

**Warren County-2022
Comprehensive Development Plan
(Land Use Plan)**



Adopted March 11, 2002-Warren County Board of Commissioners

Document compiled by the Kerr-Tar Regional Council of Governments Planning Staff 12/1999 to 3/2002. Text and graphics represent the work of the Warren County Land Use Committee, public work sessions, and comments from public review of the first and second drafts, review by the County Board of Commissioners and Warren County Planning Board.

ACKNOWLEDGEMENTS

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NCRS/US Soil Conservation Service, Warren County
North Carolina Department of Transportation-Division 5
North Carolina Wetlands Restoration Program
Northeast Tarheel Conservancy
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Warren County Tax Assessment Office
Warren County Planning Department
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Warren County Sheriff's Office and Emergency Services
Office of Congresswoman Eva Clayton-Citizens Advisory Board
Town of Warrenton and Town of Norlina Police Departments
Warren County-Local Volunteer Fire Departments and Rescue Squads
National Register of Historic Sites, North Carolina State Archives
Warren County Courthouse-Clerk of the Superior Court
Warren County, North Carolina Cooperative Extension Service
US Natural Heritage Program
North Carolina Center for Geographic Information and Analysis
FEMA-NFIP (National Flood Insurance Program), HMGP (Hazard Mitigation Program)
Triangle J Council of Governments
The Warren Record (Warren County Newspaper)
The Daily Dispatch (Vance County/Henderson Newspaper)

MAP 1

MAP 2

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Attachments

1. NC Conservation Reserve Enhancement Program handout (USDA/NC-DENR-copy)
2. Riparian Buffers-NC Division of Water Quality public education handout (copy)
3. NC Natural Heritage Program (website information-copy)
4. Draft Transportation Improvement Program Project List for Warren County (copy)
5. March 11, 2002 Public Hearing Announcement-Warren County-The Warren Record (copy)
6. Record of Minutes-Warren County Board of Commissioners Meeting March 11, 2002 (copy)

I. INTRODUCTION TO WARREN COUNTY

Overview

Warren County, one of five counties that are members of the Kerr-Tar Regional Council of Governments (Region-K), is located in the north/northeast area of North Carolina at the border with Virginia. Map 1 illustrates the physical location of Warren County, in proximity to Raleigh and Durham, as well as the member counties of Region-K (situated to the west are Vance, Granville, and Person, to the south is Franklin). Map 2 is a base map of Warren County, which identifies its primary physical features, as well as the three incorporated towns of Warrenton (County Seat), Norlina, and Macon.

In relation to major cities within North Carolina and on the East Coast, Warren County is 55 miles from Raleigh, 58 miles from Durham, 99 miles from Richmond, 205 miles from Washington, DC, and is approximately halfway between New York and Florida. I-85 intersects the County in the north/northwest area, providing major highway access for commercial and commuter travel. The nearest major international airport is in Raleigh (Raleigh-Durham International), 60 miles to the south, and there is a spur of the CSX rail line from Vance County.

General geographic characteristics include a land area of 443.38 square miles, 96.67% land (428.62 square miles) and 3.33% water (14.76 square miles). The major surface waters include Lake Gaston, Kerr Lake, and an extensive hydrologic system of creeks and streams that are inclusive of the Roanoke River Basin and Tar-Pamlico River Basin. Topography is classified as having rolling hills, moderately steep slopes along water drainageways, and an average elevation of 451 feet above sea level.

Warren County is a rural county, with its population living in communities no larger than 1,500 people (inclusive of the three incorporated municipalities). The predominating source of revenue for its economy is agriculture, even with the advent of technology-related industry and the outgrowth of development from the Raleigh-Durham area; agri-business is the prime source of revenue. Major agri-business is centered on tobacco and swine farming, but the decline in the tobacco industry, as well as the steady decline of the textile industry has had a reciprocal effect on County economy.

The outpouring of development from the Raleigh-Durham area has caused an increase in residential development, especially from the south where Franklin County is located. Due to these issues, and several others to be identified in this document, County Commissioners established the need to update the County Comprehensive Development Plan. This would insure that development occurs in a manner that best benefits the County, as well protecting it from the negative effects of development such as overburdened infrastructure and damage to natural resources.

A Brief History

The origins of Warren County can be traced back to well before the Revolutionary War, even before the initial settling of the Pilgrims at Plymouth Rock. Native American Indians, the Tuscarora, populated this area prior to the first incursions of white explorers who came to the North Carolina region, in and around present day Warren County, as early as the late 16th and early 17th centuries. From the early 1700's to around 1730, more and more settlements were created. One of the first known settlers to what would eventually become Warren County was William Duke in 1735. At this time, the area became a prime agricultural community, with

tobacco, as the main cash crop. Other agricultural and manufactured exports included tar, hemp, turpentine, and flax, as well as exports of pork and beef.

The area was not formally created as a county until 1764, when Bute County, the forerunner of Warren County, was created. Family names of Hawkins, Macon, Duke, Jones, Eaton, and Person moved into the area. The Shocco community, while not incorporated, began to form with the construction of a local tavern and the Bute County Courthouse in the vicinity.

As the 18th century neared the Revolutionary War in 1776, the name of Bute took a negative connotation, as Lord Bute was the Prime Minister of England. In 1779, the North Carolina State legislature passed a bill that would divide Bute County and remove the name. As such, the northern half of this division became what is now Warren County (name comes from a Massachusetts soldier who was killed in action while fighting at Bunker Hill). The bottom half of this now divided area was named Franklin County. With the close of the Revolutionary War, Warren County began to experience prosperity, not only on an economic scale in the form of tobacco and cotton, but in producing noted politicians. Names such as Nathaniel Macon and Benjamin Hawkins became part of the state government.

At the start of the 19th century, County population totaled 11,085, with approximately 46% white, approximately 54% black, and a minor percentage of free-colored people. The economy prospered with tobacco and cotton industries, as well as horse breeding and eventually several resorts due to the location of mineral springs in the County. Jones' White Sulphur Springs Hotel was located along what is now US-401, around 1810. Shocco Springs Hotel was established in 1815 and Panacea Springs Resort (near Littleton) was established in the 1850's. In 1840, rail service was established through the Raleigh and Gaston Railroad. Educational establishments at this time included the Warrenton Female College, thirteen academies and grammar schools, and ten primary and common schools. The Warrenton Male Academy, now the John Graham Center, was established in downtown Warrenton and remains today as a local government center and home of the County Department of Social Services. Warren County also had a carriage factory, 26 gristmills, four flourmills, 10 grocery and dry goods stores, and seven saw mills.

Yet as prosperity increased, once again so did the clouds of war, as the country wrestled with the issue of slavery. Being that the County economy was so intertwined with the plantation-slave system, both economically and socially, Warren County seceded and became one of the Confederate States. Present-day Ridgeway was, during the Civil War, Camp Beauregard, a large training facility for Confederate troops, including the First North Carolina State and First North Carolina Cavalry. Major Orren Randolph Smith, a Warren native, designed the original Stars and Bars flag and present-day Fort Bragg is named for Confederate General Braxton Bragg, also a Warren County native. It should be noted that part of the County's rich history includes the gravesite of Annie Carter Lee, daughter of General Robert E. Lee (more details on sites are included in the Historic Sites section of this plan).

With the end of the Civil War and the ensuing reconstruction period, Warren County experienced change and some deterioration of its structure. Due to its plantation-slave economy, after the war, mansions became dilapidated, there was a decline in its racing economy, and the resorts that centered on the mineral springs began to close. In time the fabric of Warren County would experience resurgence in the agricultural and textile industries, while still retaining its historical heritage. Many historic homes in downtown Warrenton (County Seat) as well as numerous sites throughout the County have been refurbished, adding to a rich culture. Yet even so, in the later part of the 20th century, the tobacco and textile industries began to decline, in the wake of lawsuits and settlements in the tobacco industry, and an increasing global economy where it is cheaper for companies to have textile work done overseas.

As the population for North Carolina grows, especially in the Raleigh-Durham area, more and more people are moving to the rural life of Warren County. Even with this growth, many families of Warren County can still trace their ancestry back to the original founders, as well as those who have influenced the history and development of the State of North Carolina.

II. PLANNING PRINCIPLES

To determine how a town, city, county, or state study area will grow and eventually look in the future, good planning needs to be implemented. To understand what planning is, in the context of a developing community, consider how one would pursue buying a car. First, there is a problem or issue, the need for a new car. Second, research information on new cars to get an idea of what one needs. Third, compare the different features of the various types and models to determine what will best suit one's needs. Fourth, select and purchase the desired car. Fifth, over time, evaluate the car and its performance, because in time, one will eventually go back to the first element to consider buying a new car.

This process is somewhat simplified, depending upon the severity of the problems and issues, as well as available resources (it may be approached in lesser or greater detail). In planning for growth and development each town, County, county, and state is different, but the basic premise is the same:

- Identify issues, problems, and opportunities.
- Gather information on these issues, problems, and opportunities.
- Compare alternatives.
- Choose a plan and implement the plan.
- Monitor the plan progress.

These five elements form the basic planning process, which is continuous, long term, and can provide great benefits to a community. Whether called a Comprehensive Development Plan or simply a Land Use Plan, this type of document follows the five basic principles previously stated. For simplicity, the term Land Use Plan will be used in this study; the ultimate goal is to establish a pattern for development and beneficial land use. Included within a Land Use Plan the following elements are addressed:

- Identifies current conditions, whether man-made or natural features.
- Identifies what the future image of the study area will be and a path to achieve that image.
- Provides a basis to insure residents will have adequate resources in the future.
- Identifies current issues, needs, and how to address them.
- Solicits the interest and support of residents.
- Field research, meetings with officials and field experts, work sessions, and public meetings.

Planning how a study area (town, city, county, state) will grow addresses:

- Encouraging managed quality growth.
- Protection of the character of the study area and preservation of natural resources.
- Enhancing aesthetics and quality of life.
- Preparation for infrastructure needs and funding to support new growth and development.

Planning can be defined as a method through which well-informed decisions are reached and are handled at the local, county, and state levels. It provides a unit of government the opportunity to evaluate and define what it wants to look like in the future, to predict what may occur, to benefit from opportunities that arise, and to determine actions that will deter future problems.

Warren County has experienced moderate growth between 1990 and 2000 and has the potential to experience even more growth over the next 20 years, especially with the development of the Raleigh-Durham area. County officials determined there was a need to properly plan for the continued growth of Warren County, as well as to provide adequate services to residents. County officials contracted with the Kerr-Tar Regional Council of Governments in August 1999 to prepare an updated Comprehensive Development Plan (Land Use Plan). This document will provide an analysis of current land use patterns and resources in order to determine the best

pattern of growth for Warren County to follow. Initial work on the project commenced September 1999, with the first meeting of the Warren County Land Use Committee held in December 1999.

Elements involved in creating a Land Use Plan start with goals that are established by the governing body in conjunction with the area Planning Board. In the case of Warren County, this included the work of the Board of Commissioners and County Manager. These goals identify the needs to be addressed by the creation of the plan. This will allow the Warren County Board of Commissioners and County Manager to better evaluate, define, and manage how the County will grow in the future.

A Land Use Plan will allow Warren County to predict what may occur and based on its features (environmental conditions, infrastructure, housing, industry, population, and economy) to benefit from new opportunities. It will provide an opportunity to determine actions that will **deter** future negative impacts, rather than **reacting** to negative impacts once they have occurred. A plan is long-term (usually over a period of 20 years) and once adopted it will serve as a policy guide for the tools that help implement the plan.

Several of the traditional planning "tools" include, but are not limited to, a variety of ordinances and documents that provide methods for managing growth and ensuring the needs of residents are addressed:

- ❑ Zoning ordinance, which defines a precise area (zone) for a specific use or type of development (homes, businesses, industry, etc.). It incorporates a zoning map and text of zoning regulations. North Carolina State Law (160A-383) specifically states that "zoning regulations shall be made in accordance with a comprehensive plan..." which means that a unit of government's comprehensive plan is in place first, before zoning is implemented.
- ❑ Updated subdivision regulations to insure minimum standards for land development.
- ❑ Housing codes to address minimum safe standards in manufactured and "stick-built" homes.
- ❑ Building and construction codes to insure safe construction standards for all structures.
- ❑ Floodplain ordinance to insure protection of life and property from flooding and flood damage.
- ❑ Capital Improvements Plan (CIP), which identifies spending for projects, addresses modification/replacement of existing infrastructure, development of new facilities, identifies financing, timing, administrative process to prioritize projects, and provides a fiscal plan to insure available funding.

While these tools can produce an effective plan, two additional elements are needed; citizen participation and monitoring. Citizen participation is defined as meetings held to inform the County residents and solicit their input. This information is analyzed in conjunction with research of the County's features to determine community needs and methods to address them. Monitoring a plan means that it is reviewed periodically (over a period of 10, or 20 years, with updates every 5 years). Once adopted, it will be a reference source for officials and residents to determine if development is following the "right path" to meet the County's goals.

The Warren County Board of Commissioners and Planning Board are necessary to the planning process and the development of the County. The Planning Board works to interpret the Land Use Plan and subsequent regulations to address County needs, at the same time the Board of Commissioners is the governing body for Warren County and is also looking out for the needs and concerns of the residents. In working together the Board acts in an advisory capacity to recommend changes or decisions that affect the growth and development of the County. To insure that the Commissioners are kept informed of the plan's development, the Land Use Committee was formed and included the Planning Board, two County Commissioners, County Manager, Executive Director of the Economic Development Commission, and County Planner. Through this cooperation, the work done by the Committee could be disseminated to the officials who establish policy, as well as officials who provide for the development of the County.

Data Collection

As stated earlier, a Land Use Plan incorporates five basic principles, with the data collected during the information-gathering phase providing support to the goals, objectives, strategies, and finally recommendations to implement the plan. The data that is researched and compiled serves to provide an overall picture or "snapshot" of the study area. Such information is usually researched over a period of time, depending on the size of the study area and the scope of the work involved to create the Land Use Plan.

For Warren County, the information-gathering phase encompassed two and a half years of research, data collection, and analysis. As such, what is presented as the information-base includes researched material, which will have dates ranging from September 1999 through March 2002. Given the available resources in creating this document, planning staff utilized "best available" data, including US Census information, which only began to release Year 2000 data as of April 2001. Completed release for the 2000 Census has estimates for all relevant data available by 2003. Figures involving data from the US Census in this document include all "best available" data for 2000, as of December 2001, inclusive of data from the 1990 Census where applicable. Projections used in data analysis for this document are based on this information.

III. COUNTY FEATURES

Warren County is the sum total of a number of features and resources. Features include (but not limited to) population, economy, available infrastructure (water and sewer), and resources such as Lake Gaston, Kerr Lake, and soil conditions. Combined they define how an area will grow and look over time. For Warren County, these resources and features have been researched to form the information-base of the Comprehensive Development Plan. In accomplishing this, officials and residents are better able to determine the strengths and weaknesses of Warren County, as well as how to meet the needs of a growing population. The information-base includes the following categories:

- Population.
- Housing.
- Economy and Agriculture.
- Soil types and conditions.
- Water resources (quality, and supply).
- Water and sewer infrastructure.
- Wetlands and floodplains.
- Transportation.
- Schools.
- Public safety.
- County facilities.
- Significant environmental features.

The remainder of this study focuses on the features of Warren County, existing issues and concerns, projections for future development, and recommendations to implement this Land Use Plan that will most benefit the development of Warren County. Through this plan development and adoption, County officials will be able to better determine the growth of Warren County, so as to provide the most benefit of the present population, as well as the future population.

Population

(Data Sources: US Census and NC-Office of State Planning, 1970 through 2000 actual, 2010 and 2020 estimated)

Determining the total population and demographics (race, age, gender) of a particular study is an essential element to planning. Such information provides background to define how land is used, water and sewer needs, schools, public safety (police, fire, EMS), roads, and housing. The location of Warren County within an hour of Raleigh and Durham has acted as a buffer to the increased development and provided an incentive to future development.

As Wake, Durham, Granville, and Franklin Counties continue to increase in population, more people are looking to move away from the increased congestion, within a reasonable distance to major metropolitan areas. People are moving to Warren County to enjoy a more rural lifestyle, with more available greenspace. Table 1 illustrates the population growth for Region-K (counties and municipalities) from 1990 to 2000. Table 2 presents statistics on growth from 1970 to 2000 and estimates for 2010 to 2020 (Region-K), Chart 1 graphically illustrates these statistics.

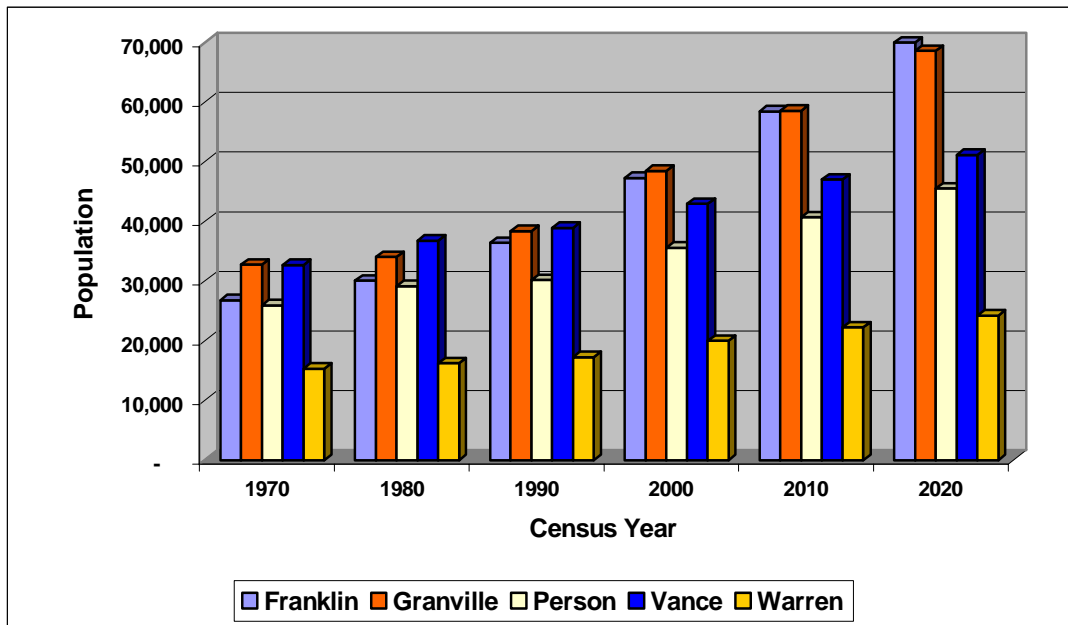
Table 1

Location	1990	2000	Numeric Change +/-	Percent Change
Franklin County	36,414	47,260	10,846	29.8
Bunn	364	357	-7	-1.9
Franklinton	1,615	1,745	130	8
Louisburg	3,037	3,111	74	2.4
Youngsville	424	651	227	53.5
Granville County	38,345	48,498	10,153	26.5
Creedmoor	1,504	2,232	728	48.4
Oxford	7,913	8,338	425	5.4
Stem	249	229	-20	-8
Stovall	409	376	-33	-8.1
Person County	30,180	35,623	5,443	18
Roxboro	7,332	8,696	1,364	18.6
Vance County	38,892	42,954	4,062	10.4
Henderson	15,655	16,095	440	2.8
Kittrell	228	148	-80	-35.1
Middleburg	131	162	31	23.7
Warren County	17,265	19,972	2,707	15.7
Macon	154	115	-39	-25.3
Norlina	996	1,107	111	11.1
Warrenton	949	811	-138	-14.5
County Totals	161,096	194,307	33,211	17.1

Table 2

	1970	1980	1990	2000	2010	2020
Franklin	26,820	30,055	36,414	47,260	58,435	69,994
Granville	32,762	34,043	38,345	48,498	58,532	68,600
Person	25,914	29,164	30,180	35,623	40,678	45,510
Vance	32,691	36,748	38,892	42,954	47,009	51,151
Warren	15,340	16,232	17,265	19,972	22,237	24,183
Region-K	133,527	146,242	161,096	194,307	226,891	259,438

Chart 1

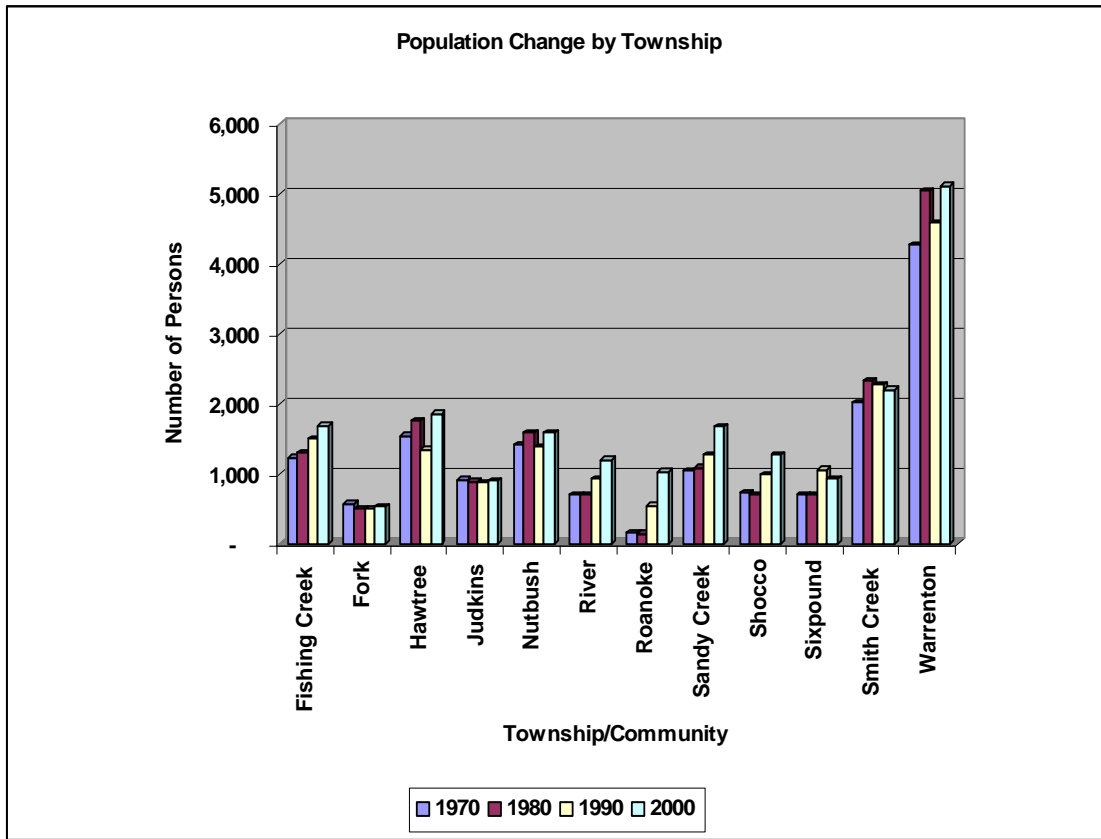


While the preceding information is for counties and municipalities, Warren County is comprised of 12 townships. Table 3 presents changes for 1970 to 2000; Chart 2 graphs the data.

Table 3

	1970	1980	1990	2000
Fishing Creek	1,230	1,310	1,501	1,692
Fork	578	500	505	526
Hawtree	1,547	1,760	1,340	1,858
Judkins	914	887	880	905
Nutbush	1,412	1,590	1,387	1,582
River	712	712	933	1,199
Roanoke	164	150	544	1,031
Sandy Creek	1,043	1,090	1,275	1,670
Shocco	737	710	993	1,270
Sixpound	706	700	1,060	926
Smith Creek	2,020	2,330	2,266	2,198
Warrenton	4,277	5,040	4,581	5,115

Chart 2

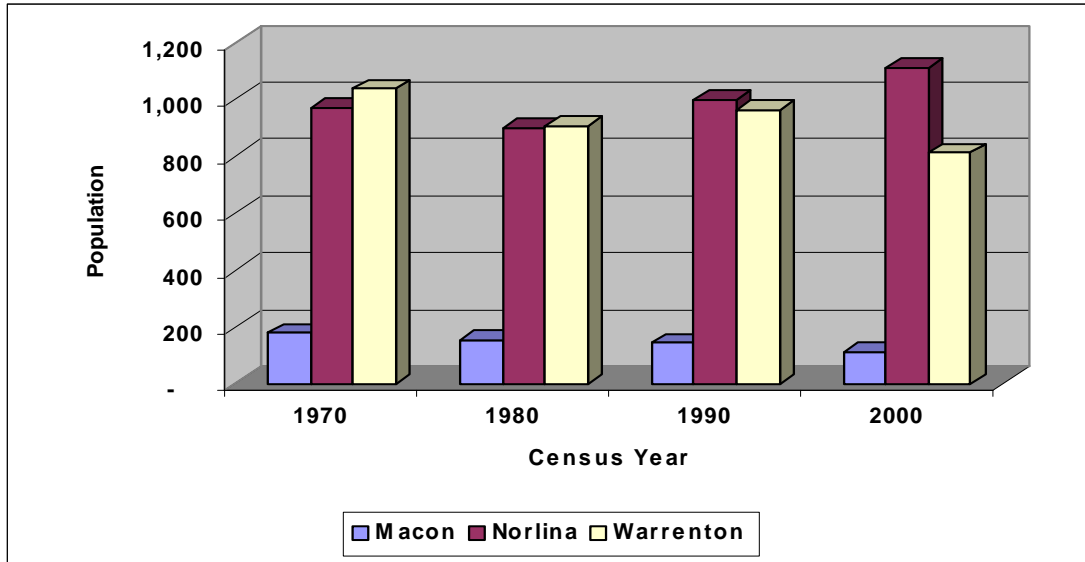


In addition to the 12 townships, there are the three (3) incorporated municipalities for Warren County, as identified in Table 1. The County Seat, **Warrenton**, is located in the **Warrenton Township**; **Norlina** in the **Smith Creek Township**, and **Macon** is located in the **Sixpound Township** (US Census-2000 data). All three municipalities are within close proximity of one another, geographically near the center of the county. To illustrate the population changes over time, 1970 to 2000, Table 4 presents the figures for population within the three incorporated municipalities and Chart 3 graphs this data. When viewed overall, of the 19,972 persons living in the County, approximately 10% live in incorporated areas, another 10% live within proximity to these incorporated areas, and remaining population classified as rural.

