



**DUPLIN COUNTY**  
NORTH CAROLINA

# Land Use Plan 2022

Adopted: June 20, 2022



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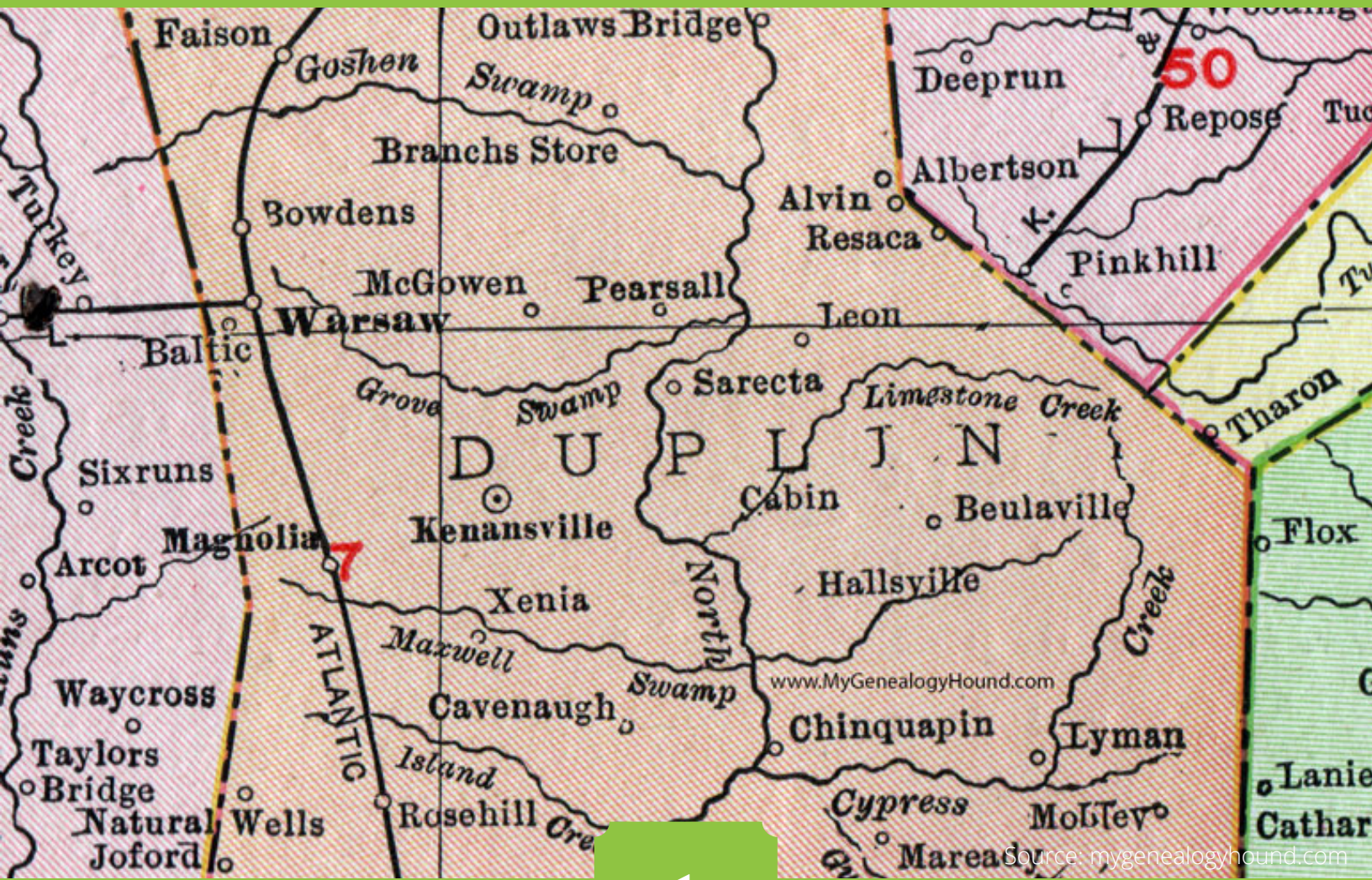
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DUPLIN COUNTY  
NORTH CAROLINA



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# CHAPTER 1

Introduction

## CHAPTER 1. INTRODUCTION

### AUTHORITY TO PLAN

Chapter 160D, Article 5 of the North Carolina General Statutes requires adoption and reasonable maintenance of a land use plan as a condition of adopting and applying zoning regulations. The plan is intended to set forth goals, policies, and programs to guide the present and future physical, social, and economic development of the jurisdiction. When adopting or rejecting any zoning text or map amendment, the governing board shall approve a brief statement describing whether its action is consistent or inconsistent with an adopted land use plan.

This statement of reasonableness may consider, among other factors, (a) the size, physical conditions, and other attributes of the area proposed to be rezoned, (b) the benefits and detriments to the landowners, the neighbors, and the surrounding community, (c) the relationship between the current actual and permissible development on the tract and adjoining areas and the development that would be permissible under the proposed amendment, (d) why the action taken is in the public interest, and (e) any changed conditions warranting the amendment.

### PLAN PURPOSE

While the preparation of a land use plan is required by North Carolina Legislation, there are broader and more important reasons to engage in the planning process. Basically, planning should begin with understanding Duplin County and its people and learning how to care for them. Choices must be made about the natural, manmade, and financial resources in the county. The county's budget should be compared to the plan to ensure that public money will be spent in accordance with the county's goals and objectives.

The plan should be:

- Comprehensive in setting goals and objectives for all aspects of the county.
- Part of a continuous planning process that is timely and responsive to the needs and desires of the county.
- The legal basis for land use regulations and a guide for a capital improvements plan for county budgeting.

The planning process is divided into four steps:

1. **Basic Goals:** For local planning, determining basic goals may mean asking questions such as the following: Do we want to grow? Do we want to arrest decline? Do we want to be a center for high-tech industry? What balance do we want between investment in highways and in mass transit?
2. **Study and Analysis:** Among other things, planners address land use, population trends, the economic base of the community, and physiographic features.
3. **Plan or Policy Preparation:** Plans or policies will be prepared for the county as a whole or for a segment of it. It is a basic statement of how the county will develop, in what direction, and perhaps at what pace.

## Chapter 1. Introduction

- 4. Implementation and Effectuation:** To carry out the plan, tools such as county ordinances, capital improvements programs, and general guidelines for private development and public investment will be specified.

In summary, the plan will:

- Review historical data.
- Discuss principal issues.
- Define problems associated with growth.
- Define main trends and produce forecasts.
- Provide a generalized future land use map.
- Define public, private, or public-private programs which should be implemented or improved.
- Define goals, policies, and implementing actions.

### PLANNING PROCESS

This plan is the first land use plan adopted by Duplin County. Preparation of this document was undertaken to produce a workable, creative, and dynamic plan to guide future long-term growth and development throughout the next twenty years. The intent of this plan is to establish a solid foundation of the ongoing planning program and to serve as the primary policy guide for short- and long-range planning and programmatic decision-making within Duplin County.

The Duplin County Planning Board supervised preparation of the plan and recommended it to the Duplin County Board of Commissioners for adoption. A public hearing on the plan was conducted on June 20, 2022, prior to its adoption.

### REGIONAL LOCATION

Duplin County is located in the Coastal Plain area of southeastern North Carolina (see Map 1). The northwestern part of the county is in the middle Coastal Plain, while the southern and eastern parts are in the lower Coastal Plain, or flatwoods. Kenansville, the county seat, is north of Wilmington and southwest of Greenville. The county is served by Interstate 40, US Highway 117, NC Highways 11, 24, 50, 403, and 903. Rail service is available through CSX rail service and the Duplin County Airport provides a 6,001-foot paved, lighted runway.

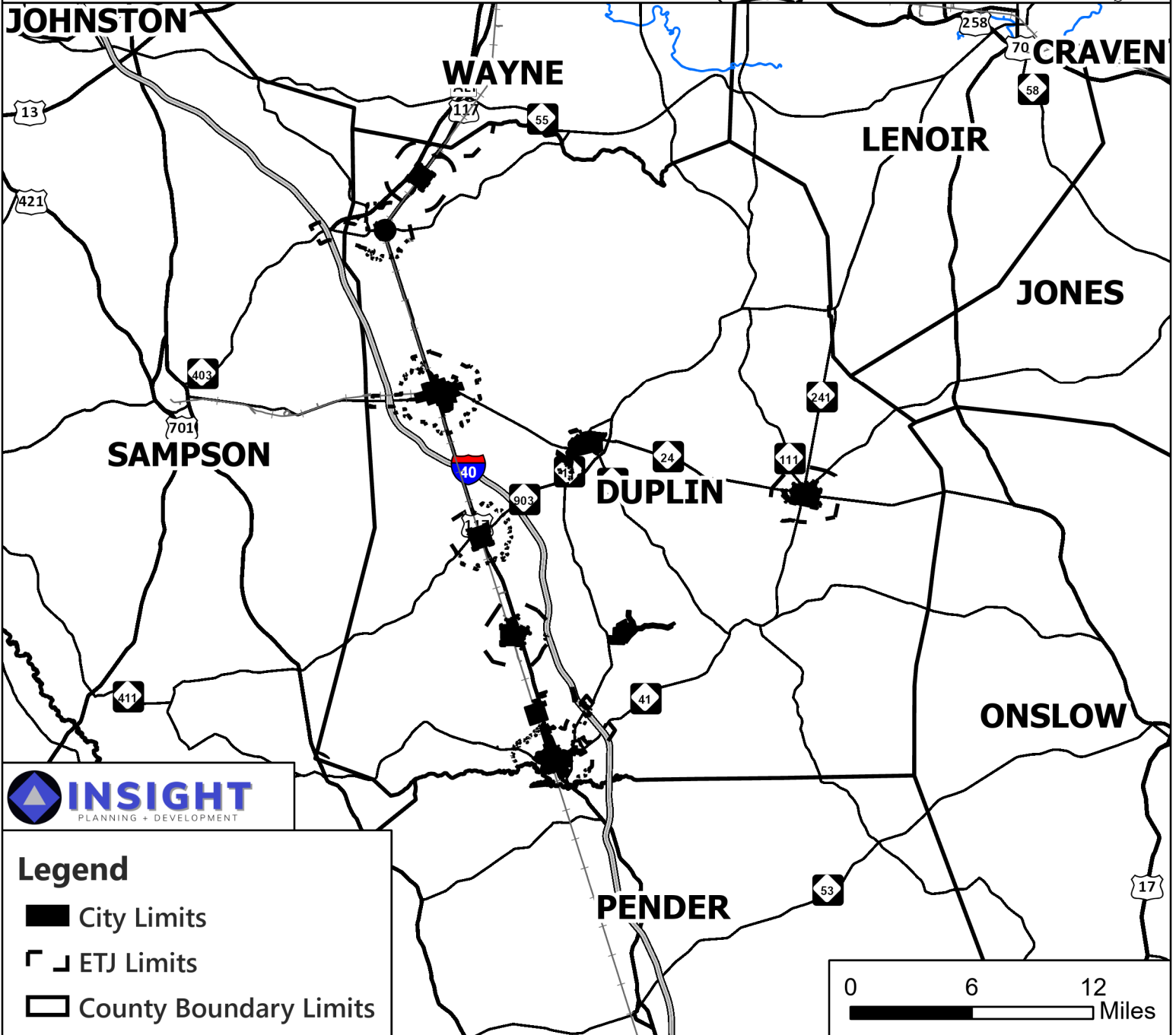
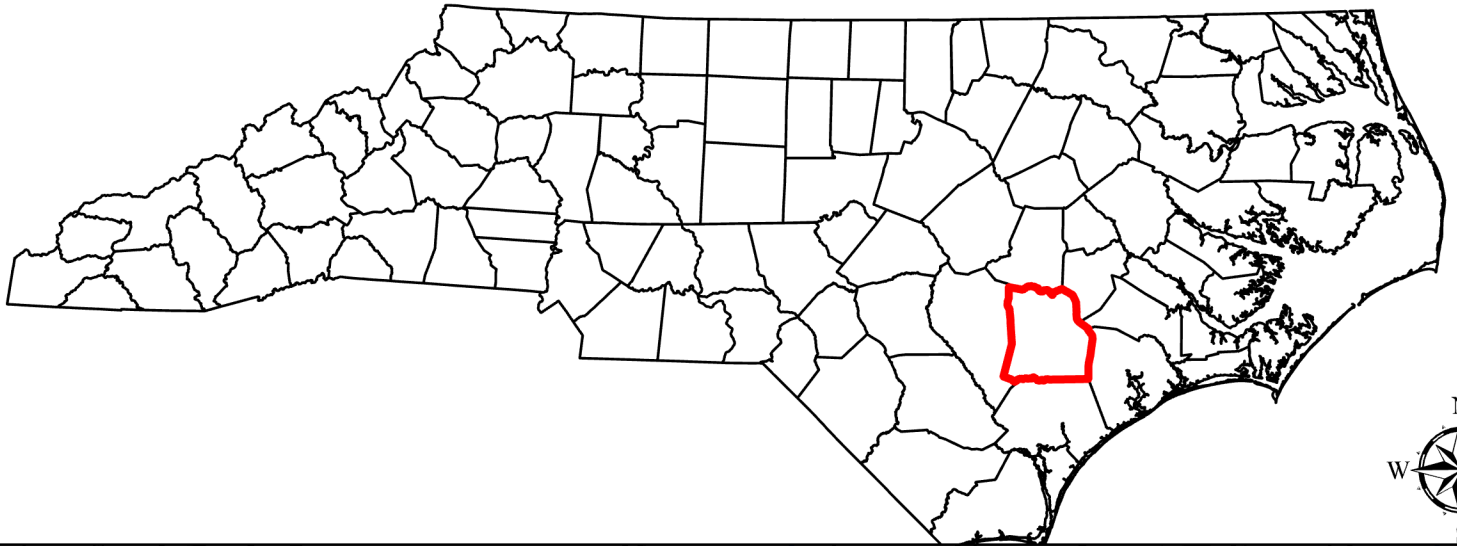
With a total area of 822 square miles, of which 816 square miles is land and 5.5 square miles are covered by water, Duplin County is the 9<sup>th</sup> largest county in the State. There are 10 incorporated towns in the county: Beulaville, Calypso, Faison, Greenevers, Kenansville, Magnolia, Rose Hill, Teachey, Wallace, and Warsaw.



Duplin County Airport-George Futrelle Runway *Image Source: Duplin County*



# Map 1. Regional Location

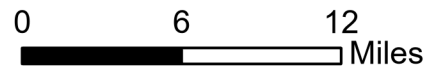


## Legend

■ City Limits

┌ └ ETJ Limits

□ County Boundary Limits



### HISTORY

Duplin County was first formed by the North Carolina General Assembly on April 7, 1750, from what was the northern part of New Hanover County. At that time, the boundaries of Duplin County included what would eventually become Sampson County. Duplin County was named after Sir Thomas Hays, Lord Dupplin, who served on the Board of Trade and Plantations for the Crown in the 1740s. During the 1700s, the area's rich farmlands attracted a wide variety of immigrants, including the Welsh, Germans, Swiss, Scotch-Irish, French, and English. The early settlements were primarily along the river and larger creeks because they were the best means of transportation.



In 1751, the first official county court was held in the home of William McRee. The original site is now the location of Guilford Mills, Inc., on NC Highway 11/903. The first courthouse was built on Turkey Swamp near the present-day Duplin/Sampson County line. When Sampson County was created in 1784 from the western half of Duplin County, the courthouse was relocated to a more central location. The first sessions of county court at this new site were held in a home near the road to Magnolia approximately 2 miles south of Kenansville. Eventually, the courthouse was relocated to the area that is now Kenansville.

Duplin County has grown steadily through the years. The first industry in the county was the naval stores industry. The harvesting of rosin from the abundant longleaf pine forests to make tar, pitch, and turpentine, provided barter and income for the early settlers and remained a significant part of the economy up until the late 1800s. The naval stores products were floated down the Northeast Cape Fear River for sale in Wilmington on large, log rafts. In later years, paddlewheel riverboats became a far better means of transportation on the river. Necessary supplies and staple goods were ferried back up the river. When the Wilmington and Weldon Railroad was completed, it provided a faster and more convenient method of shipping and the use of the river for transportation decreased.

The completion of the Wilmington and Weldon Railroad in 1840, which ran through the western half of the county, provided additional opportunities for growth and a tremendous influence for further development, not only for Duplin County, but the entire region. The Towns of Wallace, Teachey, Rose Hill, Magnolia, Warsaw, Faison, and Calypso developed along the tracks.

Duplin County has maintained its agricultural heritage and rural environment through the years while still allowing for a blending with industrial development, economic growth, and an enviable lifestyle.



Source: [ncfarmfamilies.com](http://ncfarmfamilies.com)

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# CHAPTER 2

## Demographic Profile

## CHAPTER 2. DEMOGRAPHIC PROFILE

The Demographic Profile section outlines various demographic information, including population, housing, and economic indicators. For the purposes of this plan, and for the sake of consistency, demographic data are sourced primarily from the US Census Bureau American Community Survey. Census data may also be supplemented with figures from the NC Office of State Budget and Management (NCOSBM).

