town of Hillsborough until January 1, 2005.)

Non-emergency water transfers are only permitted with the approval of the Orange County Board of Commissioners and the elected or appointed boards of the service providers providing and/or receiving the transfer. If OWASA is the service provider, approval must come from the OWASA Board

of Directors and the elected boards of Carrboro, Chapel Hill and Orange County.

C. Wastewater Transfers

Wastewater transfers are only permitted with the approval of the Orange County Board of Commissioners and the elected or appointed boards of the service providers providing the transfer. If OWASA is the service provider, approval must come from the OWASA Board of Directors and the elected boards of Carrboro, Chapel Hill and Orange County.

VIII. LINKAGE TO OTHER AGREEMENTS

Linkages to Other Agreements

There are a number of existing agreements among the parties to this agreement that are relevant to the management and planning of public water and sewer service. In addition, this agreement and those listed below should all be read together. Where inconsistencies exist, this agreement shall control, except as otherwise provided by law. Included among these relevant agreements with linkages are:

- Hillsborough-Durham Service Area Agreement
- OWASA-Durham Service Agreement
- Eno River Capacity Use Agreement
- Hillsborough/Orange-Alamance Water Systems Agreement
- OWASA-Hillsborough Service Agreement
- OWASA-Hillsborough Bulk Water Transfer Agreement
- Chapel Hill-Durham Annexation Agreement
- Mutual Aid Agreement
- Jordan Lake Allocations from NC DEHNR
- OWASA Agreements of Purchase and Sale between 1) OWASA and Carrboro, 2) OWASA and Chapel Hill, and 3) OWASA and UNC

- OWASA Agreement and Policy related to extensions of water and sewer into University Lake Watershed (applicable to water and sewer service to Rangewood Subdivision and Heritage Hills Subdivision)
- OWASA-Orange County Agreements related to Piney Mountain Subdivision sewer service

IX. APPENDICES

A. Water and Sewer Service Boundaries Map
B. Charge to the Water and Sewer Boundary Task Force
C. Toolbox of Remedies for Adverse Public Health Conditions
D. Joint Planning Area Boundary Map
E. Comprehensive Plan Land Use Maps for all Orange County local governments, and of Chatham County

THIS AGREEMENT ENTERED INTO THIS 3RD DAY OF December, 2001.

Chair, Orange County Board of Commissioners

Attest:
Clerk to the Orange County Board of Commissioners

Mayor, Town of Chapel Hill

Attest:
Town Clerk, Town of Chapel Hill

Mayor, Town of Carrboro

Attest:
Town Clerk, Town of Carrboro

Mayor, Town of Hillsborough

Attest:
Town Clerk, Town of Hillsborough

Chair, OWASA Board of Directors

Attest:

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Appendix O. Draft Framework for Orange County Transportation Plan

The Orange Unified Transportation Board (OUTBoard) developed a draft framework for preparing a comprehensive transportation plan for Orange County. This framework is provided here.

Section 1. The Destinations (a.k.a. hubs, nodes, etc)

A. Future Nodes
   a. Work with Orange County Planning, EDD planning, and others to identify growth areas in the County.
   b. Design land use regulations to channel development into higher density mixed-use development that is conducive to efficient transportation hubs.
   c. Implement plans and develop methodology for enforcing any new regulations.

B. Residential Development
   a. Develop regulations based on neighborhood size to guide motor vehicle connectivity
   b. Develop regulations based on neighborhood size to guide pedestrian connectivity

C. Current destinations
   a. Identify and map all major destinations in the County including schools, parks, businesses, shopping areas, sports facilities, etc.
   b. Develop regulations to improve amenities
      i. Bike facilities
      ii. Sidewalks
      iii. Transit stops (all modes)
   c. Improve County owned destinations
      i. Add bike facilities
      ii. Sidewalks
      iii. Transit stops (all modes)

Section 2. The Edges (a.k.a. routes, corridors, paths, roads, sidewalks, links, etc.)