Table 4

	1970	1980	1990	2000
Macon	179	153	144	115
Norlina	969	901	996	1,107
Warrenton	1,035	908	959	811
Total	2,183	1,962	2,099	2,033

Chart 3



Demographics

(Data Source: 1970 to 2000 US Census)

Identifying demographics assists in determining where current and future tax dollars are directed. Racial composition is identified so all segments of the population are considered in decisions affecting the County. The information presented for this section represents figures from the 1990 Census and best available data for the 2000 Census (as of October 2001). Tables 5 to 7 compare the change for race and age from the 1990 Census to the 2000 Census. Table 8 illustrates the overall racial demographics for the 1990 and 2000 Census (Census 2000 figures as of October 2001), based on Single Race Category. As of this document, the breakout of race by age has not been released for the 2000 Census, figures used illustrate total numbers and total numbers for persons 18 years of age and older.

Table 5

	Male-1990	Female-1990	Total-1990	Male-2000	Female-2000	Total-2000
Under 5	596	546	1,142	530	542	1,072
5-14	1,279	1,162	2,441	1,435	1,367	2,802
15-24	1,108	1,080	2,188	1,327	1,092	2,419
25-34	1,132	1,176	2,308	1,247	1,032	2,279
35-44	1,177	1,190	2,367	1,474	1,508	2,982
45-54	808	893	1,701	1,355	1,428	2,783
55-64	899	1,126	2,025	1,056	1,111	2,167
65+	1,273	1,820	3,093	1,389	2,079	3,468
Total	8,272	8,993	17,265	9,813	10,159	19,972

Table 6 below compares the change in race from 1990 to 2000 for the county as a whole. With the scope of the nation's demographics changing, the Census has revised its classifications to incorporate the races listed in Table 6. As such, the 1990 census did not include a specified breakout for "Two or More Races," but had grouped this category into "Other Race." Due to this change, the information was Not Available (N/A) for the 1990 data, but has been identified for the 2000 data. This new race category has resulted in a difference when calculating the total population based in these race categories. For example, the 2000 Census has the total

population for Warren County as 19,972 persons. When totaling the figures listed in the table below, this figure comes to 20,289 (difference is accounted for under the Hispanic/Latino category). The reason being that when the Census was conducted individuals may have reported themselves as "multi-racial" (or misclassified themselves under Hispanic/Latino categories). When the number 317 is subtracted from 20,289, the population equals 19,972.

Table 6

	1990	2000
White	6,593	7,769
Black or African American	9,847	10,882
American Indian and Alaska Native	763	957
Asian	14	26
Native Hawaiian/Other Pacific Islander	1	5
Other Race	48	157
Two or More Races (multi-racial)	N/A	176
Hispanic or Latino (of any race)	98	317

Table 7 illustrates the change in racial demographics by age for the major race categories. As of this document, the breakout by age category for race and gender (as illustrated in Table 5) has not been released for the 2000 Census.

Table 7

Black	1990	2000
Under 18	2,888	2,951
18+	6,959	7,931
Total	9,847	10,882
White		
Under 18	1,167	1,372
18+	5,219	6,397
Total	6,386	7,769
Hispanic		
Under 18	36	99
18+	62	218
Total	98	317

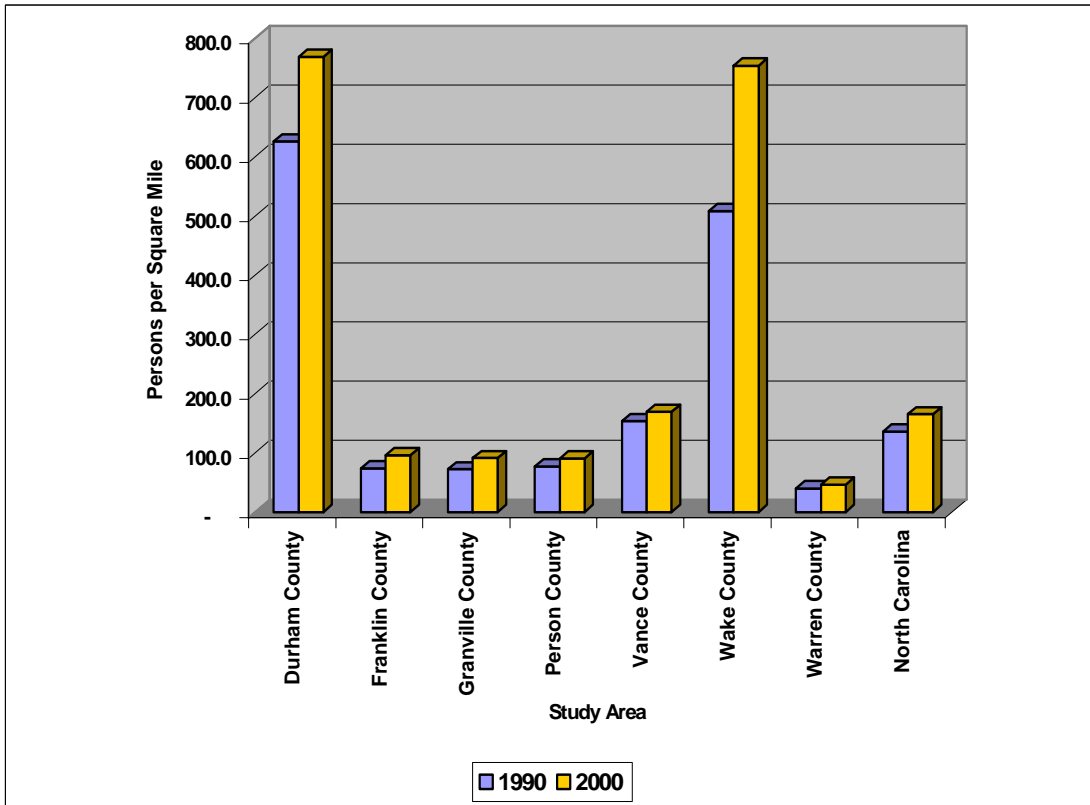
Density of Population per Square Mile

The number of people living in a specific area defines the density of that particular area. Warren County has increased in the last 10 years and projections indicate more growth over the next 20 years. There will become an increased reciprocal effect on the availability of land and services in the County, even with the current available (developable) land. Table 8 shows the density per square mile between Region-K, metropolitan counties, and state, Chart 4 graphs this data.

Table 8

	1990	2000
Durham County	626.3	769.2
Franklin County	74.0	96.1
Granville County	72.2	91.3
Person County	76.9	90.8
Vance County	153.4	169.4
Wake County	508.9	754.7
Warren County	40.3	46.6
North Carolina	136.1	165.2

Chart 4



Density of persons per square mile for Warren County has increased by approximately 14% from 1990 to 2000. In comparison to the counties in the previous chart, only Vance County has a lower increase for this same period (approximately 10%). Although the figures indicate that Warren County is still predominately rural with low density; when compared to the increase of Franklin (23%), Granville (21%), Wake (33%), and Durham (19%), there is a potential concern to officials and residents of Warren County. Once the neighboring counties to the south get to a point of high density and congestion, the most likely scenario would be for people to move to an area that is less dense and congested. One that has available resources to develop and relatively easy access to Raleigh and Durham **(Warren County meets these needs).**

Haliwa-Saponi Indian Community

(Data source: Haliwa-Saponi Indian Tribe reference material-1999-2000)

One community that has a significant presence in Warren County is located in the Arcola (Bethlehem) area, near the border with Halifax and Franklin Counties. With approximately 3,800 tribal members in both **Halifax** County and **Warren** County, this Native American community descends from the Saponi (Red Earth People), Tuscarora, Occaneechee, Tutelo, and Nansemond Indians. In the early 18th century, these tribes merged (under a treaty in 1713 with the pre-colonial governor of the Virginia Territory) and eventually settled in their current community. In 1953, the community formalized their structure and assumed the name Haliwa, chosen to identify the residents "as a people, not a tribe." Saponi was added in 1979 on the State Charter (Haliwa-Saponi), in 1997 the State General Assembly formally recognized Saponi.

As this community has residents that reside in both Halifax and Warren Counties, the Census does not represent an accurate figure Native Americans in Warren County. The following was researched from the data source for incorporation into the information-base of this document. At the time of research, this data represents a survey of 2,109 residents out of the 3,800 residents for the Haliwa-Saponi Community (1999-2000). Of the 2,109 residents surveyed:

- ◆ 52% Female (1,097), 48% Male (1,012).
- ◆ 37.4% persons live in poverty, North Carolina is 13.1%.
- ◆ 55.6% of the community households are Female-headed, North Carolina is 31.1%.
- ◆ 23.7% of the community's occupied housing is substandard.
- ◆ 77% have health insurance, 23% are without health insurance.
- ◆ 780 children born for every 1,000 woman (ages 15-24), North Carolina is 322 children for every 1,000 women (ages 15-24).

The information presented provides an overview of the community in relation to the population of Warren County. Further information on education, income, and housing for the Haliwa will be presented in the appropriate sections of this document.

Conclusion-Population

The charts and tables illustrated in the previous section show that Warren County has experienced moderate growth since 1990 and is estimated to continue its growth (based on 2000 Census) over the next 20 years. From 1990 to 2000, population creased by 15.7% (2,707 persons). In that time frame, the relation between births and deaths was relatively steady (2,100 births, 2,155 deaths), with a net migration into the County of 2,762 persons (total of the three categories when added to the 1990 population equals 19,972 persons). These figures could potentially change once the final release of the 2000 Census has been completed. As of this document, the figures for the 2000 US Census began release in April 2001, but people believe that when this data is released, it includes all data compiled through the Census. However, this process takes approximately 2-3 years (as of this report, only selected data on population and housing is available, full release is estimated by 2003).

The figures presented in this section for 2010 and 2020 are based on current data. With the increase in population for the neighboring counties in Region-K, specifically Franklin, and the proximity to Wake and Durham Counties, these estimates may be low. County officials in the present (and future) administration need to be aware that as the number of residents' increases, there is added demand for services (water and sewer, recreation, schools, police, fire and rescue). Resources currently available to residents, and the projected population growth, may or may not become reality. This will depend upon the efforts of the local and County officials to address issues such as attracting new industry, providing adequate infrastructure (for residents and businesses alike), and **working together** to insure the quality of life for Warren County.

While growth overall for the County has been steady since 1970, the Warrenton, Hawtree, and Roanoke townships experienced the greatest growth from 1990 to 2000. The proximity of these areas to US-158, I-85, US-401, and the Lake Gaston area have been contributing factors, as well as the increased availability of water and sewer infrastructure in the Warrenton area. It is evident that Warren County is growing, while not as rapidly as southern Granville County and Franklin County. Residents are moving to the area and developers are looking to meet housing demands, in the most cost efficient manner. Warren County is a prime area for development for many reasons and this will continue to draw on existing resources (natural and man-made). If the rate of growth continues at this pace, available services, like water and sewer, will be unable to keep pace with demands of the residents (both current and future). As such, it is of primary importance that County officials take the necessary measures to insure that the needs of a growing and diverse population are met.

Housing

Related to the population of the Warren County is the housing element of this document. Figures presented include a combination of the 1990 US Census, 2000 US Census, information researched from the Warren County Code Enforcement Office, Department of Environmental Health, and County Public Works Department. Four primary types of housing are identified:

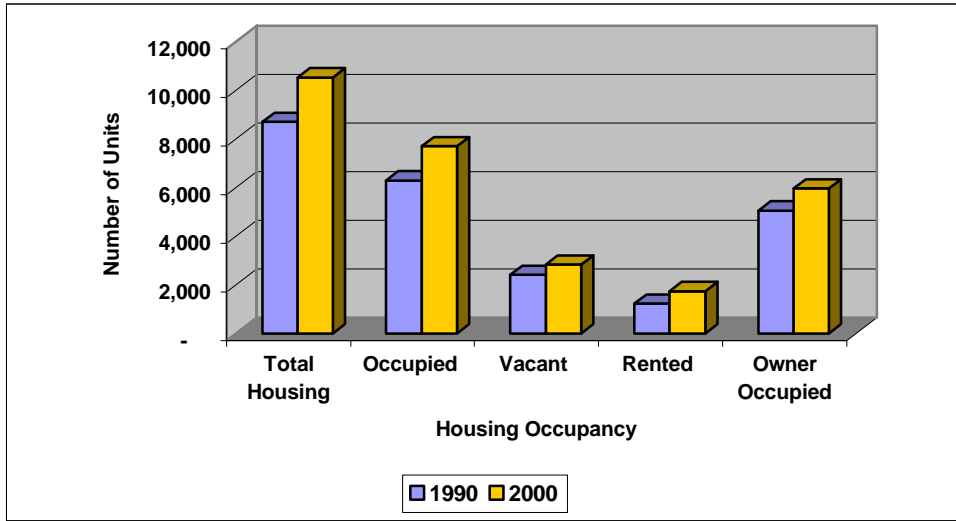
- ◆ Single Family-Detached: individual single-family homes, also known as "stick-built."
- ◆ Single Family-Attached: Single-family homes, "stick-built" and attached to one another.
- ◆ Manufactured Homes: Single-family homes defined by HUD (Department of Housing and Urban Development) as "a dwelling unit of at least 320 square feet in size with a permanent chassis to assure the initial and continued transportability of the home.
- ◆ Apartments: multi-family, multiple dwelling unit buildings.

The total number of housing units has been identified for 1990 and 2000; figures are presented in Table 9 for the County as a whole. Chart 5 graphs these figures for housing occupancy.

Table 9

	1990	2000
Total Housing	8,714	10,548
Occupied	6,305	7,708
Vacant	2,409	2,840
Rented	1,237	1,741
Owner Occupied	5,068	5,967

Chart 5

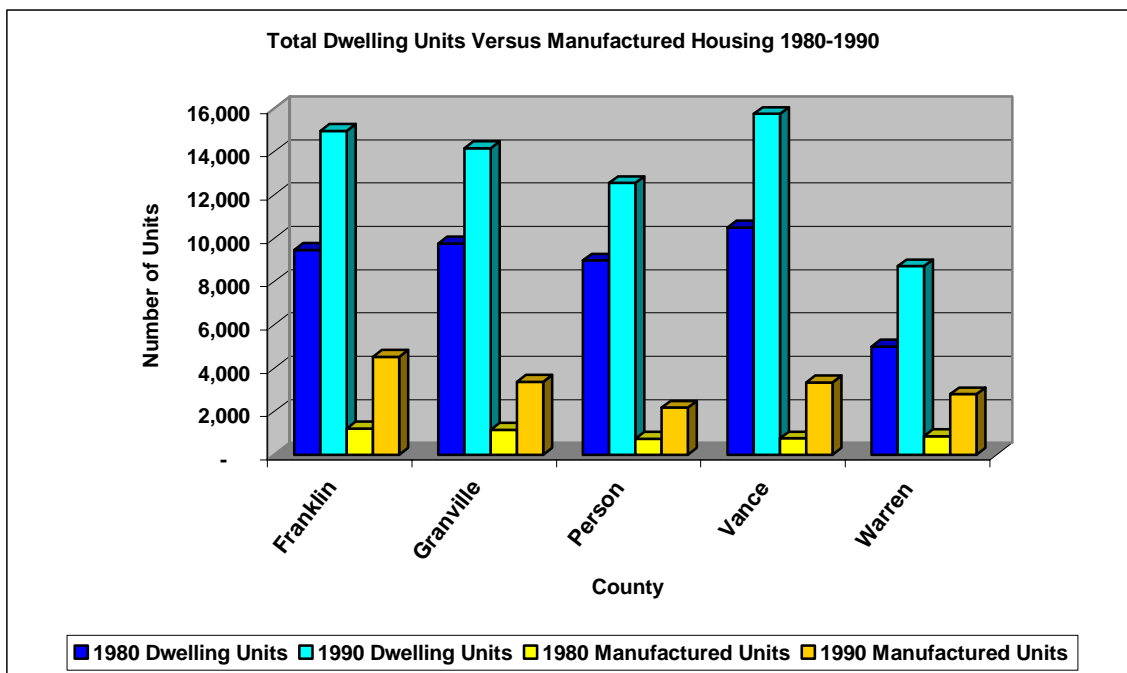


To accurately identify the number of each of the dwelling unit type: single family detached, single family attached, manufactured, and apartments, would require in-depth field surveys for the entire county prior to the completed release of the 2000 Census. In conducting field research on land use patterns, COG planning staff identified clusters of homes to establish concentrations of residential land use (cluster defined as 10 or more dwelling units). Information on housing counts for this plan is based on best available data for the 2000 census (as of October 2001), actual figures from the 1990 Census, and information researched with the Warren County Planning and Code Enforcement Office. As a comparison of the change in number of dwelling units versus manufactured housing, Table 10 illustrates these figures. Chart 6 graphically illustrates the change from 1980 to 1990 for Total Number of Dwelling Units versus Manufactured Housing.

Table 10

	1980 Dwelling Units	1990 Dwelling Units	1980 Manufactured Units	1990 Manufactured Units
Franklin	9,460	14,957	1,213	4,529
Granville	9,764	14,164	1,166	3,381
Person	8,973	12,548	737	2,182
Vance	10,499	15,743	764	3,339
Warren	5,009	8,714	871	2,805
Totals	43,705	66,126	4,751	16,236

Chart 6



While the figures in the above charts and graphs illustrate the numbers of units in Warren County, there are added concerns relative to housing, especially in rural communities as relates to substandard conditions. Several issues of substandard housing include lack of adequate plumbing facilities, lack of adequate kitchen facilities, and lack of adequate heating facilities. Table 11 illustrates the major categories in relation to housing, based on the 1990 Census (as of October 2001, 2000 Census data for this information not released). The 1990 Census also identified that approximately 13% Warren County's 8,714 housing units were substandard (combined total of units lacking complete plumbing and kitchen facilities).

Table 11

	1990	2000
Total Housing Units	8,714	10,548
Lacking Complete Plumbing Facilities	649	N/A
Lacking Complete Kitchen Facilities	478	N/A
Public Water Sources	1,952	N/A
Private Well Water Source-Drilled	4,838	N/A
Private Well Water Source-Dug	1,750	N/A
Other Water Source	174	N/A
Public Sewer Service	1,408	N/A
Private Sewer Service-Septic Tank	6,589	N/A
Other Sewer Service	717	N/A

To further illustrate the changes in housing stock for Warren County (and subsequent reinforcement to information presented in the Population Section), the number of dwelling units by township are presented in Table 12 and graphed in Chart 7 below, from 1970 to 1990 (best available data as of October 2001). This information indicates that the greatest increase in dwelling units over the stated 20-year period occurred in the Roanoke Township. Proximity to Lake Gaston is a significant draw to developers and private landowners alike, the next largest increases occur in the Sixpound and River Townships respectively. In both cases, the most likely

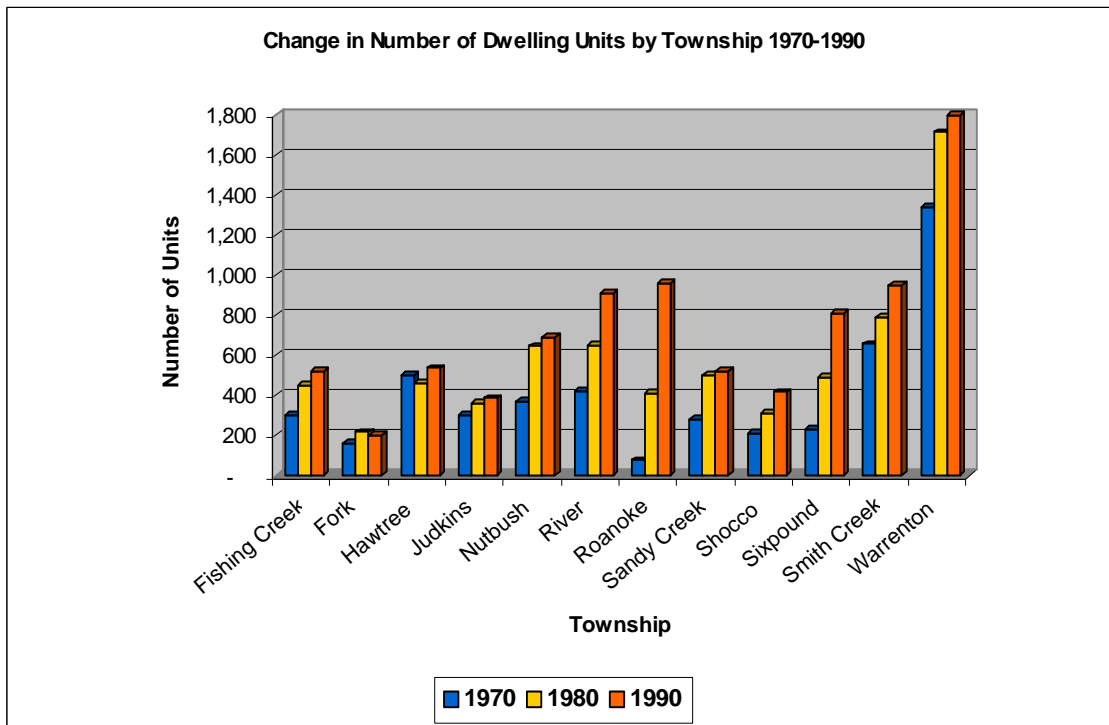
indicator is proximity to Lake Gaston; with the Warrenton Township experiencing the 4th greatest increase in dwelling units, due to the availability of public water infrastructure.

It is most likely that once these same figures are released from the 2000 Census, there will be further changes in growth noted for these townships from 1980 to 2000. The figures presented here do not necessarily indicate a reciprocal effect on the populations for these townships as illustrated on Table 3. New homes do not always mean new population growth; however, they are an indicator of where potential future growth could occur (whether through expansion of existing families or new residents moving to these areas from elsewhere).

Table 12

	1970	1980	1990	Growth 1970-1990
Fishing Creek	303	451	524	221
Fork	159	216	203	44
Hawtree	503	463	537	34
Judkins	300	360	386	86
Nutbush	373	645	693	320
River	421	653	913	492
Roanoke	78	411	960	882
Sandy Creek	284	502	519	235
Shocco	212	314	416	204
Sixpound	230	494	813	583
Smith Creek	655	789	952	297
Warrenton	1,337	1,712	1,798	461

Chart 7



The following information pertains to the 12 townships and the number of substandard dwelling units located within each township. Based on the 1990 Census (best available data, October 2001), Table 13 shows the distribution of units as relates to substandard housing (lack of adequate plumbing, kitchen, and heating facilities). As stated earlier in this section, the 1990 Census identified approximately 13% of Warren County's dwelling units were substandard. When compared to the 1980 Census, which had substandard housing for the County at approximately 23%, this represents a significant improvement over that 10-year period. However, when compared to the same data for the rest of Region-K: Franklin (approx. 10%), Granville (approx. 11%), Person (approx. 8%), and Vance (approx. 6%), the percentage in Warren County is still high (North Carolina in 1990 had 3.9%).

Table 13

	1980 Total Dwelling Units	1980 Sub-standard Dwelling Units	1990 Total Dwelling Units	1990 Sub-standard Dwelling Units
Fishing Creek	451	193	524	163
Fork	216	96	203	48
Hawtree	463	116	537	170
Judkins	360	151	386	55
Nutbush	645	127	693	105
River	653	138	913	103
Roanoke	411	35	960	16
Sandy Creek	502	156	519	50
Shocco	314	69	416	86
Sixpound	494	122	813	83
Smith Creek	789	166	952	74
Warrenton	1,712	263	1,798	174
Totals	7,010	1,632	8,714	1,127

As stated in the Population section, information appropriate in each section would be presented on the Haliwa-Saponi Indian Community. The following data is related to housing for the tribal community (Haliwa-Saponi Indian Tribe reference material-1999-2000). This data represents a survey of 2,109 residents out of 3,800 residents for the Haliwa-Saponi Community (1999-2000).

- ◆ 87% have indoor plumbing, 13% have no indoor plumbing.
- ◆ 76% have bathroom facilities, 24% have no bathroom facilities.
- ◆ 76% are satisfied with their housing, 24% are not satisfied with their housing.
- ◆ 75% responded housing as standard condition, 25% responded housing as substandard.

Conclusion-Housing

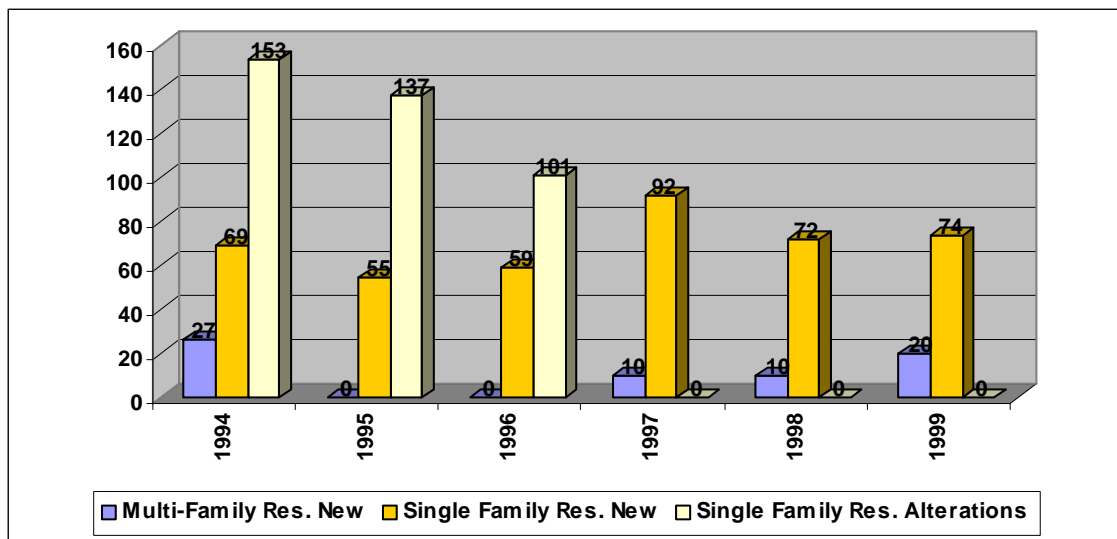
The housing conditions, distribution by township, and standard/substandard conditions for the 2000 Census will have a bearing on the information presented in this section. The conclusions that are drawn are based on what data is available as of this document (October 2001). While the percentage of substandard housing has dropped from 1980 to 1990, Warren County still has a high percentage of homes classified as having substandard conditions. The predominance of rural homes and lack of public water and sewer throughout the County equates to many homes on private well and septic systems, detailed later in this document. Additional concerns from County officials include inadequate heating, infestation (insects, rodents) lack of smoke detectors, and distance to fire hydrants as posing significant threats to the health and safety of residents.

A detailed housing survey would need to be conducted, in combination with information gathered from the final 2000 Census to complete the information in Tables 10 through 13 and determine the number of homes needing improvements, number of dwelling units, and related information by township for the County. At this time, the Warren County Code Enforcement Office, based on the work in creating this document, would require increased staff to accommodate such a detailed survey for the above information, as well as internal inspections of each dwelling unit. In addition, an updated tracking system for residential permits, as well as entering historical data on such construction permits would need to be initiated.