### POPULATION



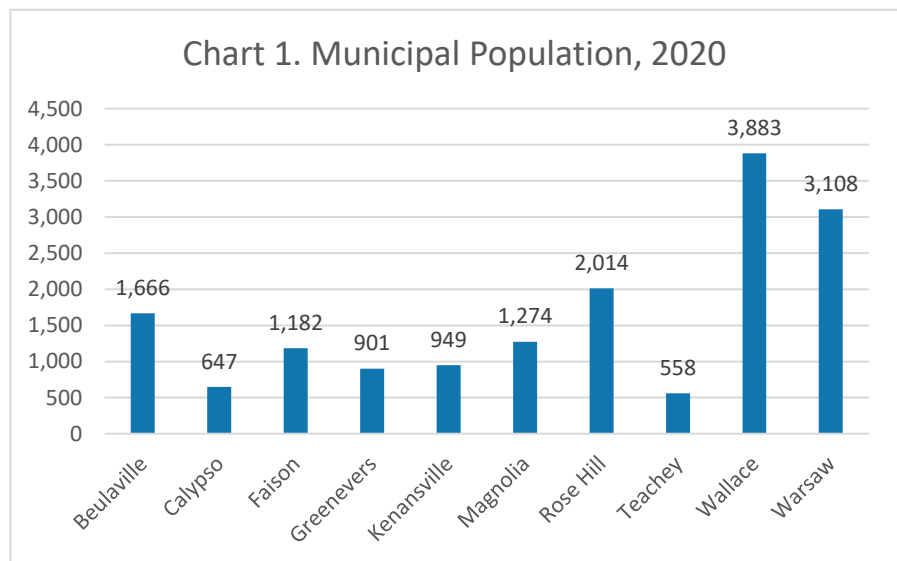
#### Population Growth

Table 1 provides an overview of regional population growth from 1990 to 2020. Since 1990, population growth within Duplin County has been steady. Over this period, the County’s total population increased at a rate of 47.4%. This increase is lower than the State overall (54.8%), as well as the counties of Pender (109.3%) and Sampson (49.9%).

Jurisdiction	1990	2000	2010	2020	% Change '90 to '00	% Change '00 to '10	% Change '10 to '20	% Change '90 to '20
Duplin County	39,995	49,063	58,505	58,967	22.7%	19.2%	0.8%	47.4%
Jones County	9,361	10,381	10,153	9,594	10.9%	-2.2%	-5.5%	2.5%
Lenoir County	57,274	59,648	59,495	56,756	4.1%	-0.3%	-4.6%	-0.9%
Onslow County	149,838	150,355	177,772	195,069	0.3%	18.2%	9.7%	30.2%
Pender County	28,855	41,082	52,217	60,399	42.4%	27.1%	15.7%	109.3%
Sampson County	42,297	60,161	63,431	63,385	42.2%	5.4%	-0.1%	49.9%
Wayne County	104,666	113,329	122,623	123,603	8.3%	8.2%	0.8%	18.1%
North Carolina	6,632,448	8,049,313	9,535,483	10,264,876	21.4%	18.5%	7.6%	54.8%

Source: US Census Bureau and 2020 American Community Survey 5-Year Estimates.

Duplin County ranks 48<sup>th</sup> out of 100 North Carolina counties in terms of population. The most densely populated areas of Duplin County are found in and around the ten incorporated municipalities. Of those ten municipalities, Wallace has the highest population (3,883) followed by Warsaw (3,108). All ten of the County’s municipalities experienced population growth from 1990 to 2020 (see Table 2).



## Chapter 2. Demographic Profile

Table 2. Municipal Population, 1990 to 2020

Jurisdiction	1990	2000	2010	2020	% Change '90 to '00	% Change '00 to '10	% Change '10 to '20	% Change '90 to '20
Beulaville	933	1,067	1,296	1,666	14.4%	21.5%	28.5%	78.6%
Calypso	479	410	538	647	-14.4%	31.2%	20.3%	35.1%
Faison	697	744	961	1,182	6.7%	29.2%	23.0%	69.6%
Greenevers	515	560	634	901	8.7%	13.2%	42.1%	75.0%
Kenansville	861	1,149	855	949	33.4%	-25.6%	11.0%	10.2%
Magnolia	752	932	939	1,274	23.9%	0.8%	35.7%	69.4%
Rose Hill	1,287	1,330	1,626	2,014	3.3%	22.3%	23.9%	56.5%
Teachey	244	245	376	558	0.4%	53.5%	48.4%	128.7%
Wallace	2,924	3,344	3,880	3,883	14.4%	16.0%	0.1%	32.8%
Warsaw	2,886	3,051	3,054	3,108	5.7%	0.1%	1.8%	7.7%

Source: US Census Bureau.

### Age Distribution

Duplin County appears to have an aging population profile, with its median age in 2000 at 34.9 years and in 2020, 40.5 years. Just under half of Duplin County's population (45.2%) is over the age of 45 years. The 55 to 59-year-old age group grew the most from 2000 to 2020 (92.6%). The second largest shift in population was in the 65 years and older age group at 72.8%.

Table 3. Age Composition 2000 to 2020

Age Group	Population			% of Total Population	
	2000	2020	% Change	2000	2020
Under 5 years	3,609	3,646	1.0%	7.4%	6.2%
5 – 9 years	3,544	4,451	25.6%	7.2%	7.5%
10 – 14 years	3,558	3,540	1.3%	7.2%	6.0%
15 – 19 years	3,341	3,776	13.0%	6.8%	6.4%
20 – 24 years	3,460	3,465	0.1%	7.1%	5.9%
25 – 34 years	7,067	6,629	-6.2%	14.4%	11.2%
35 – 44 years	7,332	6,814	-7.1%	14.9%	11.6%
45 – 54 years	6,293	7,451	18.4%	12.8%	12.6%
55 – 59 years	2,343	4,512	92.6%	4.8%	7.7%
60 – 64 years	2,200	3,767	71.2%	4.5%	6.4%
65 and older	6,316	10,914	72.8%	12.9%	18.5%
Total Population	49,063	58,965	20.2%	100.0%	100.0%
Median Age (years)	34.9	40.5	---	---	---

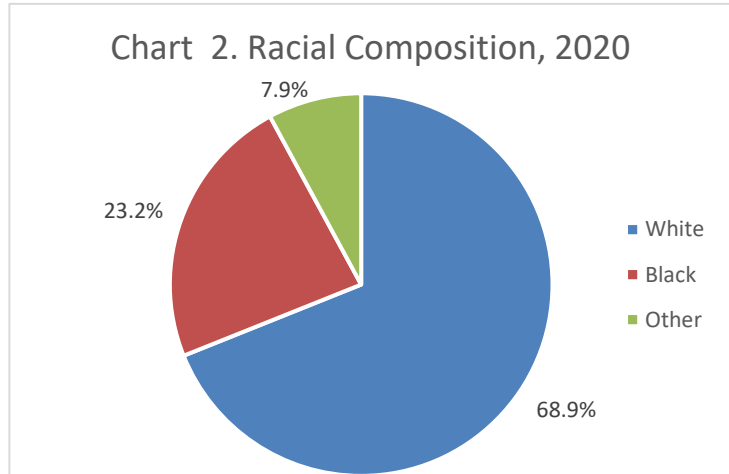
Source: US Census and 2020 American Community Survey 5-Year Estimates.

The current majority of the population is 65 years and older (18.5%). Of equal importance is the percent of the population which is under the age of 20 years (26.1%). Therefore, the needs of the community will need to strike a balance to ensure families and younger generations have recreation opportunities and the aging population have access to social services, including healthcare.

**Gender and Racial Composition**

Duplin County’s population gender and racial composition have remained fairly constant. In 2000, the male/female composition was 24,317/24,746, for a 49.6%/50.4% mix. By 2020, the male/female composition was almost the same at 28,715/30,252, for a 48.7%/51.3% mix. By comparison, the 2020 North Carolina distribution was also 48.7% male and 51.3% female.

In 2000, 58.7% of the County’s population was White, with 28.9% Black and 12.4% Other. By 2020, the racial makeup was 68.9% White, 23.2% Black, and 7.9% Other. The White percent of total population increased from 58.7% to 68.9% while the Black population decreased from 28.9% to 23.2%. The Other racial category also decreased from 12.4% to 7.9%. Thus, in 2020, the County’s total minority population was 18,319, or 31.1% of the total population (see Chart 2).



**HOUSING**



**Dwelling Unit Growth**

From 2010 to 2020, the total dwelling units in Duplin County increased from 24,914 to 26,014, an increase of 4.4%. Additionally, the number of owner-occupied housing units increased by roughly the same amount, from 14,802 to 15,415 (see Table 4). However, the number of vacant housing units also increased in Duplin County – increasing from 15.8% of total units to 17.6%.

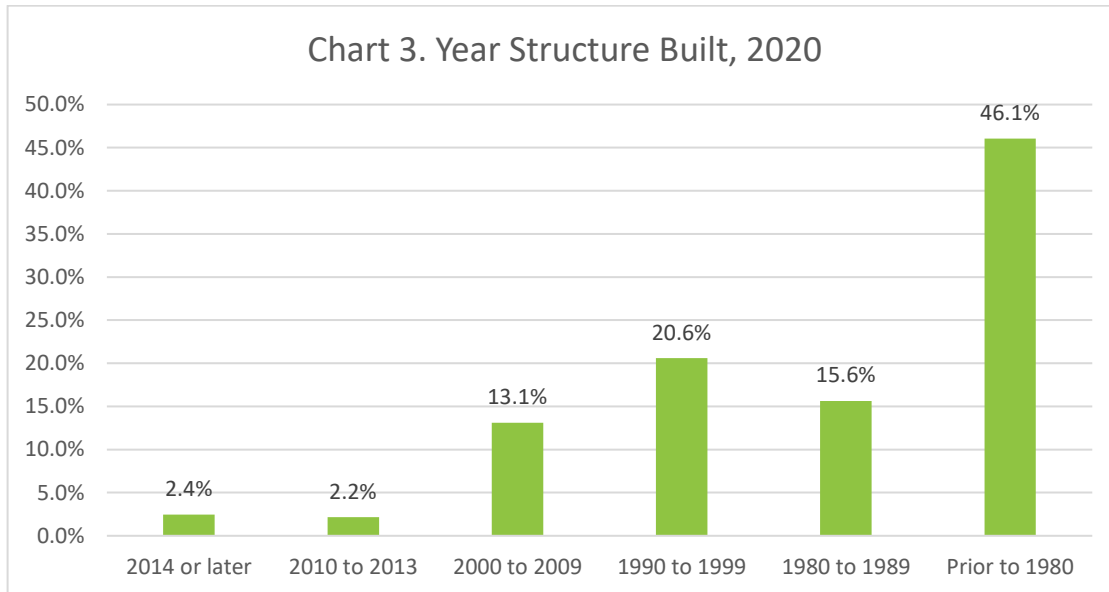
	2010 Census				2020 Census			
	Duplin County		North Carolina		Duplin County		North Carolina	
	Number	%	Number	%	Number	%	Number	%
Owner-Occupied	14,802	59.4%	2,468,489	58.4%	15,415	59.3%	2,649,849	56.5%
Renter-Occupied	6,167	24.8%	1,157,690	27.4%	6,022	23.1%	1,381,743	29.5%
Vacant	3,945	15.8%	603,373	14.3%	4,577	17.6%	655,530	14.0%
Total	24,914	100.0%	4,229,552	100.0%	26,014	100.0%	4,687,122	100.0%

Source: US Census Bureau, 2010 and 2020 American Community Survey 5-Year Estimates.

## Chapter 2. Demographic Profile

### Age of Dwelling Units

In 2020, over 45% of Duplin County's housing units were more than 40 years old (see Chart 3). This percentage is slightly higher than the state's percentage of older housing units (37.5%). For comparison, in 2010, 37.0% of Duplin County's housing units were more than 40 years old. The age of the housing inventory has increased significantly.



### Housing Cost & Condition

In 2020, the median home value in Duplin County was \$89,500. Statewide, the median housing value is \$182,100 - more than twice that of housing units in Duplin County. It is difficult to obtain a precise picture of housing affordability in any jurisdiction. However, most measures of housing affordability consider 30% of gross income an allowable/affordable expenditure for housing. For homeowners, the cost includes mortgage payments, taxes, insurance, and utilities. For renters, housing cost includes rent and utilities.

In 2020, over 20% of homeowners in Duplin County have a mortgage exceeding 30% or more of their income. According to the 2010 Census, over 35% of homeowners in the county allocated that level of income to their mortgage - representing an almost 50% decrease in homeowners burdened by a large mortgage payment over last decade.

However, the number of renters paying a significant portion of household income for living purposes increased slightly from 2010 to 2020. In 2010, 43.8% of renters used more than 30% of their income to pay rent. By 2020, the percentage of renters burdened by their living costs increased to 45.1%. For comparison, the State's percentage of burdened mortgage owners and renters decreased from 32.2% and 48.9%, respectively, to under 25% of mortgage owners and 46.8% of all renters in 2020.

The percentage of housing units lacking complete plumbing facilities and/or complete kitchen facilities in Duplin County is comparable to the statewide average.

**Table 5. Housing Cost and Condition, 2020**

	Duplin County		North Carolina	
	Number	% of Total	Number	% of Total
Median Housing Value	\$89,500	--	\$182,100	--
Mortgage Greater than 30% of Income	1,482	23.5%	400,030	24.3%
Rent Greater than 30% of Income	2,351	45.1%	590,267	46.8%
Lacking Complete Plumbing Facilities	154	0.7%	12,023	0.3%
Lacking Complete Kitchen Facilities	138	0.6%	24,943	0.6%

Source: US Census Bureau.

## ECONOMY



### Employment by Industry

According to the Labor and Economic Analysis Division of the NC Department of Commerce, the Manufacturing sector has the largest number of employees in Duplin County (note that all employees are not listed in this table). Over 30% of the workforce is employed in the Manufacturing industry, followed by Agriculture, Forestry, Fishing and Hunting, which employs approximately 10% of the workforce. The Information sector has the highest average weekly wage at \$1,782.00, followed by the Management of Companies and Enterprises sector at \$1,555.00 (see Table 6).

**Table 6. Employment and Wage by Industry, 2020**

Industry	Establishments	Average Employment	Percent of Workforce	Average Weekly Wage
Agriculture, forestry, fishing and hunting	153	1,905	10.3%	\$735.00
Utilities	4	24	0.1%	\$1,264.00
Construction	124	665	3.6%	\$835.00
Manufacturing	38	6,105	33.1%	\$730.00
Wholesale trade	42	398	2.2%	\$895.00
Retail trade	183	1,665	9.0%	\$521.00
Transportation and warehousing	58	374	2.0%	\$917.00
Information	9	32	0.2%	\$1,782.00
Finance and insurance	45	189	1.0%	\$885.00
Real estate and rental and leasing	30	66	0.4%	\$538.00
Professional, scientific, and technical services	73	182	1.0%	\$838.00
Management of companies and enterprises	8	934	5.1%	\$1,555.00
Administrative and support and waste management and remediation services	43	588	3.2%	\$586.00
Educational services	20	1,498	8.1%	\$812.00
Health care and social assistance	99	1,527	8.3%	\$755.00



## Chapter 2. Demographic Profile

Industry	Establishments	Average Employment	Percent of Workforce	Average Weekly Wage
Arts, entertainment, and recreation	5	13	0.1%	\$363.00
Accommodation and food services	74	892	4.8%	\$318.00
Other services (except public administration)	90	283	1.5%	\$669.00
Public administration	28	1,078	5.9%	\$772.00

*Source: NC Department of Commerce, Labor & Economic Analysis.*

Butterball is the largest employer in Duplin County. Other significant employers include House of Raeford, Duplin County Schools, Smithfield Foods, and Murphy Family Ventures (see Table 7). Unemployment in Duplin County has declined since April 2020, when it was 8.5%. The unemployment rate recorded for March 2022, was significantly less at 3.3%.

**Table 7. Duplin County Top 10 Employers, 2020**

Rank	Company Name	Industry	Class	Employment Range
1	Butterball LLC	Manufacturing	Private Sector	1,000+
2	House of Raeford	Manufacturing	Private Sector	1,000+
3	Duplin County Schools	Educational Services	Public Sector	1,000+
4	Smithfield Foods Inc	Management of Companies and Enterprises	Private Sector	1,000+
5	Murphy Family Ventures LLC	Agriculture, Forestry, Fishing and Hunting	Private Sector	500-999
6	County of Duplin	Public Administration	Public Sector	500-999
7	Lear Corporation	Manufacturing	Private Sector	250-499
8	Vidant Medical Center	Health Care and Social Assistance	Public Sector	250-499
9	Bay Valley Foods LLC	Manufacturing	Private Sector	250-499
10	Johnson Breeders Inc	Agriculture, Forestry, Fishing and Hunting	Private Sector	250-499

*Source: NC Department of Commerce, Labor & Economic Analysis.*

### Income

In 2020, the median household income for Duplin County was \$43,422. The county still lags behind the state and the neighboring counties of Onslow, Pender, and Wayne (see Table 8). The poverty rate for Duplin County is consistent with many other counties in eastern North Carolina. It should also be noted that Duplin County is a Tier 1 County – a designation given to the forty (40) most economically distressed counties in the state.

