



# CAMA LAND USE PLAN



Draft: September 3, 2020 10:54 AM

# ACKNOWLEDGMENTS

Many people helped to facilitate the update of the Town' of Carolina Beach Coastal Area Management Act (CAMA) Land Use Plan Update. In addition to the stakeholders and residents who provided their input, the following people were integral to the process.

## **Mayor and Commissioners**

- » Joe Benson, Mayor
- » Tom Bridges, Mayor Pro Tem
- » LeAnn Pierce
- » JoDan Garza
- » Steve Shuttleworth

## **Planning and Zoning Commission**

- » Keith Bloemendaal, Chair
- » Deb LeCompte, Vice chair
- » Mike Hoffer
- » Jerry Kennedy
- » Wayne Rouse
- » John Ittu
- » Melanie Boswell

## **Steering Committee**

- » Adam Priest
- » David Schifter
- » Debra LeCompte

- » Dennis Barbour
- » Ethan Crouch
- » Jay Healy
- » Jeff Hogan
- » Karen Graybush
- » Steven Klem
- » Todd Piper
- » Wayne Rouse
- » LeAnn Pierce
- » JoDan Garza

## **Staff**

- » Ed Parvin, Assistant Town Manager
- » Jeremy Hardison, Planning Director
- » Miles Murphy, Planner

And the residents, business owners, and visitors who participated and contributed their time and perspectives.

This plan facilitated and written by:



**STEWART**

**Adopted: (Placeholder until adoption)**

**DRAFT**

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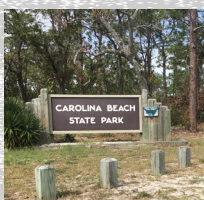


Below is a copy of the resolution passed by the Town of Carolina Beach Town Council formally adopting this land use plan.

**(This area held blank until an adoption resolution is passed by Town Council.)**

# PART 7

## Introduction to Carolina Beach

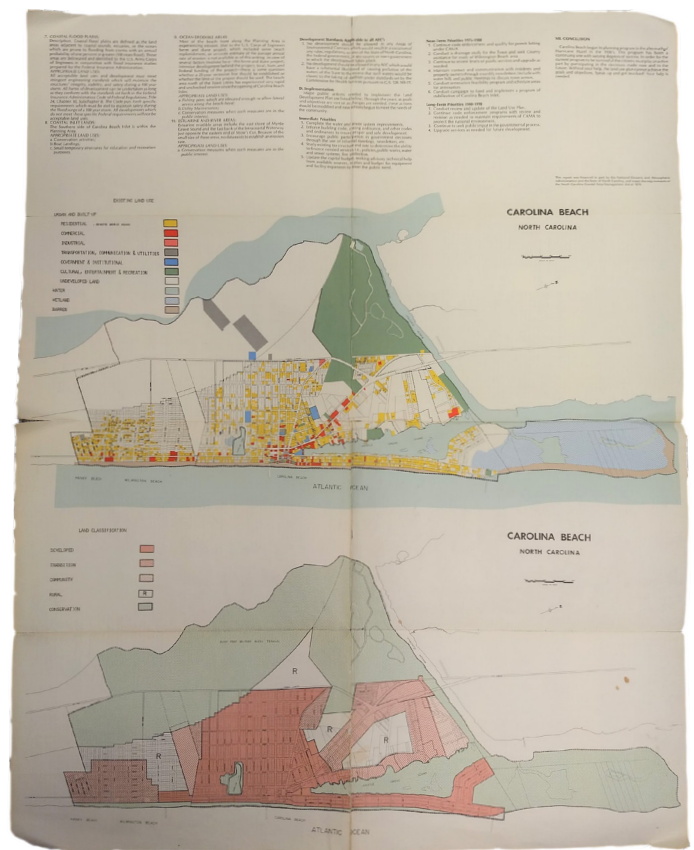




## Introduction

In the 1920's Carolina Beach was subdivided by developers and for the most part, those actions set the tone for existing development patterns ever since. The Town's 1979 Land Use Plan, which was required by the passing of the 1974 Coastal Area Management Act (CAMA) by the State, shows a town with opportunity remaining for expansion onto undeveloped property. Since that time, much of Carolina Beach has been built out and redevelopment is becoming the rule rather than the exception. Looking to the future, the town embarked on a planning process to update their land use plan.

In the fall of 2018, the Town of Carolina Beach engaged the planning firm Stewart to facilitate the update to the Town's CAMA Land Use Plan. A CAMA land use plan is required by the State for the communities in North Carolina's 20 coastal counties, and helps guide land use and development



*The town's 1979 Future Land Use Plan.  
Source: Town of Carolina Beach*



## Part 1: Introduction to Carolina Beach

decisions, as well as the issuance of CAMA permits.

There are several reasons to create a Land Use Plan (LUP). A LUP is an opportunity to take a look at the "big picture" and to clearly capture and communicate the community's vision for the future. A LUP establishes a road map and policies to guide development including public and private investment of resources. It also communicates a cohesive community direction and provides a framework for making land use and infrastructure investment decisions.

The LUP looks at the interconnectedness between land uses, transportation, utilities, recreation, economic development, and other factors that form the town's physical and policy environment. This LUP is an opportunity for the residents and business owners of Carolina Beach to tell their story and help continue the distinct vision and unique identity of the community.

A LUP typically has a planning horizon of 20-30 years, but it's important to review and update the plan in the interim to keep pace with changes in the Town and to ensure the vision still resonates with current residents. Land use plans are usually reevaluated and updated every 5-10 years, but this varies by community.

The plan development process included extensive public outreach and comment. Throughout the nearly year-long planning process, information was gathered and analyzed and the findings were vetted by a Steering Committee appointed by the Town Council. The Steering Committee was composed of elected and appointed officials, representatives of various committees and boards, Town staff, residents, and business owners. Ultimately, the final plan was presented again to the public during an

### Coastal Area Management Act (CAMA)

*The following is a summary of information from the NC Division of Environmental Quality (NCDEQ).*

The Coastal Area Management Act (CAMA) requires each of the 20 coastal counties to have a local Land Use Plan (LUP) in accordance with guidelines established by the NC Coastal Resources Commission (CRC). The CRC's guidelines provide a common format and a set of issues that must be considered during the planning process.

The LUP may include policies specific to the locality addressing growth management, protection of productive resources (i.e., farmland, forest resources, fisheries) and natural resources, economic development, and reduction of storm hazards.

The Division of Coastal Management (DCM) which serves as staff to the CRC, uses the Plans to review proposed projects and activities to ensure consistency with rules and policies and to make federally consistent determinations.

At the local level, the CAMA LUP provides guidance for both review and approval of individual projects, public investments or resources, and development of regulatory ordinances, and broader policy issues. Public involvement in the planning process affords residents and business owners the opportunity to help shape their coastal community by providing policies, recommendations, and support for a resilient future.

open house workshop and a month-long public review and comment period, before adoption by the Town.

## Study Area

The CAMA Land Use Plan covers the entire area under the Town's planning jurisdiction, including the Town's corporate limits and the Extra-Territorial Jurisdiction (ETJ). This area stretches from the Atlantic Ocean on the east to the Cape Fear River on the west, and from the inlet and Snow's Cut on the north to Alabama Avenue and the Town of Kure Beach on the south. The western portion of Carolina Beach's jurisdiction are primarily covered by Carolina Beach State Park and the Military Ocean Terminal at Sunny Point (MOTSU), both of which are lands managed by the State and federal governments, respectively.

## Public Participation

Public participation is a key component of a CAMA LUP update and the community was involved throughout the process. The LUP update began with a community tour and stakeholder interviews with key focus groups and representatives of various perspectives and community groups. Their thoughts, ideas, and perspectives influenced future information gathering efforts. The Steering Committee reviewed and evaluated all of the information and data assembled for the update. Among other things, their guidance shaped the public online survey, goals and vision, future land use, policy recommendations, and every other aspect of the LUP. Two large public open house workshops were held - one in the beginning to assess the community's goals, vision, preferences, and perspectives, and one



*Public open house.*

toward the end to make sure what emerged from the plan conformed to the community's expectations and aspirations.

## Plan Assessments

The following plans were reviewed to identify and incorporate relevant information into the Land Use Plan update.

- » **2007 CAMA Land Use Plan**
- » **Parks and Recreation Master Plan (2017)**
- » **Water Use and Harbor Management Plan (2008)**
- » **Bicycle Multi-Use Transportation Plan (2011)**
- » **Draft MOTSU JLUS Recommendations (Nov. 2018)**
- » **Pedestrian Master Plan (2018)**
- » **Central Business District Master Development Plan (2008)**
- » **Traffic Study Recommendations – N. Lake Park Boulevard Corridor Study (2018)**
- » **Capital Improvement Plan (2018)**
- » **Information on Proposed / Potential Development / Redevelopment Projects**
- » **Zoning and Subdivision Ordinances, and Official Zoning Map**
- » **2009 Future Land Use Map, Flood Zones Map, and files and resources**

See the appendix for more information on plan assessments.

# PART 2

## Community Concerns & Aspirations





## Significant Existing and Emerging Conditions

Through stakeholder interviews with focus groups as well as Steering Committee issue identification, and resident involvement at the public open house workshop, the following themes were identified. More information can be found in the Appendix.

### Stormwater and Flooding

In general, there are concerns about stormwater and flooding. Hurricane Florence exacerbated problems that already existed. In particular, the following issues came up frequently:

#### » Carolina Beach Lake

- Recent dredging project to mitigate localized flooding.
- Additional pumps have also been installed.

#### » Canal Drive – floods during high tides, stormwater drains fail

- A committee has been formed to generate ideas.
- Current working plan is increase seawall height and install pumps.

#### » Flooding of neighboring homes when previously vacant lots develop

- Some vacant lots have served to mitigate stormwater flooding, but when they develop, the water they absorbed is forced onto neighboring properties.

#### » NCDOT stormwater pipes

- The stormwater pipes on some streets have proven to be undersized as impervious surfaces and rainfall patterns have increased through the years.
- Retrofitting and fixing these issues are difficult and require coordination.

### Traffic Congestion and Parking

Parking is perceived as lacking, particularly



## Part 2: Community Concerns & Aspirations

in downtown and during the summer / tourist season. Traffic congestion, especially along Lake Park Blvd in the summer, is an impediment to daily life.

### Family-Friendly Community

The family-friendly character and vibe of the town is cherished by residents. Lower structure heights are viewed as a contributing factor. The school is a community-prized resource but is limited in space and has some difficulty with regular operations, especially parking.

### Inlet, Marina, and Waterfront

These areas are critical to driving the local economy. Access is plentiful. Public and private marinas provide recreational tourism and help support the local maritime culture and industry. Maintenance costs at the inlet are also high and include regular beach nourishment.

### Redevelopment

Redevelopment has become the norm rather than the exception. A lot of concern revolves around how to allow redevelopment, especially if it results in more intense development. A tension exists between maintaining the charm and character of the town's current configuration, while also

allowing redevelopment. Increased building heights (especially in or near the downtown area) may conflict with the character of existing areas.

### Downtown and Boardwalk

The downtown area and boardwalk are the recreational and social hub of the town, providing a family-friendly experience that has come to define the town for visitors. This unique experience requires protection through zoning that restricts the area from being developed as residential condos or hotels. The appearance of this area was also identified as an opportunity for improvement.

### Highway & Appearance

There is a desire for upgraded appearance requirements for the most visible part of town - Lake Park Blvd - including enhanced development and landscaping standards. Reducing driveways to improve safety and increasing pedestrian connectivity is desired. Across the town, burying electric lines and tree preservation are also concerns.

### Pedestrian & Cyclist Connectivity

Carolina Beach is engaged in increasing connectivity and upgrading pedestrian and

## Significant Themes

Highway and  
Appearance

Stormwater and  
Flooding

Redevelopment

Environment

Healthy Year-  
round Economy

Traffic  
Congestion and  
Parking

Sea Level Rise  
and Erosion



cyclist facilities throughout town. Many groups expressed a desire for even more of these projects. Although not needed everywhere, residents welcome enhanced pedestrian and multi-use facilities along major corridors and between key destinations.

### **Parks and Recreation**

Abundant access to recreation is valued and helps define the family-friendly character of the town, and include state, public, and private recreational opportunities. Expansion of recreational opportunities is welcome, including passive use of the MOTSU buffer area.

### **Housing Affordability**

There is a lack of affordable housing and it seems that the most profitable development project is residential in nature. Second homes or vacation rental properties are in high demand. Standalone residential apartment or condos will displace nonresidential uses if left unchecked, which changes the character and balance of land uses. The many short-term rentals are also a concern.

### **Healthy Year-round Economy**

Although tourism is recognized as a strong economic driver, the residents are proud to have the daily-life services on the island

that nearly eliminate reliance on mainland facilities. A desire exists to strengthen the non-tourism economy as a way to diversify the local tax base and maintain livability year round.

### **Sea Level Rise and Erosion**

Sea levels have been rising and will continue to do so. Erosion from the inlet and along the north end requires regular and costly beach nourishment. Much of the town is within areas that are potentially vulnerable to storm surge from hurricanes.

### **Environment**

The natural environment is the key to the quality of life in Carolina Beach. Tree preservation and water quality are important. Access to environmental amenities and preservation of natural resources, including wetlands and dunes, is essential.

### **Growth Outpacing Infrastructure**

Aging infrastructure and maintenance costs are recognized as a potential threat to the town's viability. The Town's capital improvement plan continually prioritizes repairs and investments. New facilities (especially sidewalks and the greenway) have been welcomed, but some residents voiced concern about the accrued costs of maintenance.



# Community Vision and Goals

The vision and goals started with the Steering Committee's evaluation of the previous land use plan's efforts and were reviewed and revised by the broader community at the public open house workshop on February 6, 2019 in Town Hall.

## *Community Vision Statement*

Establishing a clear vision statement for your community helps organize people around future actions and provides a touchstone when evaluating decisions and priorities.

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*Carolina Beach is recognized for balancing its past and unique coastal attributes and challenges with integrity and enterprise. We will remain an attractive and safe family-oriented community, with a healthy ecosystem, quality recreational opportunities and a vibrant business environment that will connect families, residents, and visitors now and into the future.*

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## Community Goals

Goals are specific actions that are tied to the overall vision statement, and provide direction for the community on how to achieve its vision.

### Character & Appearance

**Goal 1:** Enhance functionality and appearance of major thoroughfares and gateways.

**Goal 2:** Retain the traditional character and density of single family neighborhoods.

**Goal 3:** Promote and beautify the town center as a focal point, including increasing connections to the surrounding community.

**Goal 4:** Continue to reduce overall nonconformities in the town, but also respect existing uses and entitlements, and the rebuilding of structures.

### Natural Resources

**Goal 5:** Preserve natural beauty through the protection of unique habitats, water quality, wetlands, and mature trees.

**Goal 6:** Protect barrier dunes, beaches, floodplains, and coastal features, recognizing their natural storm protections.

**Goal 7:** Reduce and mitigate the negative effects of stormwater and flooding.

### Economy

**Goal 8:** Sustain a healthy and vibrant locally-oriented economy that respects tourism.

**Goal 9:** Enhance and promote family-oriented businesses and services.

### Connectivity & Mobility

**Goal 10:** Enhance mobility for pedestrians, bicyclists, and non-traditional vehicles.

**Goal 11:** Reduce traffic and parking congestion and ensure adequate access for emergency services.

### Recreation & Access

**Goal 12:** Balance the use and accessibility of Myrtle Grove Sound, especially among commercial, sport-fishing, recreational, and transient boaters.

**Goal 13:** Maintain and increase the accessibility of public trust waters and public recreational facilities and assets, especially the beach, waterfront, parks, and downtown.



# PART 3

## Existing & Emerging Conditions





## Population, Housing, & Economy

### Population

Carolina Beach has grown steadily over the past 50 years.

### Population Estimates and Projections

The US Census reports the town's population as 4,701 and 5,706 in 2000 and 2010, respectively.