A. Identify and map major routes between important destinations
B. Describe for each connector the condition and quality of the route for each of the transportation modes
   a. Condition of connector for automobile traffic
   b. Condition of the connector for pedestrian traffic
   c. Condition of the connector for bicycle traffic
   d. Condition of the connector for public transportation
C. Identify deficiencies in the connectors
   a. Safety

   b. Non multimodal (this means, for instance, a road is acceptable for automobiles but unsafe for any other mode such as pedestrians or bicycles.)
   c. Gaps in connectivity

D. Work with DOT to identify and prioritize improvements to connectors
   a. TIP: work to prioritize and advocate for projects
   b. Spot Safety and other improvement programs: work to identify, prioritize, and advocate for projects
   c. With DOT to initiate a SWOCH program (Selected Widening on Curves and Hills) for bicycle safety on rural roads
   d. Apply for funds (i.e. Enhancement, Safe Routes to School)
E. Work with ERCD and Parks and Recreation to develop a Rural Ways program
F. Encourage growth of public transit facilities (i.e. bus routes)
G. Revive train transportation in Orange County

Section 3. Traffic (who uses the network and how they use it)

A. Obtain and monitor traffic information from DOT
B. Work with employers to reduce congestion
C. Support local production, distribution, and use of renewable, sustainable fuels
D. Evaluate and serve the special transportation needs of
   a. The elderly
   b. The young (high school students)
   c. The economically disadvantaged
   d. The disabled
   e. Others
E. Evaluate and serve needs of emergency vehicles
F. Encourage safer interaction between car drivers and bicycle riders
G. Encourage use of rail, bus, bicycle, walking as primary transportation modes
H. Encourage private transit and public/private transit opportunities
I. Seek improvements in traffic flow first by improvements (such as turning lanes) and lastly by adding full lanes

Section 4. Qualities we want our system to have or that we want to keep in mind when planning, designing, and implementing the transportation plan.

A. Efficient in use of all kinds of resources (i.e. natural and financial)
B. Highly integrated and connected
C. Providing equal access
D. Friendly, easy to understand (i.e. signage)
E. Respecting privacy
F. Respecting nature
G. Respecting history and culture
H. Enhancing natural and cultural heritage
I. Providing efficient service
J. Sustainable
K. Creative

L. Attractive

Section 5. How our transportation system should relate with other systems

A. Plan with other groups in County, both public and private
   a. Hillsborough
   b. Chapel Hill
   c. Carrboro
   d. Mebane
   e. ERCD
   f. Parks and Recreation
   g. Indian Trading Path
   h. Others

B. Plan with groups outside of County, both public and private
   a. Neighboring RPOs and MPOs
   b. Mountains to Sea Trail project
   c. Amtrak
   d. NC Railroad
   e. Triangle Transit
   f. Others

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Appendix P. Key Documents

The following is a list of key documents that were used in the preparation of this comprehensive plan.

- *Investing in Innovation: The Orange County Economic Development Commission's 2005-2010 Strategic Plan*
- *State of the Local Economy Report*, published by the Orange County Economic Development Commission in March 2007.
- *Staying on Top: Winning the Job Wars of the Future*, published by the Future Clusters Competitiveness Task Force in 2004.
- *2005-2010 Housing and Community Development Consolidated Plan.*
- *2006 Draft of the Orange County, North Carolina Comprehensive Housing Strategy.*
- *2007 Orange County Master Aging Plan: Building Aging Friendly Communities in Orange.*
- *Orange County Ten Year Plan To End Chronic Homelessness: A Broad Proposal to End Homelessness* (2007).
- *1981 Orange County Land Use Element* (September, 1981)
- *Joint Planning Area Land Use Plan* (1986)
- *Planning Board Evaluation of 1981 Plan* (May, 2007)
- *Shaping Orange County's Future* (2003)
- *Rural Character Study Committee (RCSC) Phase I & II* Report (1990)
- *Rural Character Study Commission Conceptual Guidelines for Rural Orange* (1993)
- *2004 Orange County State of the Environment Report.*
- *Hillsborough Strategic Growth Plan* (2006)
- *Draft Land Use Element Update* (2006)
- *Efland/Mebane Small Area Plan* (2006)
- *Orange County Transfer of Development Rights Feasibility Study, Phase II Report* (2006)
- *NC Highway 57 Speedway Area Small Area Plan* (2007)
- *Proposed 2007 Amendments to Land Use Element* (August, 2007)
- Policy Documents, Creation of APB—VFPO, Rules of Procedure (1992-2002)