**Table 8. Median Household Income, 2010 and 2020**

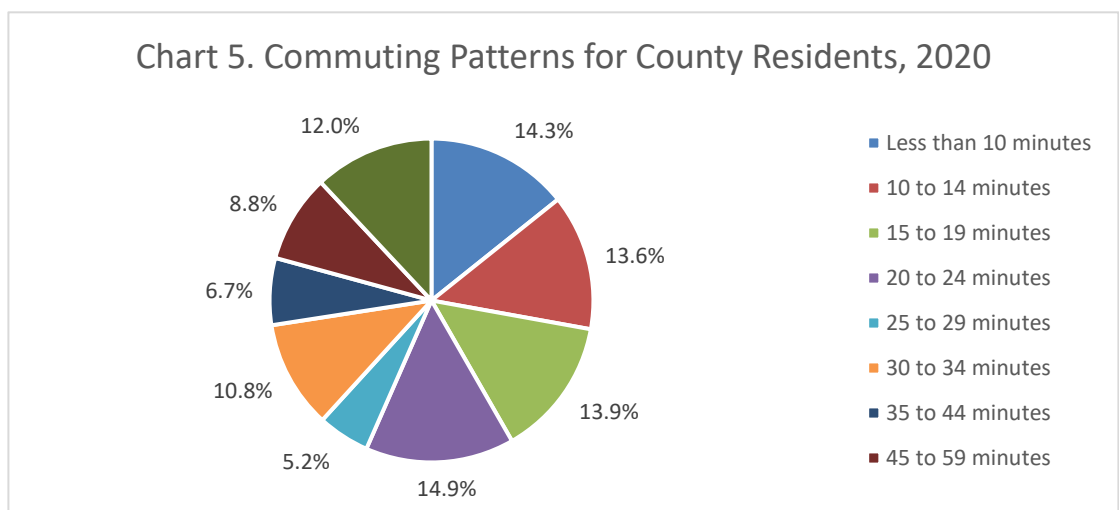
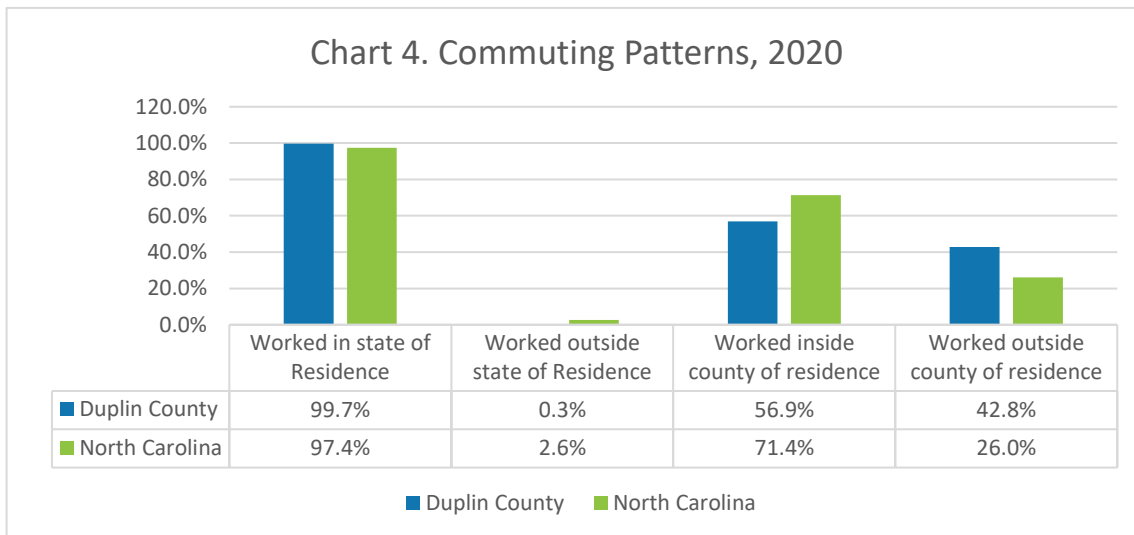
Jurisdiction	Median Household Income		Person Below Poverty Level (%)	
	2010	2020	2010	2020
Duplin County	\$32,816	\$43,422	23.7%	18.2%
Jones County	\$38,354	\$38,324	16.8%	23.5%
Lenoir County	\$33,625	\$39,923	22.7%	22.0%

Jurisdiction	Median Household Income		Person Below Poverty Level (%)	
	2010	2020	2010	2020
Onslow County	\$43,561	\$51,560	13.8%	12.4%
Pender County	\$44,338	\$60,044	14.8%	14.0%
Sampson County	\$35,740	\$42,914	20.4%	21.7%
Wayne County	\$41,224	\$47,221	18.6%	18.7%
North Carolina	\$45,570	\$56,642	15.5%	14.0%

Source: US Census Bureau; 2020 ACS 5-Year Estimates.

**Commuting Patterns**

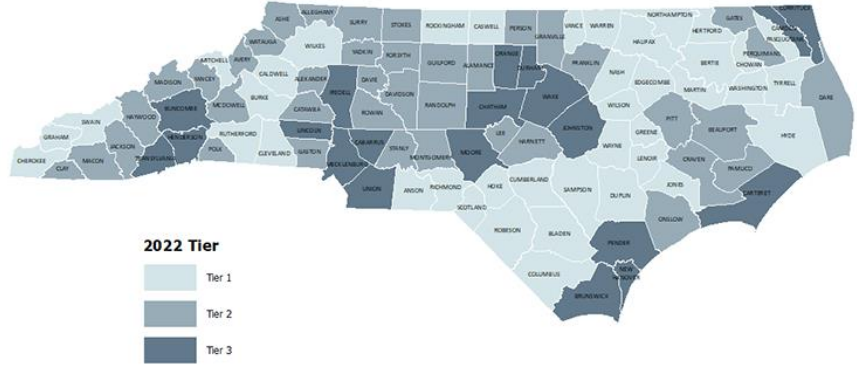
The 2020 American Community Survey 5-Year Estimates reports that 56.9% of Duplin County workers traveled within the county to their place of employment and the mean travel time to work was 27.9 minutes. In comparison, North Carolina reports 71.4% of workers commute within their county for employment with a mean travel time to work of 24.9 minutes.



## Economic Conditions

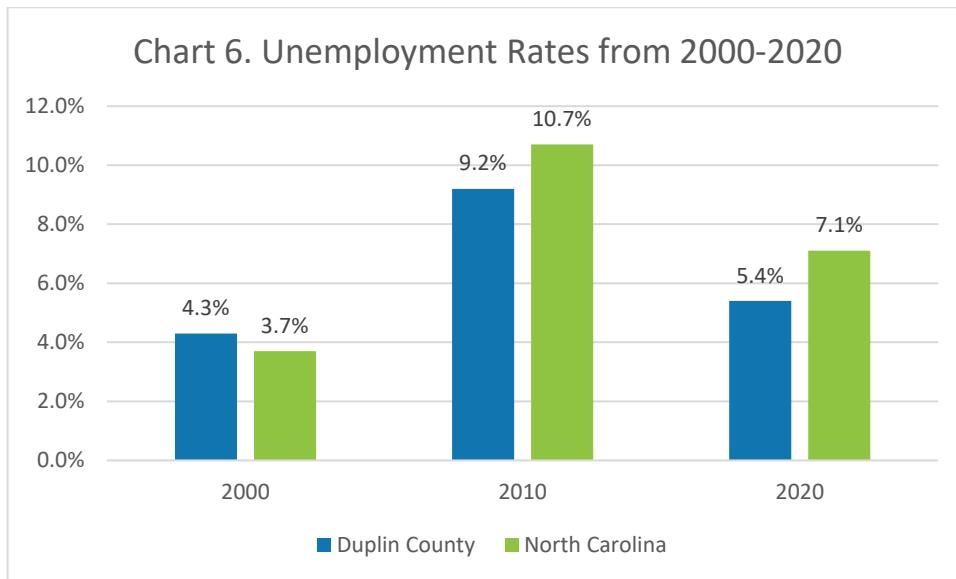
Each of the North Carolina counties are assigned a tiered rank by the North Carolina Department of Commerce based on economic well-being. The tier system is incorporated into various state programs to encourage economic activity in less prosperous areas across the state. The evaluation criteria for the tier designation

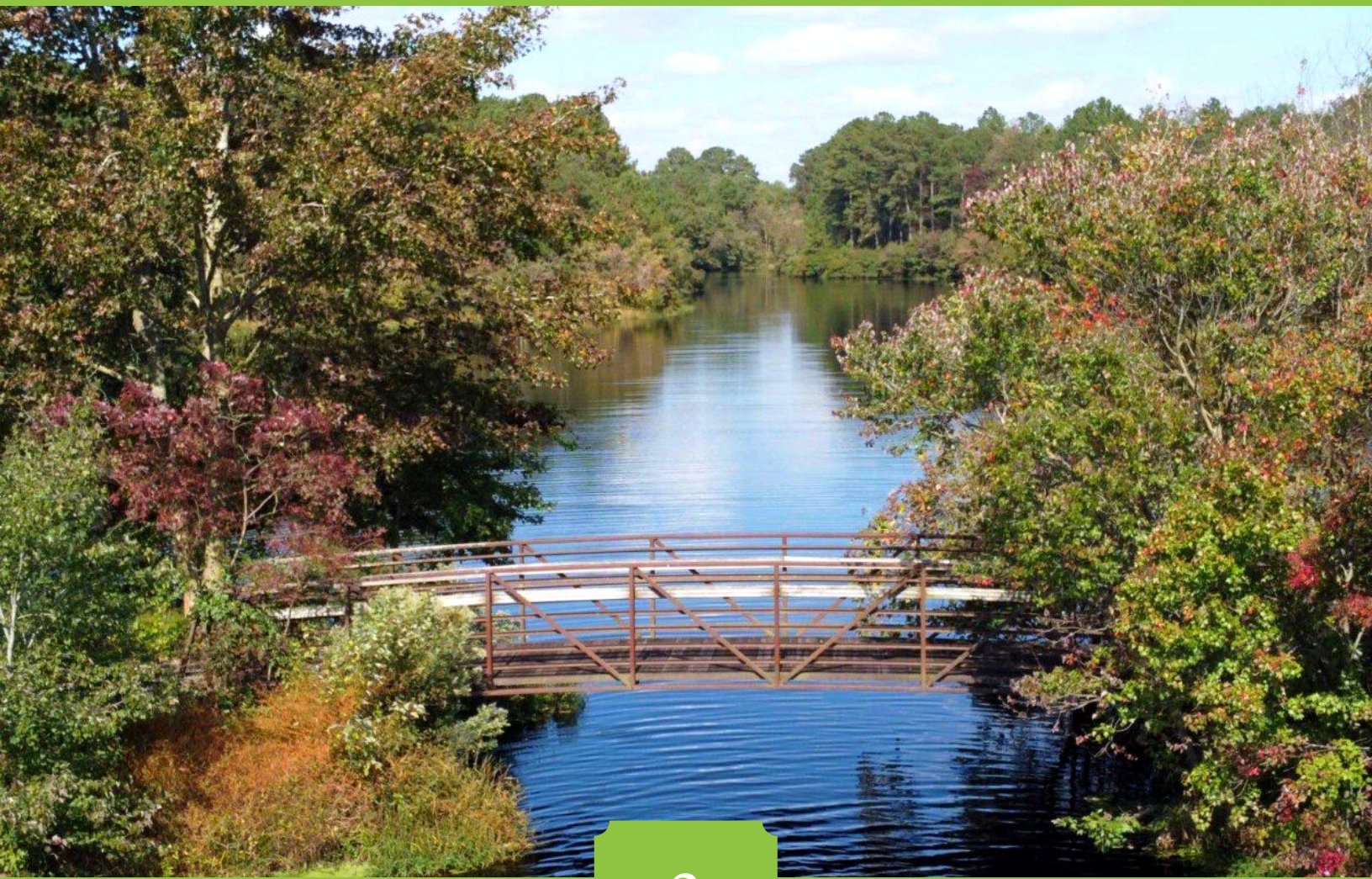
includes average unemployment rate, median household income, percentage growth in population, and adjusted property tax base per capita. The forty most distressed counties are designated as Tier 1, the next 40 as Tier 2, and the 20 least distressed as Tier 3. Duplin County is rated as a Tier 1 county under the system.



**County Distress Rankings (Tiers).** Image Source: NC Department of Commerce.

The unemployment rate in Duplin County continues to be lower than the state average. Current 2022 statistics are the lowest the county has experienced in twenty years (3.3% as of March 2022).





3

# CHAPTER 3

Environment/Existing Conditions

## CHAPTER 3. ENVIRONMENT/EXISTING CONDITIONS

Reliable land development policies require a comprehensive understanding of the existing natural systems, land use patterns, transportation networks, and supporting community facilities and services. The following existing conditions section provides information and details pertaining to each of these topics for Duplin County.

### ENVIRONMENTAL RESOURCES

#### Climate

The climate in Duplin County is mild but can present hot and humid conditions during the summer months. Winter is cool and has occasional, brief cold spells, but significant accumulations of ice and snow are unusual. Overall, the County has a temperate environment with a year-round temperature average of 61.9 degrees Fahrenheit (F). Over the course of a typical year, the temperature ranges from 34 degrees F to 90 degrees F.

Average rainfall in Duplin County is 52 inches per year. A wet day is one with at least 0.04 inches of liquid or liquid-equivalent precipitation. The chance of wet days in Duplin County varies throughout the year. The wetter season is Autumn when it rains 30% of the time and the driest is Winter with only a 21% chance of a rain on any given day.

#### Geography and Topography

Duplin County is located in the Southeastern Coastal Plain of North Carolina. Duplin County is the 9th largest county in the state in area, at 816 sq. miles, and is situated approximately 90 miles from Raleigh and 50 miles from Wilmington and the Atlantic Ocean. The topography ranges from nearly flat to gently rolling. Slopes rarely exceed 5 percent. The county's terrain slopes from the higher slightly rolling terrain of the northwest to the lower flatter portions of the southeast. The highest elevation in the county is near Bowden, approximately 167 feet above sea level. The lowest elevation is approximately 20 feet above sea level at the point where the Northeast Cape Fear River flows out of the county. The County is bounded by Wayne County to the north; Lenoir to the northeast, Jones and Onslow Counties to the east; Pender County to the south; and Sampson County to the west. Kenansville is the county seat, located in the center of the county.



North Carolina's Physiographic Provinces. *Image Source: USGS.gov.*

### Flood Zones

According to the 2020 flood maps, approximately 15.23% of Duplin County is inundated by a Special Flood Hazard Area (SFHA). This percentage does not include areas impacted by the X flood zone. A SFHA is defined as a land area with a greater than 1% chance per year of flooding and is also known as a “floodplain.” Special Flood Hazard Areas are indicated on Flood Insurance Rate Maps (FIRMs), which are considered the most reliable and consistent source for delineating SFHAs and are the source used to determine whether or not the purchase of flood insurance is mandatory for developed properties with a mortgage.

SFHAs are broken into “A/AE” zones and “VE” zones. “A/AE” zones, formerly known as the 100-year floodplain, are areas subject to risk of flooding by standing or relatively static flood waters, while “VE” zones are areas subject to wave action. “Shaded X” is a supplemental flood hazard area in which there is a 0.2% annual chance of flooding, also known as the “500-year floodplain.” Land bordering the Atlantic Ocean is most susceptible to wave inundation, whereas land bordering estuarine areas are most susceptible to flooding/rising waters.

Approximately 14.28% of the County’s planning jurisdiction is impacted by the A/AE zone. These percentages are based on flood maps prepared by the National Flood Insurance Program in June 2018. The geographic location of each flood hazard area is displayed on Map 2. Digital FEMA Flood Insurance Rate Maps are available for review at <http://fris.nc.gov>.

**Table 9. Flood Hazard Areas**

Flood Zones	Acres	% of Planning Jurisdiction
Shaded X (0.2% Annual Chance)	5,017.23	0.96%
A	2,237.18	0.43%
AE	72,687.22	13.85%

*Source: Federal Emergency Management Agency.*

### Wetlands

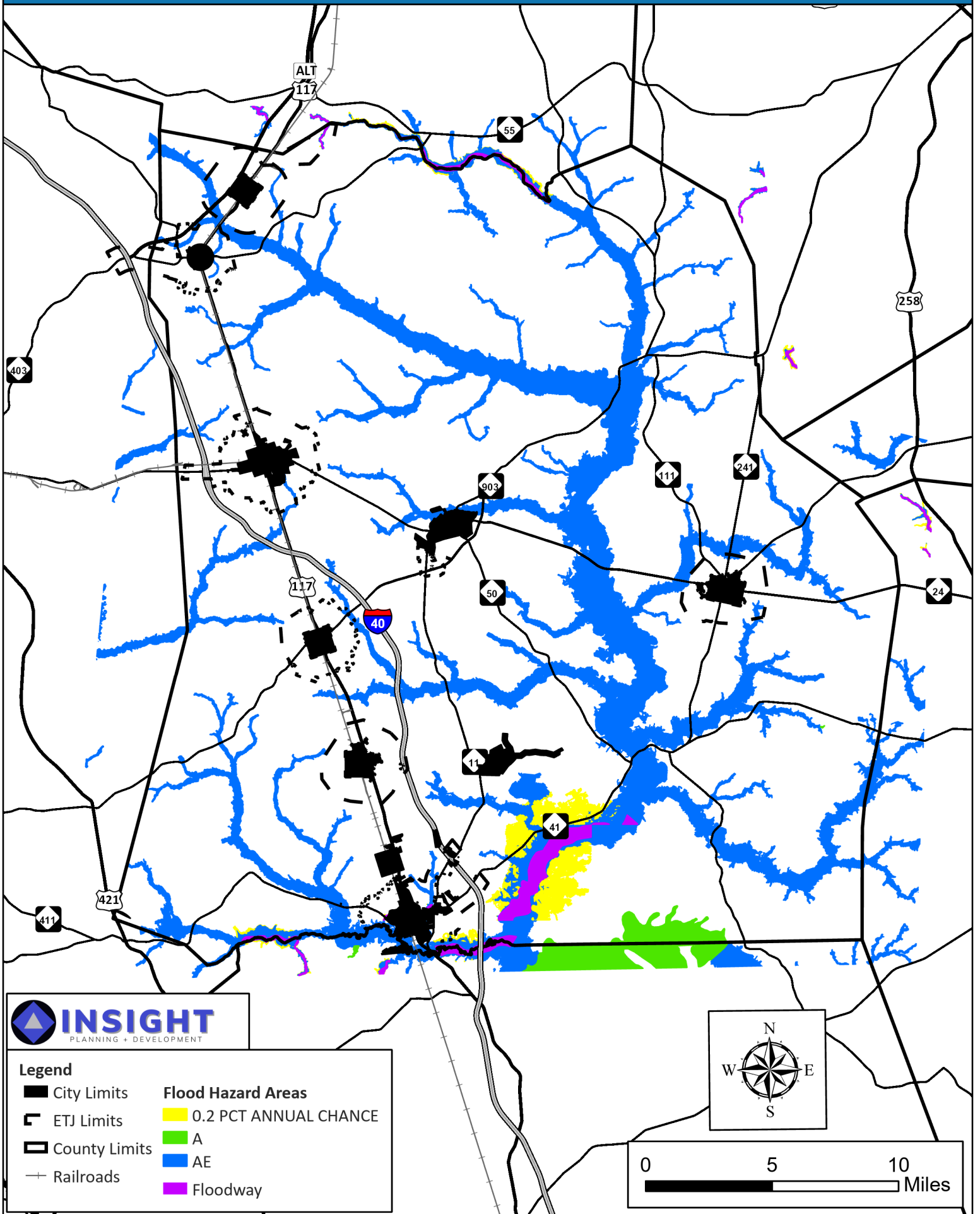
Wetlands help preserve or improve water quality, protect wildlife and vegetative habitats, control flooding and soil erosion, and provide recreation and education opportunities. Wetlands in the planning area are mostly concentrated along swamp and forest areas. Development of regulated wetlands must be identified and permitted under federal or state wetland protection laws. The probable wetlands indicated on Map 3 are based on the National Wetlands Inventory. Duplin County development is minimally impacted by wetlands. As indicated in Table 10, wetlands encumber approximately 21% of the planning jurisdiction.