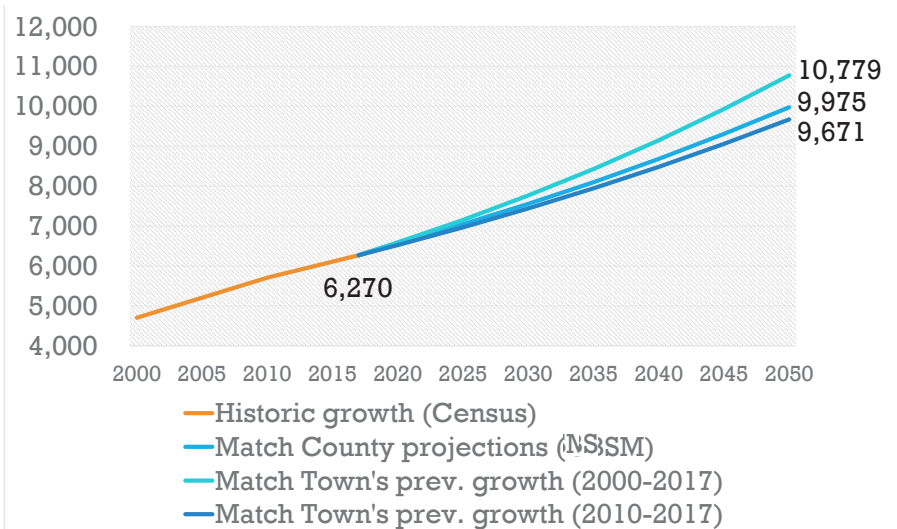
The year-round (permanent) population was reported to be 6,270 in 2017 (2017 American Community Survey, 5-year estimates). By 2050, the town may add approximately 4,000 year-round residents if growth continues to match the county rate projected by the

NC Office of State Budget and Management projections.

Seasonal (visitor, vacation, and part-time resident) population was estimated based on two methods: water usage rates and overnight lodging room and occupancy data.

### Population Estimate and Projections.

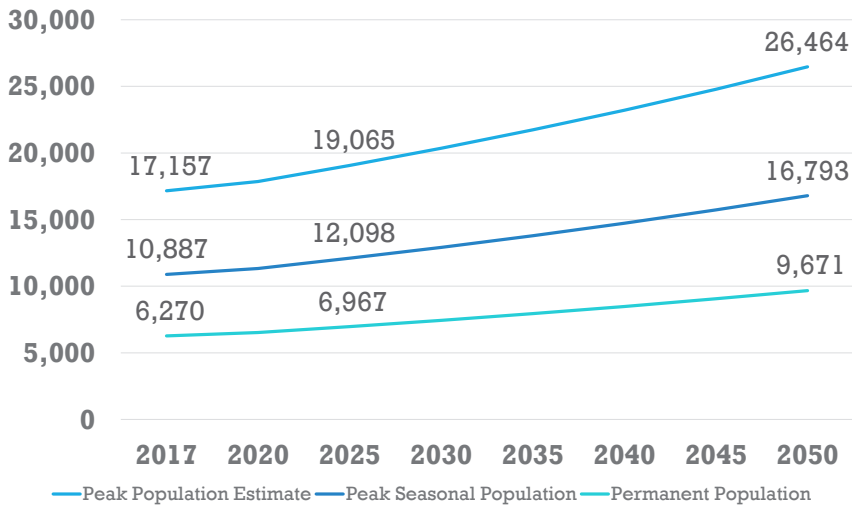
(Base data from US Census and NC Office of State Budget and Management (OSBM))



## Part 3: Existing & Emerging Conditions

### Peak Seasonal Population Estimates and Projections, using water usage rates and overnight lodging occupancy.

(Data from US Census, NC OSBM, and the Town)



Using the average of the two methods, the peak seasonal population is projected to be as much as 74% higher than the permanent population. That figure does not account for day-trippers to the island. This method projects a peak seasonal population of 10,887

as a baseline, to which a 1.36% annual growth rate is applied (to match the most recent growth rate from 2010-2017) to determine peak seasonal population projections for the planning period. This yields a peak seasonal population estimate of 16,793 in 2050. More information on these calculations can be found in the Appendix.

### Demographic Characteristics

The age distribution in Carolina Beach is predominantly individuals aged 45-64 (32%), followed by 20-44 (29%), 0-19 (22%), and 17% aged 65 and older. The

largest change in any cohort has occurred with those aged 65 and older, with 141.3% increase in this age group between 2010 and 2016. The Median Age is 44.2 (2010 Census, 2016 ACS 5-year Estimates)

## Definitions for Understanding Population Projections

### Peak Population

Permanent plus seasonal population. This is an approximation of the planning area's population on a "typical" peak day during the high season.

### Peak Seasonal Population

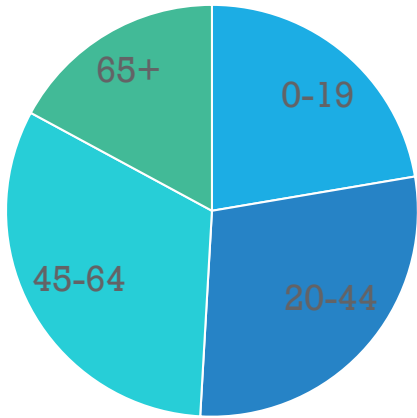
Persons who are temporary residents in the planning area, such as tourists and vacationers, but who normally reside in another location; does not include day-trippers.

### Permanent Population

Persons who usually reside in the planning area, year-round.



**Age distribution (2016) and % Change by Age Group (2010-2016)**  
 (Data from US Census and 2016 ACS 5-year estimates)



**+31.9%** for ages 0 to 19  
**-9.4%** for ages 20 to 44  
**-4.4%** for ages 45 to 64  
**+141.3%** for ages 65+

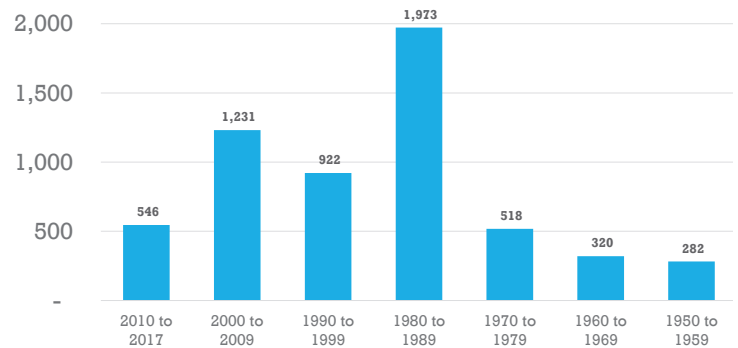
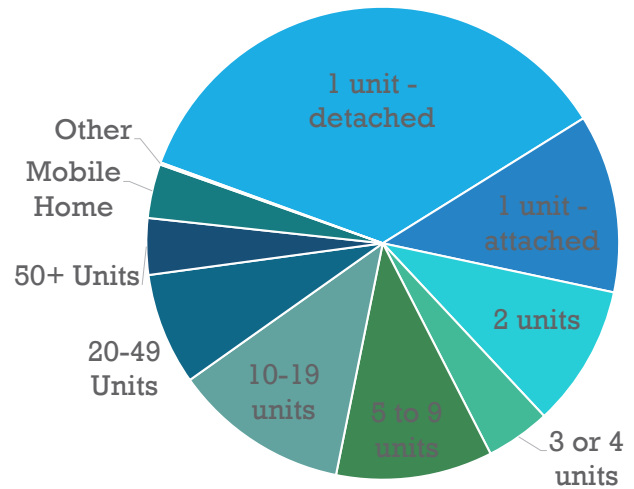
The Median Household Income increased 62% from an average of \$37,662 in 2000 to \$61,171 in 2016. Family poverty rate was reported as 13.5% in 2016 (2000 Census, 2010 Census, 2016 ACS 5-year Estimates).

Home ownership rates have seen a decline in the past two decades. Rates of home ownership went from 65.7% in the year 2000 to 54.7% in 2016 while rental rates have increased by 45.3% over the same time period (2000 Census, 2016 ACS 5-year Estimates). Nearly 40% of occupied rental units in Carolina Beach are paying more than 35% of household income on rent (2016 ACS 5-year Estimates).

### Housing

The median home value of owner occupied units in Carolina Beach is \$320,200 - 66% higher than the state's median (2016 ACS

**Housing by Type (2016) and Distribution of Housing Units by Year Built 1950 to the present**  
 (Data from US Census, ACS, and the Town)



5-year Estimates). Of the 5,492 dwellings 34.2% of the housing units are located in dwellings of 5 or more units. Single-unit detached structures make up 35.6% of the housing stock. Mobile homes make up 3.7% of the housing units. The majority of homes were built between 1980 and 1989 (33.0%) followed by 20.6% between 2000 to 2009 (2016 ACS 5-Year Estimates). From 2010 to 2017, 546 units were constructed. (Town of Carolina Beach Planning Dept, 2018). With few vacant parcels remaining, the town is at a time where redevelopment is the rule rather than the exception.

## Part 3: Existing & Emerging Conditions

Vacant housing makes up 54.2% of the housing units within the Town. The 2,979 vacant units include occupancy status of persons who have a typical residence elsewhere. While vacant units increased from 1,790 to 2,939 between the 2000 and 2010 Decennial Census, the 2016 ACS Estimate shows only a slight increase to 2,979 units.

### Rental Housing

The number of vacant housing (for seasonal, recreational, or occasional use) has doubled since 2000, and is currently 45% of housing units in the town.

Source: ACS 2016, Census data 2010.

Employment by Industry (Residents of Carolina Beach)	#	%
Educational services, and health care and social assistance	626	21.1%
Retail Trade	373	12.6%
Arts, entertainment, and recreation, and accommodation and food services	341	11.5%
Professional, scientific, and management, and administrative and waste management services	302	10.2%
Construction	263	8.9%
Other services, except public administration	205	6.9%
Public administration	191	6.5%
Finance and insurance, and real estate and rental and leasing	182	6.1%
Manufacturing	176	5.9%
Transportation and warehousing, and utilities	145	4.9%
Wholesale Trade	76	2.6%
Information	57	1.9%
Agriculture, forestry, fishing and hunting, and mining	24	0.8%

2016 ACS 5-Year Estimates

### Local Economy

The majority of residents living in Carolina Beach are employed in Educational Services, Health Care and Social Assistance (21%), followed by Retail Trade (12%). Since 2000, the Information, Finance, and Transportation, Warehousing, and Utilities sectors have seen the highest percentage increases in employment while individuals employed in the Construction sector have experienced a reduction of approximately half (2010 Census, 2016 ACS 5-Year Estimates).

Employment data taken from Esri's CensusOnTheMap, reports 2,811 individuals primarily employed within the Town. The economic activity sectors within Carolina Beach are categorized below.

Employment by Industry (Within Carolina Beach)	#	%
Health Care and Social Assistance	387	16.5%
Retail Trade	317	13.5%
Accommodation and Food Services	311	13.3%
Educational Services	209	8.9%
Professional, Scientific, and Technical	161	6.9%
Construction	143	6.1%
Public Administration	140	6.0%
Administration & Support, Waste Management and Remediation	124	5.3%
Manufacturing	89	3.8%
Wholesale Trade	81	3.5%
Finance and Insurance	73	3.1%
Real Estate and Rental and Leasing	62	2.6%
Information	61	2.6%
Other Services (excluding Public Administration)	58	2.5%
Transportation and Warehousing	44	1.9%
Arts, Entertainment, and Recreation	37	1.6%
Management of Companies and Enterprises	26	1.1%
Utilities	20	0.9%

2015 CensusOnTheMap

## Commuting

The mean travel time to work for residents of Carolina beach is 28.2 minutes. The majority commute by driving alone. The majority of those employed in Carolina Beach commute into the Town while a smaller number are both employed and living within the Town. Approximately 8% of people in the town work from home (2017 ACS 5-yr est.). Conversely, of those living in Carolina Beach that are employed, over 90% commute outside of the Town to their place of employment.

Commute to Work	#	%
Car, truck or van, drove alone	2,108	76%
Car, truck or van, carpoled	212	8%
Walked	128	5%
Worked at home	111	4%
Other means	66	2%
Public transportation	53	2%
Ferryboat	53	2%
Bicycled	53	2%

2016 ACS 5-Year Estimates



*Bicycling and walking are popular means of traveling to destinations in and around Carolina Beach for commuting, errands, and recreation.*

### Natural Systems

The quality of life of residents and visitors of Carolina Beach is inextricably linked to the area's natural systems and one of the primary purposes of a CAMA Land Use Plan is to establish an integrated program capable of rational and coordinated management of coastal resources. Identification and recognition of Areas of Environmental Concern (AECs) is critical to the plan.

#### Areas of Environmental Concern

AECs are areas of natural importance designated by the NC Coastal Resources Commission (CRC). The State Guidelines for Areas of Environmental Concern (15A NCAC 7H) require that local land use plans give special attention to the protection of appropriate AECs because of their environmental, social, economic, and aesthetic value. Four categories of AECs have been established:

- » **Estuarine and Ocean System:** This system is the coast's broad network of brackish sounds, marshes, and surrounding shores. CAMA permits are required for development in the four subcomponents of this system:
  - **Coastal Wetlands.** These areas are considered to be unsuitable for all development activities and other land uses that alter their natural functions. They are defined as any salt marsh or other marsh subject to regular or occasional flooding by tides, including wind tides and contains one or more of the following plant species: Cord Grass, Black Needlerush, Glasswort, Salt Grass, Sea Lavender, Bulrush, Saw Grass, Cat-tail, Salt Meadow Grass, or Salt Reed Grass.

- **Estuarine Waters.** These areas provide important habitat for a diverse range of shellfish, birds, and other forms of marine wildlife. They are the dominant component of the entire estuarine and ocean system. They provide nursery areas and habitat for a variety of marine and benthic species. Conservation of estuarine waters is usually the highest priority use for these areas. Development activities which are water dependent and require water access and cannot function elsewhere (e.g. simple access structures, structures to prevent erosion, boat docks, marinas, wharves and mooring piling) may be allowed within this AEC.
- **Public Trust Areas.** Public trust areas include coastal waters and the submerged tidal lands below the mean