Chart 8 illustrates a comparison of the number of residential building permits issued for Warren County, from 1994 to 1999 (**New** refers to new construction, **Alterations** refers to changes or remodeling requiring building permits). Data source for Chart 8 is the NC-Employment Security Commission website (2001) and represents a sample of the number of permits issued. Total residential permits for this time period is 879 (average of 146 permits issued each year).

As growth continues, the need to maintain an accurate database of permits issued and housing conditions should be initiated to insure that County residents have safe and healthy living conditions. Existing vacant housing should be considered as a potential resource to assist in the housing needs of the growing population. Ordinances and programs can be utilized to improve housing conditions at the County level (**Minimum Housing Code, Zoning Code, and Community Development Block Grant Program**). Such documents can add to existing housing stock, improve housing conditions, and meet the needs of the current population, as well as future residents. **The incorporated towns of Warrenton, Norlina, and Macon have Minimum Housing Codes in place to address the issue of insuring safe and healthy living conditions for residents within their incorporated limits (and the within the ETJ for Warrenton).**

Chart 8



Economy and Agriculture

(Data sources: Warren County EDC, US Census, NC-Employment Security Commission and Department of Commerce, Warren County Agricultural Extension Service)

Information on economy, income, and related conditions assists in determining county growth. It identifies workforce, available resources to maintain existing industry, and resources to encourage new industry. This information also assists in determining efficient land use, transportation needs, and facility planning. With a growing population, there is a need to provide

services for current and new residents. As the region continues to expand and the development out of Raleigh and Durham increases, there is a strong desire to draw new businesses and industry to Warren County, providing for residents and to aid in the development of the County.

Current economic conditions were researched through the Warren County Economic development Commissioner (EDC), NC-Department of Commerce, NC-Employment Security Commission, and the Warren County Agricultural Extension Services. Data provided through the EDC was used to identify the economic characteristics of Warren County. Table 14 identifies the top companies in Warren County (as of 2001) and number of staff for each company. These companies represent the top **private industries/employers** within Warren County. **Text at the bottom of page 28 defines the breakout of major industries within Warren County and the percentage of workforce in each; government is the overall top industry in Warren County with 32.1% of the workforce (1,365: includes all levels of government).**

Table 15 provides information on the Median Household Income (HHI-total income for a household) and Per Capita Personal Income (PI-total for working parents/parent only) for 1990 and 2000, as a comparison between Warren County, Region-K, Wake and Durham Counties. Charts 9 and 10 graphically illustrate the comparison of the Median Household Income and Per Capita Household Income for 1990 and 2000.

Table 14

Company	Staff-Employees
Cochrane Furniture Company, Inc.	155
Glen Raven Mills, Inc.	145
Hampton Industries, Inc.	145
Peck Manufacturing Company, Inc.	125
Chesapeake Packaging Company	101
Elberta Crate and Box Company	83
Atlantic General Packaging	55
Arcola Hardwood/Lumber Company	47
Data Service America	34
Tar Heel Tire Sales and Service	22
Architectural Ornament Casting	19
Coleman Pulpwood and Logging	18
Arcola Logging Company, Inc.	17
International Paper	8

Table 15

	Median HHI 1990	Per Capita PI 1990	Median HHI 2000	Per Capita PI 2000
Granville Co.	\$ 26,488	\$ 10,939	\$49,300	\$22,102
Franklin Co.	\$ 25,049	\$ 10,959	\$66,100	\$22,667
Person Co.	\$ 25,625	\$ 11,158	\$49,100	\$21,835
Vance Co.	\$ 21,555	\$ 10,457	\$37,800	\$20,168
Warren Co.	\$ 16,937	\$ 8,502	\$31,100	\$16,991
Durham Co.	\$ 30,526	\$ 15,030	\$66,100	\$29,677
Wake Co.	\$ 36,222	\$ 17,195	\$66,100	\$35,759

Note: Median Household Income for Franklin County is the same as Wake and Durham Counties, due to its proximity to these high growth/high income counties (NC-Department of Commerce-March 2002)

Chart 9

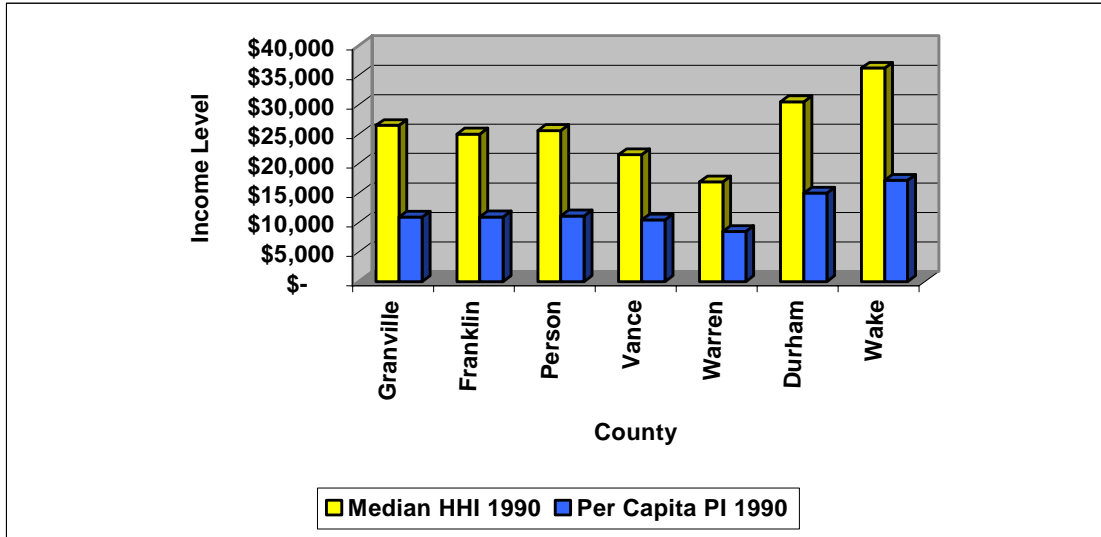
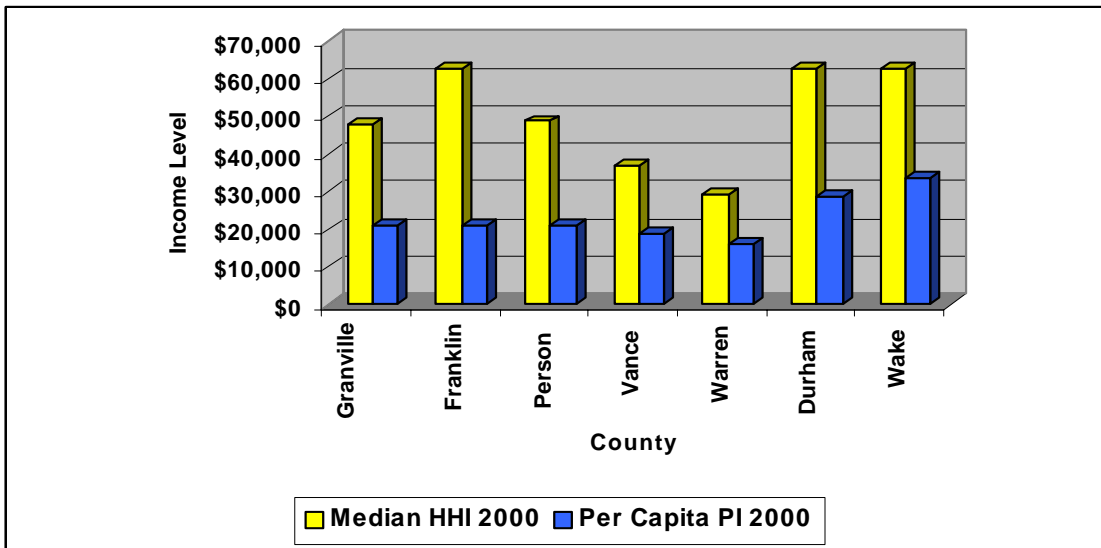


Chart 10



Overview of Economic Conditions and Resources

Industry within Warren County, predominantly clustered in the developed areas, is centered on the heart of the "old textile belt" and the state has been experiencing a loss of jobs (and money) in this industry (approximately 12,600 jobs in 1999-which has affected Warren County). The remaining textile business combined with the furniture making, wood products, and box industries comprise the bulk of County industry. The textile industry, traditionally, is on the low end of income (just above agriculture and farming). An employee who works in one sector, tends to be specialized which makes it difficult for them to move from one job to the next if they are laid off.

Available resources in Warren County include an industrial area between the communities of Ridgeway and Manson (approximately 400 acres). This tract of land has access to water and sewer infrastructure, rail service, natural gas, and is located within 2.5 miles of I-85 (additional land available near the Interstate). Manson Road has a significant traffic pattern, which feeds into US-158 and offers one of the best locations for retail-commercial concentration. Land is also available near the Oine/Wise interchanges, for future development, as well as a 2,000-acre tract near the incorporated town of Macon, but there are no utilities available (as of October 2001).

There exists in Warren County a strong work ethic, but the education of the workforce is an issue (high technical level, comprehension skills, skills for the service and electronic industries). In terms of location to transportation routes, companies tend to locate within an hour of a major airport; Warren County is located just over an hour from Raleigh-Durham International. There is access to rail and major interstates; however, companies tend to have reservations about locating in a rural area (workforce, education, and location).

Warren County enjoys periodic social and cultural events bring the various communities together, as well as outside visitors, but there are still some social differences between communities. This has hindered efforts to organize a Chamber of Commerce, which will continue to be a hurdle that officials and residents will need to overcome. Some events do bring the various communities together, but there are still clusters of residents not willing to work together.

Even with the differing mindsets of the each community, the issue remains of where to concentrate commercial efforts to benefit the individual areas. It is estimated that one of the best potential areas for retail development is along the NC-401 corridor, between Norlina and Warrenton, with some added growth of the antique trade in the US-158 corridor. The installation of natural gas lines will be a draw to the area for residents, as well as encouraging growth of more businesses. Warren County is also located within two larger tourism markets, with 800,000 visitors stopping at the NC Visitor Center on I-85 (daily) and the 6th largest NC attraction (Kerr-Lake). However, it is difficult to monitor the amount for tourism dollars to the County through these areas at this time. Other retail and tourism draws include numerous historical attractions, recreational lake areas, walking tours of Warrenton, and riding tours of the county.

In light of the above conditions and resources, several factors can influence continued industrial development in Warren County:

- ◆ Public perception: a strong desire to encourage development and new business, but not to become a major industrial manufacturing center. Small to medium-scale, industrial operations are preferred, with an emphasis towards distribution facilities.
- ◆ Availability of land (soil conditions, topography, impacts on natural resources). There is an abundance of land in Warren County.
- ◆ Industry is more willing to invest in property already zoned for industrial uses, with adequate access to public utilities (natural gas lines only located along the US-1 corridor, as of October 2001), which includes water and sewer, and location to major transportation corridors.

Overview of Agricultural Conditions and Resources

Although Warren County has a long history of agriculture as part of its economic base, with the drop in the tobacco industry, there has been a reciprocal effect on the economy and income of county residents. Map 3 on page 29 illustrates the distribution of cultivated land throughout the County (bands of agricultural soils), in relation to the types of land use and land cover distributed countywide. Soils best used for agriculture are covered in the Soils Section (sections of the County more suited to the timbering industry or residential development). From Drewery, to the Wise area, and then to Warrenton, this section of the County is best suited for agriculture.

The agriculture economy in Warren County is struggling; the main crops are tobacco (even with the downturn in the industry), soybeans, wheat, corn, cotton, and some fruit. The top animal

producers include Carroll's (swine), Perdue (chicken), and a variety of local cattle farms. Based on the drop in the tobacco industry for Warren County (53%) and that agricultural products are at low prices currently, there is a strong need to find alternate methods of production for farmers, as well as alternative crops. As development increases, less land is available for agriculture; County officials should consider guiding development to areas away from prime agricultural locations.

Agricultural land from tobacco farms alone, being lost to residential development for the county as a whole, is down from 834 to 776 (as of January 2001). Nationwide public perception issues have affected the agricultural economy in North Carolina as well (lawsuits-tobacco, pesticides, etc.). Added influence on pricing for all agriculture products (break even or loss levels), include:

- ◆ Switch to a global economy (from national economy).
- ◆ The 1995 Farm Bill.
- ◆ NAFTA agreements (North American Free Trade).
- ◆ GATF (Government Actions on Tariffs and Trades).

To present an overview of income generated through agriculture, the following information was researched through the Warren County Cooperative Extension Services (data is as of 1998):

Crops (total \$36,100,625)

- ◆ Field Crops: \$15,724,655
- ◆ Vegetables/Berries: \$741,037
- ◆ Fruits/Nuts: \$21,487
- ◆ Greenhouses/Plant Nurseries: \$1,474,000
- ◆ Forestry (value of timber sold): \$18,139,446

Livestock (total \$3,278,155)

- ◆ Hogs: \$1,240,125
- ◆ Cattle, Beef: \$1,977,400
- ◆ Cattle, Dairy: \$31,125
- ◆ Sheep: \$3,750
- ◆ Lambs: \$13,755
- ◆ Various other livestock: \$12,000

Other Agriculture (total \$13,994,448)

- ◆ Milk/Wool/Honey: \$3,361,748
- ◆ Poultry: \$9,600,300
- ◆ Eggs: \$831,900
- ◆ Horses: \$200,500

The combined total of the three categories equals **\$53,373,238 for 1998**; previous text explains that County agricultural economy is struggling for several reasons (low or "break even" prices). For tobacco, the 53% drop in sales over the last few years equals \$7,200,000 in losses for the County (10% of gross retail sales: \$70,000,000). **County workforce distribution** illustrates the rank of agriculture in County economy (NC-Department of Commerce, 2001):

- ◆ Government: 1,365 (32.1%)
- ◆ Manufacturing: 913 (21.4%)
- ◆ Service: 760 (17.8%)
- ◆ Retail Trade: 484 (11.4%)
- ◆ **Agriculture: 305 (7.2%)**
- ◆ Construction: 210 (4.9%)
- ◆ Transportation/Communications/Public Utilities: 117 (2.7%)
- ◆ Finance/Insurance/Real Estate: 75 (1.8%)
- ◆ Wholesale Trade: 29 (0.7%)
- ◆ Total workforce: 4,258 (100%)

Map 3

Timber Industry

Within Warren County's agricultural economy is the timber (forestry) industry, cutting of trees for various manufacturing purposes. The 1998 data listed on page 28 presents the forestry industry as having contributed \$7,500 for that year (most likely one small tree farm listed when the data was researched). In calculating the income from the timber industry, there are two figures for the value of timber sold: stumpage (initial value "cut at the stump") and delivered (value once the timber is delivered to market). The figures below compare for Year 2000 between the Region-K counties and State of North Carolina (includes sales from private, industrial, and public lands).

<u>Year 2000 figures:</u>	<u>Stumpage Value</u>	<u>Delivered Value</u>
◆ Franklin County:	\$45,031,947	\$66,697,599
◆ Granville County:	\$15,789,492	\$21,076,651
◆ Person County:	\$8,799,641	\$12,753,622
◆ Vance County:	\$7,124,200	\$10,768,582
◆ Warren County:	\$22,892,160	\$30,334,129
◆ North Carolina:	\$1,028,133,635	\$1,493,130,192

Of the five counties in the region, total **Stumpage Value** for timber \$99,637,440 and **Delivered Value** for timber \$141,640,583, Warren County comprised approximately 23% and approximately 22% respectively for the region's timber value. Warren County provides a significant portion of the timber industry for Region-K, nearly 25% in both categories. When compared to the state, Warren County contributes approximately 2.5% and approximately 2% respectively to the value of the timber industry.

County officials need to consider this resource in future development issues, not just as a source of revenue, but also for environmental impacts. If buffers are not maintained around surface waters and management practices to limit runoff in areas where timber is harvested, then the occurrence of non-point source pollution (discussed later in this document) becomes a severe (and expensive) environmental issue for County officials and residents to address. In addition to management measures implemented by the state to protect natural resources (while supporting the timber industry) County officials need to continue their efforts supporting this industry as well **and** protecting County resources from potential negative impacts.

LABOR FORCE STATUS

With the 2000 Census information not fully released (as of October 2001) complete best available economic data from the 1990 Census is used (**1990 Summary Tape File 3A**, Kerr Tar COG, Affiliate Data Center US Census) to provide background material on economic conditions:

- ◆ Persons 16 years and over: 13,344
- ◆ In labor force: 7,372
- ◆ Percent in labor force: 55.2
- ◆ Civilian labor force: 7,317
- ◆ Employed: 6,770
- ◆ Unemployed: 547
- ◆ Percent unemployed: 7.5
- ◆ Armed Forces: 55
- ◆ Not in labor force: 5,972

Males 16 years and over: 6,265

- ◆ In labor force: 4,047
- ◆ Percent in labor force: 64.6
- ◆ Civilian labor force: 3,992
- ◆ Employed: 3,646
- ◆ Unemployed: 346
- ◆ Percent unemployed: 8.7
- ◆ Armed Forces: 55
- ◆ Not in labor force: 2,218

Females 16 years and over: 7,079

- ◆ In labor force: 3,325
- ◆ Percent in labor force: 47.0
- ◆ Civilian labor force: 3,325
- ◆ Employed: 3,124
- ◆ Unemployed: 201
- ◆ Percent unemployed: 6.0
- ◆ Armed Forces: 0
- ◆ Not in labor force: 3,754

Females 16 years and over: 7,079

- ◆ With own children under 6 years: 946
- ◆ Percent in labor force: 67.9
- ◆ With own children 6 to 17 years only: 1,240
- ◆ Percent in labor force: 75.6
- ◆ Own children under 6 years in families and subfamilies: 1,296
- ◆ All parents present in household in labor force: 858
- ◆ Own children 6 to 17 years in families and subfamilies: 2,693
- ◆ All parents present in household in labor force: 1,919

Persons 16 to 19 years: 912

- ◆ Not enrolled in school and not high school graduate: 139
- ◆ Employed or in Armed Forces: 89
- ◆ Unemployed: 3
- ◆ Not in labor force: 47

Commuting to Work

- ◆ Workers 16 years and over: 6,654
- ◆ Percent drove alone: 65.9
- ◆ Percent in carpools: 24.6
- ◆ Percent using public transportation: 0.5
- ◆ Percent using other means: 2.1
- ◆ Percent walked or worked at home: 7.0
- ◆ Mean travel time to work (minutes): 21.0

Occupation

- ◆ Employed persons 16 years and over: 6,770
- ◆ Executive, administrative, and managerial occupations: 321
- ◆ Professional specialty occupations: 611
- ◆ Technicians and related support occupations: 128
- ◆ Sales occupations: 376
- ◆ Administrative support occupations, including clerical: 684
- ◆ Private household occupations: 26
- ◆ Protective service occupations: 148
- ◆ Service occupations, except protective and household: 559
- ◆ Farming, forestry, and fishing occupations: 573
- ◆ Precision production, craft, and repair occupations: 852
- ◆ Machine operators, assemblers, and inspectors: 1,371
- ◆ Transportation and material moving occupations: 549
- ◆ Handlers, equipment cleaners, helpers, and laborers: 572

Employed person 16 years and over: 6,770

- ◆ Agriculture, forestry, and fisheries: 499
- ◆ Mining: 19
- ◆ Construction: 536
- ◆ Manufacturing, non-durable goods: 1,526
- ◆ Manufacturing, durable goods: 947

- ◆ Transportation: 242
- ◆ Communications and other public utilities: 70
- ◆ Wholesale trade: 197
- ◆ Retail trade: 780
- ◆ Finance, insurance, and real estate: 142
- ◆ Business and repair services: 169
- ◆ Personal services: 169
- ◆ Entertainment, and recreation services: 11
- ◆ Health services: 333
- ◆ Educational services: 572
- ◆ Other professional and related services: 277
- ◆ Public administration: 281

Class of Worker

- ◆ Employed persons 16 years and over: 6,770
- ◆ Private wage and salary workers: 5,070
- ◆ Government workers: 1,097
- ◆ Local government workers: 396
- ◆ State government workers: 606
- ◆ Federal government workers: 95
- ◆ Self-employed workers: 574
- ◆ Unpaid family workers: 29

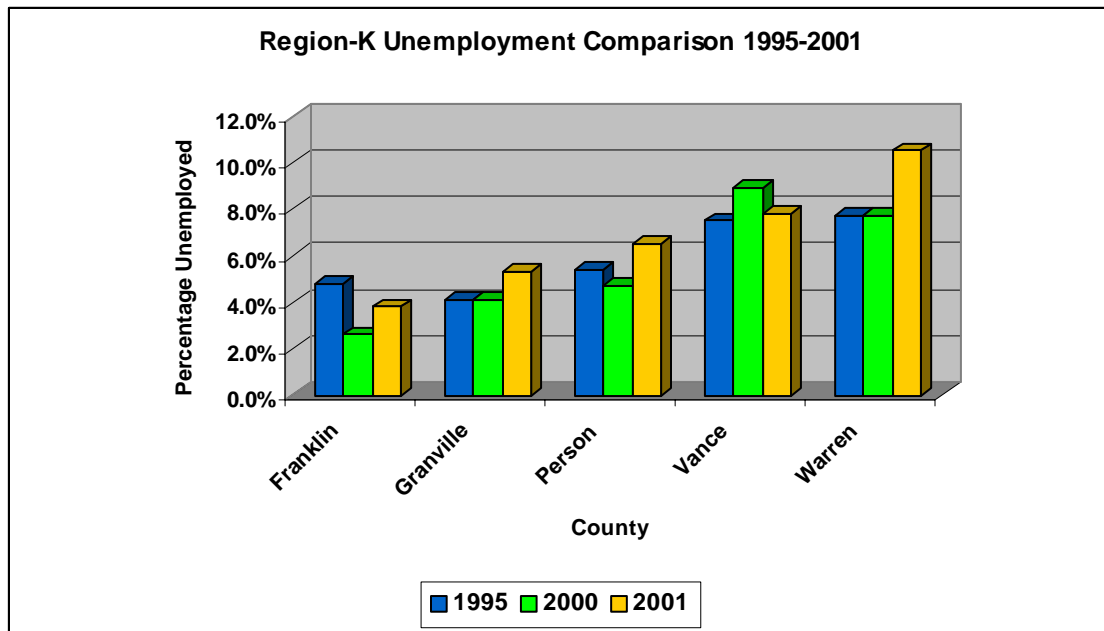
The preceding text provides an overall image of the economic conditions for commercial, industrial, and agricultural levels within Warren County. This data would not be complete without a comparison of unemployment between Warren County, Region-K, the RTP counties (Research Triangle Park) of Wake and Durham, and the state. Table 16 illustrates these figures.

Table 16

Area	Total Labor Force	Employed	Unemployed	% Unemployed-Annual
NC	3,958,400	3,814,300	144,100	3.6%
Franklin Co.	23,780	23,150	630	2.6%
Granville Co.	22,850	21,650	930	4.1%
Person Co.	17,170	16,370	800	4.7%
Vance Co.	19,740	17,980	1,760	8.9%
Warren Co.	7,250	6,690	560	7.7%
Wake Co.	255,440	349,990	5,450	1.5%
Durham Co.	117,240	114,570	2,670	2.3%

The percent unemployed-annual figure represents Year 2000. As of September 2001, the percent unemployed for each county in Region-K is Franklin (3.8%), Granville (5.3%), Person (6.5%), Vance (7.8%), and Warren (10.5%). Chart 11 compares the changes in unemployment.

Chart 11



Conclusion-Economy

Economic conditions, whether for a small town, large city, urban county, or rural county, are a combined function of residents, education, and available resources. In relation to industry statistics, approximately 73% of Warren County's workforce is made up of government, manufacturing, and services (as of 2000). With manufacturing second to government for the majority of the workforce agriculture ranked 5th), 11 of the 20 largest manufacturers in Warren County are located in Warrenton (county seat). For County economy to improve, the **capacity** for development needs to be present. The NC Department of Commerce disseminates an Economic Development Scan to identify a **development capacity checklist** (includes 11 indicators). The information below is referenced for 1999 and illustrates that Warren County has 6 out of the 11:

- ◆ County Development Program: **YES**
- ◆ Local Development Corporation: **YES**
- ◆ Chamber of Commerce: **NO**
- ◆ Economic Development Plan: **YES**
- ◆ 80% of the population within a 10-mile radius of a 4-lane road: **NO**
- ◆ Commercial airport within 50 miles: **NO**
- ◆ Interstate highway within 10 miles: **YES**
- ◆ Wastewater treatment capacity available: **YES**
- ◆ Natural gas available: **YES**
- ◆ 100,000+ square feet of industrial space available: **NO**
- ◆ Industrial sites available: **NO (see text below)**

Warren County does have land that is available for industrial development, but there are no designated parks or property "zoned" for industrial and commercial development. Zoning is only present around the lake areas and in the incorporated towns of Warrenton and Norlina. There are three main factors that industry and commercial developers look for when determining where to focus development efforts: access to public infrastructure (water and sewer), access to natural

gas, and land that is properly zoned for industrial and/or commercial development. Warren County is increasing its capacity for providing water and sewer, as well as availability of natural gas (central and northwestern region of the County). County officials need to consider incorporating zoning throughout the county, with a focus for commercial and industrial efforts along US-158 (access to infrastructure, natural gas, and transportation).

There is potential for growth and development in Warren County, but there is difficulty in attracting financial investment to promote growth and development. Using the NC Department of Commerce as a resource base, in 1999/2000 Warren County scored 2 for new businesses and 34 for business failure (scores ranged from 1 to 100 with 1 being lowest and 100 being highest). When this data is combined with County gross retail sales at approximately \$70,000,000 for the same time period and a loss of \$7,200,000 for agriculture (53% drop presented for the same period), there is added indication that business and industrial growth is deficient within the County. Table 15 on page 30 provides economic data in relation to personal income for County residents; this information is another indicator of economic viability. Warren County is ranked as follows for income and poverty (year 2000 data):

- ◆ Per capita personal income: 98th out of 100 counties (\$15,874).
- ◆ Median household income: 97th out of 100 counties (\$29,300).
- ◆ Average weekly earnings: 86th out of 100 counties (\$397 for first quarter 2000).