**Table 10. Wetlands**

Wetland Type	Acres	% of Planning Jurisdiction
Freshwater Emergent	566.97	0.11%
Freshwater Forested/Shrub Wetland	103,512.85	19.72%
Freshwater Pond	1,155.38	0.22%
Lake	258.52	0.05%
Riverine	5,405.50	1.03%

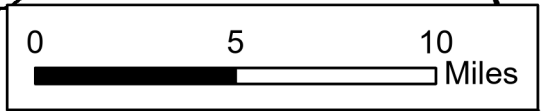
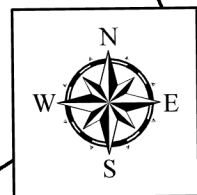
*Source: Federal Emergency Management Agency.*

# Map 2. Flood Hazard Areas

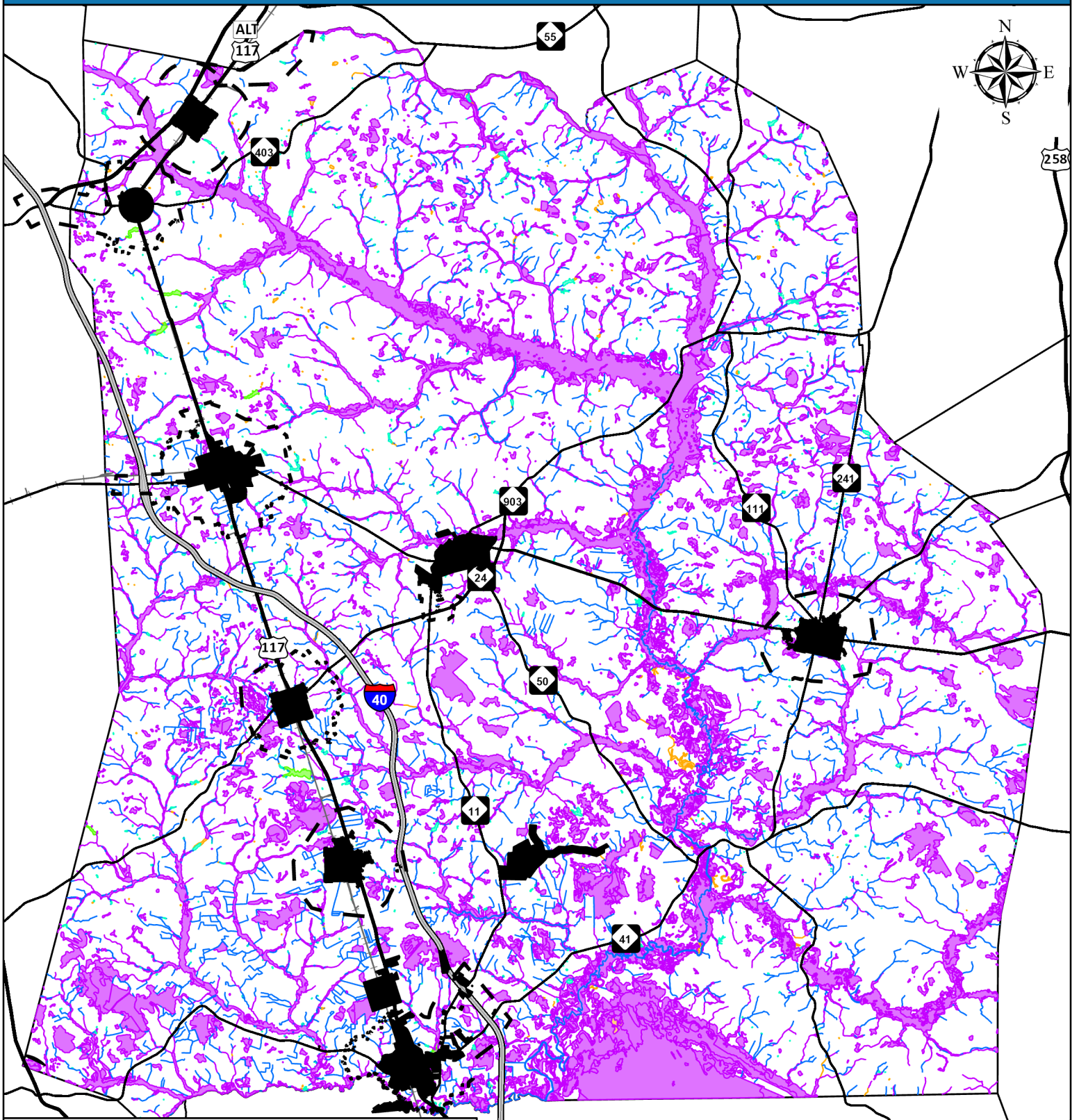


**Legend**

- |               |                           |
|---------------|---------------------------|
| City Limits   | <b>Flood Hazard Areas</b> |
| ETJ Limits    | 0.2 PCT ANNUAL CHANCE     |
| County Limits | A                         |
| Railroads     | AE                        |
|               | Floodway                  |











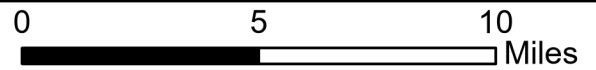
# Map 3. Wetlands



## Legend

### Wetland Type

-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Riverine
-  City Limits
-  ETJ Limits
-  Railroads





**Natural Heritage Areas**

By consolidating information about hundreds of rare species and natural communities, the North Carolina Natural Heritage Program (NHP) ensures that the public can get the information that is needed to weigh the ecological significance of various sites and to evaluate the ecological impacts of development. The information aggregated and shared by NHP, using methodology developed by the Nature Conservancy and maintained by NatureServe, helps project planners and landowners make land use decisions that have the most benefit for society and the economy, while having the least ecological impact. There are five Natural Heritage Areas within the Duplin County planning jurisdiction. Map 4 depicts the location of the known resources, including:

- Angola Bay,
- CPF/Northeast Cape Fear River Aquatic Habitat,
- Goshen Swamp,
- Millers Creek Limesinks, and
- Northeast Cape Fear River Corridor.

**Water Classifications**

Surface Waters

Surface water classifications are designations applied to the surface water bodies, such as streams, rivers, and lakes, which define the best uses to be protected within these waters (for example swimming, fishing, drinking water supply) and carry with them an associated set of water quality standards to protect those uses. Surface water classifications are one tool that state and federal agencies use to manage and protect all streams, rivers, lakes, and other surface waters in North Carolina. Classifications and other associated protection rules may be designed to protect water quality, fish and wildlife, the free-flowing nature of a stream or river, or other special characteristics.

Each stream mile of water in North Carolina is evaluated and rated by the NC Division of Water Resources. The classifications are based upon the existing or contemplated best usage of the various streams and segments of streams within a basin, as determined through studies, evaluations, and comments received at public hearings. The state water classification system is summarized in Table 11.

Table 11. NC Division of Water Resources	
Water Body Classifications	
PRIMARY FRESHWATER AND SALTWATER CLASSIFICATIONS*	
Class	Best Uses
C and SC	Aquatic life propagation/protection and secondary recreation
B and SB	Primary recreation and Class C uses
SA	Waters classified for commercial shellfish harvesting
WS	<i>Water Supply Watershed.</i> There are five WS classes ranging from WS-I through WS-V. WS classifications are assigned to watersheds based on land use characteristics of the area. Each water supply classification has a set of management strategies to protect the surface water supply. WS-I provides the highest level of protection and WS-V provides the least protection. A Critical Area (CA) designation is also listed for watershed areas within a half-mile and draining to the water supply intake or reservoir where an intake is located.

## Chapter 3. Environment/Existing Conditions

SUPPLEMENTAL CLASSIFICATIONS	
Sw	<i>Swamp Waters:</i> Recognizes waters that will naturally be more acidic (have lower pH values) and have lower levels of dissolved oxygen.
Tr	<i>Trout Waters:</i> Provides protection to freshwaters for natural trout propagation and survival of stocked trout.
HQW	<i>High Quality Waters:</i> Waters possessing special qualities including excellent water quality, Native or Special Native Trout Waters, Critical habitat areas, or WS-I and WS-II water supplies
ORW	<i>Outstanding Resource Waters:</i> Unique and special surface waters that are unimpacted by pollution and have some outstanding resource values.
NSW	<i>Nutrient Sensitive Waters:</i> Areas with water quality problems associated with excessive plant growth resulting from nutrient enrichment.
<i>*Primary classifications beginning with an "S" are assigned to salt waters. Source: NC Department of Environmental Quality.</i>	

The water classifications relevant to Duplin County are provided on Map 5. The majority of Duplin County's surface water streams are classified by the North Carolina Department of Environmental Quality as Class C; Sw waters. This classification designates waters suitable for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. The section of the Northeast Cape Fear River between Muddy Creek and Rockfish Creek is additionally classified as "High Quality Waters." This segment is rated as good based on biological and physical/chemical characteristics.

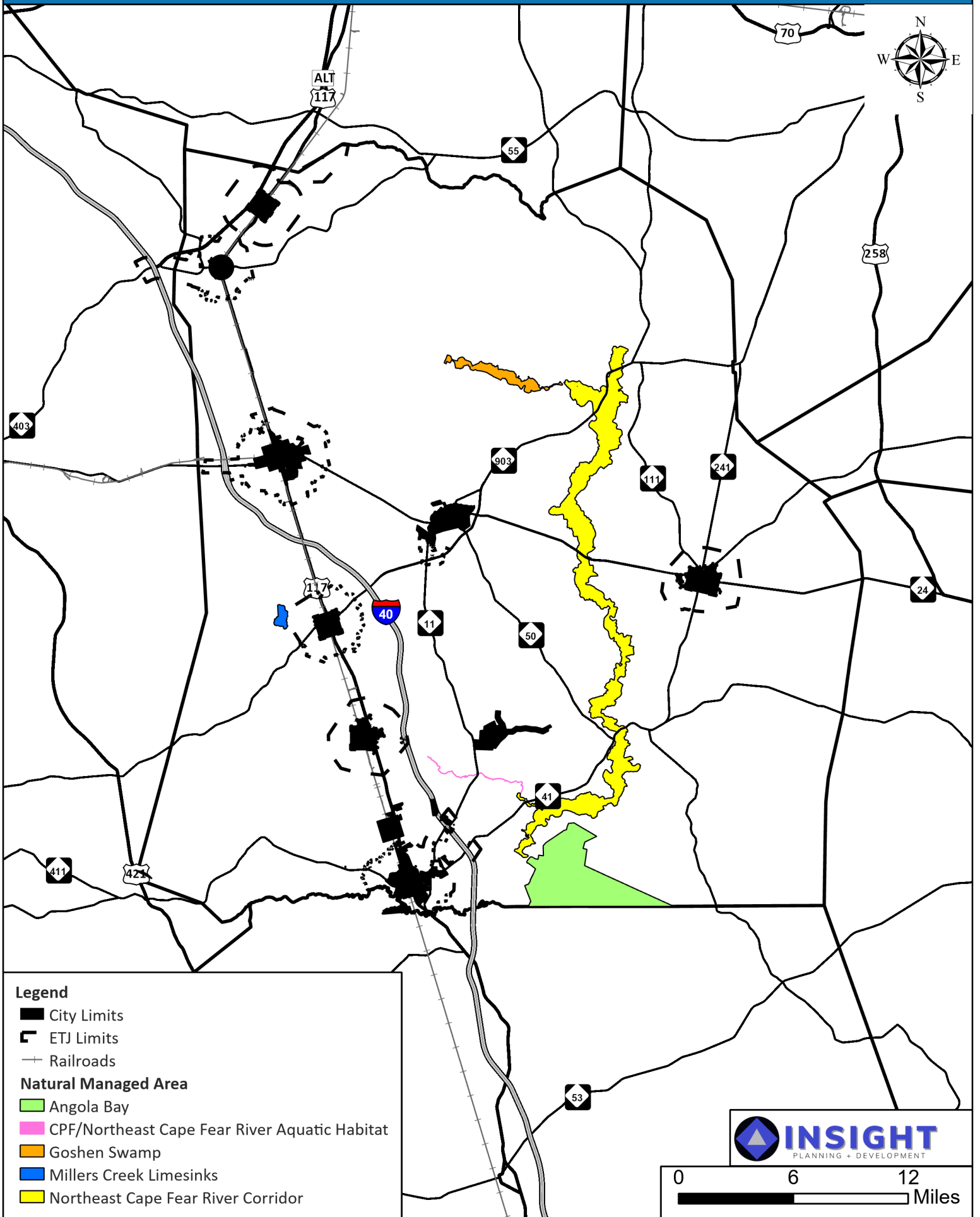
### [Water Quality](#)

Basinwide water quality plans are prepared by the NC Division of Water Resources (DWR) for each of the seventeen major river basins in the state. Each basinwide plan is revised at five-year intervals. While these plans are prepared by DWR, their implementation and the protection of water quality entails the coordinated efforts of many agencies, local governments, and stakeholders in the State.

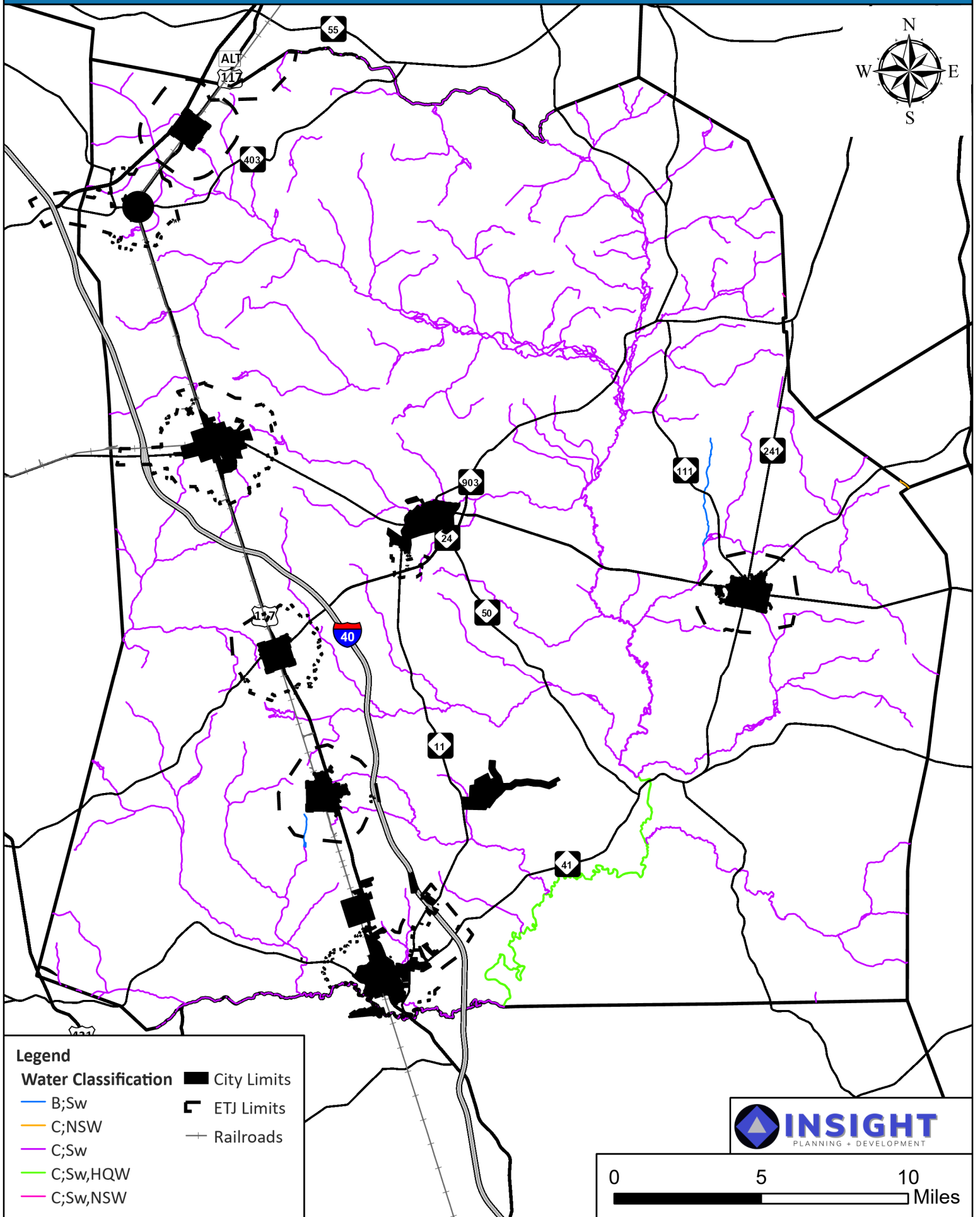
Duplin County is located within the Cape Fear River Basin, which is North Carolina's largest river basin and is one of only four major river basins whose boundaries are located entirely within North Carolina. This basin encompasses approximately 9,149 square miles and contains 24 subbasins. The river basin is formed by the Deep, Rocky, and Haw rivers, which converge in Chatham County just below the B. Everett Jordan Dam. The river basin ends in 32,000 acres of estuary near Southport. The Cape Fear River Basin includes all or portions of 26 counties and 115 municipalities. Duplin County contains portions of two subbasins of the Cape Fear River Basin: Subbasin 03-03-00-07 (Northeast Cape Fear River) and Subbasin 03-03-00-06 (Black River).