*Coastal wetland. (Source: Andrea Correll)*



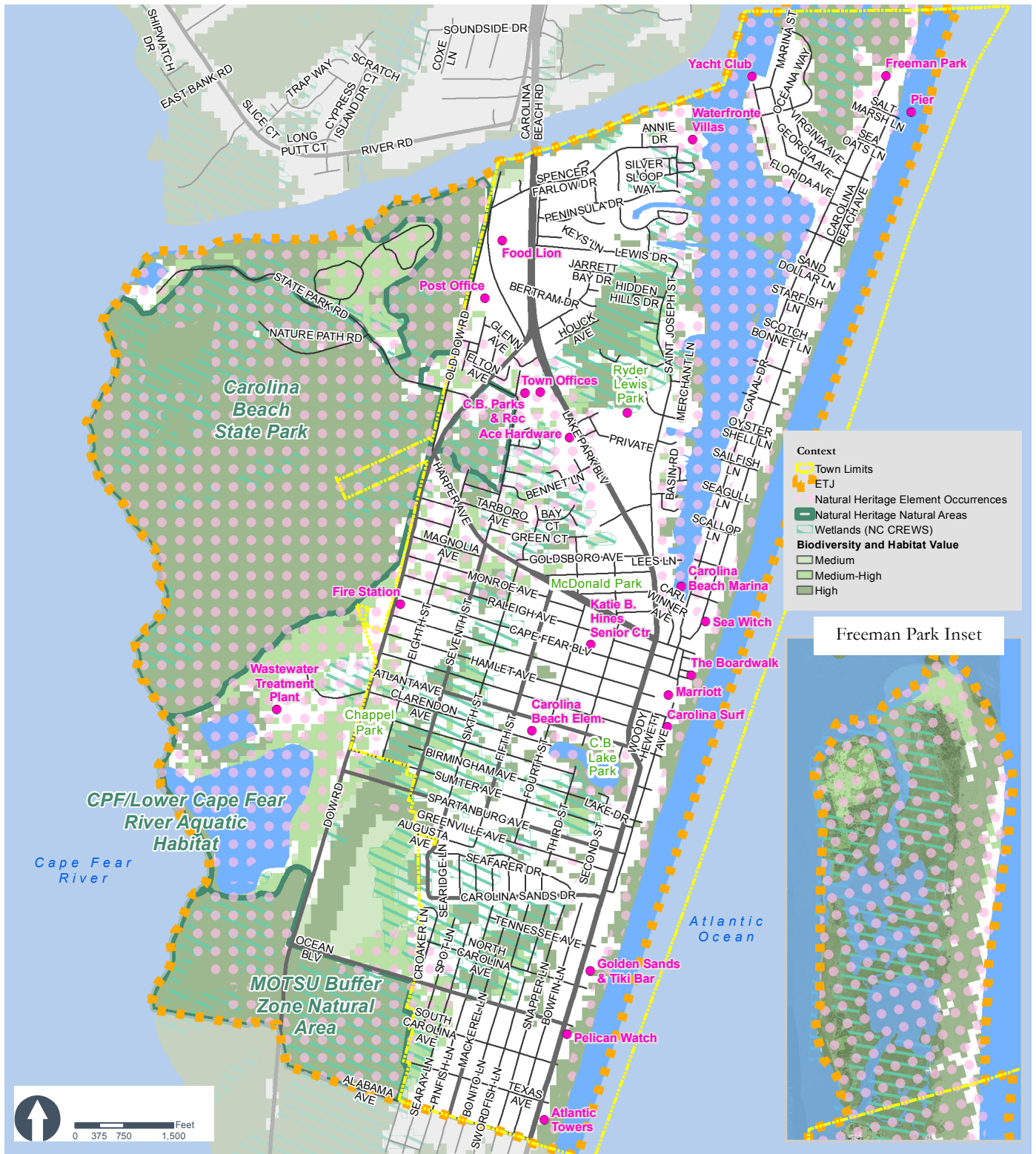
## Part 3: Existing & Emerging Conditions

high water line (MHWL). The water and submerged tidal lands are held in trust for the public to use through such activities as fishing, swimming, and boating. The Town of Carolina Beach public trust waters include all estuarine waters and their tributaries, Snow's Cut, the Cape Fear River, and the Atlantic Ocean. The state's policy is to ensure that the public is able to maintain access to these waters. All development, structures, and land uses that interfere with the public's right to the access and use of these waters is inconsistent with state policy. Structures and activities in public trust areas must not be detrimental to the public trust rights and the biological and physical functions of the estuary. Projects which would directly or indirectly block or impair existing navigation channels, increase shoreline erosion, deposit spoils below normal high water, cause adverse water circulation patterns, violate water quality standards, or cause degradation of shellfish waters are considered incompatible with the management policies of public trust areas.

- **Coastal Shorelines.** The estuarine shoreline is the non-ocean shoreline, extending from the normal high water level or normal water level along the estuarine waters, estuaries, sounds, bays, fresh and brackish waters and public areas (15NCAC 7H.0209). Coastal Shorelines include all lands within 75 feet of the normal high water level of estuarine waters. This definition also includes lands within 30 feet of the normal high water level of public trust waters located inland of the dividing line between coastal fishing waters and inland fishing waters. Generally, development in this area must not cause significant damage to any estuarine resources, must not interfere

with public access to navigable waters or public resources, have limited hard (impervious) surfaces, should preserve natural barriers to erosion, and must take steps to prevent pollution of the estuary by sedimentation and runoff.

- » **Ocean Hazard Areas:** Oceanfront beaches and dunes protect buildings and the environment behind them by absorbing the force of wind and waves. Carolina Beach is situated on a barrier island between the ocean and the mainland. Barrier islands are often subject to significant shoreline changes, high hazard flooding, and are vulnerable to erosion and flooding. The Ocean Hazard areas at Carolina Beach includes the following:
  - Ocean Erodible AEC
  - Inlet Hazard AEC
  - Unvegetated Beach AEC
- » **Public Water Supplies:** Protection of fresh (i.e. - drinking) water is vital to human health and economy. Protection of public water supply areas prevents damage to fresh water supplies which are vulnerable to sea-level rise and salt water intrusion. The town's public wells are being actively managed to preserve their capacity, and current consideration is being given to expanding public water supply through desalination.
- » **Natural and Cultural Resources:** These are specific sites designated to receive protection because they contain environmental or cultural resources that are important to the entire state. The CRC formally designates these resources through a nomination process.



*Biodiversity and natural heritage.*

## Part 3: Existing & Emerging Conditions

### *Environmentally Fragile Areas*

#### **Wetlands**

A number of wetlands and specifically managed coastal wetlands rated as "Beneficial," "Substantial," "Exceptional," and "Unrated" are located throughout the planning jurisdiction including:

- » **Pocosin**
- » **Depressional Swamp Forest**
- » **Pine Flat**
- » **Managed Pineland**
- » **Freshwater Marsh**
- » **Salt/Brackish Marsh**

Wetlands cover a large portion of the Planning Jurisdiction, including many developed areas. Many wetlands have been cut over, cleared or disturbed in other ways by human impacts. A number of these wetlands have potential for restoration or increased protection.

There are four broad classifications of Estuarine Shoreline within Carolina Beach, where the water meets the land. Marsh and Sediment Banks are found along the Atlantic Ocean, Cape Fear River and through the majority of Snow's Cut. Modified, and Miscellaneous areas include those where bank stabilization has occurred particularly south of Freeman Park, on the south bank of Snow's Cut, and various sites within the Carolina Beach Yacht Basin.

#### **Prime Wildlife Habitat and Natural Resources**

The planning jurisdiction of Carolina Beach is flanked by substantial natural resource areas. The buffer zone for the Military

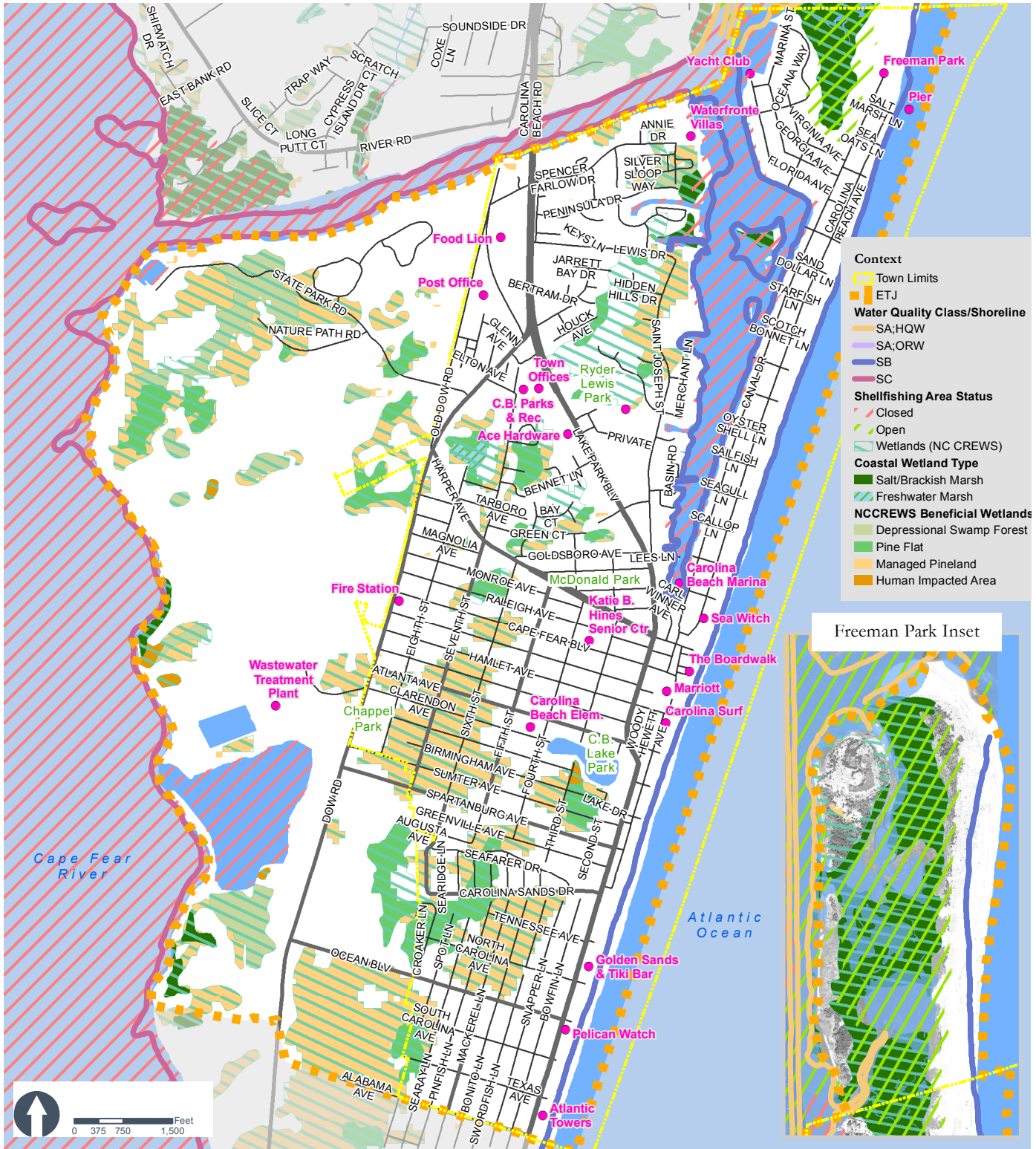
Ocean Terminal at Sunny Point (MOTSU) and Carolina Beach State Park comprise roughly 765 acres. Although the prime forest areas are located in state and federally owned land falling within the Town's planning jurisdiction, the Town of Carolina Beach has zoned these areas as Conservation to preserve and protect their character.

Areas of high biodiversity and quality habitat for flora and fauna are generally found at the water and land interface and in undisturbed natural areas. A large portion of the planning jurisdiction of Carolina Beach contains areas of medium biodiversity or higher, including all coastal marshes and wetlands.

Carolina Beach State Park and the MOTSU contain an area of Exceptional class rating for Natural Heritage Natural Areas. This is an area of special biodiversity significance due to the presence of rare species, unique natural communities, important animal assemblages or other ecological features. These areas are comprised of mainly maritime forests, which are "forests that have developed under the influence of salt spray and that are found on barrier islands or immediately adjacent to estuarine waters". The State Park also has a number of unique wetlands.

Seventy-two Natural Heritage Element Occurrences or "elements of natural diversity" are found within the Carolina Beach planning jurisdiction, in many cases contributing to the excellence rating for the area's Natural Heritage Natural Areas, including:

- » **24 Plants,**
- » **20 Natural Communities,**
- » **1 Animal Assemblage, and**
- » **17 Animals**



Wetlands and environmentally sensitive areas.

## Part 3: Existing & Emerging Conditions

### Endangered Species

Kemp's Ridley sea turtle, Leatherback sea turtle, Red-cockaded woodpecker, and West Indian manatee are all listed as vertebrate species in danger of extinction. The American alligator, Piping plover, Loggerhead sea turtle and Green sea turtle are listed as threatened species meaning they are at risk of becoming endangered within the foreseeable future throughout all or a significant portion of habitat range.

The following vascular plants are listed as endangered: Cooley's meadowrue, Golden sedge, and Rough-leaved loosestrife. The Seabeach amaranth is a threatened species.

A number of additional species within New Hanover County are considered at risk including: Carolina gopher frog, Southern hognose snake, Magnificent rams-horn, Rare skipper, Carolina bishopweed, Raven's seedbox, and the Venus fly trap which is native only to this particular area of the United States and is found within Carolina Beach State Park.

### Primary Nursery Areas

Primary fishing nursery areas are located north of Carolina Beach along Masonboro-Myrtle Grove Sound Area (west side) but these areas are not located within the Carolina Beach planning jurisdiction.

### Shellfishing Areas

Within the planning jurisdiction of Carolina Beach, all waters are classified as closed to shellfishing except the north end marsh system in the ETJ. There are a number of closed shellfish growing areas in the Myrtle Grove Sound area.



*Kemp's Ridley sea turtle, an endangered species*



*Seabeach Amaranth, a threatened species*



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## Part 3: Existing & Emerging Conditions

### Soils, Erosion, and Water Quality

Soil type, erodible areas, and water quality are all factors that contribute to the potential for and limitations to certain types of land uses and activity within Carolina Beach. The primary soil type(s) are sand variants. Like many barrier islands, this area is generally poorly aggregated, well-drained, well-aerated, and highly erodible.

Carolina Beach Inlet was opened by private interests in 1952 and has been used for a borrow source for the US Army Corps of Engineers beach renourishment projects. During the past 50 years the inner and outer segments of the main channel have shifted toward Masonboro Island as much as 475 feet. After opening of the inlet, adjacent oceanfront shorelines along Carolina Beach and Masonboro Island began to erode at rapid rates ultimately leading to a significant landward offset of Carolina Beach. Higher rates of erosion occur on the northern oceanfront side of the island. Between the rock embankment northward along Freeman Park to Carolina Beach Inlet calculated erosion rates exceed 5 feet per year. Areas south of Freeman Park to approximately Starfish Lane experience lower calculated rates of erosion. The chronic erosion is related to the inlet. Oceanfront areas south of Starfish Lane, including the Boardwalk area, have calculated average accretion rates of approximately 2.5 feet per year.

The existing Inlet Hazard Area is currently delineated on both sides of Carolina Beach Inlet. Inlets have been documented to increase nearby erosion or accretion rates. A state-proposed 2019 change could expand the recommended boundary of the Inlet Hazard Area southward to



**Existing Inlet Hazard Area.**

Source: Coastal Resources Commission online mapping tool, 08/01/2018.

approximately Salt Marsh Lane due to expanded recognition of the inlet's influence.

Carolina Beach is in the Cape Fear and White Oak River Basin and contains three surface water classifications. All surface waters in North Carolina are assigned a primary classification by the NC Division of Water Quality (DWQ). The tidal/salt water classifications in the Carolina Beach planning jurisdiction are SC and SB, and there are Outstanding Resource Waters in the Masonboro Island system north of the inlet.

Carolina Beach Estuarine Waters		
Symbol	Description	Location
SA; HQW	Tidal Salt Waters (Commercial Shellfishing; High Quality Waters)	Intracoastal areas between Carolina Beach Inlet and Snow's Cut
SB	Tidal Salt Waters (Primary Recreation)	Oceanfront areas & Carolina Beach Yacht Basin
SC	Tidal Salt Waters (Secondary Recreation - minimal skin contact)	Cape Fear Riverfront areas and Snow's Cut from Carolina Beach Yacht Basin to the Cape Fear River

NC Division of Water Resources (DWR)



## Part 3: Existing & Emerging Conditions

Wastewater and sewer service is available to all of Carolina Beach; there is no need for septic systems. For more information about soils, see the Appendix.

### *Hazards, Storm Surge, and Flooding*

Portions of Carolina Beach are at risk from flooding from major storm events and hurricanes. Over half of the assessed property tax value of Carolina Beach occurs on land within the footprint of the 100-year floodplain. The majority of Carolina Beach is affected by storm surge from a Category 3 Hurricane as indicated by the Sea Lake and Overland Surge from Hurricanes (SLOSH) Model. For a Category 5 hurricane, the modeling indicates that the only area not inundated by storm surge would be a strip of inland parcels along Dow Rd between the Post Office and the Fire Station.

Other areas of stormwater flooding concern include Canal Drive and Florida Street. Concerns about frequent flooding during storm events on Town roads have prompted further investigation and planning.

### *Vulnerability*

A large portion of the inhabited parts of Carolina Beach (i.e. - not state- or federally-owned lands, or Freeman Park) are in regulatory floodplains. Nearly 51% of the assessed value (i.e. property tax) of the town is within the footprint of the 100-year floodplain. This means that a greater than 100-year storm event could potentially damage every structure in that floodplain. The adverse impact to the property values in the town, and subsequently the town's ability to raise funds used to provide services, could be substantial. The age of structures can

also be a factor in determining vulnerability to storms and weather.