For the 1990 Census, 19% of the County's workforce pursues employment outside of the Warren County. This data when combined illustrates what officials and residents have strong concerns about, people are leaving the area to find better paying jobs. In addition, relative to income is level of poverty (best available data for 1990 and 1995) with a comparison between Region-K counties illustrated below. **For 1995, the state was 13.1%; Warren County was 23.9%.**

1990 Levels of Poverty

- ◆ Franklin County: 14.5%
- ◆ Granville County: 13.5%
- ◆ Person County: 13.0%
- ◆ Vance County: 19.6%
- ◆ Warren County: 28.2%

For agriculture, with the reasons previously stated, there are potential solutions that can be utilized by the County, as well as several that are beyond the scope of County officials. Changes to federal programs such as the 1995 Farm Bill, NAFTA, and GATF would have a positive effect on County agriculture. Finding a "middle ground" in the switch from a national to global economy will be more difficult and long term. Locally, there is a need to educate farmers in alternative farming practices and alternative crops. Altering the mindset of tobacco farmers who have been in the tobacco industry for generations will also be a critical component of improving County agricultural economy.

County officials will again (as in industrial development) need to consider zoning as a possible answer for assisting in improving the agricultural conditions (centralize growth of industry and agriculture by utilizing the land use plan and zoning). An overview of soil conditions indicates that the heaviest concentrations of agricultural soils are located in the north/northwest and southwest regions of the County. These are the areas that have the best potential to focus agricultural efforts. An alternative that farmers can investigate if there is no further potential in farming their land is the Conservation Reserve Enhancement Program (CREP). Attachment 1 at the end of this document provides details on the program. An overview of the program is that it will provide a voluntary method to protect environmentally sensitive cropland and marginal pastureland, while providing tax incentives and benefits to landowners. These voluntary measures are accomplished through 10, 15, or 30 year agreements for landowners to provide grassed filter strips, hardwood trees, and forested riparian buffers to be used to restore wetlands. Further details are provided in the attachment.

This section provides an overview of the County's economic conditions. Lack of opportunities for residents, whether educational or economic, will continue to have a strong bearing on future development. There is an active and strong Economic Development Commission, as well as the 158 Corridor Development Association. These organizations, as well as groups like the Warren County Historic Society, have a common goal of improving economic conditions, as well as attracting visitors and industry to the County. There are efforts to expand infrastructure as well as development potential through implementing the recommendations from this plan. Residents and officials see a strong need to attract retail development and to provide goods/services for County residents. It is also evident that more job opportunities are needed so that residents can work where they live, resulting in the ability to earn a better living for themselves and their families.

Soils

In any area (state, county, town, etc.) a primary element affecting development is soils and their associated conditions. Warren County is no exception, with soils determining; not only what can be done agriculturally, but also the potential of where to build and what types of structures can be built. Soil data is used to determine what specific land uses can be achieved on a given site, whether commercial, industrial, agricultural, or residential.

Soils are a diverse element, with many classifications and characteristics that make each one unique. Soils are a resource that supports plant life consisting of different minerals, organic matter, and numerous species of living organisms. Soils have continuously changing biological, chemical, and physical properties, which provide a biological and chemical environment for water, nutrients, air, and living organisms. Soils control the distribution of rainfall, irrigation, water runoff and infiltration, water storage, and drainage. Finally, soils regulate water flow, affecting the movement of soluble materials, such as nitrogen, phosphorous, or pesticides.

An updated soil survey for Warren County has been under development (since work on this document began in September 1999) and the information contained in this section is based on data researched for September 1999 to September 2000. As of October 2001, approximately 40% of the County's soils have been surveyed; estimated completion of the survey is 7-8 years.

Soil information is used to determine development potential and development limitations for a given site. If conditions are unfavorable to a particular land use, then specific engineering measures need to be determined and implemented, if development is to be pursued. Soil surveys can be used to prevent future development problems, which can be both expensive and a hazard to public health. Soils are evaluated for:

- ◆ Residential uses (single family homes, apartments, townhouses, manufactured homes, etc.).
- ◆ Commercial uses (retail-shopping centers, strip malls, industry-manufacturing, warehousing).
- ◆ Public and private infrastructure (water and sewer lines, well and septic systems).
- ◆ Transportation (highways, railroads, local roadways).
- ◆ Agriculture (crops, animal operations, feed operations).
- ◆ Recreational uses (parks, playgrounds, golf courses, playing fields, etc.).
- ◆ Conservation areas (wetlands, forests, open space, natural resource preservation).

The major physical characteristics, which make soils unique and identify what can (and can not) be done, include **drainage, runoff, permeability, shrink/swell capacity, and slope**. These characteristics are defined as follows:

- ◆ **Drainage**-primarily an agricultural classification based on the height of water table during the growing season.
- ◆ **Runoff**-once the soil is saturated how much excess water flow over surface of the soil.
- ◆ **Permeability**-the ability of water to penetrate the soil.

- ◆ **Shrink/Swell Capacity**-when the soil is wet, how much it will expand and push outward versus when dry, how much it will shrink/crack/pull apart. Categories used in the attached charts (Low, Moderate, and High) are based on the most restrictive layer within 60 inches.
- ◆ **Slope**-how steep the landscape is physically determines what is built and where. There are few limitations to structures if the slope is between 0% to 8%. If the slope exceeds 8%, more leveling, cutting, filling required to build (incur more cost). A steep slope impacts septic systems and requires more engineering to prevent the effluent from running to the end of the drainfield. Slope is classified as follows:

A=0%-2%
B=2%-6%
C=6%-10%
D=10%-15%
E=15%-35%

Given the above stated characteristics, several additional characteristics are significant in relation to their effects on development potential. Bedrock and how close it lies to the surface (can be right below the surface or 40" deep depending area) can require extra engineering measures to develop and maintain the integrity of structures. Depth of the water table (for residential development), if the table is deeper than 40 inches throughout the year, then few problems will occur (unless the home has a basement). If table is higher than 40 inches (closer to surface) then problems will occur with septic systems, ground water damage in basement, etc. **Shrink/swell capacity** is one of the important characteristics of concern in development, especially in regards to building foundations, well/septic, water and sewer lines, and roads. If a severe limitation is determined, this can cause these to fail, fracture, and be compromised.

The soils classified on the accompanying charts include three levels of limitations in regards to development potential (Slight, Moderate, and Severe). These limitations are based on most restrictive layer (depth) assigned to that particular soil class:

- Slight (SL)**-generally favorable to the intended use with minor limitations, easy to address.
- Moderate (MO)**-not as favorable to the intended use, specific planning design/maintenance is required to address limitations.
- Severe (SE)**-very unfavorable and requires very specific (and expensive) measure of construction.

Some soils are not appropriate for a proposed use; surveys help to determine the limitations of soils for a particular use. Soils are evaluated for:

- ◆ Dwellings, commercial structures, and roads
- ◆ Septic tank absorption fields
- ◆ Forestry and agricultural production
- ◆ Public uses - playgrounds, golf courses
- ◆ Location of sources of sand, gravel, road fill and topsoil
- ◆ Location of areas difficult to excavate due to bedrock, wetness, or very firm soil layers

Knowledge of soil types allows engineers, developers, and scientists to predict what a soil will do. Soils are evaluated to determine the limitations or potential of the soils, a definitive survey aids in the planing of land uses and can be used as a **general** guide to development.

Definitive on-site soil investigation or engineering analysis is needed when evaluating specific sites for on-site sewage disposal or other waste disposal system or when there will be a significant change in land use such as large subdivisions, commercial, industrial and wholesale uses, forestry clearing and land clearance activities for agricultural use. The major soil classifications determined for Warren County are listed in the following tables by physical characteristics (**Table 17**), agricultural resources (**Table 18**), recreational (**Table 19**), residential and commercial (**Table 20**), septic systems and natural resources (**Table 21**). The following information provides further explanation of the table data:

- ◆ Moderate and severe limitations do not preclude development, but indicate that the soil type would require extra engineering measures and subsequent added cost to develop.
- ◆ Categories under Shrink/Swell Capacity include Low, Moderate, High based on the most restrictive layer within 60 inches.
- ◆ Very Good, Good, Fair, Poor, and Very Poor listed on Table 21 indicate level suitability for the indicated uses under Wetlands.
- ◆ Descriptions listed in parenthesis indicate: m (marginal), g (good), m/g (marginal to good).
- ◆ Where applicable: Y (Yes), N (No), N/A (Not Applicable).
- ◆ In all tables, where Number of Acres and Percent of County are listed, these figures as based on the work done by the US Soil Conservation Service-Warren County, September 2000.

Table 17

Physical Characteristics (General)

Soil Type	Soil Group	Acres	Percent County	Drainage	Runoff	Permeability	Shrink/Swell Capacity
Ap	Appling	28,416	10%	Well	Medium to Rapid	Moderate	Low
Ce	Cecil	34,099	12%	Well	Medium to Rapid	Moderate	Low
Cw/Wh	Chew-Wehad	8,525	3%	Somewhat Poorly to Poorly	Slow	Moderate	Low
He	Helena	14,208	5%	Moderate	Medium to Rapid	Slow	High
Pa	Pacolet	113,664	40%	Well	Medium to Rapid	Moderate	Low
Va	Vance	14,208	5%	Well	Medium to Rapid	Slow	Moderate
Wa-Lo-Sa	Wake-Lou-Saw	8,525	3%	Well to Excessive	Medium to Rapid	Moderate to Rapid	Low
We	Wedowee	36,940	13%	Well	Medium to Rapid	Moderate	Low
N/A	Remaining	25,575	9%	N/A	N/A	N/A	N/A

Table 18

Agricultural

Soil Type	Soil Group	Acres	Tobacco	Corn	Cotton	Fruit	Veg.	Small Grain	Hay	Grass-Legume	Pasture
Ap	Appling	28,416	Y	Y	Y	N	N	Y	Y (m/g)	Y	Y (m/g)
Ce	Cecil	34,099	Y	Y	Y	N	N	Y	Y (m/g)	N	Y (m/g)
Cw-Wh	Chew-Wehad	8,525	N	Y	N	N	N	Y	Y	N	Y (m)
He	Helena	14,208	Y	Y	Y	N	Y	Y	Y	Y	N
Pa	Pacolet	113,664	N	N	N	N	N	Y	Y	N	Y
Va	Vance	14,208	N	N	N	N	N	N	N	N	Y
Wa-Lo-Sa	Wake-Lou-Saw	8,525	N	Y	N	Y	Y	Y	Y	Y	Y
We	Wedowee	36,940	Y	Y	Y	Y	N	Y	N	Y	Y
N/A	Remaining	25,575	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 19

Recreational

Soil Type	Soil Group	Acres	Camping Area	Picnic Area	Playground	Trails	Golfcourses
Ap	Appling	28,416	SL	SL	MO, SE	SL	SL
Ce	Cecil	34,099	SL, MO	MO	MO, SE	MO	SL, MO
Cw/Wh	Chew/Wehad	8,525	SE	MO, SE	SE	MO, SE	SE
He	Helena	14,208	MO	MO	MO	MO	MO
Pa	Pacolet	113,664	SE	SE	SE	SE	SE
Va	Vance	14,208	MO	SL	MO	SL	SL
Wa-Lo-Sa	Wake-Lou-Saw	8,525	SL, MO, SE	SL, MO, SE	MO, SE	SL, SE	SE
We	Wedowee	36,940	MO, SE	MO, SE	SE	SL, SE	MO, SE
N/A	Remaining	25,575	N/A	N/A	N/A	N/A	N/A

Table 20

Residential and Commercial Development

Soil Type	Soil Group	Acres	Shallow Excavation	Home-Basement	Home-No Basement	Commercial Building	Lawns-Landscape	Local Roads
Ap	Appling	28,416	MO	SL	SL	MO	SL	SL
Ce	Cecil	34,099	MO	SL, MO	SL, MO	MO, SE	SL, MO	SL, MO
Cw-Wh	Chew-Wehad	8,525	SE	SE	SE	SE	SE	SE
He	Helena	14,208	SE	SE	SE	SE	MO, SE	SE
Pa	Pacolet	113,664	SE	SE	SE	SE	SE	SE
Va	Vance	14,208	SE	SE	SE	SE	SL	SE
Wa-Lo-Sa	Wake-Lou-Saw	8,525	MO, SE	MO, SE	SL, MO, SE	MO, SE	SE	SL, MO, SE
We	Wedowee	36,940	MO, SE	MO, SE	MO, SE	SE	MO, SE	MO, SE
N/A	Remaining	25,575	N/A	N/A	N/A	N/A	N/A	N/A

Table 21

Septic Systems and Natural Resources

Soil Type	Soil Group	Acres	Septic Tank Absorption Field	Wetlands-Plants	Wetlands-Wildlife
Ap	Appling	28,416	MO	Poor	Very Poor
Ce	Cecil	34,099	MO	Very Poor	Very Poor
Cw/Wh	Chew/Wehad	8,525	SE	Fair/Good	Fair
He	Helena	14,208	SE	Poor	Very Poor
Pa	Pacolet	113,664	SE	Very Poor	Very Poor
Va	Vance	14,208	SE	Poor	Very Poor
Wa-Lo-Sa	Wake-Lou-Saw	8,525	MO, SE	Very Poor	Very Poor
We	Wedowee	36,940	MO, SE	Very Poor	Very Poor
N/A	Remaining	25,575	N/A	N/A	N/A

With the major soil concentrations identified within Warren County: **Appling, Cecil, Pacolet**, combination of **Chewacla** and **Wehadkee, Helena, Vance, Wedowee**, and a combination of **Wake-Louisburg-Saw**. Each soil type contains variety of characteristics that make them unique and identify what they can sustain for development and agriculture. The following is an overview of the background characteristics:

- ◆ **Cecil** series consists of very deep, well-drained moderately permeable soils on ridges and side slopes of the Piedmont uplands. They are very deep to bedrock with a range of slope from 0 to 25 percent.
- ◆ **Appling** series consists of very deep, well-drained, moderately permeable soils on ridges and side slopes of the Piedmont uplands. They are also very deep to bedrock with a slope range from 0 to 25 percent, like the Cecil series.
- ◆ **Vance** series consists of well-drained, slowly permeable soils and very deep to bedrock with slope range from 2 to 25 percent.
- ◆ **Helena** series consists of very deep, moderately well-drained, slowly permeable soils. Slope is predominantly between 2 to 10 percent but ranges from 0 to 15 percent.
- ◆ **Wehadkee** series consists of very deep, poorly drained and very poorly drained soils on floodplains along streams that drain from the mountains. Slopes range from 0 to 2 percent.
- ◆ **Pacolet** series consists of very deep, well-drained, moderately permeable soils with slopes commonly 15 to 25 percent but range from 2 to 80 percent.
- ◆ **Chewacla** series consists of very deep, moderately permeable, somewhat poorly drained soils on floodplains. Slopes range from 0 to 2 percent for this series.
- ◆ **Wedowee** series consists of very deep, well-drained, moderately permeable soils; slope is predominantly less than 25 percent but ranges from 0 to 60 percent.
- ◆ **Wake** series consists of excessively drained; shallow, sandy soils with slope ranging from 2 to 45 percent.
- ◆ The **Louisburg** series consists of very deep, well-drained, rapidly permeable soils, slope ranges from 6 to 45 percent.
- ◆ The **Saw** Series consists of moderately deep, well-drained soil with slope ranging from 2 to 45 percent.

When building, it is necessary to evaluate each individual site's soil characteristics. Soil survey maps are general in nature and provide an overview of a soil type for a given area. Every site that is investigated for development (whether a single home, cluster of homes, commercial area, transportation node, etc.) should have an on-site soil survey or engineer's analysis to determine if the soils will accommodate the intended development, or if extra engineering is required.

In Warren County, the overall conditions for soils are very positive for development, with approximately 85% of the County determined to be able to support development. The remaining 15% requiring extensive engineering or would be unable to support intended development. The nature of the soil distribution is such that there are no defined areas of "bad" soils; distribution is sporadic throughout the county. Where an area may have good soils on which to build, there may exist small deposits or streaks of soils that would not support development. As such this indicates the necessity for all development to include a detailed soil survey.

Additional characteristics should be noted when investigating soil conditions in Warren County, which could incur limitations to development. These include geology (bedrock), high clay content, water table depth, and eroded surfaces. Warren County's geology is predominantly coarse-grained granite (the western portion) with sporadic locations in the rest of the county. This type of geology causes the most problems when developing a site, specifically in the form of bedrock, which can inhibit installation of water lines. Of the major soil types identified, Cecil, Pacolet, Wedowee, and Appling are most suited to development (deep soils, going down 60" with no bedrock, well-drained, moderate permeability). Saw has moderate to deep bedrock (granite) and Wake tends to be shallow in depth with bedrock between 10" and 20". The eastern part of the county has a greater occurrence of soils that would limit development, due to high clay content (where the subsoil has 60% or greater clay content). This will reduce the water permeability, causing water to rest on the topsoil, resulting in soil that inhibits infiltration of water into the soil.

Water table depth, the location of water below ground, can potentially inhibit development as well. If located too close to the surface (within 30") water seeps into basements, compromises building foundations, or causes contamination of private wells (not protected, bored wells). In determining the water table, soil surveys indicate the highest point year round the water table is located in a particular soil series. Other development issues include when eroded surfaces make it hard to establish lawns and landscaping, as well as building in drainways (site may look good on a bright sunny day, but in heavy rain, water can inundate the drainway flooding the site).

Based upon the soil surveys completed to date, the best potential for development includes the areas around Lake Gaston, I-85 corridor, eastern Warren County, and the south/southwest part of the county. The I-85 corridor would be best suited to industry and commercial uses, the Lake Gaston area as residential, as well as residential in the eastern and south-southwest part of the county. Caution should be exercised when developing around all surface water locations (Lake Gaston, Kerr Lake, streams, and creeks) and groundwater locations. These exist at the north end of Lake Gaston, near the border between Virginia and Warren County, west of Warrenton, the southwest corner of the County (between NC-58 and NC- 43), and on the north side of NC 43. Careful development of these areas needs to be enforced to manage stormwater runoff and sedimentation (point and nonpoint pollution) of water resources, wetlands, and floodplains. Land surrounding these surface water sources can be used as a buffer to minimize negative impacts on water quality, provide tree cover and add to open space conservation for the County.

An overview of the areas within Warren County, well suited to development, is covered below. Included within each area is an overview of the physical characteristics, specific to the soil types and conditions in these locations. This information is a general overview. Previously stated is the need to conduct (incorporate in the development process), detailed soil surveys whenever development is pursued in a given location. For further details in soil types and development limitations, refer to **Tables 17 through 21**.

North and Northeast Warren County

This region of the County is predominantly Cecil (Ce) soil type, with an average slope between 2% and 6%. It includes the area the east of Wise, towards and including the Lake Gaston area and north of US-158 around Macon. There exist concentrations of Appling (Ap) soil in the more central part of this area, along SR-1039 towards the Oakville area, slope averages between 2% and 6%. Both soils have **Low Shrink/Swell Capacity** and are well drained, accommodating agriculture to include tobacco, corn, cotton, small grains, hay, grasses and legumes, as well as for pastureland. Development for residential, recreational or commercial would have only **Slight to Moderate Limitations**, with possible **Severe Limitations** for playground use on Appling soils.

Sporadic concentrations of Vance (Va) soils exist as well in this part of the County with slopes of 2% to 6%. For residential and commercial development, this soil type has **Severe Limitations** requiring extra engineering measure to develop and additional cost. Agricultural use is limited to pastureland only, although for recreational uses there are only **Slight to Moderate Limitations**.

Northwest Warren County

On the western side of Wise, towards Kerr Lake, I-85 and the border with Vance County, the soils again include predominantly Cecil (Ce) and Appling (Ap), with an average slope between 2% and 6%. Additional concentrations of Louisburg (Lo), Pacolet (Pa), Helena (He), and Wedowee (We) are present, slope ranging from 0% to 10%. This region of soil concentrations is north of US-1 and US-158. Both the municipalities of Warrenton and Norlina are included in this region of soil types. Wedowee (We) and Pacolet (Pa) soils have a **Low Shrink/Swell Capacity**, while Helena (He) soils have a **High Shrink/Swell Capacity**. Development on sites with Helena (He) soils requires additional engineering measures to build. Helena (He) and Pacolet (Pa) have **Severe Limitations** for residential or commercial development (extra engineering and cost), while Wedowee (We) has **Moderate to Severe Limitations**. Agricultural uses on these soils are best suited for Helena (with the exception of fruit or pastureland); Pacolet (Pa) is best for small grain, hay or pastureland, and Wedowee (We) would be unsuitable only for vegetables or hay.

West and Southwestern Warren County

Predominate soil types in this area, which includes south of Warrenton and along NC-401 towards Vance and Franklin Counties, are Appling (Ap), Cecil (Ce), and pockets of Wake-Louisburg-Saw (Wa-Lo-Sa) combinations. Minor concentrations are spread throughout of the Chewacla-Wehadkee (Cw-Wh) soils combination. Characteristics and development potential of Appling (Ap) and Cecil (Ce) have been mentioned previously, both the Wake-Louisburg-Saw combination and Chewacla-Wehadkee have a **Low Shrink/Swell Capacity**. Agricultural uses are similar for combinations; corn, small grains, hay, and pastureland. Wake-Louisburg-Saw can also accommodate fruit, vegetables, grasses, and legumes. Both types have **Slight, Moderate, and Severe Limitations** for all types of development.

South and Southeastern Warren County

The remaining regions of the County include the lower half below US-1 and US-158 towards Franklin County and Halifax County (below Littleton). Appling (Ap) and Cecil (Ce) soils are predominate, with concentrations of Pacolet (Pa) spread throughout. Physical characteristics and development potential for these types have previously been stated.

Conclusion-Soils

Soils and their associated characteristics determine what land use is best suited for a particular area, therefore, every site to be developed requires an accurate soil survey or engineering study (combined with in-depth engineering studies). Understanding soil characteristics allows for better land use and development. Once these characteristics are determined, although some soils are inappropriate for a specified land use, there exist certain soils that have potential for more than one land use (leads to possible conflicts in development). Soils that fall within the categories of floodplain, wetland, and severe slope, have severe limitations and are best left in their natural state. Left in their natural state, these soils should be preserved as open space, as natural buffers for stream channels, as a floodplain management program, or a combination of all three.

Soils with characteristics best suited for agriculture, contain significant environmental features, or have significant wetland classifications, need to be protected. Careful and well-planned development will be required, in conjunction with some flexibility, to best use (and protect) these natural resources. Based on the soil surveys completed to date, the best development potential includes the areas around Lake Gaston, I-85 corridor, eastern Warren County, and the south, southwest part of the county. The I-85 corridor would be best suited to industry and commercial uses, Lake Gaston area as residential, as well as the eastern and south, southwest county.

Caution should be exercised when developing around all surface water locations (Lake Gaston, Kerr Lake, streams, and creeks) and groundwater recharge/discharge points. These identified points exist at the North end of Lake Gaston, near the border between Virginia and Warren county, West of Warrenton, the Southwest corner of the County (between NC 58 and NC 43), and on the North side of NC 43. Careful development of these areas needs to be enforced to manage stormwater runoff and sedimentation of water resources, wetlands, and floodplains. Land surrounding these surface water sources can act as a buffer to minimize negative impacts on water quality, provide tree cover, and add to open space conservation for the County.

Water Resources, Wetlands and Floodplains

Water is essential to life, humans can go for up to 10 days without food, but will not survive beyond three days without water. Water is of major importance in relation to land use and development as well. Even with public water lines or private well systems, natural water resources and water quality is of primary importance. Water is one of the most precious resources we have, related to virtually all aspects of our lives, and as such water resources and

water quality must be protected. This should be one everyone's highest concern. The quantity and quality of water determines the survivability of wildlife, agriculture, and us.

As development occurs, the impact on water resources becomes greater, increased housing and industry reduces available land cover, affects water quality and agriculture (improper farming practices). Land use in a large part determines the extent of degradation. Land development and management affects how much precipitation becomes runoff, how much infiltrates soil, where runoff goes, and how fast it runs off. As land is developed the amount available for infiltration (and filtering by the soil) is reduced and velocities of flow increase as runoff is guided to channels with a lower resistance to flow. This same development will affect aquatic habitats by changing vegetative cover, increasing stream temperature, and reducing the food supply for aquatic life.

Warren County Water Resources

Warren County is 443.38 square miles in total area, with 14.76 square miles covered by surface water (approximately 3.4%). The surface water resources include the two large water bodies- Kerr Lake and Lake Gaston. Included in these figures are the numerous streams and creeks that are spread throughout the County. These streams and creeks are classified as perennial (present year round) and intermittent (only present during significant rainfall or snowmelt).

The primary water resources for Warren County are Kerr Lake (John H. Kerr Reservoir) and Lake Gaston. Kerr Lake is the source of the County's public water supply; it also provides drinking water to Henderson, in Vance County, and Oxford, in Granville County. These three entities comprise the Kerr Lake Regional Water System. The majority of Kerr Lake is located in Vance County, with a small part, the upper Northeast, situated in the most Northwest point of Warren County. Lake Gaston serves as a primary recreation point in this area. The US Army Corps of Engineers maintains Lake Gaston as a water resource, incorporating a Shoreline Management Program, protecting the lake and surrounding shoreline as a natural resource.

River Basins

Two river basins divide Warren County, the Roanoke River Basin and Tar-Pamlico River Basin. The Roanoke River Basin includes both Kerr Lake and Lake Gaston, essentially ending at NC-158 on an east-west axis through the County. The Tar-Pamlico begins just south of the axis at NC-158 and continues down throughout the remainder of the County. Map 4 illustrates the location of Warren County within the two river basins.

The Roanoke River Basin is 220 miles long, containing 9,580 square miles and over 400 square miles of rivers, flowing from the foothills of the Blue Ridge Mountains beyond Salem, Virginia to the Albemarle Sound near Plymouth, North Carolina. It includes the Dan, Smith and Staunton River Basins. Virginia municipalities located within are Danville, Martinsville, Bassett, Rocky Mount, Lawrenceville, Chatham, Altavista, Roanoke, Salem, South Boston, South Hill and Clarksville. North Carolina municipalities located within include Eden, Mayodan, Reidsville, Yanceyville, Roxboro, Henderson, Littleton (northern municipality), Norlina, Roanoke Rapids, Weldon, Jackson, Rich Square, Scotland Neck, Williamston, Windsor and Plymouth. This River Basin includes the following dams: **Kerr Dam, Gaston Dam, Roanoke Rapids Dam, Smith Mt. Lake Dam, Leesville Dam and Philpott Dam** and several other water impoundment points.

The Tar-Pamlico River Basin has a total area of 5,440 square miles and is one of four river basins contained, entirely, within North Carolina. It is the fourth largest basin in North Carolina. Within Warren County, Warrenton is located in this river basin, as is the southern area of Littleton. The Town of Macon is located, in between the Roanoke and Tar-Pamlico River Basins (starting point for the "Tar-Pam" is in Person and Granville Counties, upper Piedmont region, flowing roughly southeast to the Pamlico Sound). Located upstream of the City of Washington, the main surface water is the Tar River, below this it becomes the Pamlico River. The Pamlico River is an estuarine water source, while the Tar River is mainly a free-flowing freshwater water source. Tributaries include Fishing Creek (Warren County), Swift Creek, Tranters Creek, Cokey Swamp, and Pungo River. This river basin is also the location of the state's largest natural lake, Lake Mattamuskeet.