The Safe Drinking Water Act Amendments of 1986 established requirements for states to develop Wellhead Protection Programs (WHPPs). A WHPP is a pollution prevention and management program used to protect underground sources of drinking water. These programs were intended by Congress to be a key part of a national groundwater protection strategy to prevent contamination of groundwaters that are used as public drinking water supplies. In North Carolina, development of a local Wellhead Protection Plan is not mandatory; however, it is viewed as a valuable supplement to existing state groundwater protection programs. North Carolina's WWHP is intended for city and county governments and water supply operators who wish to provide added protection to their local groundwater supplies.

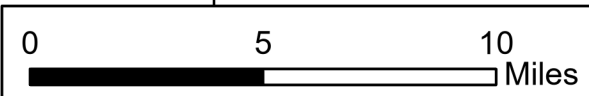
# Map 4. Natural Heritage Areas



# Map 5. Surface Water Classification



- Legend**
- |                             |                    |
|-----------------------------|--------------------|
| <b>Water Classification</b> | <b>City Limits</b> |
| — B;Sw                      | ■ ETJ Limits       |
| — C;NSW                     | — Railroads        |
| — C;Sw                      |                    |
| — C;Sw,HQW                  |                    |
| — C;Sw,NSW                  |                    |



The Wellhead Protection Plan, once implemented, reduces (but does not eliminate) the susceptibility of wells to contaminants. Duplin County adopted a Wellhead Protection Plan (NC 0431095) November 16, 2004; however, the plan is currently inactive. An inactive status indicates all wells covered by the plan are no longer in use or have been transferred to another water system.

### Soils

In general, most Duplin County soils located outside the flood plains are suitable for agriculture and are capable of supporting structures. The major limiting factor is poor drainage. The soils of Duplin County fall within two major land resource areas (MLRA'S), 133A – Southern Coastal Plain and 153A – Atlantic Coast Flatwoods. The soils are derived from marine sediments that traverse four marine terraces (i.e., Autryville, Goldsboro, Rains, and Noboco Norfolk) and are classified as mineral soils. Refer to Map 6 for specific soil details.

A large percentage of soils in Duplin County are considered very poorly drained or “hydric” soils. Hydric soils are saturated long enough during the growing season that they support partially or totally submerged plants or plants that can grow in waterlogged soils. Duplin County has land that consists of partly, mostly, or completely of hydric soils. Those with hydric soils are less able to absorb stormwater runoff, and are less able to support septic systems. Refer to Appendix A for a summary of soil types (hydric soils are denoted with an asterisk) throughout Duplin County and their respective limitations relating to suitability for development.

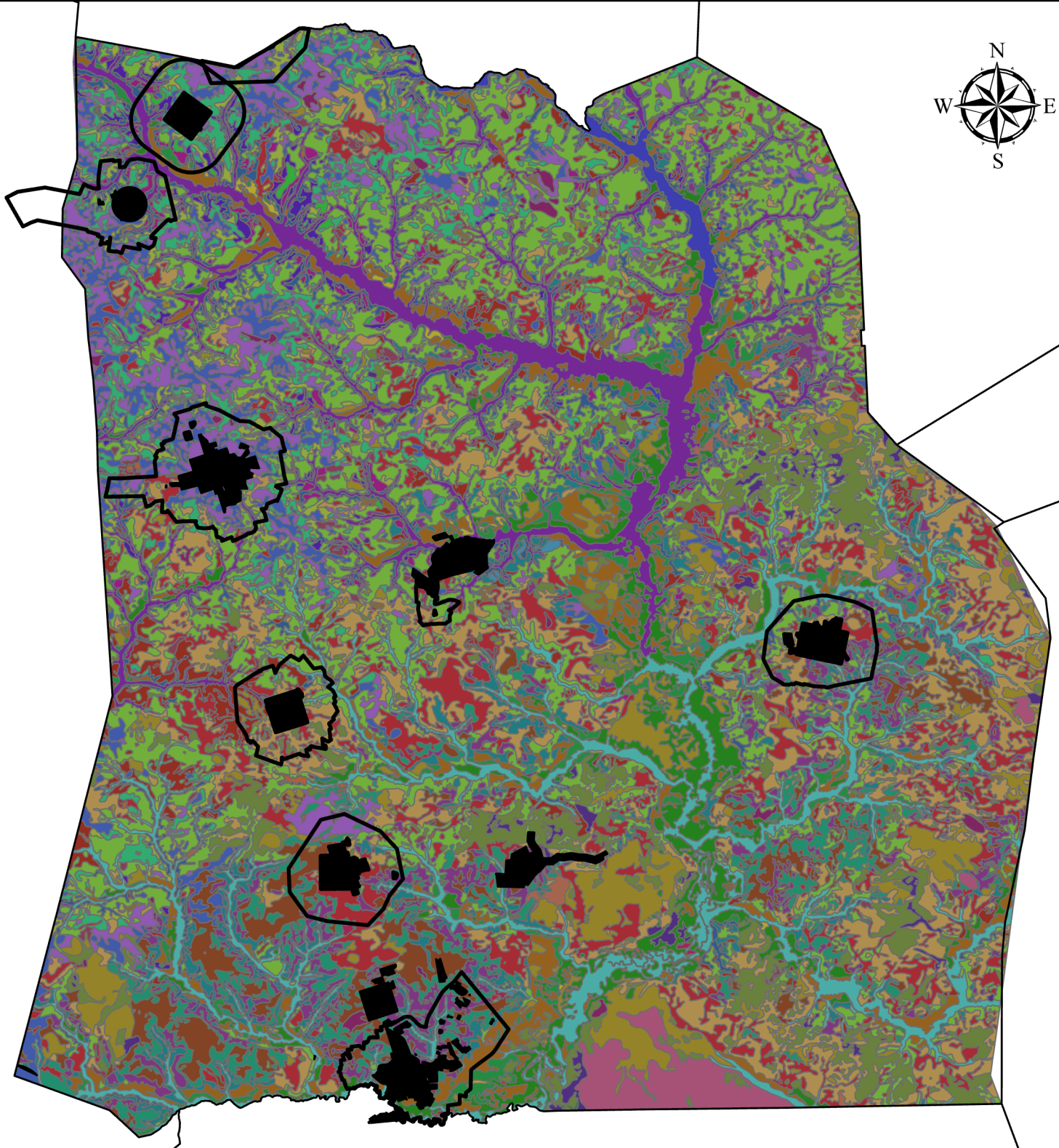
## HISTORIC RESOURCES

Historic resources typically include areas, districts, or sites containing properties listed on the North Carolina State Historic Preservation Office, the National Register of Historic Places, or designated by the County or municipality as historically, architecturally, or archeologically significant. Duplin County is home to numerous individually listed historic properties as well as four national register historic districts. The individual listings located in the unincorporated planning jurisdiction have been identified on Map 7.

### Individual Listings

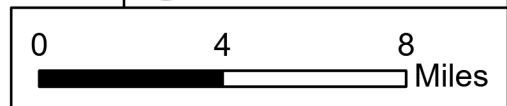
1. Buckner Hill House, Faison
2. Carter-Simmons House, Albertson
3. Hebron Presbyterian Church, Albertson
4. Joshua James Blanchard House, Warsaw
5. Loftin Farm, Mount Olive
6. Needham Whitfield Herring House, Kenansville
7. Roger Dickson Farm, Rose Hill
8. Waterloo (Grady House), Albertson
9. William Wright Faison House, Bowdens

# Map 6. Soil Types

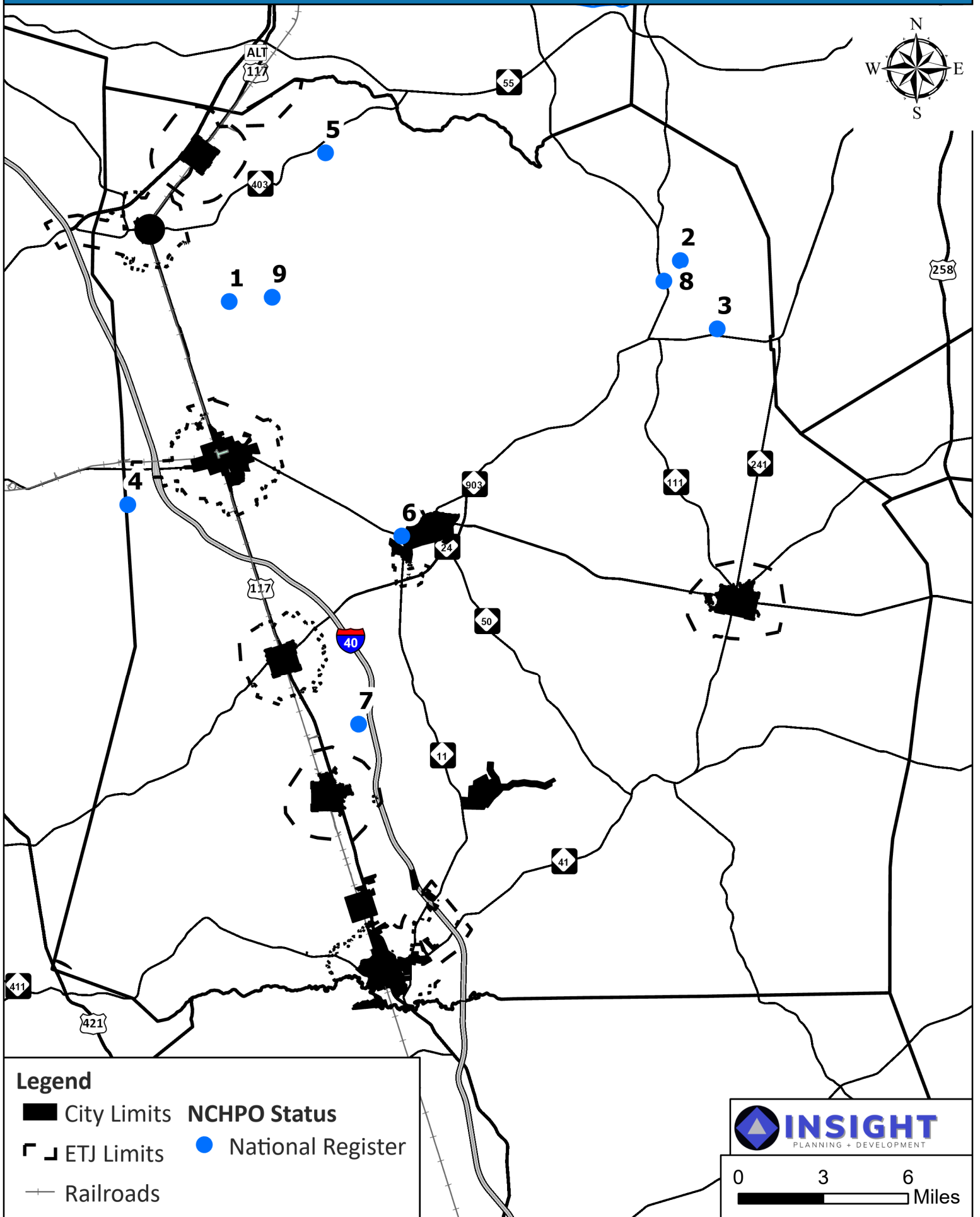


## Legend

City Limits	CtA	LnA	NbB	Ra
ETJ Limits	FoA	LsB	NoA	RaA
<b>Soil Type</b>	Go	LuA	NoB	RuA
AuB	GoA	M-W	OrA	RuB
BbA	GtA	McC	OrB	ToA
BnB	JoA	MKA	PaA	Water
CrB2	JpA	MuA	PnA	WoA
	KaA	NbA	Pt	



# Map 7. Historic Properties



### District Listings

- **Town of Kenansville Residential Historic District:** Contains 18 contributing structures within the district including Liberty Hall Plantation, Kelly-Farrior House (Cowan Museum), the courthouse, the Spring, Masonic Lodge and others dating to the early 1800's.
- **Town of Wallace Commercial Historic District:** Contains 55 contributing structures in a two-block downtown area including the Z.J. Carter & Son Building, A.C. Hall Building and the 1890 Wallace Railroad Depot.
- **Town of Warsaw Residential and Commercial Historic District:** Contains 55 contributing structures in a combined business/residential district along the railroad and Hill Street.
- **Town of Faison Residential and Commercial Historic District:** Contains 116 contributing structures in 31 blocks including an 1850 false front frame store.

## EXISTING LAND USE

### Introduction

The following provides a summary of Duplin County's existing land use. Land use patterns with maps and associated data enable policy makers to make more informed decisions about future service needs and future land use demands. This effort, in turn, assists elected officials, planning board members and citizens at-large in making educated decisions about rezoning cases (map amendments), quasi-judicial hearings, and zoning ordinance text amendments.

### Methodology

Existing land use should not be confused with zoning. Existing land use classifies the current land use, which may differ from current zoning. Existing land use information for the County was obtained and validated from the Planning and Inspections Department. The following provides a summary of the existing land use categories utilized:

- Agriculture
- Commercial
- Industrial
- Institutional
- Residential
- State Lands
- Urban
- Woodland



Existing Land Use Map

Map 8 illustrates the existing land uses in Duplin County, including identification of vacant, unprotected land available for either future development or permanent preservation. The approximate acreage for each land use category displayed on the existing land use map is summarized in Table 12.

**Table 12. Existing Land Use**

Land Use	Planning Jurisdiction	% of Total Planning Jurisdiction
Agriculture	250,771.38	47.68%
Commercial	348.02	0.07%
Industrial	1,546.55	0.29%
Institutional	72.15	0.01%
Residential	7,729.39	1.47%
State Lands	6,719.13	1.28%
Urban	8,734.68	1.66%
Woodland	249,470.92	47.53%
Total	524,892.22	100.00%

*Source: Duplin County Planning & Inspections, Insight Planning & Development.*

**PUBLIC FACILITIES & SERVICES**

The following provides an overview of the public facilities and services located throughout the County. These day-to-day operations are critical to sustaining the quality of life that both residents and visitors of Duplin County have come to appreciate. See Map 9 for location of community facilities.

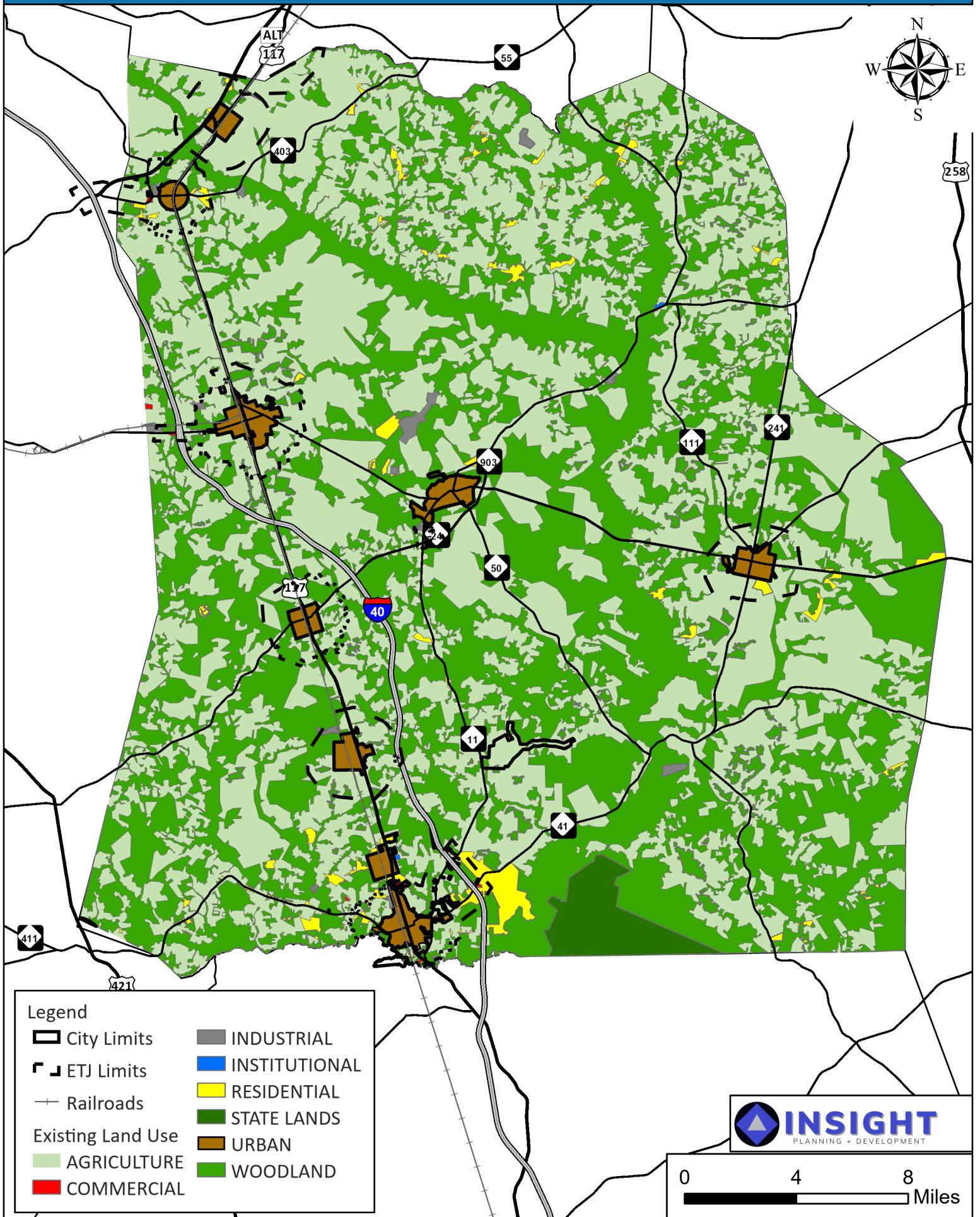
Healthcare Resources

Medical Facilities

ECU Health Duplin Hospital in Kenansville provides primary and secondary care including medical/surgical, maternity services, psychiatric services, cancer care, and 24-hour emergency care. The hospital is certified as a Primary Stroke Center and also provides digital imaging. ECU Health Duplin is an 81-bed facility affiliated with the Brody School of Medicine at East Carolina University.