- *Planning for an Agricultural Future: A Guide for North Carolina Farmers and Local Governments.* American Farmland Trust, 2007.
- *To Preserve Our Farms, Final Report of the Orange County Agricultural Task Force* (1979)
- *Preserving Our Farms: A Purchase of Development Rights Program of Orange County North Carolina* (Orange County Planning & Inspections Dept., 1994)
- *Farmland for the Future: A Program for Acquiring Agricultural Conservation Easements in Orange County, North Carolina* (1991)
- *Orange County Soil Survey & Supplement, "Important Farmlands in Orange County North Carolina"* (1978)
- *Report of the Ad Hoc Committee on Farmland Preservation to the Board of Directors of the North Carolina Associations of County Commissioners* (1984)
- *Public Policymaking: A Rural Land-Use Case Study of the Public Policy Process* (1984)
- *The Revised Universal Soil Loss Equation with Factor Values for North Carolina*? (1995)
- Kimberly Siran masters thesis, N.C. State University (1997)
- Text and Map in *1981 Land Use Element*
- *Zoning Limitations and Opportunities for Farm Enterprise Diversification: Searching for New Meanings in Old Definitions.* Robert Andrew Branan, 2006.
- Carrboro, Hillsborough, Chapel Hill and Orange County: *Greenhouse Gas Emissions Inventory and Forecast* (draft) (ICLEI Energy Services, Toronto, ON, CA, 2007)
- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *Clean Air for the Triangle Area – An Action Agenda* (Southern Environmental Law Center, 2005)
- *Environmental Responsibility in County Government Goal* (Orange County, 2005)
- *Alternative Fuel and Low Emissions Vehicle Work Group Report*, (Orange County, 2000)
- *Marin Countywide Plan, Natural Systems and Agriculture Chapter* (Marin County CA, 2007)
- *A Report on Sustainability Indicators for Orange County* (Pamela McIntosh, 2000)
- Preservation Ordinance, Historic Preservation Commission Rules of Procedure

- *1996 Historic Preservation Element*
- *Preserving the Orange Tradition* (local landmark program)
- Report on financial impact of local landmark program
- Draft Design Standards (two sets) prepared by Historic Preservation Commission and by grad student
- Staff prepared Historic Preservation Commission notebooks
- Draft Discussion Paper, Heritage/Scenic Corridor Program
- *The Scenic, Rustic, and Rural Roads Program*, by the Planning Board's Transportation Advisory Subcommittee (TAS),
- Multiple Properties Documentation Form (MPDF) & Publication Narrative
- Countywide inventory of historic sites (files) and Loose-leaf notebooks Architectural Resources Report of St. Mary's Road (GAI Consultants)
- National Register Historic District Nominations for Cedar Grove, The Oaks
- Text and Map in *1981 Land Use Element*
- County Policy for Cultural and Archaeological Surveys (2005)
- *Inventory of Sites of Cultural, Historic, Recreational, Biological, and Geological Significance in the Unincorporated Portions of Orange County* (Planning Dept., 1986; revised 1988)
- *Inventory of Natural Areas and Wildlife Habitats for Orange County* (Sather and Hall, 1988; updated 2004)
- *Vascular Flora of the Duke Forest, NC* (Palmer, 1990)
- *Eno River State Park Aquatic Inventory* (NC Wildlife Resources Commission, 1996)
- *Environment and Resources Protection Committee Report*, Shaping Orange County's Future (1998)
- *B. Everett Jordan Lake Project: Inventory for Rare, Threatened, and Endangered Species and Natural Area Inventory* (Harry LeGrand for US Army Corps of Engineers, 1999)
- *A Lands Legacy Program for Orange County* (ERCD, 2000)
- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *State of Open Space* (Triangle Land Conservancy, 2000 & 2002)
- *Triangle GreenPrint Regional Open Space Assessment* (Triangle J Council of Governments et al., 2002)

- *New Hope Corridor Open Space Master Plan* (Coulter Associates and New Hope Corridor Advisory Committee, 1991)
- *A Landscape with Wildlife for Orange County– Parts I & 2* (Wiley et al. for Triangle Land Conservancy, 1997 & 1999)
- *The Duke Forest at 75, A Resource for All Seasons* (Ida Phillips Lynch for Duke University, 2006)
- *Orange County State of the Environment* (Commission for the Environment, 2000; 2002; 2004)
- *Ground-Water Recharge to the Regolith-Fractured Crystalline Rock Aquifer System, Orange County NC* (US Geological Survey in conjunction with Orange County, NC, Water Resources Investigations Report 96-4220, Charles C. Daniel III, 1996)
- *Susceptibility of Ground Water to Surface and Shallow Sources of Contamination, Orange County, NC* (US Geological Survey in conjunction with Orange County, NC, Open File-Report 99-179, Silvia Terziotti and Jo Leslie Eimers, 1999)
- *Investigation of Ground-Water Availability and Quality in Orange County, NC* (US Geological Survey Water Resources Investigations Report 00-4286, in conjunction with Orange County, NC, William L. Cunningham and Charles C. Daniel III, 2001)
- *Public Forum: State of Our Local Water Supply* (Orange Water and Sewer Authority, 2008)
- *Orange County Water Supply Study, Phase I* (Hazen and Sawyer, P.C., 1987)
- *Report of the Water Resources Committee* (Orange County Water Resources Committee, 2001)
- *Shaping Orange County's Future* (Shaping Orange County's Future Task Force, 2001)
- *Jordan Lake Watershed Technical Study and Proposed Nutrient Management Rules* (draft) (NC Division of Water Quality, 2007)
- *Cane Creek Watershed Technical Study* (TetraTech, 1999)
- *Master Recreation and Parks Plan* (1988)
- *Recreation Dedication/Payment-In-Lieu Report* (1995)
- *Executive Summary – Report of the Joint Master Recreation and Parks Work Group* (2000)
- *Report to the Master Recreation and Parks Work Group* (1999)
- *Report on Potential Joint Capital Funding for Parks* (2000)
- *A New Era for Parks – Organizational Structures for Parks Coordination* (2001)