Map 4

Stormwater Runoff and Watershed Protection

Previously stated, as development occurs, the impact on water resources becomes greater, increased housing and industry reduces available land cover, affects water quality and agriculture. Development affects how much precipitation becomes runoff, how much infiltrates soil, where runoff goes, and how fast it runs off. The amount soil available for infiltration (and filtering) is reduced and flow velocities increase. Aquatic habitats are then affected by changing vegetative cover, increasing stream temperature, and eliminating food supply to aquatic life.

Two terms are used to identify the types of pollution that can impact water resources, point source and non-point source pollution. Point source pollution is easy to pinpoint a storm drain or an industrial standpipe discharging water into a stream. Non-point source pollution is less defined and can be spread over a wider area. It can include uncontrolled agricultural practices, distribution of pesticides and fertilizers, sediment runoff from construction sites, or runoff from an overflowing wastewater station or septic drainfield.

Stormwater runoff (or runoff) is either rainfall or melted snow that flows over the ground (or impervious surfaces, building roofs or paved areas-parking lots, roads) and drains into natural or manmade drainage areas. Runoff can also drain directly into rivers, streams, lakes, or other water resources. As areas are developed, the amount of runoff increases due to a lack of available land to absorb (and filter) the water. Runoff is not treated like water in a sanitary sewer system (human and industrial wastewater treatment). It accumulates materials as it flows over surfaces including soils/sediment, waste, chemicals, etc., then drains (untreated) into water resources. There is also an increase in flooding due to excess runoff, in urban areas. The remaining water evaporates or filters into the soil (replenishing groundwater supplies). Increased development adds to the percentage of impervious surfaces, increasing the amount of runoff, as there is less area (land, soils, etc.) to absorb the water. The following describes stormwater pollutants and sources, impacts on humans/wildlife, and potential management methods:

Pollutants and Sources

- ◆ Sediment: Construction sites, disturbed areas, streambank erosion, and landscape alterations
- ◆ Nutrients: Fertilized lawns, roadsides, leaking sewers and septic tanks
- ◆ Bacteria: Leaking sewers and septic tanks, and pet wastes
- ◆ Oxygen Demanding Substances: Leaking sewers/septic tanks, organic matter, pet wastes
- ◆ Oil and Grease: Leaking automobiles, industrial areas, illegal dumping
- ◆ Trace Metals: Automobile wear and tear, exhaust, and industrial areas
- ◆ Road Salt: Applications to snow and ice
- ◆ Toxic/Synthetic Chemicals: Pesticides, automobiles, accidental spills, illegal dumping
- ◆ Thermal Impacts: Heated landscape/impervious areas, tree removal, shallow ponds

Impacts

- ◆ Flooding: Damage to public and private property including infrastructure
- ◆ Eroded streambanks: Sediment clogs waterways, fills lakes and reservoirs
- ◆ Widened Stream Channels: Loss of valuable property
- ◆ Aesthetics: Dirty water, trash/debris, and foul odors
- ◆ Fish and Aquatic Life: Impairment and destruction
- ◆ Impaired Recreational Uses: Swimming, fishing, boating, etc.
- ◆ Threat to Public Health/Safety: Contaminated drinking water, fish/shellfish populations, flooding
- ◆ Economic Impacts: Fisheries, shellfish, tourism, recreation and related businesses
- ◆ Cost of Water/Wastewater Treatment: Increased treatment cost

Management Practices (BMP's-Best Management Practices)

- ◆ **Impervious Surface Limits:** Minimize size of impervious surface areas to reduce runoff.
- ◆ **Minimum Lot Sizes:** Large lots provide more natural/vegetated areas (filters runoff, reduces flow, but increases potential for paved roads-cluster development reduces occurrence).
- ◆ **Open Space Requirement:** Percentage of open space reduces overall flow (and pollutants).
- ◆ **Buffer Zones/Setbacks:** Built up areas set back from sensitive waters, establish vegetative buffers, low cost method of infiltrating runoff and filtering pollutants into stream/water channels.
- ◆ **Tree Protection:** Trees along stream helps to minimize runoff; absorb energy of rainfall and reduce soil erosion, recycle rainfall through evapotranspiration (reduces amount of runoff), shade water to prevent elevated temperatures-threat cool/cold water aquatic habitats.
- ◆ **Downspout Controls:** Downspouts discharge onto impervious surfaces (driveways, parking lots) and drain directly into storm sewers and streams, encourage discharge into stabilized vegetated areas where runoff can infiltrate soil (filter).

Rain and snow, when it falls and does not evaporate or soak into the ground, will usually drain into ditches, streams, marshes, or lakes. The result is a watershed, the land from which the water drains to a given point. A watershed community is made up of people, animals, birds, fish and vegetation; they all depend on the watershed. They all influence what happens in a watershed, either positive or negative, while what happens in a watershed will have impacts downstream.

When water fails to evaporate or infiltrate into the soil, it will often drain into surface waters (streams, creeks, marshes, swamps, and lakes). Humans, animals, and plants are affected by what occurs in or to a watershed and what occurs there will also have an impact (positive or negative) on water sources further downstream. Runoff (stormwater) scours over soil surfaces, if too high a velocity it can cut into the soil and create gullies, increasing erosion and sedimentation into surface waters. As this occurs, whatever chemicals or debris (garbage) is swept into the water sources as well. This combination, soil (sediment), litter, chemicals not only destroys water quality for consumption by humans and animals, but destroys aquatic habitats as well. It adds increased cost to enact measures to clean this pollution. And it can clog riverbeds, creek beds, streambeds, and lakebeds, thereby increasing potential for flooding.

To counter this potential hazard to watersheds and life in general, several common sense measures can be implemented, either individually or in combination to safeguard watershed areas:

- ◆ Maintaining ground cover (trees and vegetation) slows water runoff and scouring of the soil.
- ◆ Use of vegetated (riparian) buffers along obvious streams and creeks.
- ◆ Proper disposal of hazardous waste and chemicals (whether for normal household use of commercial and industrial use).
- ◆ Setting impervious surface limits in developing areas and not using curbs and gutters.
- ◆ Use of vegetated drainways or swales to filter water.
- ◆ Possible to coordinate with another municipality or county to protect water resources.
- ◆ Re-vegetation can restore an areas water quality.
- ◆ To manage sedimentation and runoff from timbering practices, 100' buffer requirement (50' on both sides of surface water, total of 100').
- ◆ Agricultural practices such as terracing or contour farming and sensible use of fertilizers and chemicals to assist in crop production.

It should be noted that although agricultural practices are the most prevalent cause for impaired water quality and watersheds, Warren County has done well (in comparison to other areas in NC) in proper agricultural practices to maintain water quality and protect its watersheds. In addition, farmers have been using BMP's (Best Management Practices) to reduce nitrogen and phosphorous being discharged into surface waters around their land.

Basin Watershed Issues

Mentioned earlier, Warren County is located in between river basin, Roanoke River and Tar-Pamlico. The information previously stated applies to water quality issues not just within the County itself, but the river basins as well and they affect more than just Warren County (all the communities that are located within). NC DENR has adopted basinwide water quality management plans for these river basins (September 1996 and July 1999 respectively). The ultimate goal of these plans is to protect water quality in the river basins and enhance water quality restoration.

Rivers, creeks, and streams all feed into these larger basins (from Kerr Lake and Lake Gaston). These surface waters contribute to the overall water quality of these basins, their associated watersheds, and groundwater recharge/discharge locations. Each water source is classified based on data gathered, analyzed and determining a specified use or uses for that body of water. Standards of quality have been established and the water sources are tested to determine if those standards are being met. The classifications include fully supporting, partially supporting, not supporting, and not rated.

The North Carolina Division of Water Quality has identified two impaired water bodies (based on biological monitoring). Sandy Creek (located in the far Southwest corner of the County), with possible causes coming timbering practices, Hurricane Fran, and millpond. Smith Creek (a tributary of Lake Gaston), with possible cause from non-point source pollution (runoff) from the NC DOT Welcome Center located in that area. There also exists an identified nutrient sensitive stream in the County (Fishing Creek-means there are excess levels of nitrogen and phosphorous).

Impaired water quality means that NC Department of Environment and Natural Resources determines if the water is able to support its intended use(s). Several methods used to determine this include testing for dissolved oxygen levels, testing for trace metals, and testing for fecal coliform pollutants. Warren County topographic location on a ridgeline and between two significant river basins could cause an increase in wastewater discharge issues if more wastewater plants are built or the existing plant increases in size to handle a larger population.

The data gathered to determine the level of impairment and use rating also includes data on population growth, land use, and wastewater facilities. Permits to dispose of treated wastewater (NPDES-National Pollutant Discharge Elimination System) are based on the information gathered. State NPDES permits are issued to wastewater treatment facilities, industries, and any entity that needs to dispose of wastewater into surface water source (stream, lake, river, or creek). These permits regulate and ensure the quality of the discharged wastewater. The receiving sources' quality (and the impact the wastewater could incur) determines the amount and quality discharged. If the water quality on the receiving end is already poor, the NPDES permit will decrease the amount wastewater discharged or increase the quality of the water to be released. In some instances both apply. NPDES permits apply not only to existing capacity of a wastewater treatment facility, but future capacity as well. In the case of a water source classified as not supporting or only partially supporting, no new capacity is permitted at a treatment plan or permitted by new industry.

Available natural ground cover (trees, grass, shrubs) slows water and prevents it from becoming stormwater runoff. Land should be protected and not stripped bare, steep slopes require soil conservation measures (contour farming, strip cropping and terracing), and chemicals need to be disposed of properly. The two types of pollution previously addressed can result when land is not properly protected. Point source is where a defined location (drainpipe for example) results in pollution to a water source and non-point source is when pollution is spread over a large area with no defined location (chemicals/waste from farming practices).

In 1994, all cities and counties in North Carolina with public water supply watersheds within their boundaries were required to adopt regulations to protect them. Regulations were created to control development throughout the watersheds, with protected areas are defined as five miles and draining to the normal pool elevation of reservoirs, or ten miles upstream of, and draining to intakes located in large rivers. Critical areas are those that are very close to the water supply intakes and have stricter controls.

Minimum requirements require land use controls around surface water supplies, to ensure that there will be less harmful stormwater runoff going into the water supply. Land use controls for residential development limit the number of houses that can be built (per acre). For residential, commercial and industrial development there are limits to the amount of area that can be covered by buildings, parking lots, driveways (impervious surfaces). Any operation that stores, uses, sells or manufactures hazardous materials is required to submit a plan of what they will do in case of a spill, how the material would be contained and in certain cases, will require the construction of a spill containment structure.

Wetlands

A wetland is defined on three types of criteria. For general purposes these are **hydrology**, **soil**, and **plants**, if met they come under federal jurisdictional wetlands and would therefore require a federal permit for ditching or draining. North Carolina defines "a wetland as an area that is saturated or inundated by an accumulation of surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

Hydrology (water saturation) determines the development of soil and the types of plant/animal communities that live in and around the soil. To delineate a wetland it is necessary to look at hydrology tables in soil surveys to ascertain how often certain soil types are saturated with water within 18 inches of the surface. **Soil** relates to wetlands in that when "the upper part of the soil is saturated with water at growing season temperatures, organisms consume the oxygen in the soil and create conditions unsuitable for most plants. Such conditions also cause development of the color and texture characteristic of hydric-soils." **Plants** that can tolerate hydric soils and the hydrology that accompanies them (hydrophytes) are the third indicator of wetlands."

Wetlands provide substantial environmental benefits. Along with vegetated riparian areas (areas along the margins of streams); wetlands act as filters that remove sediment and pollutants from stormwater runoff, thus improving water quality. Wetlands store large quantities of water, acting as buffers that mitigate flood damage. Both wetlands and riparian (vegetated) buffers stabilize stream banks, again reducing sedimentation and erosion. Wetlands and riparian areas provide important habitats for many plant and animal species. Wetlands and riparian areas provide both spawning grounds and nursery areas for many commercially and recreationally valuable fish species.

Wetlands, defined by the U.S. Army Corps of Engineers, are most often located in or near significant surface waters, such as the creeks, streams, and lakes of Warren County. These areas serve as habitats for numerous species of wildlife and plants; they may also contain designated endangered species habitats. Development should be discouraged in designated wetland areas and any development occurring near such an area, should require contacting Corps of Engineers and U.S. Fish and Wildlife Service (determination of wetlands and habitat boundaries). Wetlands are lands that are transitional, between terrestrial (land) and deepwater (aquatic) habitats. The water table is usually near or directly at the land surface, or a shallow depth of water covers the land. Either vegetated or non-vegetated, wetlands are classified on the basis of their hydrology, vegetation, and substrate (conditions just below the surface). A vital natural resource, wetlands have an important role in life cycles, flood prevention, the hydrological cycle, and are often also scenic natural areas.

Appropriate recommendations should be considered in all planning and land use issues to protect the functions they serve. **Wetlands are unsuitable for building sites**; they frequently act as flood retarding reservoirs or water-table recharge areas. This is strong justification for proposing that they be maintained as natural greenways. With the attraction of development around Lake Gaston and Kerr Lake, County officials need to consider methods to protect wetlands that surround these natural resources. A brief list of management methods is on page 45. If these methods are developed (and implemented), it is recommended the County take the necessary actions to protect the wetlands surrounding the lakes. This will prevent future issues of point and non-point source pollution from occurring and degrading these natural resources. One of the easiest protection methods to utilize is the use of buffers near surface waters.

Buffers

A buffer is a strip of land along a feature, either landscaped or left in its natural state. The purpose of a buffer is to separate one land use from another, reduce noise, and reduce the visual impact of an undesirable feature. Buffers afford privacy or protect an environmental feature. When a vegetated buffer is used along a stream or lake, it serves as a filter for surface waters, flowing to a larger body of water. Structures and paving are not allowed in these areas unless there is no other practical alternative. A buffer protects water quality and serves the function of leaving natural areas along streams/lakes (wider the buffer, the better filter it provides), including:

- ◆ Protecting water quality by filtering pollutants from runoff.
- ◆ Provides shade to cool water temperatures, maintains dissolved oxygen concentrations for aquatic habitats, and provides valuable habitat for fish and wildlife.
- ◆ Infiltrates and slows runoff, reducing peak flows and downstream flooding.
- ◆ Stabilizes stream banks reducing sedimentation, preserves the aesthetics of riparian areas increases adjacent property values and provides areas for appropriate recreational activities.

Floodplains

Previously stated at in this section on water resources, is the opportunity for increased flooding when watersheds, wetlands, and other surface waters are affected by reduced land cover (point and non-point source pollution such as sedimentation). Warren County has an extensive hydrologic system; Map 5 illustrates the water resources for the County. In addition, Warren County has an extensive floodplain system, illustrated on Map 6. Floodplains are important in the hydrologic cycle that can benefit a community, but can also be a hazard.

A floodplain is the area of land that lies adjacent to a surface water source (stream, river, lake) and is currently (or potentially could be) covered by floodwater (depending on climactic, geologic, or hydrologic processes). During excessive rains or large amounts of snowfall, the waters of rivers, lakes, streams and creeks can overflow the natural floodplain areas that surround them and pose an extreme hazard to life and property. The natural floodplain area usually consists of a river channel, wetlands area, the physical floodplain area, and in some cases a terrace area.

The river channel is the way in which the water source moves through the landscape, cutting through the terrain and depositing sediment as it moves. The sediment deposits and depressions that form around the water edge create a wetland area; it is almost always or at least periodically inundated with water. The floodplain area is a level area bordering a river channel, stream channel or creek bed. Finally, the terrace area is the area of land around a river that is left over from when the river flowed at a higher elevation. Included in the floodplains is a watershed, which is the area of land surrounding a water source that is drained by a river and its tributaries.

A floodplain is defined in relation to the chance of being flooded in a given year. There is a common misconception of what this term really means (for example-a hundred-year floodplain). Most people think it means that if a flood occurs that year, it won't happen again for another 99 years. In actuality, it means that there is a 1-% chance in a given year that a flood could occur. This term, 100-year or 500-year floodplain, is based on the flood magnitude, not the frequency.

Map 5

Map 6

Floodplains need to be maintained and protected both as a natural resource and to prevent loss of life and property (can be used for green/open space requirements, building in a floodplain can be hazardous). They are important to preserving water resource quality, as floodplains a part of the hydrologic process and the soil in the watershed filters stormwater runoff. Hydrologic and geologic characteristics of the landscape determine what particular vegetation will inhabit an area, soil types and water flow will determine what species will grow, and these features will then in turn affect how water flows overland (will affect natural erosion control and sedimentation). Both living and non-living parts of a floodplain create an ecosystem that can accomplish the following: store and convey floodwaters, protect water quality, prevent erosion, and maintain habitats for fish and wildlife (ecological communities that live together and support one another).

Issues raised regarding water quality are tied to floodplains, as the soils and vegetation within these areas are crucial to maintaining water quality and reducing stormwater runoff (and sedimentation). Increased impervious surfaces and removal of these natural areas will inhibit (even eliminate) the functions of the natural ecosystems that occupy a floodplain, as well as removing the floodplain itself as a valuable natural resource. There exist different classifications of land use development that affect natural resources and floodplains. These include open areas (greenspace or wildlands) rural areas, suburban areas (urban fringe), and urban areas.

In open space, there is low density in population, allowing more open space with functioning natural floodplains, and ecosystems. Rural areas have a slightly higher population density (agriculture predominates), but still have a large amount of open space available and natural floodplains (manage with erosion control, buffer against excess nutrient runoff, farms insure re-vegetation of stream banks). The suburban areas (urban fringe) now start to have increased population density, but it is still possible to have open space areas with natural floodplains and ecosystems (maintain along waterways, restored vegetation). The highest population density exists in urban areas, increasing the percentage of impervious surfaces. This classification is fully developed and would require restoration of natural areas and possible relocation of structures built in potential flood hazard areas. With these classifications explained and an overview of what a floodplain is, how does this relate Warren County? How can its residents be protected from life and property hazard in times of flood?

Warren County Floodplains

Warren County floodplains are generally situated bordering large surface water sources (lakes, creeks, reservoirs, streams, etc.). The extent of these floodplains is such that they usually are no further than a quarter to a half-mile from the bank of a water source, with the most notable floodplain areas around Lake Gaston and Kerr Lake (Map 6). Floodplains also border the major surface waters in the county (streams and creeks). These include Ben's Creek, Bridle Creek, Buzzard Creek, Fishing Creek, Hawtree Creek, Hubquarter Creek, Largo Lake, Lee's Branch, and Little Deep Creek. Other identified floodplain areas include Little Fishing Creek, Little Shocco Creek, Little Stone House Creek, Lizard Creek, Maple Branch, Owens Creek, Phoebe's Creek, Possumquarter Creek, Reedy Pond Creek, Richneck Creek, Sandy Creek, Shocco Creek, Six Pound Creek, Smith Creek, Song Bird Creek, Stone House Creek, and Terrapin Creek.

The most obvious method to prevent flood loss is not to build in a floodplain, but government cannot limit where property owners wish to build without good reason. What can be done is to utilize a program that can insure property owners in case of loss due to flood. This program is called the NFIP (National Flood Insurance Program). It is based on the ability of residents to apply for insurance as necessary (life, auto, or fire insurance have limited use and the rates go up if used). NFIP goals are to make flood insurance available and improve building techniques in flood hazard areas (SFHA-Special Flood Hazard Area). The Federal Emergency Management Agency (FEMA) automatically will grandfather non-compliance structures currently in existence, but should flooding and damage occur, then compliance with the standards during re-construction is required. Under the program, a community would require permits for development in flood-designated areas. This would ensure structures and development that would minimize potential flood damage.

NFIP allows residents the option to purchase insurance, if a community in which one lives is under the NFIP (then residents can choose to buy flood insurance). However, if a community is not in the program, then residents are unable to apply for insurance. Living near a flood area does not require buying of insurance if the community is under NFIP. Warren County and the County Seat, Warrenton, are members of NFIP; residents can buy insurance if they choose. Norlina and Macon are not in the NFIP and therefore, residents in these incorporated towns cannot buy insurance (as of April 2000). In this instance, these towns are not required to follow County guidelines. **As of March 2002, efforts are in effect to incorporate Hazard Mitigation Planning for the County, inclusive of enrolling Norlina and Macon in NFIP (to insure that the municipalities and County are under Countywide Hazard Mitigation Planning).**

Enrollment into the NFIP is strictly voluntary, the choice of each community. As mentioned earlier, the State, FEMA, and federal government cannot tell landowners where to build. These organizations and local governments do however want to encourage residents to build responsibly. Communities need to develop away from floodplains and away from floodways to lessen the impact of flooding on life and property ("it is purely a local decision to tell residents not to build in a floodplain and this decision depends on what is best for community").

As of April 2000, 94 out of 100 North Carolina counties were enrolled in the NFIP as well as 320 municipalities. There are several reasons why communities do not enroll in the program. The most prevalent are education (residents not aware of program), doubt (government regulating how/where people live), or the belief that "our area never gets flooded."

To facilitate enrollment into the NFIP, a community should adopt a flood ordinance (if none exists) or make revisions if necessary to an existing ordinance. In addition, communities need to maintain the following: accurate records, maps of updated flood elevations (keep these records available to all residents and officials), and to notify FEMA of any changes to town limits (annexations, ETJ, etc.). If these guidelines are followed, and a community enrolls in the NFIP, then should a flood disaster occur, the community will be better protected against flood loss and better prepared to get it's residents covered by insurance benefits.

Hazard Mitigation Planning

Another program available is the North Carolina Hazard Mitigation Planning Initiative (HMPI). This program is The North Carolina Emergency Management Division initiative to encourage development of hazard mitigation plans. Development of these plans and incorporation of hazard mitigation principles will decrease present and future vulnerability to hazards (flood, hazardous material spills, tornadoes, etc.) in our communities. After Hurricane Fran in 1996 the Hazard Mitigation Grant Program (HMGP) began to provide funds to 11 communities in an effort to develop exemplary local hazard mitigation plans. These communities would then serve as models to other communities in our state that want to incorporate hazard mitigation strategies. Local community mitigation planning activities include:

- ◆ Identification and analysis of all hazards that threaten a community.
- ◆ Assessment of vulnerable properties and populations.
- ◆ Assessment of local capabilities to implement various mitigation programs.
- ◆ Identification and prioritization of feasible mitigation opportunities.

Each community is unique in what hazards may or may not occur and needs identify what potential hazards would affect the area. In Warren County, possible additional hazards (other than flooding, though the amount of damage from Floyd was minor) could include transportation accidents in the I-85 corridor (hazardous materials spills), railway accidents, wind and rain hazards, or flooding (potential impacts of hazards depend on infrastructure, topography, and industry). Hazard Mitigation Planning relates directly to land use and land use planning. The trend, nationally and now at the state level, is to address planning for potential disasters in order to facilitate acquiring funds for restoration in the future (HMGP will be required in the future to acquire funds). Currently, Warren County is not required to develop a mitigation plan, but officials and residents should be concerned about controlling flooding for the following reasons:

- ◆ Save lives, save damage to property, and save money.
- ◆ Reduce the risk to health and safety due to an increased risk of damage to (and from) private well and septic systems. Should flooding occur, wells can become contaminated and septic tanks can flood and back up raw sewage into the house (drainage fields become useless and would have to be replaced).
- ◆ Development has a direct impact on floodplains and flooding, construction and re-grading of the floodplain can obstruct or divert water to other areas.
- ◆ Increased development reduces floodplain ability to store excess water, sending more water downstream and causing floodwater to rise to higher levels (increases floodwater velocity).
- ◆ Development affects runoff of stormwater and snowmelt. Buildings and parking lots replace natural vegetation that would absorb water. Natural vegetation can absorb up to 90 percent of a rain (in highly developed areas 90 percent can runoff into a stream). Storm sewers increase velocity, with increased development comes more water moving at a faster speed.
- ◆ With increased development of farmland, once land has been developed in a floodplain, it rarely reverts back to its natural state.
- ◆ Floodplain management would significantly increase the opportunities for residents of Warren County to get obtain assistance funding should damage from flooding (natural disaster funds are not as easy to obtain for areas without the flood insurance program).

Conclusion-Water Resources, Wetlands and Floodplains

In Warren County, protection of all water resources is of the utmost priority as it affects not only the health and welfare of Warren County, but other communities as well. To protect the natural water resource, which in turn preserves wildlife/aquatic habitats **and** human health and safety, County officials should consider several options. Insure County ordinances contain (and enforce) minimum buffer requirements as applicable in the River Basin guidelines (per NC-DENR) if developing along a perennial stream and set impervious surface area requirements. Coordinated efforts with state and federal agencies, as in the case of the Shoreline Management Programs for the lakes and surrounding areas should be at the forefront of development decisions facing Warren County officials. Careful land use as the county develops will insure protection of its water resources, implementation of stormwater controls, maintenance of wastewater discharge regulations, and management of construction practices (use of BMP's) will provide this insurance.

Protection of Warren County's water resources should be a concerted, cooperative effort between the residents, County officials, developers, state, and federal governments. Ordinances should be reviewed for potential changes to incorporate not only the previously stated required buffers, but also greenways and trails to protect natural resources that help manage runoff. Guidelines for stormwater management (best management practices) to manage runoff should be researched and implemented by the County. Development and future land use need to have careful (**wise**) planning and thorough research on all impacts, prior to approval and implementation. This will help preserve water resources, protect natural resources, and further protect the lake area (should development occur in that area). Protection of water resources and water quality begins with residents, developers, and local officials, but requires cooperation and coordination with all levels of government.

To better be prepared for potential flood damage, in coordination with Hazard Mitigation Planning, a number of issues should be addresses at the County level. Identify floodplain areas and encourage, if possible, development to occur away from known floodplain areas and floodways. Encourage all communities, whether incorporated or not, to be enrolled in the NFIP to protect all County residents. Establish and submit a County Flood Ordinance to the North Carolina State Emergency Management Office for review to determine if it complies with NFIP standards. Establish (if not already established) or maintain (if already established) an updated plan for evacuating residents of existing campgrounds, recreational vehicle parks, manufactured home parks, or residential subdivisions located in flood prone areas. This plan should be filed and approved by the appropriate County Emergency Management agency.