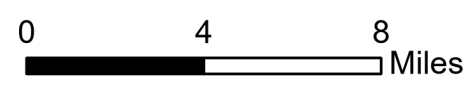
Duplin County is serviced by the trauma centers located at ECU Health Medical Center in Greenville, NC (Level I) and New Hanover Regional Medical Center in Wilmington, NC (Level II). ECU Health Medical Center is approximately 67 miles from Kenansville, the Duplin County seat, and serves as the flagship teaching hospital for the Brody School of Medicine at East Carolina University. For those living in eastern North Carolina, ECU Health Medical Center provides access to a Level I Adult Trauma Center and Level II Pediatric Trauma Center. With 974 licensed beds, ECU Health Medical Center offers extensive inpatient and outpatient services to more than 1.4 million people across 29 counties. New Hanover Regional Medical Center (NHRMC), approximately 57 miles from Kenansville, provides access to a Level II Adult Trauma Center at its 800-bed facility, serving seven counties. NHRMC partners with UNC Health and the UNC School of Medicine to offer extensive outpatient and inpatient services to the people of Southeastern North Carolina.

# Map 8. Existing Land Use

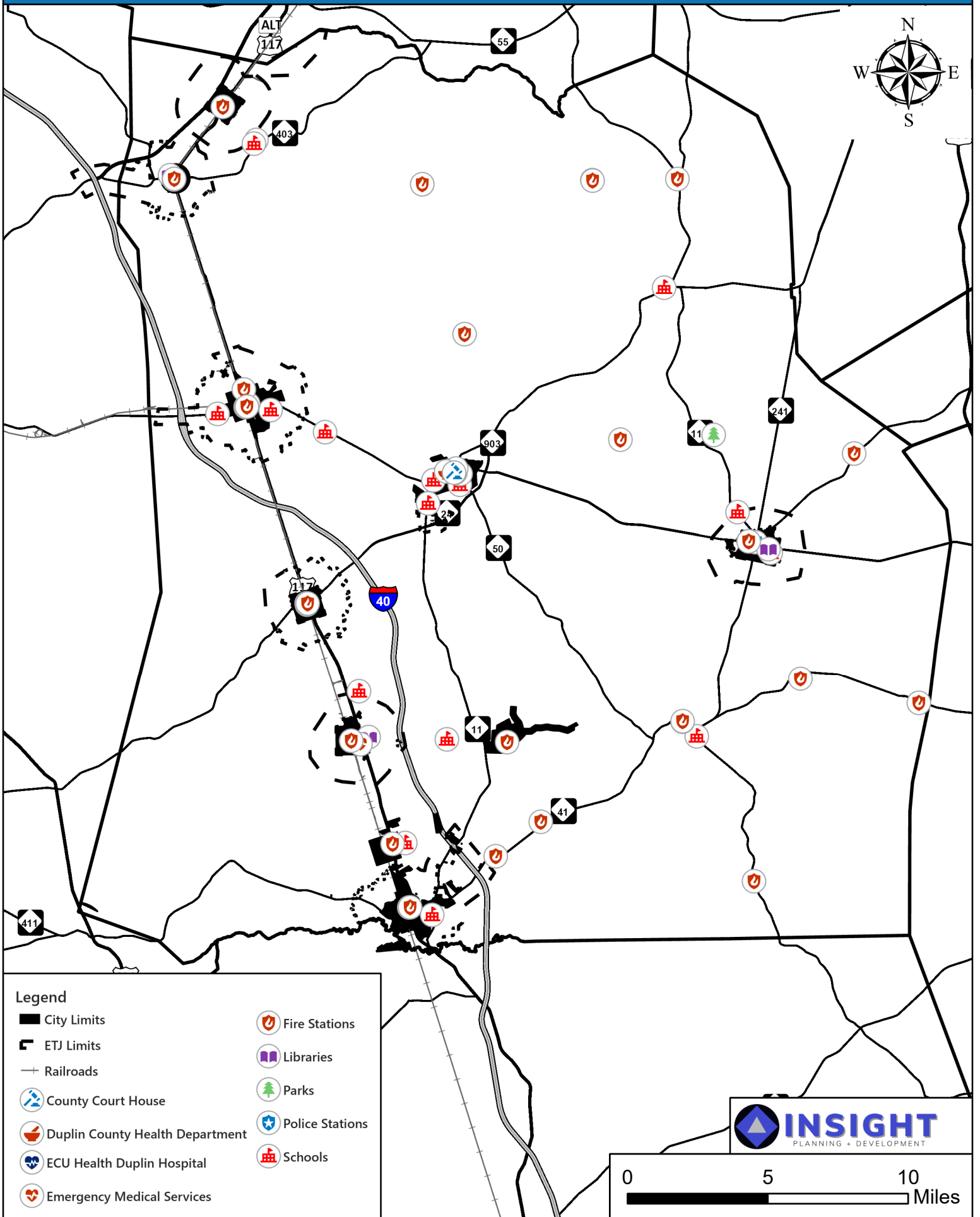


### Legend

- City Limits
- ETJ Limits
- Railroads
- Existing Land Use
  - AGRICULTURE
  - WOODLAND
  - URBAN
  - RESIDENTIAL
  - INDUSTRIAL
  - INSTITUTIONAL
  - STATE LANDS
  - COMMERCIAL



# Map 9. Community Facilities



## Chapter 3. Environment/Existing Conditions

### [Duplin County Health Department](#)

The Duplin County Health Department provides preventive health services and primary health care for all Duplin County residents. Besides offering preventative and primary health care, Duplin County Health Department also offers community-based education programs that help residents identify their own personal health risks. The staff is comprised of a pediatrician, nutritionists, nurses, family nurse practitioners, physician assistant, health educator, environmental health specialists, and a variety of well-trained professionals. The Duplin County Health Department offers the following services through its various departments:

**Clinical Services:** Family Planning, Maternal Health, Primary Care, Child Health, Employee Wellness, Communicable Disease, Immunizations, Chronic Disease Management, Nutritional Therapy, Lab Services, and Sexually Transmitted Disease Testing and Treatment.

**Outreach Services:** Care Coordination for Children, Peer Breast Feeding Program, Prenatal Case Management, Drug Screenings, Diabetes Education Classes; Mobile Dental Unit, and WIC services.

**Environmental Health Services:** On-site Wastewater Permits, Well Permits/Water Sampling, Food and Lodging Inspections, Public Swimming Pools, Child Care Sanitation Program, Lead Poisoning Prevention, and Tattoo Establishment Permits.

### Law Enforcement

The Duplin County Sheriff's Office is the principal law enforcement agency serving a population of approximately 58,000 citizens spanning over 819 square miles. The Duplin County Sheriff's Office has 102 full-time employees and 19 part-time employees providing service to the public twenty-four hours a day, seven days a week.

The mission of the Duplin County Sheriff's Office is to protect the citizens of Duplin County through law enforcement of civil and criminal laws, operation of a professional and secure detention facility, outstanding public service with integrity and upholding the constitutionality of the office of sheriff.

The department is divided into these divisions: Administration, Civil, Criminal Investigations, Detention, Explorer's Post #2054, Patrol, Professional Development, School Resource Officers, Sex Offender Registration Unit, and Special Response team. The headquarters is located at 112 West Hill Street in Kenansville.



Duplin County Sheriff Vehicle *Image Source: Duplin County Sheriff's Office.*

### Crime Rates

The State Bureau of Investigation releases an annual Uniform Crime Report based on the 15 largest cities and the ten largest county sheriff offices reporting twelve months of crime data for the current reporting year. The most recent report released in October of 2021, indicates crime across North Carolina decreased 4.5% during 2020 when compared to the figures reported in 2019. The rate of violent crime increased 11.0% statewide. Property crime decreased 7.0%. Locally, Duplin County experienced some similarities when compared to the state average, with an overall 0.03% decrease in reported crime in 2020 compared to 2019. While the rate of reported violent crimes increased 42.8% in 2020, property crime reported decreased 2.9%, compared to 2019. Violent crimes are defined as murder, rape, robbery, and aggravated assault. Property crimes are defined as burglary, larceny, and motor vehicle theft.

### Animal Control

Duplin County Animal Services (DCAS) strives to protect the health and safety of county residents, ensure humane treatment of animals, provide temporary shelter for stray and unwanted animals, and promote responsible pet ownership. Animal Services officers strive to educate citizens on animal welfare laws to promote proper care and humane treatment of animals. DCAS is responsible for enforcing the County's Animal Control Ordinances and operating the County's Animal Shelter. Offices are located at 117 Middleton Cemetery Lane in Kenansville.

### Fire Protection and Emergency Management

Duplin County Fire & Emergency Management works to protect the citizens of Duplin County through prevention, mitigation, preparedness, response, and recovery. Working with public and private sectors involving local, state, and federal partners, the department seeks to provide a customer service focused program for all of the citizens and visitors of Duplin County.

Duplin County Fire & Emergency Management manages and serves the 25 fire departments that provide service to districts inside Duplin County. Working to help these fire departments to reduce their insurance ratings, allows the department to provide better service and to reduce homeowners' insurance premiums. Duplin County Fire & Emergency Management also serves as a working component of the Duplin County Firefighters' Association. Additionally, Duplin County Fire & Emergency Management serves as a working component of the Duplin County Local Emergency Planning Committee (LEPC). The Duplin County LEPC serves to protect and inform the public on regulations and reporting of organizations that handle hazardous materials.

### Emergency Medical Services

Duplin County Emergency Medical Services (EMS) is responsible for providing emergency medical treatment and transport of the sick and injured throughout the County. Duplin County EMS strives to provide an exceptional quality of pre-hospital care and promote the overall improvement of individual health through dedication to the communities and perpetual support of pre-hospital providers.



## Chapter 3. Environment/Existing Conditions

Duplin County EMS serves as the primary EMS agency in the County providing eight paramedic ambulances to eight EMS districts which covers the 816 square mile county. Support is provided by one supervisory EMS Officer operating a paramedic level QRV and two administrative EMS Officers. The agency is also supported by two volunteer EMS agencies functioning at the Advanced EMT (AEMT) level out of the Chinquapin and Pleasant Grove Volunteer Fire Departments. Duplin County EMS also has six volunteer emergency medical responder (EMR) agencies that operate out of Calypso, Faison, Fountaintown, Magnolia, Oak Wolfe, Pink Hill, and Teachey Volunteer Fire Departments.

### Schools

Duplin County Schools consists of thirteen public schools that include seven Pre-K-8 schools, one Pre-K-6 school, four traditional high schools, and an early college high school.

- B. F. Grady Elementary School (Pre-K-8)
- Beulaville Elementary School (Pre-K-8)
- Chinquapin Elementary School (Pre-K-8)
- Duplin Early College High School (9-13)
- East Duplin High School (9-12)
- James Kenan High School (9-12)
- Kenansville Elementary School (Pre-K-8)
- North Duplin Elementary School (Pre-K-6)
- North Duplin Jr./Sr. High School (7-12)
- Rose Hill-Magnolia Elementary School (Pre-K-8)
- Wallace-Rose Hill High School (9-12)
- Wallace Elementary School (Pre-K-8)
- Warsaw Elementary School (Pre-K-8)



Duplin County Schools and James Sprunt Community College jointly operate Duplin Early College High School, for which Duplin County students are eligible. Students who graduate from Duplin Early College receive a high school diploma and an Associates degree. A main purpose of the school is to prepare students for entry into high-skill careers. Duplin Early College High School is located on the campus of James Sprunt Community College in Kenansville.

Higher education is offered at James Sprunt Community College -- is one of the premier institutions in the North Carolina Community College System. James Sprunt Community college serves more than 5,000 students annually from their Kenansville and WestPark (Warsaw) campuses and three specialized centers.

### Libraries

Duplin County Library System prides itself in being the "very best place to start" for finding information and providing recreational and educational materials for patrons of all ages. Services such as photocopying, laminating, faxing, and Wi-Fi are also available. The library system headquarters is located in Kenansville, the county seat. Five branch libraries are located in Beulaville, Faison, Magnolia, Rose Hill, and Warsaw. The Duplin County Law Library, located in the Courthouse, is also administered by the public library.

Each of the six public libraries is fully automated and provides free public access to computers and the internet. More than 80,000 items are represented in the collection including fiction and nonfiction books, audiobooks, DVDs, music CDs, magazines, and newspapers. Patrons can also access free e-books and downloadable audiobooks via the library website.

In 2000, the library system automated its circulation system which allows remote patron access to the system's catalog via the library and county's websites. Patrons can check their accounts 24/7, as well as renew and request materials from home. Additional services include programming for pre-school children and those who attend daycare centers throughout the county. These programs are scheduled throughout the year with additional events and programs held to give children the opportunity to discover the love of reading and the many valuable resources available to them at the public library.

The public library system provides access, information, and connections to libraries worldwide via Interlibrary Loan services. Additional online reference resources are available via the library website including NC LIVE and Start Squad. Duplin County and a State Aid to Public Libraries grant from the North Carolina General Assembly fund the library system.

### Parks & Recreational Facilities

Duplin County operates and maintains Cabin Lake County Park. The mission of Cabin Lake County Park is to serve the citizens of Duplin County and all park visitors by enriching their quality of life through outdoor recreational experiences. The park accommodates RV camping, tent with electric camping, standard tent camping, and group tent camping, in addition to offering picnic shelter, pedal boat, and canoe rentals. The park also provides opportunities for fishing, a 2.3-mile hiking trail, and a swimming area that is open from Memorial Day until Labor Day.



Cabin Lake County Park *Image Source: Duplin County.*

### Administration & Governance

Duplin County is governed by a Board of County Commissioners. The Commissioners are elected by district to four-year terms. Duplin County has operated under the County Manager form of government since 1979. The County Manager hires the County staff, meets regularly with department and agency heads, and ensures the Board's goals and objectives are met. The County Manager serves at the discretion of the Board and serves as Clerk to the Board of Commissioners. Major responsibilities of the Board of Commissioners include:

- Adoption of an annual budget.
- Establishment of the property tax rate.
- Appointment of county officials, board, and commission members.
- Enactment of ordinances.
- Establishment of policies and procedures for operation of programs.

## Chapter 3. Environment/Existing Conditions

Duplin County Government has twenty-seven departments, including County Manager (Administration), Airport, Animal Control, Building Inspections, Cabin Lake, Cooperative Extension, Cowan Museum, Economic Development, Elections, Emergency Management/Fire Marshal, Emergency Medical Services, Finance, Health Department, Human Resources, Information Technology, Library, Maintenance, Planning, Services for the Aged, Social Services, Soil & Water Conservation Office, Solid Waste, Tax Administration, Tourism/Events Center, Transportation, Veterans Services, and Water/Utilities.

### Water System

The Duplin County Water Department provides its customers with a safe and dependable supply of water. The Water Department is committed to ensuring the quality of water as required by State and Federal Laws. The Duplin County water system presently has 13 elevated storage tanks, 14 ground water wells, and 6 booster pumps station which pumps water throughout the county. On an average day, the Water Department delivers approximately 1,600,000 gallons of water to over 7,200 customers. The system's finished water storage capacity is 5.7 million gallons. The Duplin County Water System is permitted to operate by the State of North Carolina under Public Water System I.D. number 04-31-085.

### Sewer System

Duplin County does not operate a county-wide or partial county wastewater treatment system. Outside of the municipal sewer districts within the County, private wastewater management systems must be installed. The Duplin County Environmental Health Department issues septic tank permits for new installations and existing systems as well as for the repair of failing systems.

### Natural Gas

Duplin County does have access to central natural gas service through Piedmont Natural Gas (Duke Energy Progress). Additionally, there are private companies that provide LP gas service for commercial and private residential use.

### Solid Waste

The Duplin County Solid Waste Department offers a variety of services to fulfill the county's need for a comprehensive solid waste system. The department manages an on-site transfer station for the collection of solid waste. Trash is shipped by tractor-trailer loads to the regional landfill in Roseboro, North Carolina. The department also manages the Land Clearing Inert Debris at the county's permitted site. This consists of yard waste, trees, stumps, and any other vegetative debris.

A recycling warehouse is also on-site to process recyclable materials collected throughout the county. Materials are then sold to manufacturers for recycling into new products.