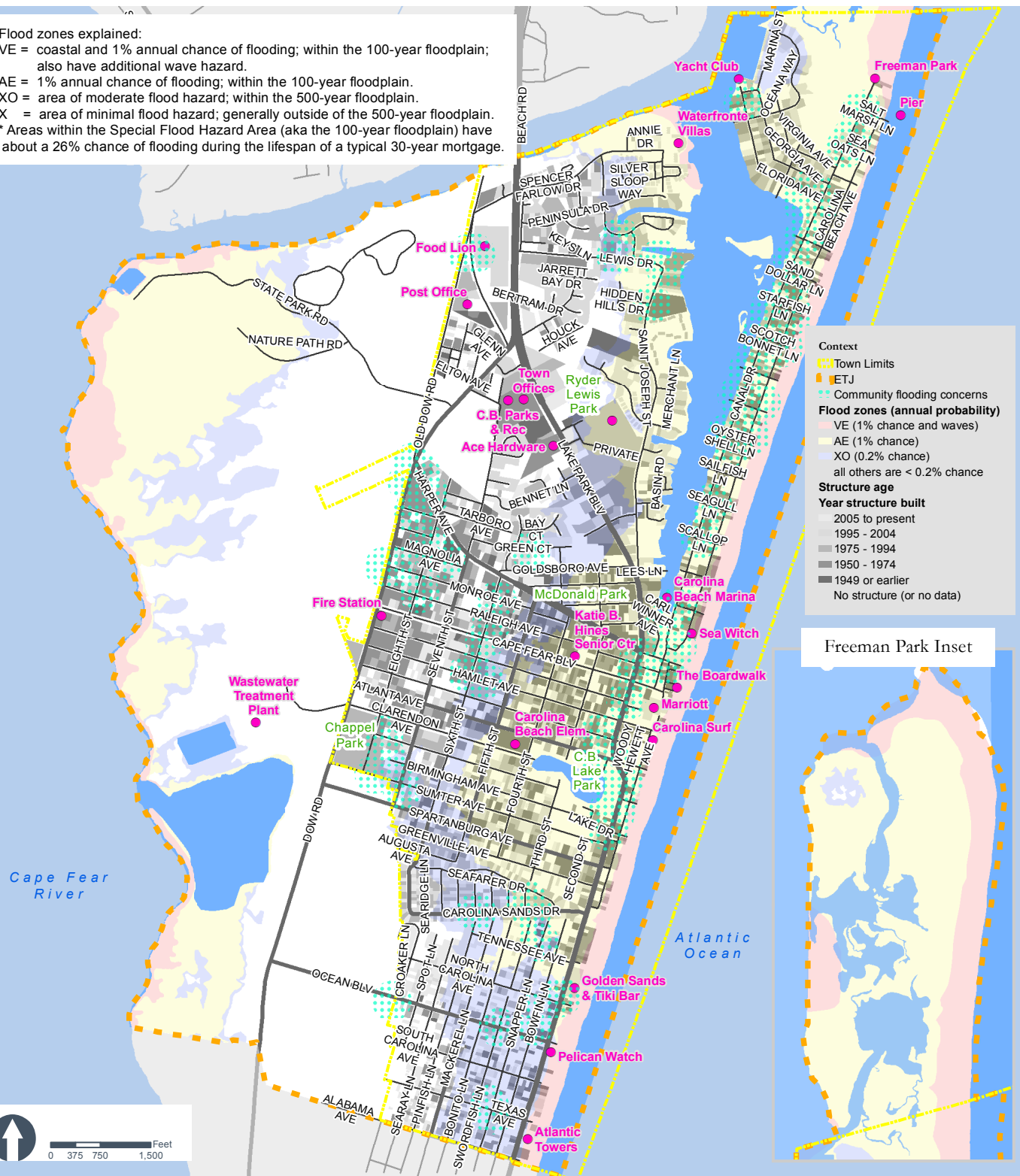
Sea levels are rising faster in North Carolina than other places on the east coast, and are currently projected to rise by a *minimum* of 1 foot by 2060 and a *minimum* 1.74 feet by 2100. Although 2060 is outside the time horizon of this land use plan, these time frames are within the lifespan of any building that is certified for occupancy today, and consideration of potential impacts is prudent.

Currently, the town requires flood-proofing of vulnerable building floors and/or elevation of structures, in accordance with the flood hazard prevention standards of the state. The town also participates in the Community Rating System, which results in greater protection and lower flood insurance rates town-wide. Hazard mitigation strategies are also identified in the most current hazard mitigation planning document (currently the Southeastern NC Regional Hazard Mitigation Plan (2016)).



*The town's Hazard Mitigation Plan.  
Source: NC Division of Emergency Management  
(at <https://em911.nhcgov.com>)*

Flood zones explained:  
 VE = coastal and 1% annual chance of flooding; within the 100-year floodplain; also have additional wave hazard.  
 AE = 1% annual chance of flooding; within the 100-year floodplain.  
 XO = area of moderate flood hazard; within the 500-year floodplain.  
 X = area of minimal flood hazard; generally outside of the 500-year floodplain.  
 \* Areas within the Special Flood Hazard Area (aka the 100-year floodplain) have about a 26% chance of flooding during the lifespan of a typical 30-year mortgage.



Flood zones, community flooding concerns, and primary structure age.

## Part 3: Existing & Emerging Conditions

The North End community along Canal Drive has been experiencing high (king) tide flooding along portions of Canal Drive. A committee has been identified to recommend mitigation actions or improvements.

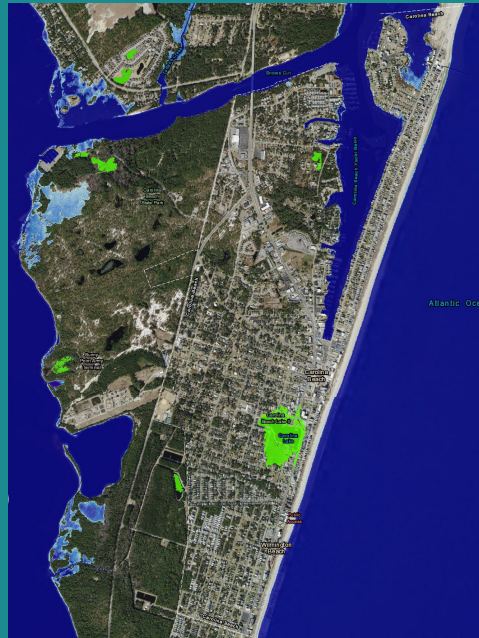
Currently the town coordinates with the state and federal governments for beach nourishment to replenish sand washed away through typical coastal processes as well as the occasional, more intense storms and hurricanes. Nourishment occurs approximately every three years and requires millions of dollars. The town intends to continue the beach nourishment program as needed.

Reducing erosion through armoring with hard structures (sea walls or rocks) helps preserve assets in the near term, but also

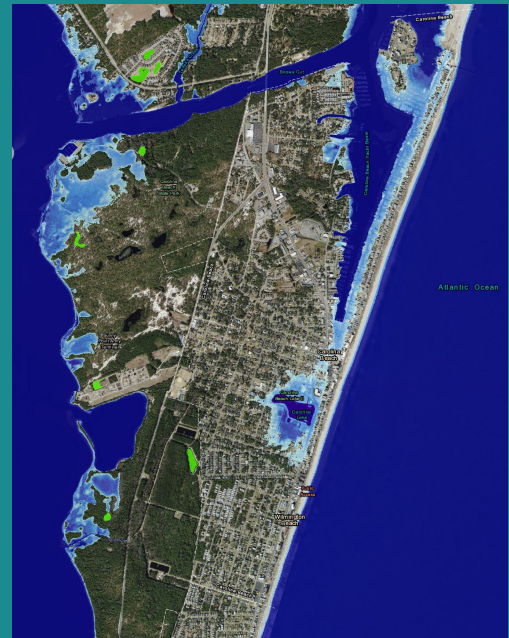
may further enhance localized erosion of the beach and natural features that residents and visitors value, possibly even reducing public access opportunities. This is particularly of concern closer to the inlet and Freeman Park, where erosion is higher. The town will continue funding and implementing storm damage prevention projects, which remains a community priority.

### Sea - Level Rise Projections

Unless mitigating actions are taken, NOAA projects that sea level rise will cause chronic inundation of some properties, with major impacts possibly occurring as early as 2060. Though 2060 is beyond the horizon of this plan, it is relevant to long-range decision-making.

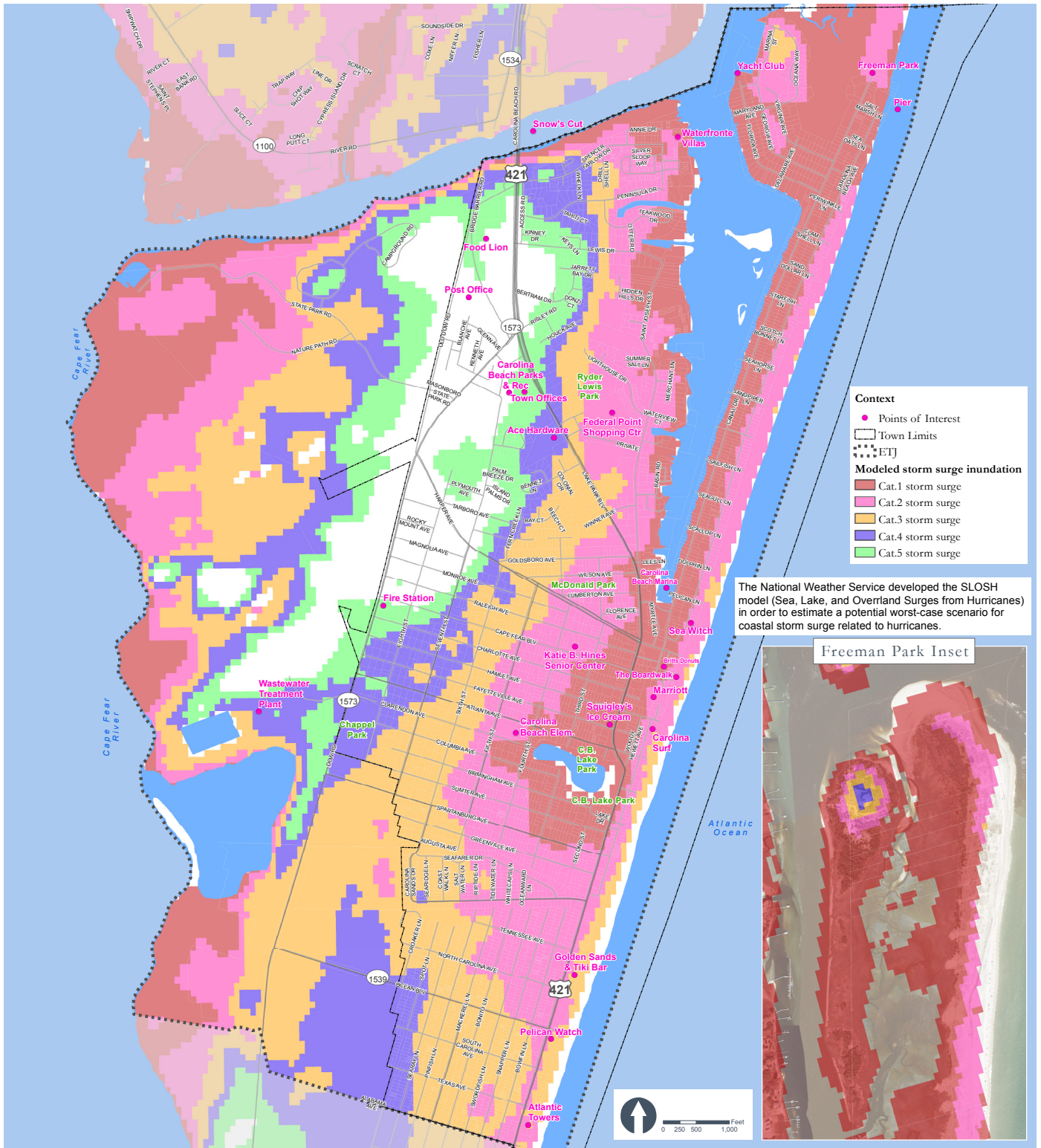


**Intermediate Scenario:** Seas are 1.87 feet higher by 2060 (1' rise shown)



**High Scenario:** Seas are 3.67 feet higher by 2060 (4' rise shown)

Source: NOAA Sea Level Rise Viewer (<https://coast.noaa.gov/digitalcoast/tools/slr>)



Modeled storm surge inundation (Source: National Weather Service SLOSH model).

## Part 3: Existing & Emerging Conditions

### Community Facilities

The town provides drinking water, wastewater, and stormwater management.

#### *Public & Private Water Supply & Wastewater Systems*

#### Wellhead Protection Areas and Drinking Water

There are no water supply watersheds located within the Carolina Beach jurisdiction. Carolina Beach maintains 13 public wells that supply drinking water for the Town from the Castle Hayne and Pee Dee aquifers. The town is also investigating the possibility of expanding and protecting public drinking water sources by adding public wells in the MOTSU buffer area, or the addition of a reverse osmosis water treatment facility.

#### Stormwater Systems

Stormwater is managed through standard drains that empty to the sound and Heniker's ditch. Pumps have recently been installed to the newly-dredged Carolina Beach Lake Park that serve to regulate flooding from storms. The town is undertaking measures to regulate sunny day flooding on Canal Drive, which is a very low road subject to regular king tide flooding. A committee has studied the issue and is recommending elevated bulkheads (sea walls) and one-way drain pipes and pumps. Canal Drive is partially built on fill created during the dredging of the sound.

### Wastewater Treatment

The town's wastewater treatment plant is in the buffer area, and plans are in place for expansion of the WWTP in the MOTSU buffer area.

#### *Parks and Open Space*

#### Parks

The residents of Carolina Beach treasure their parks system, and outdoor recreation is abundant. A new park is underway (Ryder Lewis), which will have trails and historic interpretive resources.