In addition, County officials should consider establishing criteria that would prohibit the following uses in floodplains and the floodway fringe area to further protect residents:

- ◆ Storage or processing of materials that are contaminated, flammable, corrosive, toxic, or explosive, or could otherwise be injurious to human, animal or plant life in time of flood.
- ◆ Landfills.
- ◆ Manufactured dwellings.
- ◆ Emergency services facilities, such as hospitals, fire stations, and police stations.
- ◆ Facilities such as nursing homes, handicap centers, mental health facilities or detention centers, where residents are confined either by health, disability or by physical restraints.
- ◆ Schools, cemeteries, wastewater or water treatment facilities, facilities with storage of irretrievable records, toxic or water-reactive materials.
- ◆ Primary access to and from facilities as listed above (access provided outside floodplain area).
- ◆ Onsite waste systems (septic tanks, drainage fields, or replacement drainage fields).

In order to reduce the amount of runoff and subsequent pollutants from entering surface waters, DENR and the Environmental Management Commission (EMC) created and adopted a set of rules to require buffers on either side of waterways. The Tar-Pamlico and Neuse River Basin Rules were adopted in August 2000. These rules require a 50' riparian (waterside) buffer on either side of an obvious surface water source (includes mitigation and compliance regulations). Attachments 2 and 3 at the end of the Plan text are copies of a public education handout explaining the buffer rules for both river basins, created by DENR.

If a unit of government were to be designated under the stormwater program from the state, an application would need to be submitted to the EMC. To become eligible for the program, a structure plan including the following would need to be established:

- ◆ Establish a public education program.
- ◆ Limit nitrogen loading from new development (3.6 lbs. per acre/year).
- ◆ Identify retrofit opportunities from existing development.
- ◆ Address illegal discharge emissions

Natural Habitats and Species

Warren County is part of a "larger picture" in both the Roanoke and Tar-Pamlico River Basins; development that occurs can have an affect downstream. One of the features within the County is the numerous species and habitats identified by the North Carolina Natural Heritage Program. These are resources that need to be considered in current and future land use. Table 22 lists the species present in Warren County; Map 7 illustrates their approximate locations (NC Natural Heritage Program). Detailed information on these species and habitats is provided on Attachment 4 (copy from the website-NC Parks and Recreation, NC Natural Heritage Program).

Table 22

Major Group	Scientific Name	Common Name	State Status	Federal Status	State Rank	Global Rank	County Status
Bird	<i>Aimophila aestivalis</i>	Bachman's Sparrow	SC	FSC	S3B, S2N	G3	Current
Amphibian	<i>Necturus lewisi</i>	Neuse River Waterdog	SC	-	S3	G3	Historic
Fish	<i>Ambloplites cavifrons</i>	Roanoke Bass	SR	-	S3	G3	Current
Fish	<i>Lampetra aepyptera</i>	Least Brook Lamprey	SC	-	S2	G5	Current
Fish	<i>Lythrurus matutinus</i>	Pinewoods Shiner	SR	FSC	S2, S3	G2, G3	Obscure
Mollusk	<i>Alasmidonta heterodon</i>	Dwarf Wedgemussel	E	LE	S1	G1, G2	Current
Mollusk	<i>Alasmidonta undulata</i>	Triangle Floater	T	-	S1	G4	Current
Mollusk	<i>Elliptio lanceolata</i>	Yellow Lance	T	FSC	S1	G2, G3	Current
Mollusk	<i>Elliptio steinstansana</i>	Tar River Spiny mussel	E	LE	S1	G1	Current
Mollusk	<i>Fusconaia masoni</i>	Atlantic Pigtoe	T	FSC	S1	G2	Current
Mollusk	<i>Lampsilis radiata radiata</i>	Eastern Lampmussel	SC	-	S1, S2	G5T?	Current
Mollusk	<i>Villosa constricta</i>	Notched Rainbow	SR	-	S3	G3	Current
Crustacean	<i>Orconectes carolinensis</i>	North Carolina Spiny Crayfish	SR	-	S3	G3	Historic
Insect	<i>Erynnis martialis</i>	Mottled Duskywing	SR	-	S3	G3, G4	Current
Insect	<i>Tachopteryx thoreyi</i>	Gray Petaltail	SR	-	S3?	G4	Historic
Vascular Plant	<i>Carex decomposita</i>	Cypress Knee Sedge	SR	-	S1	G3	Historic
Vascular Plant	<i>Carex tetanica</i>	Rigid Sedge	SR	-	S1	G4, G5	Historic
Vascular Plant	<i>Didiplis diandra</i>	Water Purslane	SR	-	SH	G5	Historic
Vascular Plant	<i>Eupatorium incarnatum</i>	Pink Thoroughwort	SR	-	S2	G5	Historic
Vascular Plant	<i>Lotus helleri</i>	Carolina Birdfoot-trefoil	C	FSC	S3	G3	Historic
Vascular Plant	<i>Parthenium auriculatum</i>	Glade Wild Quinine	C	-	S1	G3?, Q	Historic
Vascular Plant	<i>Platanthera peramoena</i>	Purple Fringeless Orchid	C	-	S1	G5	Historic
Vascular Plant	<i>Scutellaria nervosa</i>	Veined Skullcap	SR	-	S1	G5	Historic
Vascular Plant	<i>Thermopsis mollis sensu stricto</i>	Appalachian Golden-banner	SR	-	S2	G3, G4	Current
Natural Community	Piedmont/Mountain Bottomland Forest	-	-	-	S3?	G5	Current
Natural Community	Piedmont/Mountain Swamp Forest	-	-	-	S1	G2	Current

Map 7

Conclusion-Natural Habitats and Species

The information presented in this section is provided to identify one of the resources within Warren County. When viewed in combination with the locations of groundwater sites and floodplains, it is evident that the species and habitats present in the County are primarily located in or near these areas. Preservation and protection of area natural resources is a prime concern for the health and safety of the County as well as aesthetics. As development occurs, it impacts not just the resources of the area in which it occurs, but has reciprocal effects on other communities.

Warren County has much to offer in the way of natural resources, which need to be protected and enhanced. Several programs and agencies exist to meet this end, including the North Carolina Wetlands Restoration program. This program works to restore wetlands, wetland corridors, and prioritizes streams for restoration as well. It works to foster cooperation between local government and private landowners on both sides of an impacted stream to "buy into" the restoration program (promote the use of buffers, conversation easements). Non-profit agencies such as the Northeast Tarheel Conservancy exist to promote the use of buffers and easements as well (both resources also seek to promote natural habitats and species).

Other State agencies include the Division of Water Quality (within the Department of Environmental and Natural resources) and the NC Wildlife Commission. In December 2000, the NC Wildlife Commission established new game lands in southeastern Warren County, as part of a 341acre land purchase from the North American Timber Corporation in Fork Township. This acquisition is part of a continuing program with the purpose of "habitat conservation." Acreage includes portions of Maple Branch and land adjoining Shocco Creek in the southeast tip of the county (in the Tar River Basin). Plans for the entire project include acquiring approximately 1,000 additional acres across Shocco Creek in Franklin County (total project: 1,341 acres).

This project was pursued and accomplished due to this area having a significant "natural heritage" presence of several plant and animal species that are endangered or protected. This represents one example of efforts coordinated between the state, county, and private landowners to preserve natural resources. The purchase of the initial 341 acres was made possible through funds allocated to the wildlife agency from the state's clean water bond issue. Conservation of this area will provide an environment with clean water and a safe habitat for both plant and animal life. County officials should pursue efforts to preserve and enhance the natural resources within Warren County, for the benefit of the natural habitats, the residents within the County, and the communities that are developing downstream from Warren County.

County Infrastructure-Water and Sewer

Water is one of our major resources and one of the most complex as it relates to almost all other issues we consider. Effective removal and treatment of wastewater is of similar importance. County officials and private landowners must protect the source of water to their industry, business or homes, as well as protecting the health and welfare of residents (and animals-farm production, wildlife, etc.) from the effects of wastewater contamination. Property value can be significantly lower without a water resource to sustain it. Sources of water must be protected, as water quality and quantity affects our ability to survive, determines whether our crops will grow, the health of our livestock, and whether our natural resources (wildlife and plants) will survive.

Warren County has access to two means of infrastructure for water and sewer service. Public service, including both water and sewer lines, as well as treatment of wastewater. The other is private, which includes wells and septic systems. This section addresses these categories of infrastructure, available resources, and issues pertaining to these systems. **As of September 2001, there has been a modification in the established Water Districts for Warren County.**

Originally there were to be 4 Districts, however, County officials made necessary changes to incorporate what would have been Districts 3 and 4, has been combined into a single District (#3). Map 8 identifies the Warren County Water Districts, the distribution of water and sewer lines (based on data per NC-CGIA obtained 1997) for Norlina and Warrenton, and the extended water line distribution planned for Districts I, II, and III (as of September 2001). Having access to a public water system, there are a number of benefits available to residents. These include (but are not limited to):

- ◆ Improved water quality.
- ◆ Sufficient and dependable supply.
- ◆ Readily available water source for fire fighting.
- ◆ No pumps required (for private wells) which lowers electrical cost (slightly).
- ◆ No freezing or wear of pumps.
- ◆ No contamination from septic tank systems.
- ◆ Water will be available if electrical service goes out (temporarily).
- ◆ Adding additional/expanded wells to household means added cost, public water does not.

Obtaining public water services does not preclude individuals from having private wells, as in most cases, this water source is effective (and financially accessible) to residents. There are impacts, both positive and negative however, that have been identified with the use of private wells for County residents.

Private Wells

Warren County residents predominantly use private wells for their source of water. Two types of wells most commonly used are bored and drilled. Bored wells are less expensive and the favored type of most residents for this reason. While more costly however, there is more protection from contamination (surface or ground water intrusion) with a drilled well. Both bored and drilled wells are required per state law, to be grouted to a depth of 20'.

A bored well is constructed by means of an auger. They have a shallow depth, 35'-60', and are rarely dug beyond 100'. Though state law, requires them to be grouted to 20', there is no requirement in place to have these sites inspected or monitored. As a result, County officials would be unaware if a bored well was grouted to the required depth or only done to a depth of 10'. Water for this type of well comes from the soils surrounding the well and is supposed to be treated and maintained for water quality on a regular basis. Often, this is not the case and the shallow depth, coupled with a lack of a protective casing, increases the chance for surface water intrusion and groundwater contamination.

Drilled wells are more expensive than bored wells and are significantly deeper, depths of 100' to several hundred feet. They are installed with a casing, into the bedrock, providing more protection from groundwater contamination (and surface water intrusion) than bored wells. Most of the water supplying a drilled well comes from aquifers located in the surrounding bedrock. The quality and quantity of water of these wells depend on the type and depth of the surrounding soils and rock layers. Some rock layers have concentrations of mineral deposits that make the water unsuitable for most purposes and more vulnerable to contamination (requiring treatment and management to insure water quality for human and animal consumption). However, if an aquifer is contaminated, all wells supplied by the aquifer can be contaminated. Properties surrounding for up to one mile can be contaminated in a matter of days (usually then a permanent condition).

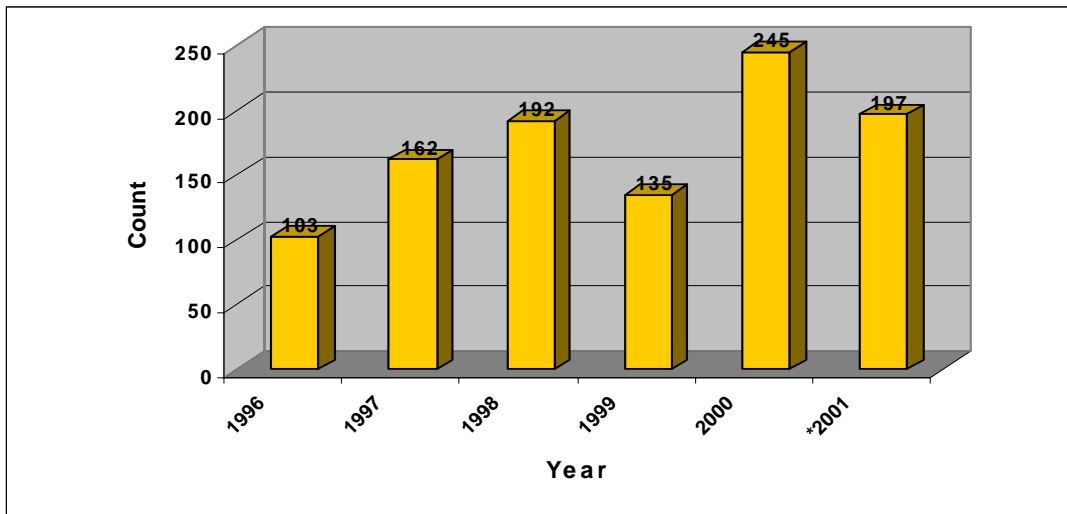
Groundwater recharge locations must be protected, as these are the source of water supply used for private wells. Whether the well is bored, drilled, or dug, any storage or use of chemicals near the well increases the chances of contamination. Wells need to be tested before initial use and then need to be tested on a regular basis. While there is no requirement for inspection of a well, in place in Warren County, residents are strongly encouraged by the County Department of Environmental Health to treat their wells on a regular basis (treat once a year). Residents not treating their water or maintaining their wells on a regular cycle are a major concern in the area.

There are no permit requirements to install a well and no required testing for private wells. Well drillers are not required to have special education and there are no standards or procedures for drilling. There are no inspection procedures for well installations, or for continued use of the well. North Carolina has developed minimum standards for installation of septic tanks in proximity to wells (developed for optimum conditions). Certain soils and geological formations create conditions that would require more space or more significant engineering measures for safe installations. The minimums are established based on a probability that a well will not be contaminated at 100' distance (state standard) between a well and septic tank, the probability of no contamination is approximately 70%). A probability of 90% or more would require at least 200'. Property owners need to be aware the state standards could be lower than they are willing to accept and not all contractors have the knowledge or are willing to advise them otherwise.

Addressing the issues raised (surface water intrusion, contamination, upgrading construction of existing wells) can be equally as expensive as the installation of a well system itself. Knowledgeable well contractors and the Department of Environmental Health encourage the installation and use of drilled wells. However, not many residents have changed from the use of bored wells to drilled wells due mainly to the lesser installation cost.

It is recommended that drilled wells are used, but it is the decision of the property owner. If a property owner wants a water sample and site inspection of a well system, then the Department of Environmental Health will execute an inspection to identify compliance. At that point the owner can decide to correct any problems found during inspection. If the site is a foster care or mental health home, the County will enforce the necessary corrections, following state rules. Most often, there will be no inspection unless a problem of contamination or other health hazard is reported. To date there are still problems with well contamination in Warren County. Chart 8 is based on the most recent information on record (*2001-data received October 2001), provided by the Warren County Department of Environmental Health (no record on distribution of well types).

Chart 12



Public Water Source

There exist a number of reasons to utilize a public water supply system over a private well. These include improved water quality, more sufficient supply of water, and more dependable supply. It means that there is a more readily available water source for fire fighting. Pumps, used to extract water from a well are not required, which can slightly lower electrical cost and there would be no freezing of pumps, or service wear. With public water supply, there would be no risk of contamination from septic tank systems. Water would be available if electrical service goes out, even if only temporarily. And there is no added cost to a property if they want to add or expand their home (adding or expanding a well system to household means added cost).

Map 8

Warren County's water source is the Kerr-Lake Regional Water System with Warren County being a 20% owner of the system and has an allotment of 20% of plant capacity (2 million gallons) with a high filtration upgrade to 5 million gallons (additional 3 million gallons). Primary distribution of the public infrastructure lines runs between Soul City, Norlina, and Warrenton, with the County Wastewater Treatment Facility located just outside of Warrenton, southwest on NC-401. On overview of the current (September 2001) line distribution/sizes includes:

- ◆ Soul City to (East-West) Norlina-extends along US 1/158: **12" water main**
- ◆ Soul City and Norlina-within municipal limits: **8" water main**
- ◆ Norlina to Warrenton (North-South)-extends along US 401/158: **14" water main**
- ◆ Warrenton-within municipal limits: **4" to 12" water mains**
- ◆ Warren County Wastewater Treatment Plant: **15" and 16" water mains from Warrenton**

As Warren County shares the Kerr Lake Reservoir with Vance County, there is a water meter located on US-158 from Vance County (monitors amount of water used by Warren County). The three water districts within the Warren County (Map 8) include District I (completed in 1999, SW County). District II had a bond referendum approved to expand water and sewer as of January 2000 (field design has commenced, NW County). District III is the result of combining Districts III and IV (September 2001). Inventory for water and sewer hook up (as of 1/31/00):

- ◆ District I: **911**
- ◆ District II: **655**
- ◆ Total: **1,566**

On average, based on information from the Department of Public Works Office, there are 25 new customers per month. However, while the taps are installed, customers may not yet have their service turned on as they are waiting for their wells to dry up first.

Based on the Department of Public Works for Warren County and the NCRS office working on the soil survey, the conditions are good within the county for expansion of the water/sewer infrastructure, but there are limitations (see soils section, charts on development). Various areas have bedrock and seamrock, located close to the surface, which inhibits placement of water and sewer lines. Distribution of these areas is sporadic and care must be exercised when installing new lines (initial survey to determine conditions, extra engineering measures to install). As of this document, in District I, the distribution of bedrock is minimal. District II has more a greater occurrence of bedrock, but based on information from the Warren County Department of Public Works, there are no large tracts of bedrock (concentrated sources).

Additional concerns pertain to the use of dual water connections (using public water and a private well). North Carolina Department of Environmental Health prohibits this practice, as there is a danger of cross contamination (private water supply could contaminate water system). It is possible for property owners to maintain private wells (separate from public water) for other uses (watering lawns, washing cars, etc.). Public education that public water and sewer is available needs to be addressed. Many residents feel that they have been using a private well for years, so there is no need to change or they are waiting for their current well system to run dry.

Wastewater Infrastructure

Private Septic Systems

Water once used, whether in a household, business, industrial plant, or farm can become wastewater, the residual water (dirty, contaminated, polluted, etc) after it's use other than drinking. Effective disposal of wastewater is as critical as a potable drinking water supply (both are related) and further important to both existing and future development in Warren County.

The primary methods of wastewater disposal in Warren County include both private septic tank systems and public sewer lines (through the wastewater treatment facility in Warrenton). As with the well sites in the County, the information provided below is based on records from the Warren

County Department of Environmental Health (January 2000 there were 9,177 approved septic permits). Table 23 illustrates the number of Septic System Permits for 1996 to 2001 (*2001 indicates as of data received October 2001). **New** indicates permits for new units (single family, manufactured homes, etc.), **expansion** indicates additions to existing systems (bedrooms added), **repair** indicates repairs to existing systems, and **installation** indicates septic systems installed at the dwelling unit's location (per Warren County approval).

Table 23

Date	New	Expanded	Repaired	Installed
*2001	226	17	42	276
2000	427	19	56	216
1999	311	11	45	354
1998	303	3	41	346
1997	271	0	48	317
1996	245	0	25	219

With the growth that has occurred in North Carolina, specifically the RTP region, more and more people are moving into the more rural areas of the state. As the population expands out into these rural areas, homeowners are locating where there isn't access to public utilities (infrastructure), mainly public water and sewer. They must then turn to another source for their water and wastewater needs specifically well and septic systems.

On-site sewage systems are used for the treatment and disposal of household wastes (most common, septic tank-soil absorption system). A standard system includes a septic tank, distribution box, and gravel-filled absorption field that is installed below the soil surface. To ensure system longevity and safeguard both the surface water and groundwater quality, proper maintenance and operation of the system must be maintained. If not, potential problems include:

- ◆ Objectionable or undesirable odors
- ◆ Breeding ground for mosquitoes
- ◆ Expensive repair and/or replacement costs
- ◆ Damage caused by sewage backing up inside the home (results in condemnation or eviction)
- ◆ Contamination of groundwater and surface water
- ◆ Spread of disease associated with sewage (cholera, typhoid fever, and infectious hepatitis)

Warren County has approximately 25% to 30% (as of data January 2000) of its total population hooked up to public water and sewer; the remainder is still using well and septic systems. There is nothing wrong with utilizing a septic system, but it does require periodic maintenance to insure the above health hazards do not occur. Property owners need to be aware of periodic maintenance (cleaning, repairs, waste removal, etc.) **before** a system fails (in order to prevent such failure). The life expectancy of a septic system is approximately 15 to 30 years, depending on usage and maintenance (although to date not many systems have failed in Warren County, there is still the potential).

Septic systems are used when public sewer service is unavailable to treat or dispose of wastewater. They are used both a permanent solution for this type of disposal or as temporary measure until public sewer lines are installed. The septic tank is watertight concrete box, buried in the ground just outside the home. Size of the tank is based on the number of bedrooms on the home (typical size is 1,000-gallon liquid capacity). The tank is then connected to drainfield by buried pipe; the drainfield consists of 2 to 5 trenches dug into subsoil. Typical systems have trenches 3' wide, 2'-3' deep, and 9' apart, each trench has 1' layer of washed gravel or stone around 4" diameter perforated distribution pipe, the entire system covered with soil. Also called a soil absorption field or nitrification field, the drainfield moves wastewater to the soil, which acts as a filter, removing germs/chemicals, before they reach the groundwater or surface waters.

The Warren County Department of Environmental Health encourages owners to get a soil survey of their site first, before applying for a septic permit (currently, not a requirement). Property owners need to be aware if the soil conditions would accommodate a septic tank. In addition, they need to know where their septic system is or will be, before installation of a well (to ensure proper soil conditions and enough distance between the two systems, thereby avoiding contamination of the well).

Warren County soil conditions are predominantly favorable to septic systems (refer to soils section charts), but caution must be used when developing in areas of severe limitation, with high shrink/swell capacity, steep slope, or a high water table. North Carolina regulations on septic systems, stipulate that gently sloping, thick, permeable soils with deep water tables make the best septic sites. Avoid areas with rock close to the surface, sticky clays, or soil layers that restrict the downward flow of water. Soils that are deep (bedrock between 40 and 60 inches) or are very deep (no bedrock within 60 inches) are good for septic systems. If soil has bedrock between 20 and 40 inches, the potential limitation to install a septic system is moderate. Any soils with bedrock shallower than 20 inches will cause a problem for construction, unless measures are taken to protect it.

Soils that have a high shrink/swell capacity can cause a septic system to fail and contaminate the surrounding water sources and surrounding soil and ultimately the overall health of the neighboring lots and general public. Soils treat the wastewater from septic system by acting as a filter. Septic systems can only be used in soils that will adequately absorb and purify the effluent. If it doesn't, then it will seep into the soil overlying the drainfield causing health problems to the homeowner, and possibly other surface or groundwater resources.

Several issues are of concern to the Warren County Department of Environmental Health, regarding septic systems. All new lots for home development, if a septic system is to be installed, require a repair area if the lot was recorded after 1982. This repair area is a piece of land on the property that can be used as an alternate drainfield/septic site if the original system fails reducing the chance for health hazards. Older subdivisions and building lots, specifically around the Lake Gaston area have been recorded prior to 1982 and therefore no repair area is required. As new subdivisions or new construction comes to the lake area, there is an increase in the amount of paved area (impervious surfaces-driveways, out buildings). This limits the amount of land for that could be used as a repair area in the event of system failure (property owners and developers not thinking ahead for this possibility).

Other problems noted relate to topography, cutting of septic lines, and lack of maintenance (causing system back-up and eventual failure). Topography is an issue in regards to where a septic system will be placed on a given lot. Not enough lot area for development, if the slope is too steep, or is too low an area causing drainage problems. These are factors that need to be considered when installing a septic system. Property owners need to be aware of where there is system is located when developing their land, otherwise they run the risk of cutting through their lines when digging.

And finally, periodic maintenance of the system, most owners simply don't concern themselves with a regular maintenance schedule until a problem occurs. Maintenance needs to be addressed in two ways, pumping out solids and using a chemical additive to kill bacteria. On a periodic schedule, the tank must have solids pumped out (a 1-2 year cycle is recommended). In addition, a chemical additive needs to be used in the system to kill bacteria (on a monthly schedule). Additional demands placed on a septic tank (dishwasher and washing machines) will increase the likelihood of failure by overloading the system. To remedy this, either the tank size must be such that it can accommodate the extra demands or having a separate tank installed for laundry and dishwasher use.

Wastewater Infrastructure Public Sewer System

The wastewater treatment plant located at the southwestern edge of Warrenton serves all public water and sewer needs for current Districts I and future extensions to District II. Total capacity of the facility is 2 million gallons per day (mgd). NPDES permits are issued under Phase I and Phase II guidelines, Phase I being for municipalities of 100,000 person or greater and Phase II for those with less than 100,000. Under NPDES permit application guidelines, the facility is operating at approximately 25% of its allotted capacity for wastewater treatment and currently complies within parameters. Processed wastewater totals approximately 600,000 gallons per day, well under the facilities capacity. Sewer mains entering the facility and discharging wastewater are 16" lines.

Currently the wastewater treatment facility is capable of handling the existing population and could conceivably handle expected growth over the next 20 years. However, care should be exercised considering future development plans in regards to insuring the capacity of the facility is not overwhelmed. It should not be taken for granted the existing capacity could accommodate any and all future growth. Plans should be considered for future expansion of the existing facility should the need arise, or construction of a new facility in another part of the county to handle growth in the lesser-developed areas. Proper planning for future development can protect existing resources to handle wastewater treatment (and look towards future growth) to deter problems from arising in conjunction with anticipated growth to of the county.

Conclusion-County Infrastructure

Adequate and safe water supply, for humans, livestock, and plants is of critical importance in all communities. County officials are currently pursuing efforts to expand the water lines through District II and initiating the environmental study phase for District III. In this manner, access to public water will eventually be available to the majority of County residents. As of this plan's development, approximately 75% of the county is currently using septic systems for onsite sewerage and wastewater disposal. To insure the continued, safe operation of private wells and septic systems, the County Department of Environmental Health would require additional staff to inspect systems during application and periodically after installation (to insure compliance).

Additional methods to be considered by the County would be to enact regulations to enforce proper installation and periodic maintenance of septic system. An aggressive public education program should be considered as well, to insure periodic maintenance of septic systems. County ordinances, where applicable, should be revised requiring all new lots for residential development with septic systems be required to have adequate space to incorporate a repair area in case of septic system failure. Ordinances should be also be reviewed and revised if necessary to **require soil surveys** to determine if soils will accommodate a septic system or if extra engineering is required to install a system. Similar requirements as mentioned above should be created to insure the safe and efficient installation of private wells through Warren County.

To insure safe and adequate wastewater treatment, the County should continue to maintain current operating parameters of the wastewater treatment facility, as well as investigate expansion possibilities with the increase of new development, and consider building another location in lesser-developed areas. A strong public education program on the benefits of a public water system should be implemented to inform residents of its advantages.