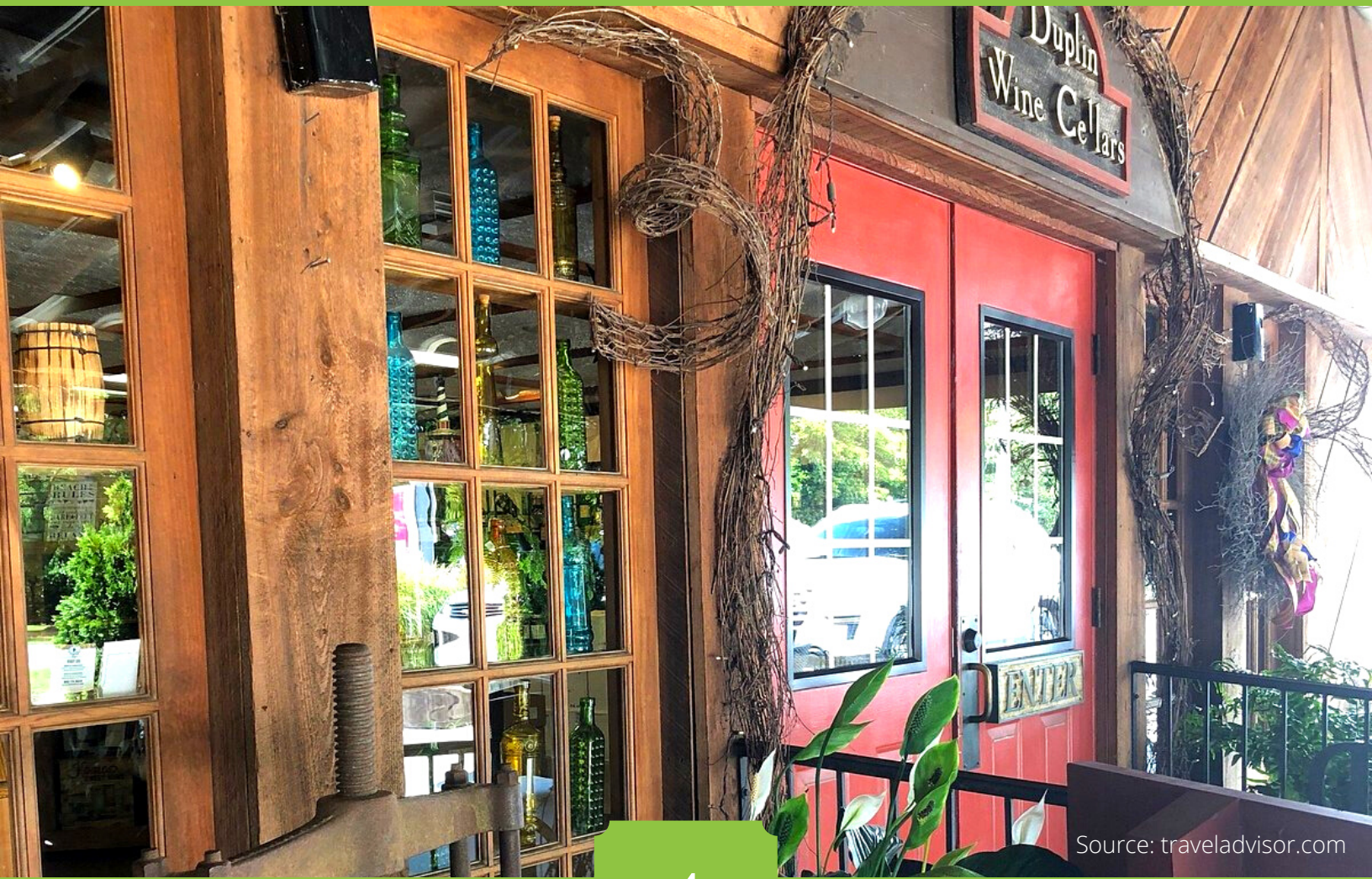
The Duplin County Solid Waste Department also helps with the Keep America Beautiful program that offers solid waste management, source reduction, recycling, beautification, and litter prevention education programs to area preschools, schools, civic clubs, and other groups upon request. The County's Solid Waste Department along with the NCDOT follow up on reports of littering, illegal dumping, and illegal burning.



### Transportation

Major highways throughout Duplin County are Interstate 40, US 117, and NC 11, 24, 41, 50, 111, 241, 403, and 903. Specific improvements are being planned as a west to east portion of Highway 24 is being completed from Sampson County to connect I-95 to I-40 in Duplin County. Improvements are ongoing in neighboring counties, such as the I-795 Corridor in Wayne County being extended thru Duplin County to connect I-795 to I-40 at interchange Exit 355 in the northern portion of Duplin County along the current I-40 Connector from Calypso to I-40 Exit 355. The segment of NC 24 connecting I-40 to I-95 near Fayetteville is scheduled to be completed by 2030 in Duplin County. Widening this portion of NC 24 will give Duplin County rapid access to I-95, the Eastern United States major north/south route. NC 11 is scheduled to be widened to four lanes from Kinston to I-40. Construction from Pink Hill NC (Lenoir County) thru Duplin County has not been funded. Completion of this project will provide a four-lane route from Pink Hill, Kinston, and Greenville. Routes as alternates to support regional efforts are being considered. With highway improvements providing four-lane access to the major regional population centers, State Port facilities at Wilmington and Morehead City; military installations at Jacksonville, Fayetteville, and Goldsboro; and the major north/south artery serving the East Coast, Duplin County is developing into the transportation and distribution hub of Eastern North Carolina.

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Source: traveladvisor.com

4

# CHAPTER 4

## Future Land Use

## CHAPTER 4. FUTURE LAND USE

### INTRODUCTION

The Future Land Use Plan is a blueprint for future development over the plan horizon, typically 15 to 20 years. It is a map of where the community feels development is appropriate. It is not a zoning map nor does it require a specific action to implement, such as a rezoning, but is a tool used when evaluating land use decisions. The future land use plan is presented in both a text (land use categories) and map format.

### LAND USE CATEGORIES

The Land Use Categories define the type and intensity of future land uses, set location criteria, and parameters for development standards to be incorporated into the implementation program. The land use definitions integrate the goal and policies of each key issue.

#### Agriculture

Agriculture areas will accommodate residential development where public water, sewer, and other municipal services may not currently be available, but are anticipated within 5 to 10 years. The primary uses in these areas are detached single-family development at rural densities. These outlying areas should retain their rural character but may be considered for more intensive development as public services become available.

#### Development Criteria:

- Rural density: Between 1 and 2 dwellings per acre
- On-site water and sewer may be allowed on suitable lands
- Access from local streets

#### Residential

Residential areas provide opportunity for lower density housing and associated civic and commercial services. Housing is typically single-family or duplexes, with setbacks on all sides. Commercial uses should be limited to office and retail spaces in areas where neighborhood character will be enhanced. Recreation and school facilities are encouraged throughout.

#### Development Criteria:

- Access from local streets with connections to arterial roadways
- Limiting cul-de-sacs is encouraged to promote internal circulation
- Appropriate density is between 1 and 6 dwellings per acre
- On-site water and sewer may be allowed on suitable lands

### Community Mixed Use

Community Mixed Use areas support planned mixed use development patterns that serve multimodal travel. These areas include a combination of retail, office, light industrial, recreation and residential uses. While preference is to integrating vertical mixed uses on a project site, a horizontal mix of uses, that support one another, can be considered. Civic uses, recreation, and public gathering places are encouraged here. Lower density single-family development may be acceptable when limitations to mixed use development exists.

#### **Development Criteria:**

- Multimodal design features
- Public water and sewer available or planned

### Industrial

Industrial areas serve as employment and production hubs, with office and light industrial uses predominating. Densities are dependent in part on the type of industries located here; office uses can be multi-story and nearer the street, while light industrial uses will likely be one story with large setbacks and ample room for trucks and other large vehicles.

Industrial categories can also accommodate residential, civic, and recreational uses, but should be clearly delineated from rural and conservation areas. Commercial uses designed to serve the needs of the employment center are appropriate.

#### **Development Criteria:**

- Arterial or major collector road access
- Public water and sewer available or planned

### Conservation

Conservation places are applied to areas of natural open space and are intended to protect the natural environment, water quality, and wildlife habitats. They serve the public through low-impact recreation and in their natural beauty. Protection may also extend to important cultural or archaeological resources and to areas where hazards are known to exist.

#### **Development Criteria:**

- Increased density is discouraged
- Low impact development methods are required

A harmonious balance between land uses is important to a high quality of life; therefore, transitions are appropriate between more intense and conservative land uses. The community mixed use areas should serve as a transitional zone between expanding commercial districts and existing residential neighborhoods. The intent is to protect the historic or existing residential qualities of an area while allowing for increased flexibility in the use of the land. Additionally, development standards can assist in securing compatible development patterns that protect existing character.

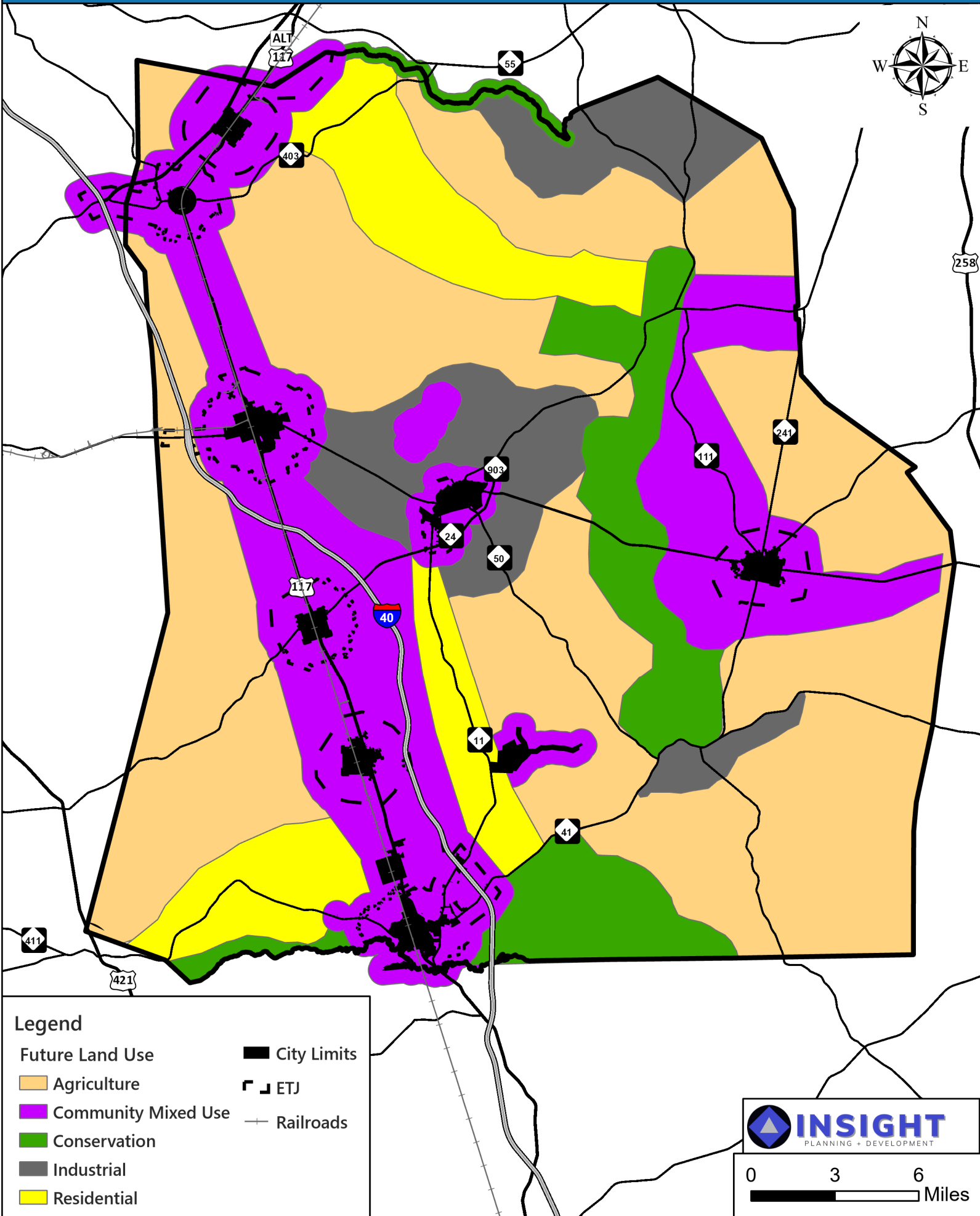
## FUTURE LAND USE MAP

Map 10 shows the desired location of the specific future land use categories. The approximate acreage for each future land use category is summarized in Table 5-5. Boundaries on the map are approximate and may be adjusted to accommodate existing parcel lines and development patterns. Exact boundaries of development and conservation areas will be designated by zoning, subdivision, and other development regulations. The County Planning Department will maintain the official map, including future amendments.

<b>Land Use</b>	<b>Planning Jurisdiction</b>	<b>% of Total Planning Jurisdiction</b>
Agriculture	236,324.56	44.03%
Residential	53,056.60	9.89%
Community Mixed Use	146,354.65	27.27%
Industrial	49,072.64	9.14%
Conservation	51,898.85	9.67%
<b>Total</b>	<b>536,707.30</b>	<b>100.00%</b>

*Source: Duplin County Planning & Inspections, Insight Planning & Development.*

# Map 10. Future Land Use





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# CHAPTER 5

Issues, Opportunities,  
Goals & Implementation



## CHAPTER 5. ISSUES, OPPORTUNITIES, GOALS & IMPLEMENTATION

### INTRODUCTION

This chapter explains the context within which the policy recommendations in the plan were formulated and outlines the policies that will aid with implementing the community vision and address existing threats and weaknesses. It includes a SWOT analysis of the community assets (strengths and opportunities) and liabilities (weaknesses and threats) identified through the research and analysis conducted preparing the land use plan and in coordination with County staff. It also defines the key issues that must be addressed over the next 5 to 15 years.

### COMMUNITY ASSETS & LIABILITIES

Community strengths and opportunities are characteristics or conditions to be preserved or pursued, and community weakness and threats are characteristics or conditions to be eliminated, improved, or diminished.

Community Strengths and Opportunities
➤ Community Facilities: Including public library, local airport, ECU Health Duplin Hospital, and James Sprunt Community College.
➤ Job training programs are available through the community college.
➤ Over 30% of the workforce is employed in the Manufacturing industry, which on average provide livable wages and benefits.
➤ The persons living below poverty in Duplin County has been reduced in excess of 5% over the last ten years.
➤ The county's location is centrally located between the beaches in Wilmington and the Research Triangle in Raleigh.
➤ Duplin County unemployment rates continue to be lower than the state average (3.3%)
➤ Nearly 60% of Duplin County's homes are owner-occupied.
➤ Duplin County has experienced a reduction of over 7% in overall reported crime in 2020, compared to 2019.

Community Weaknesses and Threats
➤ Almost half (45%) of Duplin County's housing stock is more than 40 years old.
➤ The median housing value in the state is nearly double that of Duplin County (\$89,500).
➤ Duplin County violent crimes increased 42.8% in 2020
➤ Duplin County does not operate a county-wide or partial county wastewater treatment system. Outside of the municipal sewer districts within the County, private wastewater management systems must be installed.

### KEY ISSUES, GOALS, & POLICIES

The key issues identified in the plan revolved around six themes: housing and neighborhoods, public service and facilities, environmental resources, economic development, transportation, and land use and development. The goals and policies were designed around the key issues.

### Housing and Neighborhoods

Quality, affordable housing is a key component to ensuring a healthy, strong, and secure community. Duplin County's housing stock is primarily single-family homes with minimal variety and little to no new inventory. One of the consistent responses to the needs of the community to ensure a high quality of life is an abundance of diverse housing stock.

Existing conditions suggest residential land use is one of the prominent uses of developed land. However, according to 2020 Census data, only approximately 17.6% of the county's total housing inventory is vacant. It is important to clarify this statistic does not account for the condition of the available inventory and may include units that are not habitable. The County's housing stock continues to age with little to no new inventory being created. Approximately 90 residential building permits were pulled within the planning area in the last year. The current vacancy rate, paired with the age of the existing housing stock, presents concerns for future redevelopment of distressed neighborhoods, and further suggests the community would benefit not only from additional housing units but also from rehabilitation of existing residential structures.

#### **Goal 1.1: Create and maintain a diverse housing stock.**

1.1.1 Affordable and workforce housing units, with universal design elements, should be promoted.

1.1.2 The county should seek partnerships with nonprofit housing providers to expand their capacity.

1.1.3 Alternative housing units, such as accessory dwelling units, granny flats, and mother-in-law suites, should be permitted in areas with adequate infrastructure.

1.1.4 Higher density developments should be embraced as an opportunity to provide quality, affordable housing units.

#### **Goal 1.2: New residential development should be compatible with or improve the character of the existing built environment.**

1.2.1 Quality design and appearance of all housing, including assisted and market rate housing, should be encouraged.

1.2.2 Location-efficient housing should be promoted and preserved.

#### **Goal 1.3: Provide affordable housing options for diverse populations.**

1.3.1: Production of affordable and workforce housing units, housing with universal design elements, and senior housing units should be promoted throughout the planning area.

1.3.2: The development of accessible housing for residents with disabilities, near transit stations and corridors, should be encouraged.

### Public Service and Facilities

Community facilities and infrastructure extensions are provided for the benefit of the community. This section shall guide decisions about the location, operation, programming, and design of future facilities and expansions.

A high quality of life is enhanced by providing and maintaining high levels of public services at an affordable rate. Quality education, recreation, libraries, and cultural resources are amenities that can distinguish a community and persuade people to establish residency. Adequate infrastructure and capacity encourage sustainable development patterns.

Duplin County offers a range of services that support development, including veteran services, animal control, public safety, recreation, and street maintenance.

#### **Goal 2.1: Proactively extend necessary infrastructure equitably throughout the planning jurisdiction to promote sustainable and desirable land use patterns.**

2.1.1 Expand sewer services to existing and potential industrial, commercial, and housing sites. Consultation of the Future Land Use Map is appropriate.

2.2.2 Increase the availability of access to 6- to 8-inch natural gas lines.

2.2.3 Support efforts to increase broadband service areas across the planning jurisdiction.

2.2.4 Shared location of community facilities and services should be considered, where possible, to maximize citizen and business access, reduce costs, and encourage efficient use of land and resources.

2.2.5 Review residential development proposals in coordination with the Duplin County Public Schools to determine and mitigate impact(s) on the school system. Additionally, locational decisions for community facilities will be made in consideration of the facility impact on adjacent land uses and infrastructure capacity for support including the water system and transportation system.

2.2.6 Make all Duplin County locational decisions for community facilities in consideration of the facility impact on adjacent land uses and infrastructure capacity for support including the water system, sewer systems, and transportation system.

2.2.7 Seek state and federal technical and financial assistance to provide facilities for physically challenged persons.

2.2.8 Support educational grants to subsidize in-county continuing education by nearby colleges and universities and support community education programs.

2.2.9 A comprehensive review of existing parks and recreation programs, solid waste disposal, emergency management, and education services and facilities should be pursued to identify underserved areas of the county.

**Goal 2.3: Emergency services should be planned for to protect the health and safety of Duplin County's population.**

2.3.1 Incorporate Crime Prevention through Environmental Design (CPTED) techniques in retrofits, new and infill developments.

2.3.2 Continue to plan for the provision of fire and life safety facilities that meet current and future needs.

2.3.3 Annually adopt a Capital Improvements Plan to address solid waste disposal, law enforcement, emergency management, recreation, and educational service needs.

**Goal 2.4: Coordinated planning for schools should be ensured through strong partnerships with the county, local municipalities, and the School Board.**

2.4.1 Equity in school facilities should be considered when making determinations about school construction, closures, and rehabilitation. The end goal should be to provide all students with consistent high quality learning environments.