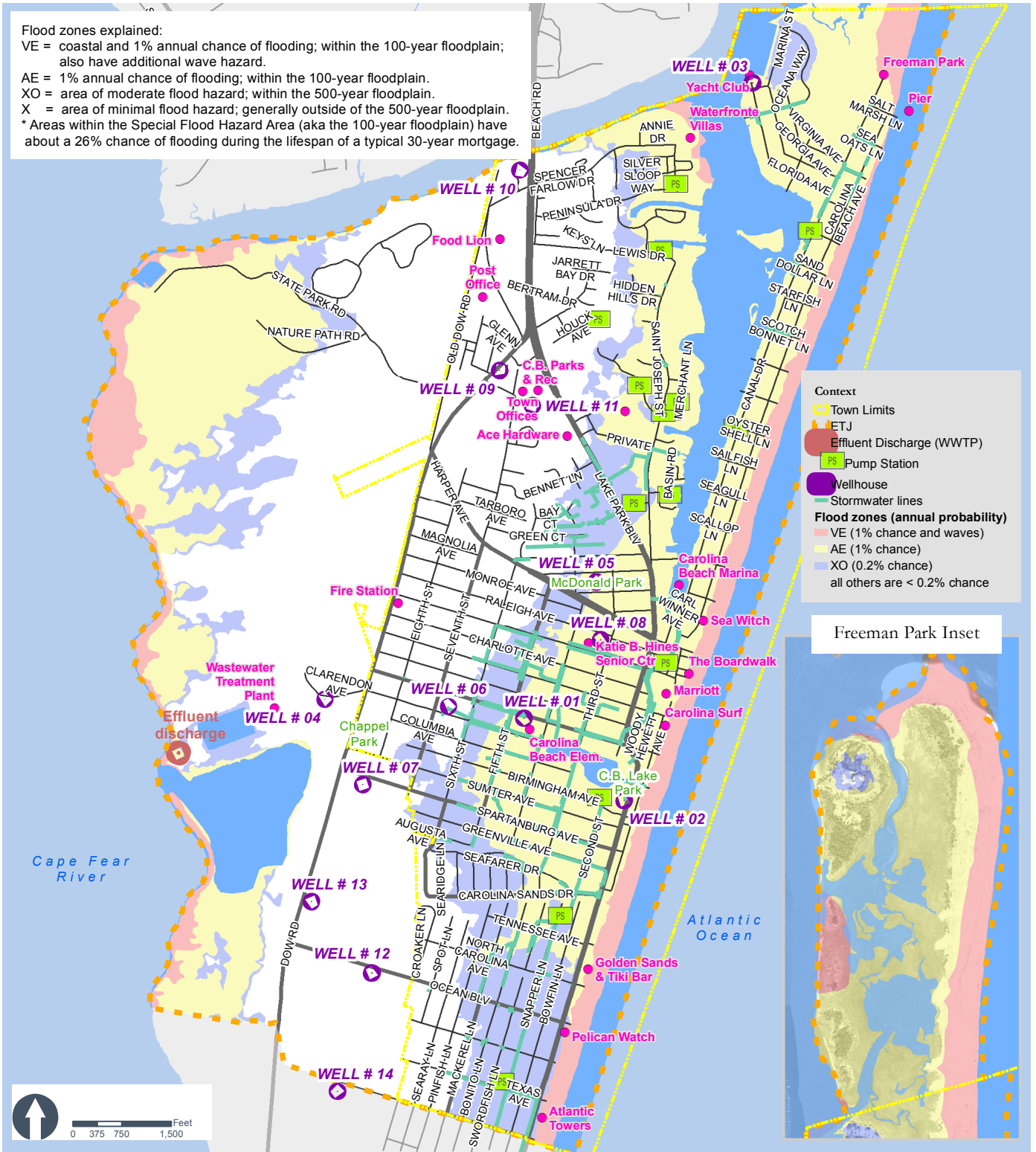
New Hanover County Open Space, in coordination with local governments, manages areas along Snow's Cut, a portion of Freeman Park, and areas in the southwest area of Carolina Beach off Dow Rd for multiple uses, including recreation.

Freeman Park, located at the northern end of Carolina Beach, is a popular destination.



*Mike Chappell Park playground*

Flood zones explained:  
 VE = coastal and 1% annual chance of flooding; within the 100-year floodplain; also have additional wave hazard.  
 AE = 1% annual chance of flooding; within the 100-year floodplain.  
 XO = area of moderate flood hazard; within the 500-year floodplain.  
 X = area of minimal flood hazard; generally outside of the 500-year floodplain.  
 \* Areas within the Special Flood Hazard Area (aka the 100-year floodplain) have about a 26% chance of flooding during the lifespan of a typical 30-year mortgage.



*Public utilities and flooding vulnerability*

## Part 3: Existing & Emerging Conditions

Enforcement of proper use of the property has been a recent priority for the Town. The site is privately owned, and identified as high quality conservation and wildlife habitat, including shellfish. Active public management of this land as a conservation and recreation resource is a priority.

### Beaches and waterways

The town provides many public access points to the ocean and waterways, including the sound. The State Park provides good access to the Cape Fear River. These are well-utilized and prized assets in the community.

### Greenways and Trails

The town's recent construction of the Island Greenway has been well received, and all intentions point toward continuing to expand greenway and trail infrastructure. A general desire exists to have Kure Beach extend the greenway to Fort Fisher, the aquarium, and the ferry. Extension of pedestrian infrastructure across the bridge over Snow's Cut is also big desire, and will likely involve coordination with NCDOT.



*The recently constructed Island Greenway is a hit with residents and visitors*

## Other areas

### Military Ocean Terminal Sunny Point (MOTSU)

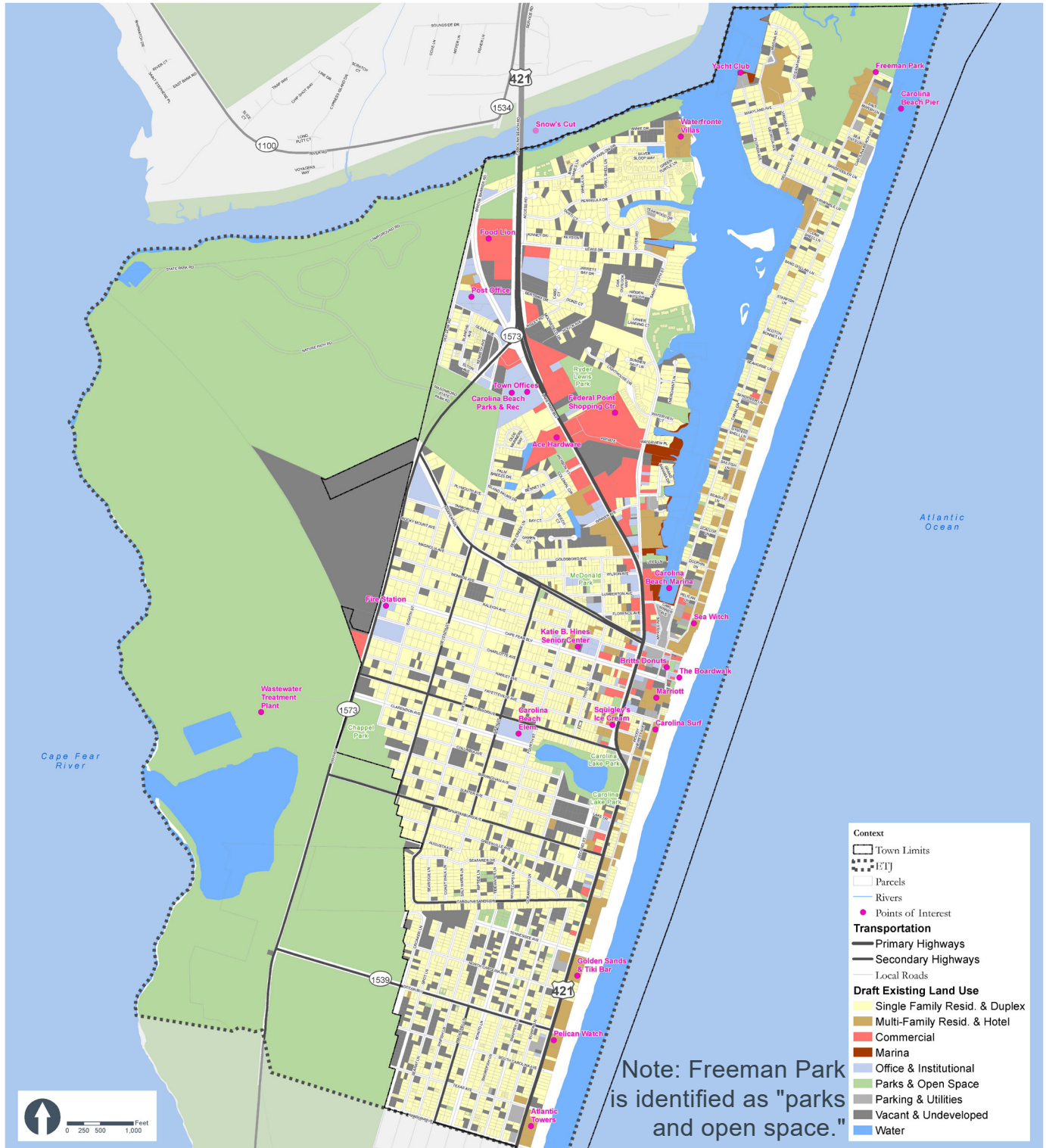
The largest military terminal in the world is located just outside of the ETJ. Because it is the Army's primary east coast deep-water port and one of a handful of Department of Defense terminals equipped to handle containerized ammunition, it serves as a transfer point between rail, trucks, and ships for the import and export of weapons, ammunition, explosives, and military equipment for United States Army.

There are 689 acres of land in the ETJ that are regulated by the existing MOTSU Buffer/Blast Zone. The MOTSU Joint Land Use Study (JLUS) is currently being conducted to protect the continued operation of its military facilities while also accommodating the growth in population and tourism in the area. Outcomes could include allowing new uses in the buffer area on the island such as public utilities expansion and recreation.



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# Part 3: Existing & Emerging Conditions



Existing Land Use

# Existing Land Use & Development

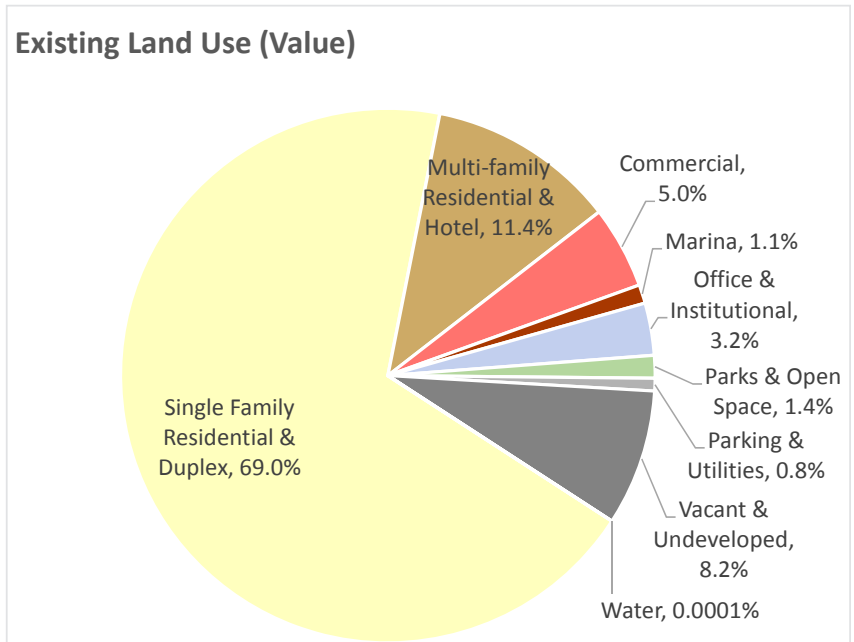
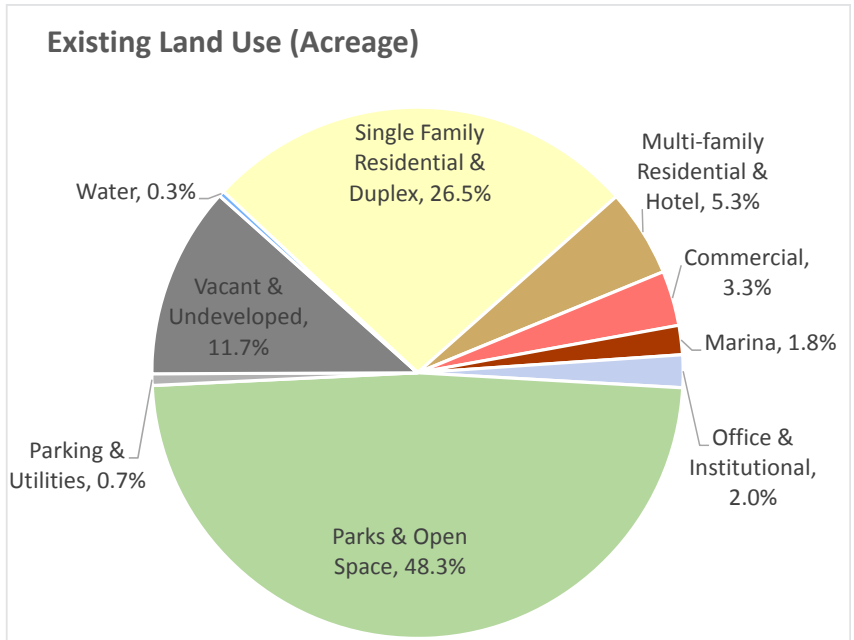
Overall, Carolina Beach is primarily composed of residential neighborhoods organized around the commercial corridor of Lake Park Blvd, and open spaces such as the state park, sound, and beach. The central business district contains a mix of all land use categories with several of the town's iconic restaurants, hotels, and the new boardwalk. The majority of land area for Commercial and Office & Institutional uses is clustered on North Lake Park Blvd. Multi-family Residential and Hotels are primarily located along the oceanfront or within the first two blocks from the ocean.

## Existing Land Use Patterns

Nearly half of all land within Carolina Beach's jurisdiction functions as Parks & Open Space (48.3%), primarily due to the state and federal lands. Single Family Residential and Duplexes constitute 26.5% of the total land area. Of the remaining area, nearly half is vacant or undeveloped while the other half is split between Multi-family Residential and Hotel; Commercial; Office & Institutional; and Marinas.

## Existing Land Value

Single Family Residential and Duplexes account for nearly 70% of the Town's



assessed value (which is a proxy for tax base). Considering the low ratio of year around residents to housing stock, this information further highlights the impact rental and vacation housing has on the community's character and economy.

## Part 3: Existing & Emerging Conditions

### Historic, Cultural, & Scenic Areas

The Town and community have roots back to the 19th century. A number of archaeological and historic sites are found within Carolina Beach due to its rich history. Many buildings date back to pre-World War II. Notable historic sites include the Boardwalk and 17 historic points of interest. These include various buildings that have been plaqued through the Federal Point Historic Preservation Society, North Pier and Center Pier. The Joy Lee Apartment Building and Annex is included in the National Register of Historic Places. Sugarloaf Civil War Earthworks is being developed as a historic site within Carolina Beach State Park. There are no historic districts located within the town's jurisdiction.



*Carolina Beach State Park entrance.*

### Transportation Systems

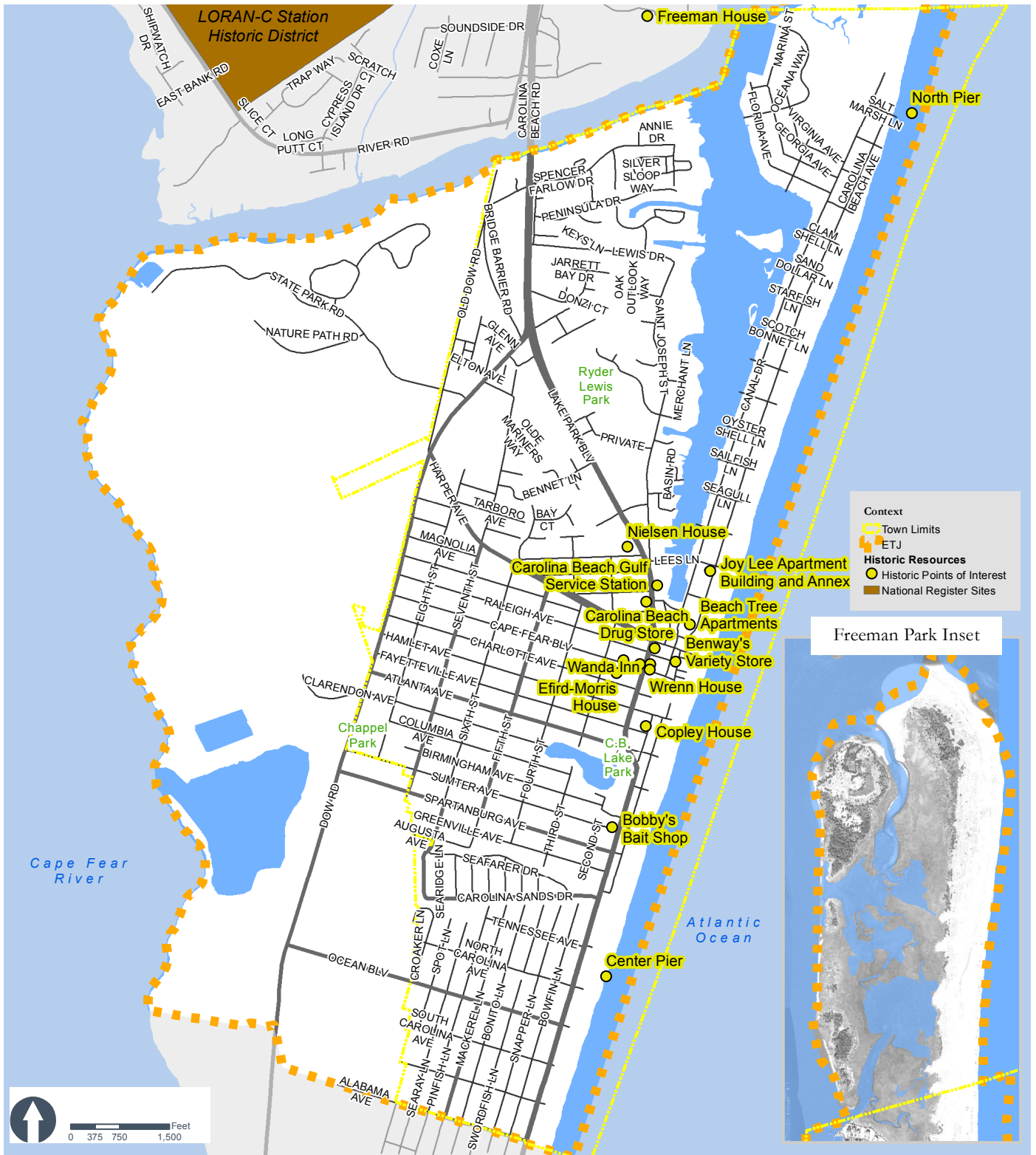
Carolina Beach has made a commitment to creating a more balanced and multi-modal transportation system for its citizens and visitors. Dow Road and Lake Park Boulevard serve as primary transportation facilities, and the town continues to make progress in the planning, design and construction of numerous projects to increase the safety and visibility of these modes while accommodating motorized traffic on Town maintained roads and negotiating improvements on NCDOT roadways to the extent possible.