Another potential measure for County officials to consider would be to create and implement regulations (ordinances) to require an adequate facilities study for water and sewer capacity prior to new development. This would mandate that developers determine if new subdivisions (residential and commercial) would require added water and sewer capacity, then either provide such facilities **or** funds to add such facilities for the new development. This type of measure

would require that Warren County evaluate the current infrastructure system to determine its capacity to support future development, based on the following:

- ◆ Determine the capacity of the current system and current levels of use
- ◆ Conduct an analysis of the water distribution system.
- ◆ Identify the location of water/sewer lines and determine the age and condition of the system.
- ◆ Initiate measures to plan for expansion of the County water treatment facility and capacity (economic analysis).
- ◆ As of the **First Quarter for 2000**, County wastewater treatment capacity was **2.000 m/g/d (millions of gallons per day) with 1.737 m/g/d available capacity** for the same timeframe (NC-Department of Commerce-March 2002)

If these factors are determined and considered in regards to future development, coupled with measure (s) to maintain and enhance the water and sewer infrastructure for Warren County, the needs of its residents would be best served in the future.

Historic Sites

The information listed was researched through the North Carolina Archives, National Registry of Historic Sites, and Warren County Clerk of the Superior Court (Richard Hunter-local authority on County history, 8/2000). Represented are buildings and sites throughout the County, there are numerous historic markers located through Warren County as well. Further survey work and research of additional sites and buildings could potentially result in their nomination to the National Registry of Historic Sites. For clarification on the list: NR-National Register identification, SR-State Road. Map 9 illustrates the locations of the National Register of Historic Sites.

National Register of Historic Places-Warren County

- ◆ Mary Anne Brown House: **NR 1204** (SR 1530-Vaughn)
- ◆ Buck Springs (Nathaniel Macon) Plantation: **NR 40** (SR 1348-Vaughn)
- ◆ Buxton Place: **NR 1696** (NC 58-Inez)
- ◆ Chapel of the Good Shepherd: **NR 496** (SR 1107-Ridgeway)
- ◆ Cherry Hill: **NR 356** (NC 58-Inez)
- ◆ Coleman White House: **NR 308** (Halifax Street-Warrenton)
- ◆ Dalkeith: **NR 365** (SR 1636-Arcola)
- ◆ Green Duke House: **NR 329** (SR 1102-Soul City)
- ◆ Elgin: **NR 255** (SR 1509-Warrenton)
- ◆ William J. Hawkins House: **NR 545** (SR 1103-Ridgeway)
- ◆ Hebron Methodist Church: **NR 952** (SR1306-Oakville)
- ◆ Lake O' Woods: **NR 596** (SR 1512-Inez)
- ◆ Little Manor (Mosby Hall): **NR 264** (Littleton)
- ◆ Person's Ordinary: **NR 263** (Littleton)
- ◆ Reedy Rill: **NR 352** (SR 1600-Warrenton)
- ◆ Shady Oaks (Cheek-Twitty) House: **NR 436** (SR 1600-Warrenton)
- ◆ Sledge-Hayley House: **NR 662** (Franklin Street-Warrenton)
- ◆ Mansfield Thornton House: **NR 505** (SR 1600-Warrenton)
- ◆ Tusculum: **NR 362** (SR 1635-Arcola)
- ◆ Warrenton Historic District: **NR 445** (Main Street-Downtown Warrenton)
- ◆ John Watson House: **NR 11588** (SR 1121-Warrenton)

In addition to the sites listed, there are several local historic preservation organizations including Preservation Warrenton, which offers a driving tour for Warren County as well as a walking tour of the Town of Warrenton. Preservation Warrenton strives to highlight the historic features and resources within Warren County.

Map 9

Conclusion-Historic Sites

Even with the numerous historic markers, sites, and districts within Warren County, historic resources are an under-used resource as an economic draw for the county. Although the Town of Warrenton is a designated historic district, there is no specific zoning classification for historic zoning (as of October 2001). Other issues pertaining to preserving and enhancing historic resources the potential widening of US-158, to find an alternate route for trucks and traffic through the downtown area (strong sentiment to leave Warrenton as it is-residential), and to direct heavy development away from US-1.

State programs are available to encourage historic resources, such as the Junior Historian Program, but there is a lack of teachers in the school program and lack of resources to teach/emphasize history (state problem, not just local). Warren County has a rich history; evident from the historical perspective included at the beginning of this plan. However, the potential of having additional historic sites as a resource requires further work. In addition to executing a full inventory of historic sites and submitting these sites to the National Registry for consideration, a program to enhance to the downtown area of the incorporated towns should be pursued by County officials.

The Main Street USA program is one program that could be utilized to enhance these areas for use as a historic district. This program seeks to have a full or part time staff position responsible for creating and implementing this program. If a community does not have the staff available, entities such as the Kerr-Tar Regional Council of Governments could act in that capacity. If the County pursues this option, a Warren County Downtown Revitalization Program could be created to preserve and enhance the County's historic resources.

Transportation

The North Carolina Department of Transportation (NC-DOT) plays a major role in planning, financing and implementing road construction within the counties of North Carolina. One benefit of transportation planning is that the roads will be designed with a specific function in mind. Having an established plan allows local officials to be aware of future improvements and incorporate them into planning and policy decisions.

Major transportation routes in Warren County include I-85, US-1, US-158, and US-401. The maps used in this plan identify the locations of the primary and secondary roads within the County. I-85 and US-1 are located northeast to southwest and across the northwest area of the County, to the Virginia State line. I-85 is the major connector for Warren County to major metropolitan areas such as Durham, Charlotte, Richmond, VA, and Atlanta, GA. US-401 lies on a north/south axis from Norlina to Franklin County (main route from Warren County to Raleigh); US-158 lies on an east/west axis across Warren County (from Norlina to Halifax County).

Based on data researched through the NC-DOT website, the following lists the number of miles of paved/unpaved roads for Warren County:

- ◆ Total State Highway System: 651.11 miles
 - A. Paved: 566.15 miles
 - B. Un-paved: 84.96 miles
- ◆ Total State-Primary System: 94.97
 - A. Paved: 94.97 miles
 - B. Un-paved: 0
- ◆ Total State Urban System (within municipalities): 9.23 miles.
 - A. Paved: 9.12 miles
 - B. Un-paved: .11 miles

- ◆ Total State Secondary Road System: 546.91 miles.
 - A. Paved: 462.06 miles
 - B. Un-paved: 84.85 miles

NC-DOT and the incorporated towns within Warren County have shared maintenance responsibilities for County roads. All roads outside the incorporated limits are the responsibility of NC-DOT for full maintenance. For improvements to roads through Warren County, the Transportation Improvement Program (TIP) is initiated on a yearly basis to identify needs for projects to be submitted to NC-DOT. Prior to the 2001 TIP public hearings, the majority of projects for Warren County were bridge replacements or requests for secondary road paving. Major projects on the TIP included (TIP project number):

- ◆ (#I-4037)-install median guardrail (on SR 1237) to start in 2001.
- ◆ (#R2587)-US 158 widening (post years projection? -beyond 2008).
- ◆ Renovations of welcome center /restrooms to make them ADA compliant.
- ◆ Norlina-spot safety study for intersection of US-401 and US-158 (traffic signal).

As of 2001, an updated priority list has been established for Warren County, presented and included within the draft TIP. One major project, the widening of US-158, has moved from an unfunded project, to being established as receiving funding for environmental studies in the near future. A full list of the projects for Warren County on the draft TIP is on Attachment 4 at the end of the plan text.

For major air service, the nearest international airport is Raleigh-Durham International, located approximately 60 miles south. Smaller local airports are located in Granville and Franklin Counties. Rail service is available to Warren County, through CSX (freight rail lines). The main rail line comes from Vance County and into Norlina. Historically, rail service extended through Warren County and parallel to US-158 to Halifax County. However, the spur from Norlina to Halifax is no longer active, a line also ran from Norlina, north, to the Virginia state line (now inactive).

Conclusion-Transportation

Warren County has an extensive primary and secondary road system with growing traffic demands, especially along US-158 and US-401. Local organizations, such as the Warren County Economic Development Commissioner and 158 Corridor Development Association, are active in addressing transportation concerns (including the widening of US-158 and eventually US-401). Efforts of these two organizations have resulted in the study of widening US-158 being moved up on the NC-DOT TIP as well as directional signs being implemented in major highways, indicating US-1 and its route to US-401, then Raleigh. In addition, the potential for the Southeast High Speed Rail Corridor (rapid passenger transit system) to come through Warren County offers great potential for development benefits. One potential stop for the rail service is Norlina, of the nine alternative corridor proposed for this route, six come through the Region-K area.

Funding for major DOT projects is the largest concern in North Carolina. While the DOT-TIP has been adopted, construction on DOT projects could begin within several months or several years. Road maintenance is a significant issue, with DOT providing for this when funds are available and a time frame within their schedule determined. One potential solution County officials should consider, for roads being built in new subdivisions, is to create ordinances and regulations can be created that require a study of available road infrastructure to determine if new construction would impact existing resources. If such impact occurred, then either the infrastructure is provided to the County, or funds are made available for the County to incorporate the added roads. This would address new construction only and would not be applicable for prior subdivisions or development.

County officials should continue the coordinated efforts with local organizations (Warren County EDC and the 158 Corridor Development Association), regional organizations (Kerr-Tar COG and the newly formed Region-K Rural Transportation Planning Organization), and the state. While there is easy access to major transportation routes and metropolitan areas, there is a need to pursue improvements to local roads and transportation routes to further facilitate access to the major routes. It is through these efforts that the transportation issues within Warren County can be addressed, and future development will not be negatively impacted due to lack of transportation infrastructure.

Schools

As Warren County grows in population, the need for schools and adequate educational services grows as well. New and improved educational facilities will be needed in Warren County to meet the demands of a growing population. Based on the figures in the section on Population (Table 5), there could be potential for up to 1,100 new students within the County school system (final release of the 2000 Census will provide full counts on age breakout). Table 24 illustrates the distribution of students and faculty, as of September 2000.

Table 24

Name	Location	Enrollment	Teachers
Hawkins Pre-K Center	Warrenton	100	6
Mariam Boyd Elementary School	Warrenton	405	23
Northside Elementary School	Norlina	478	26
South Warren Elementary School	Warrenton	297	15
Vaughn Elementary School	Vaughn	291	20
Warren County Middle School	Warrenton	799	45
Warren County High School	Warrenton	906	59
Total		3,276	194

Warren County Board of Education compiles a facilities plan to determine needs for County schools (number of teacher, physical requirements for buildings, etc.). Planning standards for schools consider three factors: number of students per classroom, student/teacher ratio, and amount of floor space in square feet. These figures will differ for the various educational levels. Based on an average statistical standard, the following figures are presented as an example for County officials to consider as the population grows:

- ◆ Grades K-5: 22 students per teacher and 90 square feet per student.
- ◆ Grades 6-8: 20 students per teacher and 120 square feet per student.
- ◆ Grades 9-12: 19 students per teacher and 150 square feet per student.

An average planning standard used to determine the number of students per classroom is 20 students per classroom. Based on the figures in Table 24, as of September 2000, approximately 48% of the total student population was in elementary school, approximately 24% enrolled in middle school, and the remaining 28% in high school.

To determine **potential** staff and facility needs for schools, the above standards are applied to estimates on potential population growth for school-age children in Warren County. Figures were projected for 2010 and 2020, per the NC Office of State Planning and are provided on Table 25 to illustrate needs if all school age children were enrolled in County educational facilities.

Table 25

Year 2010			
Grade	New Students	New Teachers	Additional Square Feet
K to 5	1,138	51	102,420
6 to 8	1,213	60	145,560
9 to 12	1,154	60	173,100
Year 2020			
K to 5	1,206	54	108,810
6 to 8	1,237	61	148,440
9 to 12	1,134	59	170,100

It should be noted that retention of students to graduation from high school is critical. As of January 2001, the dropout rate for Warren County has decreased, but is still higher than the state average (and Region-K overall). County officials should consider the information below in future development decisions, to offer better opportunities for students in Warren County (Dropout Rate (%) Grades 7-12 Source: NC-Public Schools, Henderson-Daily Dispatch)

	<u>1999</u>	<u>2000</u>	<u>2001</u>
◆ Franklin County:	4.11%	5.41%	4.26%
◆ Granville County:	4.94%	6.06%	4.31%
◆ Person County:	4.62%	4.24%	4.31%
◆ Vance County:	6.98%	6.07%	4.89%
◆ Warren County:	4.85%	7.49%	5.82%
◆ North Carolina:	4.60%	4.34%	3.86%

Conclusion-Schools

This section illustrates a general overview of the number of students within the Warren County school system and staffing for the current educational facilities. As the County grows there will continue to be a reciprocal effect on the demand on County infrastructure (water, sewer, roads, and schools. At the County level, the Board of Education is pursuing efforts to meet the demands of its school facilities for teachers and available space, as well recreational facilities/programs. The estimates in Table 25 are designed to identify facility and staff needs if **all** school age children are still residing in Warren County and enrolled in school. These figures are based on State projections for these age groups as of 2001. The County is facing a shortage of teachers currently and is researching renovations/additions to schools and programs at this time. County officials need to continue researching options to assist in providing adequate educational facilities for its growing population. Pursuit of grants at the state and federal level is one option, as is a similar option mentioned previously in this plan (as pertains to water, sewer, and roads) in utilizing an ordinance that would require in-depth studies of existing facilities and needs prior to new development. Once these needs are established, facilities or funding are provided to the County to meet the demands of the new construction.

Public Safety and County Facilities

A unit of government, whether a town, city, county, or state, provides for its residents a variety of services. In return the residents pay taxes or fees to have access to these services. These include as mentioned in this plan; water and sewer, roads, and schools. Public safety is provided as well, in the form of law enforcement and fire/rescue services. This section addresses public safety, city facilities, and an inventory of equipment as of 2001. The following lists were researched through the Warren County Manager's Office, Department of Public Works, Warren County Fire Departments, and Warren County Sheriff's Office.

Public Works/Infrastructure Sites

- ◆ Pleasant Hills Subdivision-pump station
- ◆ Axtell (SR 1100)-elevated tank site
- ◆ NC Welcome Center-pump station
- ◆ Oine Road (SR 1210)-pump station
- ◆ Traylor Site (SR 1210)-master meter vault
- ◆ Ridgeway/US 158-pump station
- ◆ Soul City (SR 1551)-main pump station

Public Works/Infrastructure Sites (continued)

- ◆ Perdue Hatchery (SR 1213)-pump station
- ◆ District I (SR 1100)-water pumping station
- ◆ Axtell-elevated tank

Capital Improvement Projects (1998-99 and 1999-2000)

- ◆ Water and Sewer District I (Phase II): funding per NC Rural Center (supplemental)
- ◆ Water and Sewer District II: funding per USDA Rural Development and NC State Grant Unit
- ◆ Water and Sewer District III (Grant): funding NC Rural Center (planning purposes only)
- ◆ Virginia DOT (Welcome Center Project): funding per Commonwealth of Virginia
- ◆ I-85 Manson Interchange: funding per Warren County and NC Rural Center
- ◆ Oine (elevated water storage tank): funding per NC/V DOT and NC Rural Center
- ◆ Manson Industrial Site Improvements: funding per NC Dept. of Commerce/Warren County
- ◆ Perdue Hatchery Pump Station Rehabilitation Project: funding per NC Dept. Commerce
- ◆ Pleasant Hill Subdivision Sewer Force Main Rehab: funding per NC Rural Center
- ◆ Warren County Regional Sewer Force Main Rehab: funding per NC Rural Center

Fire and Rescue Facilities (location) (fire insurance rating)

- ◆ Afton-Elberon, volunteer fire department (Afton-Elberon) (9-S)
- ◆ Arcola, volunteer fire department (Arcola) (9-S)
- ◆ Churchill/Five Forks, volunteer fire department (Churchill-Five Forks) (9-S)
- ◆ Drewry, volunteer fire department (Drewry) (9-S)
- ◆ Hawtree, volunteer fire department (Hawtree) (9-S)
- ◆ Inez, volunteer fire department (Inez) (9-S)
- ◆ Long bridge, volunteer fire department (Long Bridge) (9-S)
- ◆ Macon, volunteer fire department (Macon, rural) (9-S)
- ◆ Norlina, volunteer fire department (Norlina) (6)
- ◆ Norlina, volunteer fire department (Smith Creek) (6/9-S)
- ◆ Ridgeway, volunteer fire association (Ridgeway, rural) (9-S)
- ◆ Roanoke-Wildwood, fire department (Roanoke-Wildwood) (6/9-S)
- ◆ Soul City, volunteer fire department (Soul City, rural) (9S)
- ◆ Warrenton, fire department (Warrenton) (8)
- ◆ Warrenton, volunteer fire association (Central Warren County, rural) (6/9-S)

To clarify the fire insurance ratings for each district (#), when a district has a split classification (Ex. 6/9S), those properties located within 1,000 feet of a pressurized fire hydrant carry the first listed classification. All other properties in the district will carry the second classification. When an "S" classification is listed, it notes that the NC Department of Insurance has successfully inspected the department. All Warren County rural district boundary lines represent a five-mile highway radius from the responding station or an equal distance between two stations. These boundaries are in the process of being extended to six miles where applicable. The NC Department of Insurance regulations state that the area between the five and six-mile boundary lines will only carry a 9-S classification, even if other regulations allow a lower classification. As of September 2001, the Churchill-Five Forks area is adding a substation, which will extend its area of operations along the south shore of Lake Gaston (into Virginia enlarging its current fire district. The Town of Warrenton Fire Department is in the process of being re-inspected and estimates successfully obtaining a "6" classification in the next 9 months (as of September 2001).

County Sheriff's Office

- ◆ 21 officers
- ◆ 2 office personnel
- ◆ 4 full time telecommunications specialists
- ◆ Approximately 23 vehicles

Town of Warrenton Police Department

- ◆ 6 officers (including Chief)
- ◆ 2 auxiliary officers (part-time)
- ◆ 6 vehicles

Town of Norlina Police Department

- ◆ 6 officers (including Chief)
- ◆ 7 vehicles (1 is a spare, 3 out of the 7 have 100,000+ miles)
- ◆ 1 radar unit (works marginally)

County Facilities (County owned buildings and sites)

- ◆ County Courthouse-Warrenton
- ◆ Finance/Tax Building-Warrenton
- ◆ Social Services Building-Warrenton
- ◆ Health Center Building-Warrenton
- ◆ Jail-Warrenton
- ◆ Landfill (site and building)-Warrenton
- ◆ Dog Pound (landfill area)-Warrenton
- ◆ Conner Mobile Home-Warrenton
- ◆ Celebrity Mobile Home-Warrenton
- ◆ Health Department-Warrenton
- ◆ Multi-purpose Building-Warrenton
- ◆ Library-Warrenton
- ◆ Ambulance Garage-Warrenton
- ◆ Agricultural Extension Office-Warrenton
- ◆ 4-H Camp-Warrenton
- ◆ Historical residence-Warrenton
- ◆ Recreation facility/pool-Soul City
- ◆ Smoke House-Warrenton
- ◆ Detention Center-Warrenton
- ◆ Scale house-Warrenton
- ◆ John Graham Building-Warrenton
- ◆ Gymnasium-Warrenton
- ◆ CP&L Complex-Warrenton
- ◆ 105 Front Street-historic building, County Manager's Office and Public Works Department
- ◆ 103 Front Street-County Magistrate's Office

Convenience Sites (recycling collection facilities)

- ◆ Site 1: Eaton's Ferry
- ◆ Site 2: Warren Ridgeway Rd
- ◆ Site 3: Highway 401, Afton
- ◆ Site 4: Arcola
- ◆ Site 5: Five Forks
- ◆ Site 6: Macon/Vaughn
- ◆ Site 7: Inez
- ◆ Site 8: US 1, Wise
- ◆ Site 9: Drewry

Table 26
 Projected Needs for Staff and Equipment
 (Estimates are based on statistical planning model)

	1990-2000	2000-2010	2010-2020
Law Enforcement			
Personnel	(+) 3	(+) 3	(+) 2
Vehicles	(+) 2	(+) 2	(+) 1
Square Footage-Facilities	(+) 600	(+) 600	(+) 400
Fire/Rescue			
Personnel	(+) 3	(+) 3	(+) 3
Vehicles	(+) 2	(+) 2	(+) 1
Square Footage-Facilities	(+) 750	(+) 750	(+) 500
Additional Calls	(+) 110	(+) 110	(+) 73

Within Warren County is another issue that pertains to public safety, animal control and the dog population. Efforts are on going as of March 2002, to create and adopt an acceptable animal control/nuisance ordinance to address the issue of nuisance animals. It is estimated that the dog population is between 2 and 3 times the human population (40,000 and 60,000: no exact figures at present). The Citizens for Animal Protection, Inc. is the organization with the County to draft and pass the animal control ordinance. There is a County animal shelter, but services at present are not adequate to address the issues of animal control. With budget issues pervasive throughout the state, as of this document, animal control issues are at the low end of priority and funding. County officials should continue to work closely with the Citizens for Animal Protection organization in order to create an effective ordinance for animal control, addressing **nuisance issues** (not legitimate animal breeding or private hunting dog owners). In addition, the County should research options to obtain funding to improve facilities and staffing devoted animal control.

Conclusion-Public Safety and County Facilities

With a growing population comes a growing demand for County services. Warren County is actively pursuing programs to better provide services for its residents, including a new County Administration Building, consolidated County law enforcement operations, and E-911 emergency system, and updated tax maps. As of this document, the consolidation of County services into a new County Administration Building has not been finalized. Current estimated completion of the project is for 2003, start of construction is estimated for May 2002. The new building would be located off of Highway 58, south of Warrenton, at the same location as the County detention Facility and County Cooperative Extension Service (estimated to cost \$4.5 million for construction, would house the main County services, including the Sheriff's department).

Public works efforts are in effect to expand water infrastructure to District II and District III. There will be additional needs for residents as the County continues to grow; officials will need to continue pursuing options (assistance from organizations, like the Kerr Tar COG or through other grant awards) to meet the needs of a growing and diverse county. The Office of the County Manager and County Public Works Department actively pursue efforts to expand County infrastructure to meet its populations' needs. Groundbreaking for Water District II in March of 2001 marked the start of construction for the next phase of expanding public water service within Warren County. As of December 2001, the Board of County Commissioners adopted a \$6 million Capital Project Ordinance for Phase I of the District III Water District, working to expand water service to eastern Warren County. Once constructed, this water district will provide service to the Townships of Six-Pound, Roanoke, River, Judkins, Fishing Creek, and Fork. Phase I will begin with the Roanoke and Fishing Creek Townships.

In regards to placement of fire hydrants, as the County continues to upgrade its records and mapping resources, it is recommended that an accurate count of the hydrants and their locations be pursued. Future geographic information systems for the County could incorporate systems to accurately identify the locations of these points (current and future). Development is affected by the placement (access to) of rescue and emergency services facilities/equipment. New development should be required to follow all applicable local and state guidelines in regards to installation of fire hydrants and proximity to existing systems. County officials should consider this issue to insure that new development has adequate access to public safety facilities.

Private Services

Previously stated, a unit of government provides a variety of services, which can include street maintenance, public water and sewer service, schools, recreation facilities, and emergency services (police, fire, rescue, emergency management) to its residents. Residents pay taxes or fees to have access to these services. When possible, additional funding is obtained for services by the local government (grants), which can assist in reducing required taxes or fees. Additional services used by residents, businesses, and the local government are obtained through private corporations including electrical, natural gas, telephone, and cable television. Private services available in Warren County are listed as follows with number of customers listed (as available):

- ◆ Electrical: Carolina Power and Light (CP&L), Halifax Electric Membership Corporation (EMC).
- ◆ Natural Gas: Frontier Energy.
- ◆ Telephone: Sprint Communications (telephone and data services lines)
- ◆ Cable Television: several services used including private satellite dishes and Time Warner.

The companies listed in the above sections will continue to meet the needs of the present population, with anticipated continued service for future growth. The number of customers served by each service (as of 2001-2002), varies and depends on personal choice. Electrical customers include 7,595 customers through Halifax EMC and 7,200 customers through CP&L. Natural gas (9-mile line extending from Virginia, through northwestern Warren Co. to Vance Co.) includes 85 commercial/industrial customers, with another 100 residential customers requesting service.

As new development increases, subdivisions and businesses will need to continue to install utilities in a safe and efficient manner. County officials, service providers, and residents should pursue all efforts to insure the safe installation of utilities as new development occurs, including utilizing existing easements (where feasible) to install future utility lines. Information in this section provided through Halifax EMC, CP&L, Sprint Communications, and Time Warner Cable.

With the advent of telecommunications comes the need for cell towers to accommodate service. There are approximately 20 structural towers in Warren County (NC-Rural Internet Access Authority-ENC website March 2002). Continued development as well as increased population will increase the need for service and the number of cell towers. However, County officials should be aware of the proliferation of cell towers and the manner of their placement, which can have negative impacts the rural landscape of the County. Freestanding towers are usually built in fenced areas on open land, which can alter the aesthetics of the landscape. They can also be placed on existing structures, to limit the amount of land used for free standing towers. In many cases, water towers are used as platforms for cell towers/antennae. County officials should consider methods to manage the placement of future structures. Such methods include revising County subdivision and zoning ordinances to address the placement of cell towers. Additionally placement of these structures on current water towers (and proposed water towers as the water districts are expanded) can provided expanded cell service, while protecting the rural landscape and character of Warren County.

Significant Environmental Sites-Landfill/Reclamation Project

While Warren County is classified as rural, with a predominant agricultural economy, there is a growing commercial and industrial component, specifically near the US-158, US-1, and I-85 corridor. As the County grows and attracts new industry, there will be a reciprocal effect on

potential hazards associated with certain types of industry and commercial ventures. Concern with storage and use of hazardous materials should be a concern of County officials and residents alike, in order to insure that new business do not have a negative impact on the environment and public health of Warren County.

As of this plan, there are several sites of environmental concern within Warren County, including a PCB landfill and four companies that are EPA designated sites in (Glen Raven Mills, Cochrane Furniture, Saber Button Company-no longer in business, and Crown Cleaners). While not large storage facilities of hazardous materials, they are classed as conditionally exempt small quantity generators. When in operation Saber Button Group was a large generator (sites not currently leaking materials). Future development requires caution (current and new industries) due to the extensive natural habitats of the County. These natural habitat areas could be at risk of impairment or even destruction by chemical and hazardous materials contamination.

Hazardous waste issues are addressed by the State of North Carolina, through administration of the Resource Conservation and Recovery Act (RCRA) regulations (Subtitle C of RCRA deals with hazardous wastes). For the Environmental Protection Agency to delegate this authority to a state, the states' regulatory program has to be at least "equivalent" to the federal program. In classifying types of hazardous waste materials, definitions created by the US Congress may be slightly different than what the average person would assume and in some cases exceptions (exemptions) are made for special cases. As an example, a solid waste can be a solid, liquid, or gas (several criteria used when defining hazardous waste, "a waste is any material that could potentially enter the environment in a manner different than its intended use"). This definition would include materials that are intended to be discarded but haven't been or chemicals that are no longer usable and can not be reclaimed or recycled.