2.4.2 School siting should consider walkable, bikeable neighborhood locations.

2.4.3 Focus should be afforded to strengthening the local curriculum.

2.4.4 Work force training opportunities should be encouraged to support growing industries.

### Environmental Resources

Balancing development pressures with preservation of natural resources is a struggle for many communities. However, communities that protect their natural resources experience a higher quality of life due to the aesthetics the natural environs add as well as the benefits of reduced flooding and improved air quality. A safe, clean, and attractive community is a powerful economic development tool that can attract residents and businesses. Further, development of environmentally sensitive lands can potentially threaten public health and safety.

**Goal 3.1: Areas of environmental concern should be protected, and development impacts should be minimal.**

3.1.1 Support regulation of development in the county's flood hazard areas.

3.1.2 Environmentally sensitive areas should be mapped, protected, enhanced, and maintained.

3.1.3 Discourage new development and redevelopment activities which would significantly degrade the quality of natural and scenic resources in Duplin County. Utilize the future land use map as a development management tool to protect valuable resources.

3.1.4 New development and redevelopment activities which would significantly degrade the quality of natural and scenic resources in Duplin County, prematurely diminish the predominantly rural character of the area, or create incompatibilities of scale, design, or land use shall not be permitted.

**Goal 3.2: Create partnerships to educate the public on the importance of environmentally sensitive areas and their contributions to the wellbeing of the community.**

3.2.1 Work with economic development agencies to promote reuse of abandoned commercial and industrial sites, and to explore funding opportunities for brownfield site cleanup and redevelopment.

3.2.2 Oppose the disposal of any toxic wastes, as defined in the US Environmental Protection Agency's Listing of Hazardous Substances and Priority Pollutants (developed pursuant to the Clean Water Act of 1977), within the county's planning jurisdiction.

**Goal 3.3: New construction, including public facilities, should utilize best management practices.**

3.3.1 Support septic systems approved by the Duplin County Health Department and package treatment plants approved by the NC Department of Environmental Quality.

3.3.2 Walkable and bikeable communities, strengthening public transit, and integrated land use and transportation planning should be promoted.

3.3.3 Energy efficient measures should be incorporated into public facility design, construction, and renovations to reduce resource use, fuel costs, and carbon emissions.

### Economic Development

The four main factors of economic growth are land, labor, capital, and entrepreneurship. This plan, through policies and land use mapping recommendations, provides a path to cultivate the county's successes and rectify any prior shortcomings.

**Goal 4.1: Improve the image of Duplin County.**

4.1.1 Adopt a brand campaign for Duplin County to establish an identity that is marketable to companies and individuals.

4.1.2 Partner with outside agencies, including the North Carolina Department of Commerce, to update Duplin County's assets.

4.1.3 Signage should be utilized to enhance the overall built environment with attention afforded to aesthetic, economic, and safety needs.

**Goal 4.2: Promote appropriate opportunities for industrial, commercial, and residential development.**

4.2.1 Industrial development should be encouraged where supportive infrastructure exists.

4.2.2 A broad range of employment opportunities should be supported to diversify the local job market and provide equal opportunity to residents.

4.2.3 Land use patterns and zoning should support retail, office, and mixed-use opportunities and should not push non-residential users to the fringe of the planning jurisdiction.

4.2.4 Support a more diversified economic base, including increased healthcare services.

### Transportation

Transportation is the movement of goods and persons from place to place and the various means by which such movement is accomplished. However, the impacts the many modes of transportation have on the local economy can vary. A fine-tuned transportation network is necessity to a thriving community.

#### **Goal 5.1: Support regional intergovernmental planning and cooperation for transportation improvements.**

5.1.1 Endorse and support the NCDOT Transportation Improvement Projects in the vicinity.

5.1.2 Support and continue to seek funds for sidewalk and bikeway improvements across the planning jurisdiction.

5.1.3 Encourage local access street connections between adjoining residential subdivisions which have public roads, and connections between parking lots of adjoining commercial developments.

5.1.4 Explore opportunities to establish truck routes that divert traffic away from charming downtown areas.

#### **Goal 5.2: Provide dependable transit services to meet the needs of county residents.**

5.2.1 Create opportunities to support the aging populations need to attend appointments, shop, and safely maneuver through the planning jurisdiction.

#### **Goal 5.3: Improve bicycle and pedestrian circulation throughout the county.**

5.3.1 A continuous bicycle and pedestrian network shall be included within and between existing and new developments to facilitate safe alternative travel ways.

5.3.2 Resurfacing projects shall include plans for bicycle and pedestrian facilities compatible with the built environment.

5.3.3 Bicycle and pedestrian facilities shall be installed and maintained to accommodate universal access.

5.3.4 Alternative modes of transportation, such as bicycles and pedestrians, shall be accommodated on bridges, interchanges, and over and underpasses, where permitted by law.

### Land Use and Development

Land use and development issues relate to compatibility between land uses and adequate allocation to support the variety of uses that is required to support a viable community. Effective land use planning supports harmonious transitions, ensures adequate transportation and infrastructure capacity is available, and protects residential neighborhoods from adverse impacts of development.

Land use decisions should consider the overall needs of a community, impacts to existing infrastructure, and necessary protections to ensure new development is compatible with the existing built environment.

#### **Goal 6.1: Encourage compatible and efficient development patterns.**

6.1.1 All land use decisions should be consistent with the Comprehensive Plan, including the Future Land Use Map and coordinating policies.

6.1.2 Development shall create places, streets, and spaces that are visually attractive, safe, and accessible.

6.1.3 Development should encourage compact patterns that reinforce the efficient provision of public utilities, preserve open space, and reduce impacts of non-contiguous development.

6.1.4 Development should include provisions for parks, community facilities, and other amenities desired by the Duplin County residents.

6.1.5 Development and infrastructure should be designed to promote healthy communities by providing enhanced bicycle and pedestrian circulation, access, and safety.

6.1.6 Compatible design and site planning shall be promoted to ensure both new and infill development do not adversely impact the desired character of the existing built environment.

6.1.7 Low to medium density residential developments should serve as transitions between lower - density neighborhoods and more intensive commercial, residential, and mixed-use areas.

#### **Goal 6.2: Protect existing farmland from development pressures.**

6.2.1 Support transfer of development rights for protection of prime farmland areas.

6.2.2 Collaborate with the Duplin County Cooperative Extension to establish protocols and commerce networks between local farmers and food establishments.

6.2.3 Discourage heavy industries which generate air pollution, damage surface and groundwater, and have other side effects detrimental to agriculture.

6.2.4 Support development of agri-tourism.

6.2.5 Support land use decisions which will protect agricultural lands and encourage new developments to locate near towns and existing subdivisions.

6.2.6 Encourage proper agricultural and forestry management practices.

6.2.7 Pursue grant funds which may assist with the preservation of agricultural lands.

**Goal 6.3: Consider all potential impacts when siting business and industrial development projects.**

6.3.1 Light industries (lower impact/generally smaller than heavy industry) should have easy access to major transportation facilities and infrastructure but be compatible with nearby residential, agricultural, and conservation areas.

6.3.2 Industrial development shall not be located in areas that would diminish the desirability of existing and planned non-industrial areas, nor shall incompatible non-industrial uses be allowed to encroach upon existing or planned industrial sites.

6.3.3 Industrial development shall be located on land that is physically suitable and has unique locational advantages for industry. Advanced planning for the identification of such land should be encouraged. Locational decisions should be coordinated with the future land use map.

6.3.4 Industrial uses should be located in or near existing infrastructure. Careful design and/or buffering shall be required to ensure compatibility with surrounding areas.

6.3.5 Warehousing, storage, and distribution facilities should have access to appropriate thoroughfares.

6.3.6 New industrial development should be encouraged to locate in existing and/or planned industrial parks.

**Goal 6.4: Mixed-use projects should be embraced.**

6.4.1 Mixed use centers should contain a diverse mix of uses and integrated designs that avoid segregation of uses.

6.4.2 Mixed use centers should promote multimodal access with convenient live work opportunities.

**Goal 6.5: Commercial development shall be strategically sited at key locations.**

6.5.1 Redevelopment of aging and high-vacancy shopping centers should be encouraged and incentivized.

6.5.2 Commercial development should be designed with appropriate height, mass, and scale to provide suitable transitions.

6.5.3 The location of high-impact commercial uses that generate excessive traffic, late night activity, and noise shall be located to ensure minimal impact on the quality of life of Duplin County citizens.

6.5.4 Institutional land uses can also serve as transitions when designed at appropriate scale and adequate buffers are installed adjacent to low density residential areas.



### **Goal 6.6: The character of existing residential neighborhoods should be protected.**

6.6.1 Growth should be accommodated throughout the planning jurisdiction to ensure a variety of housing types and price points are available.

6.6.2 The need to increase housing supply and commerce should be balanced with the need to protect desired neighborhood character, preserve historic resources, and protect the natural environment.

6.6.3 Usable open space that preserves natural landscapes and ecological resources should be encouraged in new developments.

## **IMPLEMENTATION**

Successful implementation of this document requires County decision makers, including staff, Planning Board, and County Commissioners, to consult and execute the goals and policies established with support of residents, business owners, and developers of the community. The adoption of this plan is not the end but rather the beginning of a continuous process.

A window of opportunity exists for Duplin County to provide positive direction to development in a proactive, rather than reactive, approach. The creation of a county plan, workable conditions, and capital spending programs require commitment and forethought. The true test will come in putting this plan, ordinances, and programs into action on a day-to-day basis. Implementation of the policies contained in this plan will be an ongoing process.

Some of the strategies contained in this plan may be implemented in months, others may require years to effectively accomplish, while some will be a continuous effort. Planning is only as good as the commitment and abilities of the people responsible for implementing the plan. This plan provides the framework upon which zoning, land use regulations, and the capital improvements program should be based.

Zoning regulations should be designed to promote the public health, safety, and general welfare. To that end, the regulations should address, among other things, the following public purposes:

- Provide adequate light and air.
- Prevent the overcrowding of land, to avoid undue concentration of population.
- Lessen congestion in the streets.
- Secure safety from fire, panic, and other dangers.
- Facilitate the efficient and adequate provision of transportation, water, sewerage, schools, parks, and other public requirements.

Furthermore, the regulations should be made with reasonable consideration of the character of the district and its peculiar suitability for particular uses, and with a view of conserving the value of buildings and encouraging the most appropriate use of land throughout the county.

## Chapter 5. Issues, Opportunities, Goals & Implementation

In addition, the regulations should be made with reasonable consideration to expansion and development of any city or town within the county, in order to provide for orderly growth and development.

Specifically, in implementing this plan, the following should serve as guiding land use/planning principles:

- Consider the future land use map as part of the policies included in this plan.
- Consult this plan, including the future land use map, during the deliberation of all rezoning requests and proposed text amendments, as required by NCGS 160 D-701.

Following adoption of this plan, the County may implement the following to ensure effective citizen participation:

- Encourage diverse public participation and citizen input in all land use decisions and procedure development processes.
- Publicize all meetings of the Planning Board and Board of Commissioners through newspaper advertisements, public service announcements, and the County's website.
- Utilize broad-based advisory committees to assess and advise the County on special planning issues and needs, including implementation of this plan.
- Make notices of all Planning Department activities available on the County's website.



A

# APPENDIX A

Soils Characteristics

Map Symbol	Soil Series	Dwellings without Basements	Local Roads and Streets	Septic Tank Absorption Fields
AuB	Autryville loamy fine sand, 0 to 6 percent slopes	Not limited	Not limited	Somewhat limited: depth to saturated zone, slow water movement
BbA*	Bibb sandy loam, 0 to 1 percent slopes, frequently flooded	Very limited: flooding, depth to saturated zone, ponding, organic matter content	Very limited: depth to saturated zone, flooding, ponding	Very limited: flooding, depth to saturated zone, seepage-bottom layer, ponding
BnB	Blanton sand, 1 to 6 percent slopes	Not limited	Not limited	Somewhat limited: depth to saturated zone, slow water movement
CrB2	Craven loam, 1 to 4 percent slopes, eroded	Somewhat limited: shrink-swell, depth to saturated zone	Very limited: low strength, shrink-swell, depth to saturated zone, flooding, ponding	Very limited: depth to saturated zone, slow water movement, seepage-bottom layer, flooding, ponding
CtA*	Croatan muck, ponded, 0 to 2 percent slopes	Very limited: ponding, subsidence, depth to saturated zone, organic matter content	Very limited: ponding, depth to saturated zone, subsidence, low strength	Very limited: ponding, depth to saturated zone, subsidence, seepage-bottom layer, slow water movement
FoA	Foreston loamy fine sand, 0 to 2 percent slopes	Somewhat limited: depth to saturated zone	Somewhat limited: depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer, slow water movement
Go	Goldsboro loamy sand, 0 to 2 percent slopes, Atlantic Flatwoods	Not limited	Not limited	Very limited: depth to saturated zone, seepage-bottom layer, slow water movement
GoA	Goldsboro loamy sand, 0 to 2 percent slopes, Southern Coastal Plain	Not limited	Not limited	Very limited: depth to saturated zone, slow water movement
GtA*	Grifton fine sandy loam, 0 to 2 percent slopes	Very limited: depth to saturated zone	Very limited: depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer, slow water movement
JoA	Johns fine sandy loam, 0 to 2 percent slopes	Very limited: flooding, depth to saturated zone, ponding,	Somewhat limited: flooding, depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer, flooding, ponding, slow water movement

## Appendix A. Soil Characteristics

Map Symbol	Soil Series	Dwellings without Basements	Local Roads and Streets	Septic Tank Absorption Fields
JpA*	Johnston and Pamlico soils, 0 to 1 percent slopes, frequently flooded	Very limited: ponding, flooding, depth to saturated zone, organic matter content, subsidence	Very limited: ponding, depth to saturated zone, flooding, low strength, subsidence	Very limited: flooding, ponding, depth to saturated zone, seepage-bottom layer
KaA	Kalmia loamy sand, 0 to 2 percent slopes	Very limited: flooding, depth to saturated zone, ponding, organic matter content	Somewhat limited: flooding	Very limited: seepage-bottom layer, depth to saturated zone, slow water movement, flooding, ponding
LnA*	Leon sand, 0 to 2 percent slopes	Very limited: depth to saturated zone	Very limited: depth to saturated zone	Very limited: depth to saturated zone, slow water movement
LsB	Lucy loamy sand, 0 to 6 percent slopes	Not limited	Not limited	Somewhat limited: slow water movement
LuA*	Lumbee sandy loam, 0 to 1 percent slopes, rarely flooded	Very limited: ponding, flooding, depth to saturated zone	Very limited: ponding, depth to saturated zone, flooding	Very limited: flooding, ponding, depth to saturated zone, seepage-bottom layer, slow water movement
McC	Marvyn and Gritney soils, 6 to 15 percent slopes	Somewhat limited: slope	Somewhat limited: slope	Somewhat limited: slow water movement, slope
MkA*	Muckalee loam, 0 to 1 percent slopes, frequently flooded	Very limited: flooding, depth to saturated zone	Very limited: ponding, depth to saturated zone, flooding	Very limited: flooding, depth to saturated zone, slow water movement
MuA*	Murville mucky fine sand, 0 to 2 percent slopes	Murville mucky fine sand, 0 to 2 percent slopes	Very limited: ponding, depth to saturated zone, flooding	Very limited: ponding, depth to saturated zone, seepage-bottom layer, flooding
NbA	Noboco loamy fine sand, 0 to 2 percent slopes	Not limited	Not limited	Very limited: depth to saturated zone, slow water movement
NbB	Noboco loamy fine sand, 2 to 6 percent slopes	Not limited	Not limited	Very limited: depth to saturated zone, slow water movement
NoA	Norfolk loamy sand, 0 to 2 percent slopes	Not limited	Not limited	Somewhat limited: depth to saturated zone, slow water movement

Map Symbol	Soil Series	Dwellings without Basements	Local Roads and Streets	Septic Tank Absorption Fields
NoB	Norfolk loamy sand, 2 to 6 percent slopes	Not limited	Not limited	Somewhat limited: depth to saturated zone, slow water movement
OrA	Orangeburg loamy sand, 0 to 2 percent slopes	Not limited	Not limited	Somewhat limited: slow water movement
OrB	Orangeburg loamy sand, 2 to 6 percent slopes	Not limited	Not limited	Somewhat limited: slow water movement
PaA	Pactolus fine sand, 0 to 3 percent slopes	Very limited: flooding, depth to saturated zone, ponding	Somewhat limited: flooding, depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer, filtering capacity, flooding, slow water movement, ponding
PnA*	Pantego loam, 0 to 1 percent slopes	Very limited: flooding, depth to saturated zone,	Very limited: depth to saturated zone, flooding	Very limited: depth to saturated zone, slow water movement, flooding
Pt	Pits, quarry	Not rated	Not rated	Not rated
Ra*	Rains fine sandy loam, 0 to 2 percent slopes, Atlantic Coast Flatwoods	Very limited: depth to saturated zone, ponding	Very limited: Depth to saturated zone, ponding	Very limited: depth to saturated zone, slow water movement, ponding
RaA*	Rains fine sandy loam, 0 to 2 percent slopes, Southern Coastal Plain	Very limited: depth to saturated zone, ponding	Very limited: depth to saturated zone, ponding	Very limited: depth to saturated zone, slow water movement, ponding,
RuA	Rumford loamy fine sand, 0 to 2 percent slopes	Not limited	Not limited	Very limited: seepage-bottom layer
RuB	Rumford loamy fine sand, 2 to 6 percent slopes	Not limited	Not limited	Very limited: seepage-bottom layer
ToA*	Torhunta mucky fine sandy loam, 0 to 1 percent slopes	Very limited: depth to saturated zone	Very limited: depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer
WoA*	Woodington loamy fine sand, 0 to 1 percent slopes	Very limited: depth to saturated zone	Very limited: depth to saturated zone	Very limited: depth to saturated zone, seepage-bottom layer

\*Denotes Hydric Soils.

Source: Natural Resources Conservation Service.