- *Report of the Master Plan Work Group on the Chapel Hill Township Park and Educational Campus* (2003)
- *Concept Plan Review Committee Recommendations for the Efland-Cheeks Park, Phase 2* (2003)
- *Composite Countywide Plan for Parks and Trails – Carrboro, Chapel Hill, Hillsborough, Mebane, and Orange County* (2006)
- *Fairview Public Campus Master Plan Committee Recommendations* (2006)
- *Final Draft of the New Hope Park at Blackwood Farm Master Plan Committee Report*
- *Town of Hillsborough Parks and Recreation Master Plan* (2007)
- *Carrboro Recreation and Parks Comprehensive Master Plan* (2006)
- *Chapel Hill Greenways Plan* (2006)
- *Chapel Hill Parks and Recreation Plan* (2002)
- *Draft Orange County Recreation and Parks Strategic Plan* (2005)
- *Carrboro Greenways Plan* (2007)
- *Lands Legacy Program Action Plan* (2006-2008)
- Orange County Water and Sewer Policy (1991)
- Mebane Water and Sewer Agreement (2004)
- *Orange County Comprehensive Plan Draft* (Land Use Element – Water Resources Section begun 1989, revised through 2002)
- 2006 Efland-Mebane Small Area Plan
- 2005 OWASA Sustainability Report
- Orange County Soil Erosion and Sedimentation Ordinance (2006)
- Monthly Land Disturbance and Revenue Report(July 2007-October 2007)
- Procedures for Erosion and Sedimentation Control Enforcement in the Town of Chapel Hill
- Solid Waste Management Report 1998
- Memorandum from the Solid Waste Advisory Board Stating Goals for the 2030 Comprehensive Plan (May 2007)
- Annual Recycling Tonnage Summaries (2005, 2006, 2007)
- County Waste Reduction Report (2005 & 2006)
- Long-Range Library Facility Planning Report (2004)

- County Library Service Standards (2007)
- Schools Adequate Public Facilities Ordinance
- Educational Facilities Impact Fees Ordinance
- 2003 Staff Report to Board of County Commissioners - An Analysis of Potential Impacts Resulting from a Possible Merger of the OC and CH-Carr School Districts
- 2003 Strategic Plan Priorities for Orange County School District
- 2007-2008 Board of County Commissioner's Approved Capital Improvement Projects for Orange County Schools
- Chapel Hill - Carrboro School Strategic Plan: A Commitment to Excellence (2002-2008)
- 2004-2014 Capital Improvement Plan for Chapel Hill - Carrboro Schools
- 2007 Orange County Master Aging Plan
- *1999 Orange County Bicycle Transportation Plan*
- *2000 Draft Update of the Orange County Transportation Element*
- *2000 Alternative Fuel Vehicle Options Report*
- *2001 Recommendations of the Joint Economic Development District Work Group*
- *2006 Efland/Mebane Small Area Plan*
- *2003 Orange Grove Road Access Management Plan*
- *Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Transportation Improvement Program (2009-2015)*
- *Triangle Area Rural Planning Organization Transportation Improvement Program (2007-2013)*
- *Draft of the Triangle Area Rural Planning Organization Transportation Improvement Program (2009-2015)*
- *2007 Master Aging Plan: Building Aging-Friendly Communities in Orange*
- *2030 Durham-Chapel Hill-Carrboro Metropolitan Planning Organization Long Range Transportation Plan (April 2005) and amendments (May 2007)*
- *2008 Regional Transit Vision Plan: Recommendations for North Carolina's Research Triangle Region.*