While a solid waste can be a gas, solid, or liquid by the congressional definition and RCRA covers solid hazardous waste; RCRA has a "permit-by-rule." Permit-by-rule basically eliminates the need to get a RCRA permit if the facility already has a permit under a one of several other specific EPA statues. An example is a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act for a wastewater treatment facility.

RCRA include Land Disposal Restrictions (LDR), storage of waste materials in a warehouse is considered land disposal. In most cases, larger companies will have modern waste inventory and tracking systems. Once a material becomes a hazardous waste under LDR, a company is supposed to send the waste to disposal as soon as possible (after it becomes waste material, unless it is being accumulated for treatment). A company can essentially store waste material for one (1) year, if it has been stored less than a year, the EPA has to prove the generator (company) is storing the waster materials in place of waiting for it to be treated/disposed.

If the waste material has been stored for more than one (1) year, the responsibility is on the generator (company) to prove that hazardous waster material has not been stored illegally. Storage of raw materials for processing does not require a RCRA permit, unless the company has gone out of business and does not intend to use the materials or the material is off specifications and is unusable. In addition, if a company generates less than 100 kilograms per month of hazardous waste materials, the generator is exempt from the regulations as a "conditionally exempt small quantity generator".

The EPA has four companies (current and out of business) identified as designated sites for hazardous materials. These include Glen Raven Mills (stored chemicals, 111-Trichloroethane), Cochrane Furniture (conditionally exempt small quantity generator), Crown Cleaners on Main Street in Warrenton (a conditionally exempt small quantity generator), and Saber Button Group (out of business, but historically classified as a large generator). Cochrane furniture has been as D001 (a code based on ignitability characteristics of the hazardous materials) and F003 (spent non-halogenated solvents- including acetone-from non-specific source due to ignitability hazard).

PCB Landfill and Reclamation Project

In the late 1970's, North Carolina roadways were the dumping grounds for several thousand gallons of polychlorinated bi-phenyls (PCB's) sprayed along approximately 210 miles of state roads. PCB's were also used not only for pesticide use in agriculture, but as transformer fluids in the early 1970's. However, due to being a suspected carcinogen, PCB's were outlawed and controlled during disposal as transformers were phased out of service. In this same timeframe, the EPA designated the state roadways as a Superfund site, which were dug up, and the contaminated soils disposed of in an approved PCB landfill, located in southern Warren County off of SR-1604 (Limertown Road). Historically, at this same time, due to the opposition from County residents, the Environmental Justice movement is reported to have begun at this site.

Governor James Hunt in 1982, "made a commitment to the people of Warren County that is appropriate and feasible technology became available, the state would explore detoxification of the landfill." Funds were appropriated in 1995, \$1 million, to study detoxification of the landfill. A Citizens Advisory Board (CAB) was established, with local residents, state employees, and members of various environmental organizations in a joint partnership to explore options for detoxification of the landfill. The site includes the following characteristics and historical data:

- ◆ Landfill is 140 acres in size, designated in 1981 and built in 1983.
- ◆ Landfill was operational for September and October 1983.
- ◆ 40,000 cubic yards of PCB contaminated dirt deposited in the site.
- ◆ Operation was closed in 1984, but has been continuously monitored since that time.
- ◆ State engineers have identified there have been no release of PCB's into the environment
- ◆ Site design includes 120 acres deeded to Warren County.
- ◆ The 120 acres surround a core of 20 acres.
- ◆ Within 20 acre core is a 2.8-acre deposit of contaminated dirt (20 acres buffers the 2.8).

There have been no indications for contamination around the landfill site or coming from site. State environmental specialists take samples of soil (leachate) through sand filters, which are examined each month, to determine if any contamination occurred to the form the core. Twice per year, the monitoring wells are sampled as well (8 wells located around the facility). Samples of sediment and surface water from Richneck Creek and a tributary, as well as occasional air samples from vents/filters at the monitoring sites (to insure that no contaminants have leaked).

The CAB is seeking reduction of PCB's down to 200 parts per billion after the detoxification program implemented, it was determined that this will then make area safe for any development. Residents currently use the area for hunting, but potential future uses (once detoxification is complete) include turning the site into an athletic field, urban development, or other type recreation center. The site does have utilities (electric service and 6" water lines) and a detoxification program would require building structures and a parking area, which could be re-used for another type of use such as a recreation facility.

Current detoxification program costs have \$7 million appropriated out of a \$15 million program, which requires a match of federal money. The state has initiated a phased approach to the cleanup of the site; as of 2001 Phase I has begun with the awarding of a contract to IT Group (Alpharetta, GA based firm). This phase will include preparation of the site for detoxification, mobilizing the necessary equipment, performance testing, and treatment of a limited amount of material. Phase II would complete the detoxification process and allow for re-development. June 2001 marked the official groundbreaking for the project at the landfill location. As of December 2001, the equipment necessary for the detoxification process (chemically treat the toxic soil) was being assembled in Illinois and issuing the required federal permit to start the process was pending. It is expected that these two steps would be completed February 2002 and once the permit is obtained/approved, the equipment established on-site, then the detoxification process would begin approximately one month later. **Funding is still an issue to complete the process in Phase II; efforts to obtain the necessary funding need to be pursued by the CAB (with assistance from County officials) to complete the project, reclaiming the site to benefit Warren County.**

Citizen Input

Citizen involvement is an on-going process and an integral element in the planning process, as well as in creating a Comprehensive Development Plan. This element is important to incorporate near the start so residents can learn about the process as it develops and how it will define the growth of Warren County. Often, the best source of information when developing a plan, are the residents that will ultimately most benefit by its creation. They can contribute ideas on current issues within their community of Warren County, as well as to help officials by identifying their vision of what the County should look like in the future. Citizen involvement will allow them to comment, analyze data, and support the plan and its implementation. Citizen input allows for education of the public and offers a chance for involvement in the future of the County. Citizen input can bring out ideas beneficial to the community, leading to stronger plan. **Goals Include:**

- ◆ Education of residents on the planning process and the land use plan (outreach/education).
- ◆ Identify a common, accepted view of current issues and conditions.
- ◆ Identify what the needs of residents are and potential solutions to address these needs.
- ◆ Develop acceptance by residents of the plan on goals, strategies, and tools of the plan.
- ◆ Work with as much of the population as possible.

In the process of creating the updated Comprehensive Development Plan for Warren County, the Kerr-Tar C.O.G. planning staff presented information at each Land Use Committee meeting. In addition to presenting at Board of Commissioners' meeting as necessary, COG staff organized five (5) public work sessions in 2000 and five (5) public work sessions in 2001. These were held in five (5) communities throughout the County, to offer residents in differing areas to contribute information on their particular community. Map 10 illustrates the results of the work sessions held in 2001, reflecting the resident's perceptions of future land use patterns within the county.

Highlighted points on concerns of the residents, and related planning issues include: Manufactured homes are very prevalent in the county, especially older models. New subdivision regulations need to be incorporated as pertains to the quality of housing. Cell phone towers-need to manage their installation within the county. Zoning has a bad reputation due to its misuse by government (how zoning is administered). Need to proper administration of county ordinances. Potential to use the National Guard Armory to be used as civic center for County. Use a mixed-use land use category, north out of Norlina along US-1 to Wise. Vaughn area should be designated as mixed-use. Need to research US-158 widening and Southeast High Speed Rail for benefit to County. Need to have increased retail/shopping available to county residents. County needs to preserve and enhance recreation areas around Lake Gaston. Keep the lake areas predominantly residential. Enhance and build business along 903. Build a police substation for the Lake Gaston area. Build a post office facility for the Lake Gaston Area. Incorporate a CP+L Power substation in the southern part of the County. Need to encourage residential development near 401 towards Franklin County. Add playground equipment at South Warren School.

Conclusion-Citizen Input

Ultimately, final decisions affecting a county are made by the governing entity, made in the best interest of the county. For Warren County, this responsibility falls on the Chairman and Board of Commissioners, with advice on development and planning issues coming from the Planning Board. Residents do have a significant impact on what occurs in their community, though they may not always agree with decisions made. A unit of government must always consider the concerns and needs of area residents in the decision-making process and Warren County is no exception. The concerns and issues represent an overview of the major points raised in meetings held during the planning process and development of the Land Use Plan. In conducting field research on land use and housing counts, COG planning staff was able to interact directly with residents. Similar issues were raised by residents in the street, which indicates that there is strong support to address these issues from those who were unable to attend the meetings held in the planning process.

MAP 10

IV. CURRENT LAND USE

As an area develops distinctive patterns of how land is used becomes evident. Usually, this land use follows a natural pattern. Businesses will be built along major road systems, land with soils suitable for agriculture are used for farming, if water and sewer is available this will attract large concentrations of residential subdivisions, and access to other public utilities (natural gas, electric power) will draw development from industry.

Development that is not managed properly will result in inappropriate use of land, incompatible uses on adjacent properties, and ultimately a drain on resources to the community, as well as strong concerns from residents. The County's last development plan was adopted in 1975 and a Strategic Plan was finished in 1992. Since then there have been considerable changes in the County, as well as North Carolina. Urban Sprawl is now a common term used in development and planning issues across the country. This refers to un-managed and rapid development that occurs, in most cases before adequate resources are available to accommodate a community's population (current and future).

Field research for the updated plan was conducted over a 3-month period in the summer of 2000 (June to August) to establish general land use patterns. This information is combined with computer-mapped (geographic information systems) data from the Kerr Tar COG, Warren County Tax Office, Warren County Managers Office, Warren County EDC, and Warren County Department of Public Works. Map 11 represents a general overview of the existing land use patterns. General land use classifications are defined as follows:

- ◆ **Residential:** all non-mobile (permanent/semi-permanent) buildings used for habitation including single-family homes, manufactured homes (modular homes and mobile homes), and apartment (multi-family) dwellings.
- ◆ **Commercial:** structures either single or in a cluster that are utilized for business, retail, wholesale trade, and large scale agricultural uses (farming operations).
- ◆ **Industrial:** structures in a cluster or stand-alone used for industrial or manufacturing purposes.
- ◆ **Recreational:** land or structures for recreational use, can be either public or business making enterprise (parks and recreation facilities).
- ◆ **Open space:** open land with no or minimal structures, greenspace. Not specifically designated on the accompanying map, areas without specific color designation (white or beige) illustrate open space areas.
- ◆ **Public/quasi-public:** structures used for government agencies (local, state, and federal), schools, senior centers, libraries, churches, and cemeteries.

Total area for Warren County equals 443 square miles, approximately 14 square miles of surface waters and approximately 428 square miles of land. At 640 acres in one (1) square mile, Warren County includes 273,920 acres of land, with a total of 8,960 acres of surface waters. Based on information researched through the North Carolina Center for Geographic Information and Analysis (NC-CGIA), NC Department of Agriculture, Warren County Tax Office, and Kerr-Tar COG, **approximate land use percentages were determined** (not inclusive of the incorporated municipalities of Macon, Norlina, and Warrenton) these include:

- ◆ **Total County Area:** 283,520 acres.
- ◆ **Total Developable Land:** 273,920 acres (96.8% of total area).
- ◆ **Surface Waters:** 8,960 acres (3.2% of total area).
- ◆ **Agriculture/Cultivated Land:** 80,155 acres (29.2% of developable land).
- ◆ **Preserved Land:** 2,893 acres (1% of developable land).
- ◆ **Developed Land** (residential, commercial, and industrial): 3,180 acres (1.2% of developable land).
- ◆ **Open Space:** 187,692 acres (68.6% of developable land).

MAP 11

V. Proposed Land Use

With the data that has been researched during the plan's development, combined with the results of meetings with the Land Use Committee, Board of Commissioners, and public, an image of what Warren County would look like in the future has been created. In addition to the classifications presented above, the following categories correspond with the future land use patterns map, Map 12, presented at the November 5, 2001 Board of Commissioners meeting.

- ◆ **Greenway:** utilizing either inactive rail line easements (minus tracks) or preserved green space areas for walking and biking trails.
- ◆ **Residential:** all non-mobile (permanent/semi-permanent) buildings used for habitation including single-family homes, manufactured homes (modular homes and mobile homes), and apartment (multi-family) dwellings. Classification identifies high density or clusters of homes in existing/future subdivisions.
- ◆ **Industrial:** structures and property used for industrial or manufacturing purposes.
- ◆ **Incorporated Limits:** incorporated Towns of Warrenton, Norlina, Macon, and Littleton. The Town of Macon currently is un-zoned and has been included in the future land use patterns identified through the work of the Land Use Committee and C.O.G. planning staff.
- ◆ **Recreational:** land or structures for recreational use, can be either public or business making enterprise (parks and recreation facilities). The area surrounding Kerr Lake and Lake Gaston, while not color-coded on the Land Use Map, is considered recreational, with current County regulations allowing for residential development and limited commercial development.
- ◆ **Office/Institutional:** usually for identifying office parks, but also used for institutional operations, such as mental health facilities and prisons. This area is classified for the Warren County Prison.
- ◆ **Public/quasi-public:** structures used for government agencies (local, state, and federal), schools, senior centers, libraries, churches, and cemeteries.
- ◆ **Commercial:** structures either single or in a cluster that are utilized for business, retail, wholesale trade, and large scale agricultural uses (farming operations).
- ◆ **Agricultural Residential (Open Space):** open land with no or minimal structures, greenspace. With the predominance of open land in Warren County and small family farms, this classification would offer residents the opportunity to either maintain farming or build homes (within the guidelines of existing/potential subdivision regulations). If developed for residential use, this promotes low-density residential areas (large lot development).
- ◆ **Greenspace-Preservation Area:** areas to be preserved for use as greenways, hiker/biker trails, and natural areas, specifically in areas that include floodplains, wetlands, and natural habitats (species) to preserve these resources and reduce potential flood damage.
- ◆ **Mixed Use:** offers a combination of several uses, usually residential, commercial and even light industrial, along major transportation corridors to accommodate more flexibility in development.
- ◆ **Crossroads Communities:** well-known communities that have a larger concentration of residential development with commercial development, but are not currently incorporated towns. These communities have the potential to become future incorporated towns.

MAP 12

VI. Goals, Objectives, Strategies

This section defines the goals of the plan established by the Warren County Board of Commissioners. These goals represent what the County wants to achieve. In combination with the plan goals, objectives are determined, which define how the goals would be met. Strategies are identified as a method to be used to achieve them. In conclusion, a list of potential recommendations (planning tools) to implement this plan and to assist in the County's primary goal of managed quality development is included.

1. To promote, expand and diversify the economic base and job opportunities in Warren County in such a way that will maximize the use our workers while protecting our environment.

A. Objective 1: Protect and enhance Kerr Lake and Lake Gaston and the surrounding wetlands.

Strategies:

1. Consider countywide zoning with appropriate use categories to protect County natural resources.
2. Enforce the Tar-Pamlico River Basin Rules of minimum buffer requirements on both sides of surface water sources.
3. Continued cooperation with the US Army Corps of Engineers to enforce the shoreline management program surrounding Lake Gaston and Kerr Lake.
4. Pursue funding sources to preserve and enhance the wetlands around Kerr Lake and Lake Gaston (Northeast Tarheel Conservancy, NC-Wetlands Restoration Program).
5. Designate a buffer/green space area surrounding Kerr Lake and Lake Gaston.

B. Objective 2: Protect water quality and natural resources.

Strategies:

1. Consider countywide zoning with appropriate use categories to protect County natural resources.
2. Direct development to specified development areas and away from significant natural resources/habitat areas.
3. Consider transfer of development rights and the use of conservation easements (encourage/educate landowners) from environmentally sensitive areas and agriculturally important lands.
4. Maintain, improve, and enforce water supply watershed regulations (revise subdivision regulations to incorporate additional buffers around water sources).
5. Coordinate with local, county, and state agencies to develop buffer requirements and land use regulations to protect water sources with impaired water quality.
6. Consider a Greenway (Greenspace) Program to add to connectivity within the County, while utilizing natural resources and floodplains (deter development near floodplains), in a manner that will maintain these environmental areas and protect residents from potential flood damage.
7. Continue coordinated efforts with the Citizens Advisory Board to detoxify and reclaim the PCB landfill site, with potential future use as County Recreation Facility.

C. Objective 3: Encourage light industrial and commercial development to meet County needs, increase the tax base, and job supply.

Strategies:

1. Consider countywide zoning with appropriate use categories to encourage industrial and commercial development where resources are appropriate, while maintaining the integrity of existing land use patterns.
2. Coordinate with County Economic Development Commission to identify target sites for light industry and commercial development.
3. Inventory and maintain a local database of industrial and commercial properties, current and neighboring properties, for potential expansion.

4. Research expansion of existing industrial property for increased light industrial development and commercial uses, including the transportation corridors of I-85, US-1, US-158, and US-401.
 5. Research use of Mixed-Use classification along the US-158 and US-1 corridors, as well as the communities of Afton-Elberon, Vaughn, and Arcola-Bethlehem, to incorporate a mix of commercial, residential, and small scale/light industrial uses where appropriate.
- D. **Objective 4:** Promote tourism and preserve existing historic sites, encourage designation of new sites.

Strategies:

1. Coordinate efforts to incorporate a Downtown Revitalization program in the incorporated Towns of Warrenton, Norlina, and Macon and create improve entrance corridors to the main street area of downtown Warren County.
2. Coordinate efforts with local historical groups to research and inventory potential new historic sites for incorporation in the Historic Registry, market as tourism/history feature of the County.

- E. **Objective 5:** Encourage farming options for the local agricultural community.

Strategies:

1. Consider countywide zoning with appropriate use categories to protect County natural resources.
2. Consider an Agricultural Ordinance to protect the agricultural resources of Warren County, while allowing for development, and ensuring the quality of life for residents near agricultural operations.
3. Continue coordinating efforts with the Agricultural Extension Service to protect and enhance existing farming operations within Warren County.
4. Encourage use of alternative crops where (and if) applicable and coordinate with local farmers to develop (expand) markets for products.

2 To promote, encourage and stimulate the conservation of existing housing and the construction of new housing needed currently as well as need to attract new families to Warren County.

- A. **Objective 1:** Ensure that adequate infrastructure for water and sewer, schools, and roads are provided to meet the needs of the County.

Strategies:

1. Consider countywide zoning with appropriate use categories to encourage both high and low density residential development, while maintaining the integrity of existing land use patterns and area natural resources.
2. Consider an Adequate Public Facilities Ordinance to allow for development once funding or facilities are established (water and sewer, roads, and schools).
3. Review and revise the current subdivision regulations to accommodate non-standard housing alternatives including, cluster subdivisions, townhouses, duplexes, and to define applicable zoning for apartments (multi-family) units.

- B. **Objective 2:** Ensure conditions are maintained to provide adequate and safe housing.

Strategies:

1. Consider a County Minimum Housing Code for all residential development to insure that safe and healthy living conditions exist for all County residents.
2. Expand current Code Enforcement staff for and Department of Environmental health staff to insure development can construction conforms to all standards at the local, and State, and Federal Levels.
3. Coordinate efforts where appropriate to promote neighborhood improvement projects.
4. Encourage/assist rehabilitation of housing identified as needing repairs.

3. To provide and maintain, adequate county services and facilities to accommodate economic development and growth and to protect the public health and general welfare.

A. **Objective 1:** Protect and provide adequate water and sewer (services and facilities).

Strategies:

1. Consider an Adequate Public Facilities Ordinance to allow for development once funding or facilities are established (water and sewer, roads, schools).
2. Actively pursue grants or other funding sources to and preserve the wetlands, floodplains, and other natural resources surrounding Kerr Lake, Lake Gaston, and other related perennial water resources.
3. Actively pursue grants and other funding sources to maintain and expand the County Water Districts to provide a safe and adequate water supply for County residents, current and future.
4. Work with the County to insure cooperation in meeting all water and sewer needs.
5. Expand the staff and resources of the County Department of Environmental Health to monitor track and monitor well land septic systems within Warren County, to insure that current and future residents have access to safe and adequate private water/sewer systems.

B. **Objective 2:** To encourage sustainable economic growth and development.

Strategies:

1. Continue efforts to consolidate County operations and E-911 services within an appropriate County Administration Building, providing services to County residents.
2. Research, prepare, and adopt a Capital Improvements Program to improve County services, with emphasis on providing adequate water and sewer.
3. Consider a Rails to Trails program to utilize the inactive rail easements and potential greenways for walking/biking trails, enhancing connectivity within the County.
4. Encourage enhancement of historic sites and tourism.

C. **Objective 3:** To enhance and maintain recreation facilities and programs.

Strategies:

1. Consider countywide zoning with appropriate use categories to encourage use of natural resources for greenways and Greenspace preservation, while maintaining the integrity of existing land use patterns and area natural resources.
2. Require open space/recreation areas from new development.
3. Actively pursue funding to develop/purchase land for parks or landowner donations.
4. Develop partnerships with local and state facilities/programs.

D. **Objective 4:** Maintain, streamline, and where feasible, expand public services, public safety/emergency services, and private services (electrical, telephone, cable television, and natural gas)

Strategies:

1. Consider an Adequate Public Facilities Ordinance to allow for development once funding or facilities are established (water and sewer, roads, and schools).
2. Review current public safety assets to determine needs, identify added community needs prior to new development to insure that adequate services will exist.
3. Actively pursue available funding/grants to provide public safety services.
4. Maintain and enhance working relationships with private companies providing current services for residents including electrical, telephone, and cable television.
5. Actively pursue efforts and resources to expand service for natural gas.

4. To encourage development at a rate and in a pattern which can be efficiently served by existing and planned service and facilities.

A. **Objective 1:** Manage development so as to not overburden the land or infrastructure systems and allow for development to occur, as infrastructure becomes available.

Strategies:

1. Consider countywide zoning with appropriate use categories to encourage both high and low density residential development, while maintaining the integrity of existing land use patterns and area natural resources.
 2. Consider an Adequate Public Facilities Ordinance to allow for development once funding or facilities are established (water and sewer, roads, and schools).
 4. Review and revise the current subdivision regulations to accommodate non-standard housing alternatives including, cluster subdivisions, townhouses, duplexes, and to define applicable zoning for apartments (multi-family) units.
- B. **Objective 2:** Enhance property value and quality of life
Strategies:
1. Enhance (create) County parks/recreation program providing facilities and programs.
 2. Require new development to incorporate either funding to acquire parks/green space or provide for parks/green space.
 3. Require environmentally responsive development.
- C. **Objective 3:** Minimize incompatible land uses.
Strategies:
1. Require appropriate landscaping, buffering, and/or additional setbacks between conflicting land uses.
 2. Review and revise subdivision requirements to incorporate soil surveys on all subdivisions and development
 3. Review and revise subdivision requirements to require additional buffers for surface waters (Tar-Pamlico River Basin) Rules).
- D. **Objective 4:** Improve the image and character of the County.
Strategies:
1. Require new development to incorporate Best Management Practices to enhance the aesthetics of the County.
 2. Require open space areas appropriate to the types and level of development; ensure the preservation of mature trees and landscaping.
 3. Coordinate a Downtown Revitalization program with the incorporated towns of Warrenton, Norlina, and Macon.

5. To develop a transportation system that will address economic development and local travel concerns.

- A. **Objective 1:** Maintain and improve Transportation Routes.
Strategies:
1. Consider countywide zoning with appropriate use categories to encourage development for all land uses in consideration of current and planned transportation systems, while maintaining the integrity of existing land use patterns and area natural resources.
 2. Consider an Adequate Public Facilities Ordinance to allow for development once funding or facilities are established local roads in new subdivisions.
 3. Review and revise the current subdivision regulations to accommodate current and future transportation systems.
 4. Coordinate with NC-DOT to implement all County projects include in the Transportation Improvement Program.
 5. Pursue efforts to create and update the County Thoroughfare Plan, with consideration of the potential Southeast High Speed rail Corridor, DOT projects (include improvements to US-158 and US-401), and improve increased traffic corridors through the incorporated Towns of Warrenton, Norlina, and Macon, with access to I-85.
 6. Coordinate with DOT, methods to insure the safety of residents along major road corridors.

VII. Plan Recommendations

Upon completion and adoption of the updated Comprehensive Development Plan (Land Use Plan), several planning tools are recommended for Warren County to implement the final plan (coordinated with the Planning Board, County Manager, County Planner, Board of Commissioners, and public meetings/input).

- ◆ Adopt/implement County Comprehensive Development Plan (Land Use Plan).
- ◆ Hire County Planner (***achieved***).
- ◆ Update tax maps and mapping system (***in progress 2001-2002***).
- ◆ Incorporate/purchase GIS (computer mapping) system for use by County departments (Planning, Public Works, Fire/Rescue, Police).
- ◆ Increase staff for Code Enforcement/Inspections and Dept. of Environmental Health.
- ◆ Create and adopt the documents listed below:

Adequate Public Facilities Ordinance (APF). To assist in developing funding mechanisms to provide all appropriate infrastructures required by new development (before development receives final approval addresses water and sewer infrastructure, schools, and roads).

Revise subdivision and zoning ordinances, create/adopt countywide zoning. Revise subdivision and zoning ordinances for residential and commercial uses, including (but not limited to) required buffers, impervious surface limits, open space designation, complete soil surveys for subdivisions, defined approval process, and potential new use categories included in zoning. Based on the Proposed Land Use map generated by COG staff, some modifications to existing zoning may be required, based upon final review and adoption by the Planning Board and Board of Commissioners.

Natural Resources Protection Ordinance. To protect the natural resources of Warren County and incorporate practices that will allow managed development. Sections included would be best management practices (control stormwater runoff), erosion and sediment controls ordinance, floodplain regulations (NFIP Program), and creation/incorporation of a countywide greenway (hiker/biker trails) system.

Agricultural Ordinance. To protect the agricultural resources of Warren County, while allowing for development, and ensuring the quality of life for residents near agricultural operations.

Minimum Housing Code (Manufactured and Stick Built). To provide minimum safe standards for housing, single family (stick-built), manufactured, and multi-family.

Downtown Revitalization. County coordinates efforts with the incorporated municipalities, through a program to revitalize and maintain the character of the downtown areas in its incorporated municipalities (Warrenton, Norlina, and Macon).

Pursue Clean Water Management Trust Grants and Wetlands Restoration-preserve Lake Gaston and Kerr Lake. Meetings to be held with stakeholders and the necessary agencies to manage the wetlands around both lake areas protect the water supply and natural resources for the lake areas (water pollution prevention, buffers, and land purchase/trusts for conservation easements).

Capital Improvements Plan. Provides a priority list of needs, preliminary costs for programs and construction and a timeline for completion of each project.

ATTACHMENTS