#### Recent improvements

- » Implemented two right-turn lanes on Carl Winner Avenue outbound to US 421 northbound with expanded storage bays.
- » Completed 1.2 mile Island Greenway from Mike Chappell Park to Alabama Ave.
- » Completed a multi-use-path along Cape Fear Blvd from 3rd St to Dow Rd.
- » Completed over a mile of new sidewalks in the central residential areas as part of



*Inside Carolina Beach State Park.*



**Cultural and Historic Resources.**



the Phased Infrastructure Improvement Project.

- » Carolina Beach Avenue North and Canal Drive have both been established as two way traffic streets to promote improved traffic flow.
- » Pedestrian activated rapid flashing beacons have been installed at the following high visibility crosswalks: Hamlet Avenue/Lake Park, Atlanta/Lake Park, Carolina Sands/Lake Park, Tennessee/Lake Park, Ocean/Lake Park, Alabama/Lake Park, Dow Road/Harper, Sumter Avenue/Island Greenway, Spartanburg Avenue/Island Greenway
- » All sidewalks have been replaced in the area of the Phase 1A and Phase B Infrastructure projects.

## Planned Improvements

A number of multi-modal facility improvements are underway in Carolina Beach. A number of these projects are recommended within the existing bicycle and pedestrian plans (see Appendix) along with additional improvements:

- » **N. Lake Park Boulevard Corridor:** the Town is considering 5-lane and one-way couplet options to increase connectivity and mobility for all travel modes while improving congestion
- » **Harper Ave Streetscape Project:** Sidewalk, multi-use path, median, two-stage mid-block crossing improvements, and angle parking between Dow Rd and US 421/South Lake Park Road. The project is in design phase and construction is anticipated in late 2019/early 2020.
- » **Pedestrian Crossing Improvements:** Pedestrian activated flashing beacons have been installed at Hamlet Avenue and North Lake Park Boulevard.

Staff is also actively coordinating with NCDOT to implement improvements that will increase safety and mobility for pedestrians, bicyclists and golf cart drivers on major thoroughfares within the Town on NCDOT maintained roadways:

- » **Lake Park Boulevard and Winner Avenue:** Crosswalk and Sidewalk Improvements
- » **Lake Park Blvd & Hamlet Ave:** Crossing and Safety Improvements
- » **Lake Park Blvd and Atlanta Ave:** Crossing and Safety Improvements
- » **South Lake Park Boulevard:** Multi-use Path
- » **Dow Rd and Harper Ave:** Crossing and Safety Improvements
- » **Lake Park Blvd and Cape Fear Blvd:** Traffic Calming, Crossing and Safety Improvements



*Newly installed Rectangular Rapid Flashing Beacons (RRFBs) were installed to improve pedestrian and bicycle safety and driver yielding compliance on Island Greenway crossings (Photo credit: VisitNC)*

# PART 4

## Future Land Use





Although the Land Suitability Analysis that was performed (see appendix) did help guide the creation of the **Future Land Use Map (FLUM)**, it was not the only guiding force. Community input and preferences, previous infrastructure investments and commitments, environmental constraints, and other factors influence the designation of the Future Land Use character areas that will shape the town's future. Environmental factors and projected future conditions also contributed to the arrangement of the proposed character areas.

The FLUM represents the community's vision for the future and will be one of the factors that guides future rezoning or permit issuance decisions by local decision makers. A FLUM is also valuable for communicating public investment priorities to the private sector development community. Higher intensity character areas in the FLUM can be expected to have sufficient public infrastructure and service investments to support the activity levels shown, while other areas

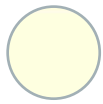
may experience less growth or infrastructure support.

The FLUM does not rezone properties, prevent rebuilding, take property, or create a nonconformity. It is the explicit desire of the community that the FLUM not prevent the possibility of constructing a single family home or rebuilding a structure, and the FLUM should not be construed to do such. As the FLUM guides the community's slow transition toward its desired future, it is not intended to unduly burden property owners that seek to develop within the regulations of their current zoning district. The FLUM shows the desired, general arrangement of land uses at a point 15-30 years into the future, although a full realization of that vision may not even occur by that point. As town leaders and staff weigh each incremental land use decision, the specifics of the proposals will factor heavily. Its possible that a request is denied, even if it is consistent with the FLUM, simply because the timing is too soon.





# Future Land Use Character Area Descriptions



## **Low Density Residential**

Primarily large-lot, single family detached residential such as many of the town's established neighborhoods. Lots are larger than in other areas; usually ~9,000 sq ft and larger. Generally characterized by low traffic, local streets and pedestrian-scale structures. Smaller lots on occasion. Note: Existing, by-right, entitled, higher intensity uses will continue to be supported in LDR areas, including allowances for rebuilding structures.



## **Medium Density Residential**

Mostly medium-sized lots (min. 5,000 sq ft) with primarily single family detached residences. Smaller-scale, attached residences (two-family homes and townhomes) allowed occasionally if contextually compatible. Some small-scale commercial, restaurants, or offices are encouraged at select locations with good access. Low- to medium-traffic streets with pedestrian facilities.



## **High Density Residential / Light Commercial**

Primarily attached, multi-story residential units (up to four stories) located within walking distance of activity centers and/or the waterfront. Structures are condominiums and apartments, and are often used as vacation and rental units. Streets move automobiles and pedestrians efficiently. Limited commercial may also be acceptable at select locations if the surrounding context is appropriate. Some single family structures may also persist.



# Future Land Use Map and Character Areas



## ***Downtown Business Area***

This is the boardwalk commercial area and central recreation district of town. 3-4 story buildings maintain a pedestrian-scaled environment with active ground floor uses; residential and other uses permitted above. Highly walkable with limited on-street parking.



## ***Mixed Use Commercial***

Higher density area with a mix of uses, within the district and individual buildings. Residential uses allowed only on upper stories; ground floor encouraged to be active. 4-5 story structures possible, unless adjacent to low or medium density residential. Attractive street facades.



## ***Low Intensity Commercial***

Smaller-scale, lower intensity commercial uses that complement the neighborhood or a distinct node of activity. Structures (3 stories max.) have active ground floor uses. Streets serve pedestrians and automobiles; includes on-street parking wherever possible.



## ***Marina Commercial/Industrial Mixed Use***

Water-based commercial, service, and light industrial uses, and sometimes water-related businesses (such as restaurants). These businesses rely on water access, so structures are purpose-built and traditional maritime activities are common.





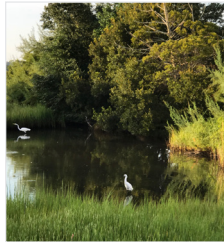
### **Office, Industrial, & Employment**

Mix of office, commercial, light industrial, and employment-generating uses. Typical uses include higher intensity offices, workspaces, indoor manufacturing/fabrication, microbrewery, and freight/transport. 3-4 story purpose-built structures. Streets accommodate truck traffic and balance the needs of pedestrians and automobiles.



### **Recreation, Civic, & Conservation**

Areas not likely to be developed due to location, risk of flooding, environmental resources, or recreational importance. Prevents development in unsuitable areas. Potential uses include boating and related infrastructure (boat houses, docks, lifts, etc.), recreational and commercial water access, parks, beachfront, trails, parking, etc.

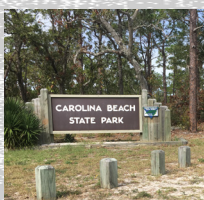


### **Proposed Connections**

These proposed connections serve to link areas of town that have limited pedestrian, bicycle, golf cart, or vehicular connectivity in areas without established right-of-way. Most often, these are simply sidewalks. Exact alignments have not yet been determined, and the intent on this map is only to show a general connection desired between two areas.

# PART 5

## Land Use Plan Management Topics





## CAMA Management Topics and Recommendations

A CAMA-compliant land use plan must address the Coastal Resources Commission's (CRC) management topics to ensure that plans support the goals of the CRC. Each CAMA-required management topic includes a Management Goal and a Planning Objective.

### Public Access

- » **Management Goal:** Maximize public access to the beaches and the public trust waters of the coastal region.
- » **Planning Objectives:** The plan shall include policies that address access needs and opportunities, with strategies to develop public access and provisions for all segments of the community, including persons with disabilities. Oceanfront communities shall establish access policies for beach areas targeted for nourishment.

## PA-1 Maintain marina operations

The marina provides recreational, commercial, and tourist access to the water.

### Action steps (anticipated timeline)

- **PA-1.1** Continue the program (ongoing)



*The commercial fleet at dock.*



## Part 5: Land Use Plan Management Topics

### PA-2 Piers

Carolina Beach used to have three ocean piers, which were significant public access amenities. These were mentioned by stakeholders as regional recreational resources. Any of the public CAMA access points operated by the town could suffice, provided that adequate access and parking are provided. Further study is necessary to gauge public interest, potential environmental impacts, and potential costs.

#### Action steps (anticipated timeline)

- **PA-2.1** Provide political support for rebuilding pier(s) in one or more locations, to facilitate action by nongovernmental actors (ongoing)

### PA-3 Acquire high vulnerability properties to enhance access

The town should continue to seek opportunities to enhance access to public trust waters by acquiring repeated flooding/erosion, high vulnerability, and/or high hazard

properties from willing sellers and turning them into an opportunity for low-investment access points.

#### Action steps (anticipated timeline)

- **PA-3.1** Remain open to opportunities to increase public access through the acquisition of high vulnerability properties (ongoing)

### PA-4 Public moorings

Continue to support public mooring buoys, mooring opportunities, and the transient boating community.

#### Action steps (anticipated timeline)

- **PA-4.1** Continue the program (ongoing)

### PA-5 Maintain and improve public trust water access points

The town currently maintains many beach access points and a public marina in the yacht basin, and the state park provides



*The pier on the North End.*



*Just outside of the mouth of Myrtle Grove Sound.*

access to the Cape Fear River. The town should continue to maintain and improve existing access points, provided that they enhance the natural environment and do not increase the probability for erosion or vulnerability to stormwater or flooding. Increasing the number of access points to the yacht basin and Myrtle Grove Sound should continue. In addition, increasing access opportunities for people with disabilities or mobility impairment, including ADA accessible paths and facilities, should continue to be a priority.

**Action steps (anticipated timeline)**

- **PA-5.1** Assess facilities, opportunities, and condition of public access points, and potential upgrades (Ongoing; recommend semi-annual basis)
- **PA-5.2** Budget for improvements (annually)

**PA-6 Signage and Wayfinding**

Provide a uniform and educational signage

system identifying public trust water access points, safety risks, and hazardous areas. Ensure that signage is compatible with the scenic quality of the area.

**Action steps (anticipated timeline)**

- **PA-6.1** Develop an enhanced wayfinding signage system that catalogs public trust water access points and other coastal features, including high hazard areas (2021-2022)

*Land Use Compatibility*

- » **Management Goal:** Ensure that development and use of resources or preservation of land balance protection of natural resources and fragile areas with economic development, and avoids risks to public health, safety, and welfare.
- » **Planning Objectives:** The plan shall include policies that characterize future land use development patterns and establish mitigation criteria and concepts to minimize conflicts.



*North end beach access with signage.*



*Neighborhood CAMA access to Snow's Cut.*

### LU-1 Implement the Future Land Use Map and character areas

The Future Land Use Map (FLUM) represents the community's vision for guiding rezoning and land use decisions. It is also important to regularly review and update zoning districts and development regulations to help realize that community vision. In all cases, public involvement and restraint are advisable in rezoning (especially upzoning) any properties prior to any actual proposed development plan or other land use action. Community- or district-wide or leapfrog rezonings are inadvisable. If any lot does not meet the standards of the FLUM, such lot should still be developable or rebuildable as a single commercial or residential unit per the allowable regulations of the current zoning district and by-right uses, and in accordance with other Town adopted ordinances.

#### Action steps (anticipated timeline)

- **LU-1.1** Review the Future Land Use Map when deciding rezoning decisions (ongoing)
- **LU-1.2** Review existing zoning districts, dimensional standards regulations, and land development regulations for the potential to implement character area recommendations (nonresidential, mixed use, and residential character areas - update when opportunity presents, at some point in fiscal years 2021-2030)

### LU-2 Canal Drive flooding improvements

Continue investigation for solutions to flooding on Canal Drive. Consider long-term viability and impacts to the Myrtle Grove Sound, yacht basin, and habitat. Ensure that any solutions contribute positively to, or at least have no net reduction in, water quality.

#### Action steps (anticipated timeline)

- **LU-2.1** Assess the problem(s) and potential solutions, working with the established Canal Drive Flooding Committee (2020)
- **LU-2.2** Determine a preferred solution, assess adjacent property owners for any requested improvements that are beyond standard maintenance and replacement costs typically incurred and covered by the Town, and implement (TBD; est. 2021-2030)



*The lake was recently dredged and upfitted with larger pumps to better manage stormwater.*

### LU-3 Maximize Carolina Beach Lake as a stormwater management feature

Carolina Beach Lake was recently dredged to increase its stormwater storage capacity. Pumps were also installed to mitigate local flooding. The lake and associated drainages, including Henniker's Ditch, must continue to be maintained. In the future, steps should also be taken to better predict what challenges future sea level rise may bring to the area and the impact that might have on stormwater management activities. In the short term, development in flood prone areas in and around the lake should be discouraged or prohibited.

#### Action steps (anticipated timeline)

- **LU-3.1** Encourage development around the lake in flood prone areas to implement best practices for drainage and flooding. (2020-2021)
- **LU-3.2** Continue maintenance of Henniker's Ditch and the lake (ongoing)

### LU-4 Maintain Freeman Park operations

Continue to operate and maintain Freeman Park as a recreational resource that preserves environmental assets and character. This environmental resource is of high value and vulnerable to erosion. Protection of the dunes is key. The Park's highest value is as conservation land with public water access. Continue to enforce regulations prohibiting



*Freeman Park is a regional recreational amenity and a state environmental resource.*

activities that irreparably damage the natural state of the land.

#### Action steps (anticipated timeline)

- **LU-4.1** Continue Freeman Park operations (ongoing)
- **LU-4.2** Explore the possibility of beach nourishment projects on Freeman Park (2023)

### Infrastructure Carrying Capacity

- » **Management Goal:** Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of AECs and other fragile areas are protected or restored.
- » **Planning Objectives:** The plan shall include policies that establish service criteria and ensure improvements minimize impacts to AECs and other fragile areas.

### IC-1 Expand public water wells and wastewater treatment facilities

The expansion of public water wells and the wastewater treatment plant are currently being considered for location on the MOTSU buffer area. Expansion in this area is preferred, as it minimizes impact on existing neighborhoods. Desalination facilities may also be an important future component of the town's water provision infrastructure.

#### Action steps (anticipated timeline)

- **IC-1.1** Continue to expand public water and wastewater infrastructure to accommodate desired level for future growth and redevelopment (ongoing)
- **IC-1.2** Continue coordination with MOTSU regarding expansions desired in the buffer area (ongoing)
- **IC-1.3** Continue to require connection to the public water and wastewater system for all development, and continue disallowing septic systems or private wastewater treatment systems (ongoing)

### IC-2 Public parking

Seek opportunities to preserve and expand public parking, and include multi-modal connectivity, and low impact design strategies when constructing new parking facilities. Allow shared parking solutions, especially those that balance time of use. Require innovative

parking lot design that results in net zero runoff and water quality impacts. Continue to actively manage the public parking resource, and remain open to parking decks, if appropriately and centrally located.

#### Action steps (anticipated timeline)

- **IC-2.1** Continue to actively manage the public parking resource (ongoing)
- **IC-2.2** Develop enhanced guidelines for stormwater design and management of parking areas (2020-2023)
- **IC-2.3** Quantify the desire of private businesses to pay for the acquisition of property and construction of public parking (2021-2022)
- **IC-2.4** If support exists, partner with private property owners for



acquisition and construction of public parking areas, based on proximity and likelihood of use by customers, residents, and employees; if necessary and desirable, develop a proportional fundraising method to pay for public parking improvements (TBD)

- **IC-2.5** Expand opportunities for golf cart parking (2025)

### Natural Hazard Areas

- » **Management Goal:** Conserve and maintain the barrier dune system, beaches, flood plains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.
- » **Planning Objectives:** The plan shall include policies that establish mitigation and adaptation concepts and criteria for development and redevelopment, including public facilities, and that minimize threats to life, property, and natural resources resulting from erosion, high winds, storm surge, flooding, or other natural hazards.

### NH-1 Balance the protection of private property with public use of public trust lands (beach, waterfront, etc.)

The beach along Freeman Park and the rock embankment on the North End will continue to face inlet-related erosion as well as natural, weather-related erosion. The rock vetment was installed decades ago and protects properties and assets immediately behind it. The pedestrian connection along the beach at the rock vetment was entirely missing at the beginning of the land use plan update process, and was only restored after the beach nourishment project of February 2019. In some jurisdictions along the coast, properties that are in high hazard erosion areas have been asked to share in the local costs of erosion protection measures.

#### Action steps (anticipated timeline)

- **NH-1.1** Continue to use public funds for the costs of maintaining the rock vetment (ongoing)



*The rock vetment/embankment on the North End protects the properties behind it. These images compare the severe erosion caused by Hurricane Florence in 2018 and the beach following the nourishment project of 2019.*

## Part 5: Land Use Plan Management Topics

### NH-2 Continue beach nourishment

Continue to provide beach nourishment to combat erosion in front of developed properties along the ocean. Evaluation of the costs and benefits should be performed periodically to ensure that this costly procedure continues to have a net gain for the community and not just the properties located in high hazard areas along the oceanfront. Public beach access to nourished areas should continue to be required and provided.

#### Action steps (anticipated timeline)

- **NH-2.1** Continue to plan for beach nourishment in the absence of federal aid, to ensure the program can continue if needed (ongoing)
- **NH-2.2** Implement dune restoration program with sand fencing and grass planting where appropriate (2022)

### NH-3 Maintain Carolina Beach inlet

The inlet is a major local economic driver, and must be maintained regularly to ensure navigable passage. The town should continue to maintain the inlet for recreational and commercial operations.

#### Action steps (anticipated timeline)

- **NH-3.1** Continue maintenance of Carolina Beach inlet and access from Myrtle Grove Sound and the yacht basin (ongoing)

### NH-4 Maintain Snow's Cut

Snow's Cut is an important connection and must be maintained in a navigable state.

#### Action steps (anticipated timeline)

- **NH-4.1** Continue to partner to maintain Snow's Cut as a navigable waterway (ongoing)



*Carolina Beach's February 2019 beach nourishment project on 2.7 miles of beach cost \$7.8 million.*



*Snow's Cut is a major economic, transportation, and recreational natural resource.*

## NH-5 Increase resiliency to flooding

As seas continue to rise, floodplains will expand and flooding events will be more frequent. Increase the community's resiliency to stormwater flooding through enhanced development standards, such as reducing the maximum amount of fill allowed, requiring additional freeboard elevation, and investing in proactive stormwater infrastructure upgrades.

### Nonresidential structure elevation

Recent FEMA flood maps for the area indicate reduced risk of flooding for some properties in the town. There is growing concern that preparing for the federally-mandated minimum flood event may not provide enough protection or security for a community that is extremely vulnerable to flooding, king tides, storm surge, and storms. The town should encourage, incentivize, or require the floodproofing or elevation of nonresidential structures above and beyond the minimum base floor elevation required by FEMA and adopted in the town's flood hazard prevention ordinance.

### Residential structure elevation

In addition to the proper siting of structures, there are also benefits to requiring additional freeboard elevation for residential structures. Any base floor elevation requirement must be balanced by careful consideration of maximum height restrictions and the need for structures to have adequate habitable space; additional accommodations for higher buildings may be necessary.



*An elevated home.*

### Infrastructure elevation

Roads and other infrastructure (lift stations, potable water wells, emergency operations facilities, wastewater infrastructure, etc.) should be identified for additional elevation and armoring so that they can resume post-storm operations as quickly as possible after an event. Not all facilities are proposed for this treatment, but a careful evaluation based on operational and community priority should be conducted.

### **Action steps (anticipated timeline)**

- **NH-5.1** Explore the potential for ordinance update(s) that encourage, incentivize, or require the floodproofing or elevation of nonresidential or residential structures above and beyond the minimum base floor elevation that is required by FEMA (2020-2022)
- **NH-5.2** Explore potential ordinance updates for higher regulation and scrutiny of fill as it relates to stormwater and flooding resiliency (2020-2022)

## Part 5: Land Use Plan Management Topics

- **NH-5.3** Assess and prioritize other infrastructure (roads, lift stations, wells, EOCs and public safety facilities, etc.) for upfits that will make them more resilient to future storm and flooding events (2021-2023); budget for upfits accordingly (beginning 2022 and ongoing)
- **NH-5.4** Continue to seek and implement improvements in development standards which will result in more resilient structures and lower insurance premiums for property owners (ongoing)
- **NH-5.5** Through the Community Rating System, continue to implement the Hazard Mitigation Plan and maintain best practices for emergency evacuations (ongoing)

### Resilient regulation

New York City has developed guidelines for the elevation of structures based on their useful lifespan. While Carolina Beach is certainly not New York City, some lessons and concepts are transferable. The Town could evaluate development standards using NOAA's sea level rise projections (<https://coast.noaa.gov/digitalcoast/tools/slr>) and codify similar standards into the town's development regulations.

**Table 1 – Facilities and components and associated climate change projections**

Climate change projections (time period covered)	Examples of building, infrastructure, landscape, and components grouped by typical useful life
<b>2020s</b> (through to 2039)	<p><i>Temporary or rapidly replaced components and finishings</i></p> <ul style="list-style-type: none"> <li>• Interim and deployable flood protection measures</li> <li>• Asphalt pavement, pavers, and other ROW finishings</li> <li>• Green infrastructure</li> <li>• Street furniture</li> <li>• Temporary building structures</li> <li>• Storage facilities</li> <li>• Developing technology components (e.g., telecommunications equipment, batteries, solar photovoltaics, fuel cells)</li> </ul>
<b>2050s</b> (2040-2069)	<p><i>Facility improvements, and components on a regular replacement cycle</i></p> <ul style="list-style-type: none"> <li>• Electrical, HVAC, and mechanical components</li> <li>• Most building retrofits (substantial improvements)</li> <li>• Concrete paving</li> <li>• Infrastructural mechanical components (e.g., compressors, lifts, pumps)</li> <li>• Outdoor recreational facilities</li> <li>• At-site energy equipment (e.g., fuel tanks, conduit, emergency generators)</li> <li>• Stormwater detention systems</li> </ul>
<b>2080s</b> (2070-2099)	<p><i>Long-lived buildings and infrastructure</i></p> <ul style="list-style-type: none"> <li>• Most buildings (e.g., public, office, residential)</li> <li>• Piers, wharfs, and bulkheads</li> <li>• Plazas</li> <li>• Retaining walls</li> <li>• Culverts</li> <li>• On-site energy generation/co-generation plants</li> </ul>
<b>2100+</b>	<p><i>Assets that cannot be relocated</i></p> <ul style="list-style-type: none"> <li>• Major infrastructure (e.g., tunnels, bridges, wastewater treatment plants)</li> <li>• Monumental buildings</li> <li>• Road reconstruction</li> <li>• Subgrade sewer infrastructure (e.g., sewers, catch basins, outfalls)</li> </ul>

*Taken from the NYC Mayor's Office of Recovery and Resiliency, Climate Resiliency Design Guidelines - Version 3.0 (March 2019).*

- **NH-5.6** Continue to educate the public and property owners on ways they can reduce their vulnerability to weather-related hazards (ongoing)

## NH-6 Reduce vulnerability by selectively siting uses

Do not allow vulnerable populations (assisted living facilities, dialysis centers, etc.) or sensitive community infrastructure, structures, or populations, (i.e. - hospitals, EMS/Fire/Police stations, etc.) to be located in high hazard areas. This may include high flood risk areas, areas vulnerable to storm surge, areas with access by roads that are subject to flooding, and areas that are not easily evacuated or do not have utility redundancy. Sewage pump stations should be elevated high above the regulatory floodplain and armored against inundation. Review the land development regulations to restrict vulnerable or essential uses in high hazard areas.

### Action steps (anticipated timeline)

- **NH-6.1** Inventory assets, evaluate options, and take action and amend ordinances accordingly (2022-2025)

## NH-7 Utilize living shorelines

Wherever practical, utilize living shorelines instead of hard-armoring (rip-rap, bulkheads, etc.) to combat erosion or other natural hazards.



*Although no building code regulations can completely protect against rising seas and increasingly damaging storms, significant elevation of new structures will help reduce vulnerability to stormwater flooding.*

### Action steps (anticipated timeline)

- **NH-7.1** Consider living shorelines as a first resort in any future erosion mitigation projects (ongoing)

## Water Quality

- » **Management Goal:** Maintain, protect, and where possible enhance water quality in all coastal wetlands, rivers, streams, and estuaries.
- » **Planning Objectives:** The plan shall include policies that establish strategies and practices to prevent or control nonpoint source pollution and maintain or improve water quality.

## WQ-1 Enhance yacht basin and Myrtle Grove Sound water quality

Wetlands in the yacht basin and Myrtle Grove Sound will also be impacted by sea

## Part 5: Land Use Plan Management Topics

level rise, and soft erosion deterrent measures should be used when possible, especially where bulkheads do not already exist. Enhancement of habitat in these areas may also have the double-benefit of improving water quality in the sound.

### Action steps (anticipated timeline)

- **WQ-1.1** Inventory bulkheads that can be removed and restored to marsh land and encourage, incentivize, or implement (2021-2024)
- **WQ-1.2** Identify areas projected to be chronically inundated by sea level rise and remove obstacles to wetland migration, if practicable; prohibit intensification, and/or explore the possibility of amortization of uses in these areas; recommend using the same time horizon as the proposed Coastal High Hazard Zoning Overlay (2021-2025); reevaluate periodically (every 5 years); amend ordinances as necessary (ongoing)

## WQ-2 Preserve water quality in and behind Freeman Park

Freeman Park offers the highest quality waters and shellfishing areas in the study area. These resources should be preserved and protected, so that they can continue to contribute to the quality of life for residents, visitors, and wildlife.

### Action steps (anticipated timeline)

- **WQ-2.1** Prohibit activities that degrade water quality in and around Freeman Park (ongoing)

## WQ-3 Control litter

Continue (and enhance) outreach and

enforcement with respect to litter and proper beach etiquette.

### Action steps (anticipated timeline)

- **WQ-3.1** Continue and enhance the anti-littering public awareness campaign (ongoing)
- **WQ-3.2** Establish town-sponsored and organized beach cleanup events (ongoing)

## WQ-4 Reduce nonpoint source water pollution

Evaluate and identify nonpoint source water pollution activities and minimize or regulate them, in order to improve water quality.

### Action steps (anticipated timeline)

- **LC-4.1** Evaluate contributions of nonpoint source water pollution and prioritize solutions based on potential gain; amend and/or enforce ordinances as necessary; monitor and track progress, and reevaluate effectiveness periodically (2021-ongoing)

### Capturing stormwater on site

Some North Carolina towns have heightened stormwater regulations in their land development ordinances to include restrictions on bringing fill to lots and/or requiring a certain amount of stormwater to be captured on site (i.e. - the first 1.5 inches of the 24-hour, 10-year storm event). This helps prevent some lots from shunting stormwater to their neighbors. Examples include Wrightsville Beach, Atlantic Beach, Oak Island, Surf City, etc.

## WQ-5 Stormwater runoff

Continue efforts to mitigate the negative impacts of stormwater runoff and flooding.

### Action steps (anticipated timeline)

- **WQ-5.1** Review and potentially increase the standards for stormwater (quality and quantity) mitigation of new and existing development (2022-2025)
- **WQ-5.2** Study and implement best practices in capital project construction and facility maintenance to reduce adverse stormwater quantity and quality impacts (ongoing)
- **WQ-5.3** Continue to manage (and expand where possible) public stormwater infrastructure (ongoing)
- **WQ-5.4** Use the watershed plan (currently being updated with NCCF, CFCOG, et. al.) to recommend small- to large-scale stormwater best management practices and infrastructure improvements (2020)
- **WQ-5.5** Encourage and utilize low impact development strategies for stormwater management (ongoing)



*Stormwater features can also be public or private recreational amenities.*



*Stormwater retrofits can give temporary reprieve from sea level rise for many years.*

## Other Areas of Local Concern

A CAMA land use plan also affords the opportunity for a government to address local areas of concern, which may be programmatic, regulatory, geographic, or otherwise. These issues were identified during the land use plan development process and are included herein. Not all of them contain specific action items, but that should not be perceived as any less a call to action. These recommendations are not required to have associated timelines for completion or implementation, although in some cases these are provided.

### Action steps (anticipated timeline)

- **LC-1.1** Research and update ordinances to achieve the goal of restricting chain stores (2022-2024)

### *LC-2 Enhance the function of Lake Park Boulevard*

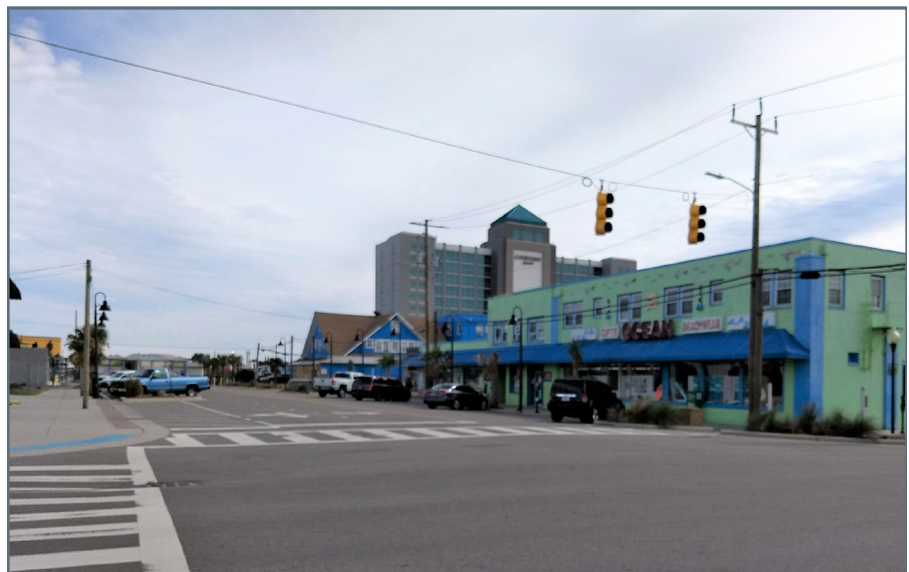
During the public input sessions, the community expressed concern about the appearance, function, and perception for visitors and residents traveling on Lake Park Boulevard. This is the entrance into town and should make a good impression. The town (and NCDOT) are also currently evaluating options for enhancing operations and function of the corridor. Some recommendations may be implemented sooner than others, depending on factors such as when properties redevelop or town funding of improvements in the right-of-way. The following improvements, requirements, and design recommendations are proposed:

***"Keep the quirky!"***

-Stakeholder

### *LC-1 Support for local businesses.*

Prioritize locally-owned and originated stores, and minimize chain stores (especially national or international chains). A focus on local businesses maintains the unique character and charm of the town, while also invigorating the local economy. Look for opportunities to promote locally-originated or small chain businesses. Evaluate the Table of Uses to determine which Conditional Uses could instead be allowed by-right.



*Continuing work on redesigning and upgrading Lake Park Blvd should also focus on pedestrian, bicycle, and golf cart accommodations.*

### Action steps

- **LC-2.1** Improve traffic function and reduce congestion by:
  - **LC-2.1.a** Limiting turning movements and left-over turns.
  - **LC-2.1.b** Eliminating redundant driveways by requiring and upgrading cross access between parcels and eliminating redundant driveway cuts for parcels, businesses, or parking areas with multiple driveways.
  - **LC-2.1.c** Relocating major entrances to secondary and side roads.
- **LC-2.2** Enhance pedestrian facilities.
  - **LC-2.2.a** Install upgraded pedestrian facilities, including sidewalks of at least 6' width, but preferably 8' width.
  - **LC-2.2.b** Explore the potential for bicycle lanes.
  - **LC-2.2.c** Install pedestrian-scale lighting along the sidewalk.
  - **LC-2.2.d** Install pedestrian crosswalks and signals at major intersections.
  - **LC-2.2.e** Add pedestrian-supportive infrastructure: covered bus stops, trash cans, benches, etc.



*Local businesses contribute to the unique character of the town.*

highly visible from the right-of-way. Review and consider revisions to code enforcement policies, especially for dilapidated structures and sites, as these can have a disproportionate impact on surrounding properties and activities.

***"We need a way to safely accommodate golf carts."***

-Resident

### ***LC-3 Building and landscaping aesthetics***

Review existing requirements for building aesthetics, including potentially stronger requirements for portions of a site that are

### ***LC-4 Pedestrian, bicycle, and non-automobile transportation***

Increasing mobility and safety for non-motorized transportation modes along roadways and at street crossings is important. Bike/ped connections are desired between destinations within town, and to the neighboring community of Kure Beach

## Part 5: Land Use Plan Management Topics

and across Snow's Cut to the mainland. The following recommendations build on recommendations from previous bicycle and pedestrian planning efforts. These other plan(s) should also be implemented as designed, and these recommendations may also serve to bolster these efforts.

### Action steps

- **LC-4.1** Increase safe non-motorized connectivity to activity centers in general, and to downtown specifically.
- **LC-4.2** Non-automobile transportation:
  - **LC-4.2.a** Golf carts should be considered when designing and implementing community upgrades, including parking facilities for golf carts.
  - **LC-4.2.b** Establish bicycle lanes on Lake Park Blvd from Charlotte Ave to the Carolina Sands entrance, and beyond.
  - **LC-4.2.c** Add bicycle lanes, expanded sidewalks on Lake Park Blvd between Harper Ave

and Charlotte Ave. Relocate parking to the adjacent blocks on Harper Ave and Cape Fear Ave.

**"The greenways - we love them!"**

-Resident

- **LC-4.3** Increase pedestrian mobility and connectivity.
  - **LC-4.3.a** Pedestrian crossing improvements.
    - **LC-4.3.a.1** A number of existing street crossings were identified as safety concerns, especially where thoroughfares intersect priority pedestrian corridors and multi-use paths. Pedestrian connections and safety should be enhanced, especially to destination centers, such as the new Publix and along St. Joseph Street. In order to prevent accidents and injuries design modifications and/or improvements should be studied at the following locations:
      - » Dow Rd, Harper Ave, and the Carolina Beach Greenway
      - » Island Greenway at Ocean Blvd
      - » Across US 421 (Lake Park Blvd) at signalized intersections.
        - **LC-4.3.b** Introduce sidewalks, bicycle lanes and traffic calming devices on Carolina Beach Avenue North and Canal Drive.
        - **LC-4.3.c** Yielding Enforcement Campaign: Continue



*Carolina Beach Island Greenway.*

participating in the "Be a Looker" campaign to maintain motorist awareness of pedestrians.

- **LC-4.3.d** Increase pedestrian crossing safety.
  - **LC-4.3.d.1** Add and/or upgrade crosswalks at major pedestrian crossings
  - **LC-4.3.d.2** Investigate the potential for a pedestrian bridge or enhanced crossing at Winner Drive.
- **LC-4.3.e** Increase pedestrian connections.
  - **LC-4.3.e.1** Create a bicycle/ pedestrian connection through the Carolina Sands neighborhood at Pinfish Lane and Riptide Lane, per the adopted Pedestrian Plan.
  - **LC-4.3.e.2** Relink Cape Fear Blvd and Canal Drive with Hamlet Ave and Woody Hewett Ave by reestablishing a bicycle/ pedestrian connection near the Marriott.
- **LC-4.3.f** Increase safety and connections for children walking to the elementary school.
- **LC-4.3.g** Build on the success of the Island Greenway and keep making greenways (aka multi-use paths). Complete the connections along Clarendon Rd, Hamlet Ave, and Ocean Blvd with particular attention to providing safe intersection crossings. All crossings of Dow Rd and US-421/Lake Park Blvd should include

marked crosswalks and additional safety countermeasures, such as a Rectangular Rapid Flashing Beacon and pedestrian refuge islands where possible, to create a safe walking

***"The elementary school is our most important place."***

-Stakeholder

and bicycling environment for individuals of all ages and abilities.

- **LC-4.3.h** Increase interjurisdictional connectivity
  - **LC-4.3.h.1** Access to and from the island from the north is limited for non-motorized modes. To the south, a ferry carries passengers between Federal Point and Southport. To provide non-motorized accessibility to the island, evalu-



*The elementary school and town have been successful in recent coordination efforts.*

## Part 5: Land Use Plan Management Topics

ate the feasibility of alternatives for bicycle and pedestrian connections from the ferry, through Carolina Beach, and across Snow's Cut to the mainland, River Road, and the greater Wilmington trail network, including opportunities for a bridge accompanying US-421, options for a standalone bridge, and/or a sidepath.

- **LC-4.3.h.2** Explore opportunities to extend the greenway from Carolina Beach to Kure Beach, Fort Fisher, and the ferry.
- **LC-4.4** Continue to invest in major pedestrian corridors such as Harper Road. This locally-significant pedestrian corridor and improved pedestrian facilities will be installed in conjunction with the upcoming road improvement project.
- **LC-4.5** Bicycle infrastructure
  - **LC-4.5.a** Continue to invest in bicycle infrastructure, and require bicycle-supportive infrastructure standards in new development and upfits/renovations.

### LC-5 Family-oriented character

Even though demographics have been shifting steadily over the past decades, the community still prides itself on being a family town and wants to preserve that character and value, for all types of families.

#### Action steps

- **LC-5.1** Support families that work from home or otherwise reinforce the family-oriented character of the town.
- **LC-5.1.a** Continue to support Carolina Beach as a family-oriented town with year-round residents.
- **LC-5.1.b** Consider ways to increase the ability of residents to work from home, through a review of the allowances for home occupation business operations. Allow more people to work from home and reduce the need to commute off the island.
- **LC-5.2** Charm and character
  - **LC-5.2.a** Protect the operational

***"Keep the families!"***

-Stakeholder

***"We're a three-legged stool: residents, businesses, and tourism - and you gotta balance them all."***

-Resident

capacity of the elementary school.

- **LC-5.3** Maintain the small-town and community atmosphere.

### LC-6 Short-term rentals

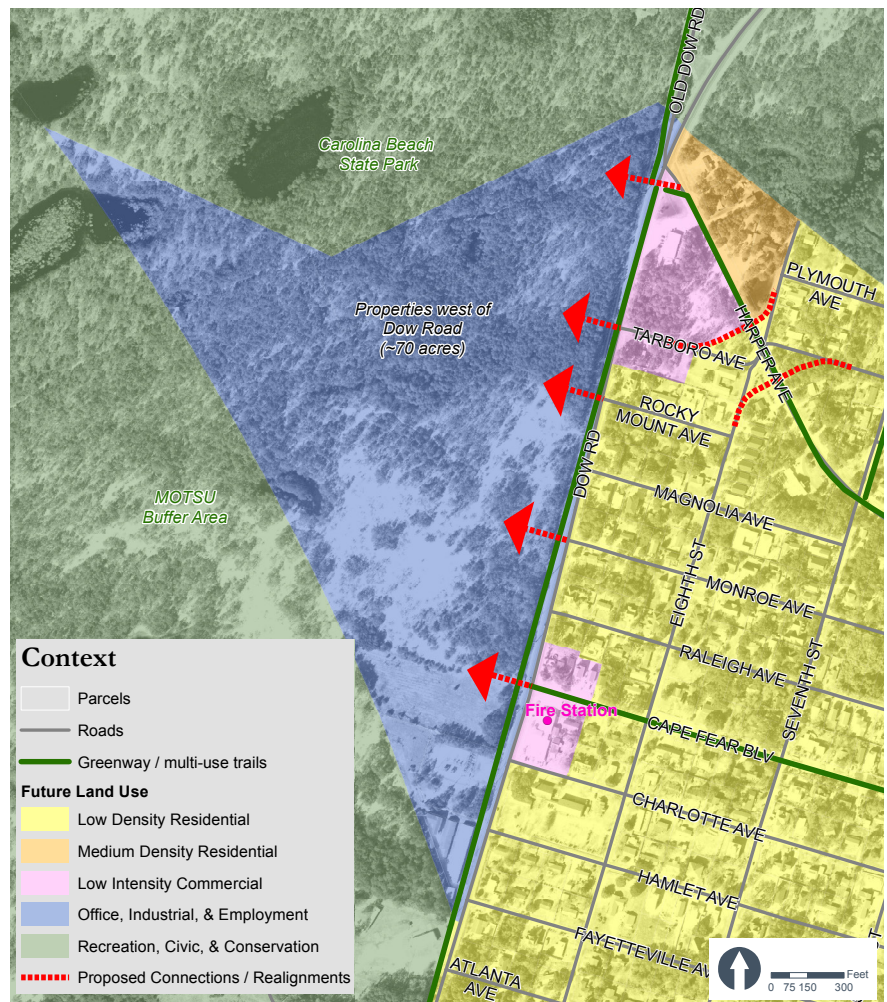
Often short-term rentals are zoned residential and developed to residential standards, but these properties may actually function more like small-scale commercial hotels. This affects zoning, use and nuisance regulation, traffic, and building standards (including fire safety). Short-term rentals may be strong economic engines for tourism, but also have the potential to diminish

the character of established neighborhoods, akin to the impact of a predominance of vacation rentals. To give certainty to homeowners, residents, investment property owners, rental managers, and vacationers, the Town should consider establishing clear geographic boundaries, policies, and guidelines for short-term rentals. Nearby jurisdictions such as Wilmington have recently adopted regulations and can be looked to for guidance.

facilitate a connection with the existing community. Ideally, additional pedestrian connections would also be created at the remaining roadway extensions.

### LC-7 Minimize congestion on Dow Road

The last major piece of undeveloped property (~70 acres) in the town is west of Dow Road. This property is currently zoned as industrial and the Future Land Use Map designates it as Office, Industrial, & Employment. This is the property owner's preferred land use unless the property can be developed with a large, unified plan or campus such as a research institute, conservation area, major employer, or master-planned community. If the property does not develop in a large, master planned development or campus, it will be important to control access and driveways onto Dow Road in order to preserve the low traffic congestion and relatively high capacity of this local thoroughfare. As such, driveways onto Dow Road are prohibited, with all access occurring on secondary streets (which are shown as red dashed arrows on the Future Land Use Map). These access streets will align with the existing grid network, and will



The ~70 acre property west of Dow Road is undeveloped.

## Part 5: Land Use Plan Management Topics

### Action steps

- **LC-7.1** Preserve Dow Road as a local thoroughfare.
  - **LC-7.1.a** Prohibit and actively reduce driveways that open directly onto Dow Road.



*Exploring options to allow older structures to reinvent themselves within the limits of public safety and welfare can help preserve the quirky beach town character that defines Carolina Beach.*

- **LC-7.1.b** Require parcels that front on Dow Road to have access via secondary streets.
- **LC-7.1.c** Require cross access between or behind nonresidential properties.
- **LC-7.1.d** Require extensions of public right-of-ways at logical intersections that compliment vehicular and pedestrian connectivity.

### LC-8 Redevelopment

Encourage, support, and find a path forward for reuse or renovation of existing structures to allow local businesses to grow into underutilized buildings where a tear-down/

***"The laid back community - [it's] quiet - different than anywhere else around."***

*-Steering Committee member*

rebuild is not the best possible outcome.

### LC-9 Restrict Density

Only allow increased density and development (above existing standards) if it also maintains the quality of life and environment.

### LC-10 Develop broadband infrastructure

Development of high-capacity broadband infrastructure is necessary for supporting the jobs of tomorrow. It will also allow those employees to live/work in Carolina Beach. To the extent possible, the Town should look for opportunities to partner or develop these facilities.



*Residents value the town's recreational opportunities.*



*Mature trees are both a valuable community asset and a potential storm hazard, and the benefits and liabilities must be carefully weighed.*



*The waterfront and coastal ecology are the primary source of economy and quality of life.*

### **LC-11 Central Business District**

Continue to support the central business district as a destination downtown with activities for families, residents, and visitors. Protecting the character of the district is important. Expanding opportunities for public activities, including events, should be pursued.

### **LC-12 Parks and recreation**

Residents value the town's parks and recreational access and assets and support continued investment in these facilities. Some tension exists in the community about the expansion of facilities and associated maintenance obligations and liabilities, and some residents would prefer to maintain the current level of service while others support the continued expansion of facilities and services.

### **LC-13 Preserve existing mature tree cover**

Continue to implement and support efforts to preserve existing tree cover and use indigenous landscape materials in new development and redevelopment. Efforts should also continue to preserve and protect maritime forests due to their vulnerability to disturbance and development, and their regional importance.

### **LC-14 Preserve wetlands**

Continue to protect wetlands and investigate and implement disincentives and possibly prohibitions to the filling of jurisdictional wetlands, including but not limited to "404" wetlands.

## Part 5: Land Use Plan Management Topics

### *LC-15 Preserve the high quality beaches and natural areas*

The beaches and natural areas are a primary draw for residents and visitors. Heavy industrial uses, such as mineral extraction (onshore or offshore) have the potential to disturb these areas and should continue to be prohibited and advocated against. Protection of dunes and beach ecology is also important.

### *LC-16 Reduce traffic congestion and increase safety*

Continue to budget for and partner with NCDOT for traffic improvements that reduce congestion, particularly on Lake Park Boulevard and Ocean Boulevard. Consider lower speeds on Dow Road and traffic calming on other streets.

### *LC-17 Bury electric lines*

Continue to bury electric lines, especially in coordination with other maintenance and capital improvement projects.

#### **Action steps**

- **LC-17.1** Continue to evaluate and implement electric line burial as part of other major maintenance and capital improvement projects (ongoing)

### *LC-18 The North End*

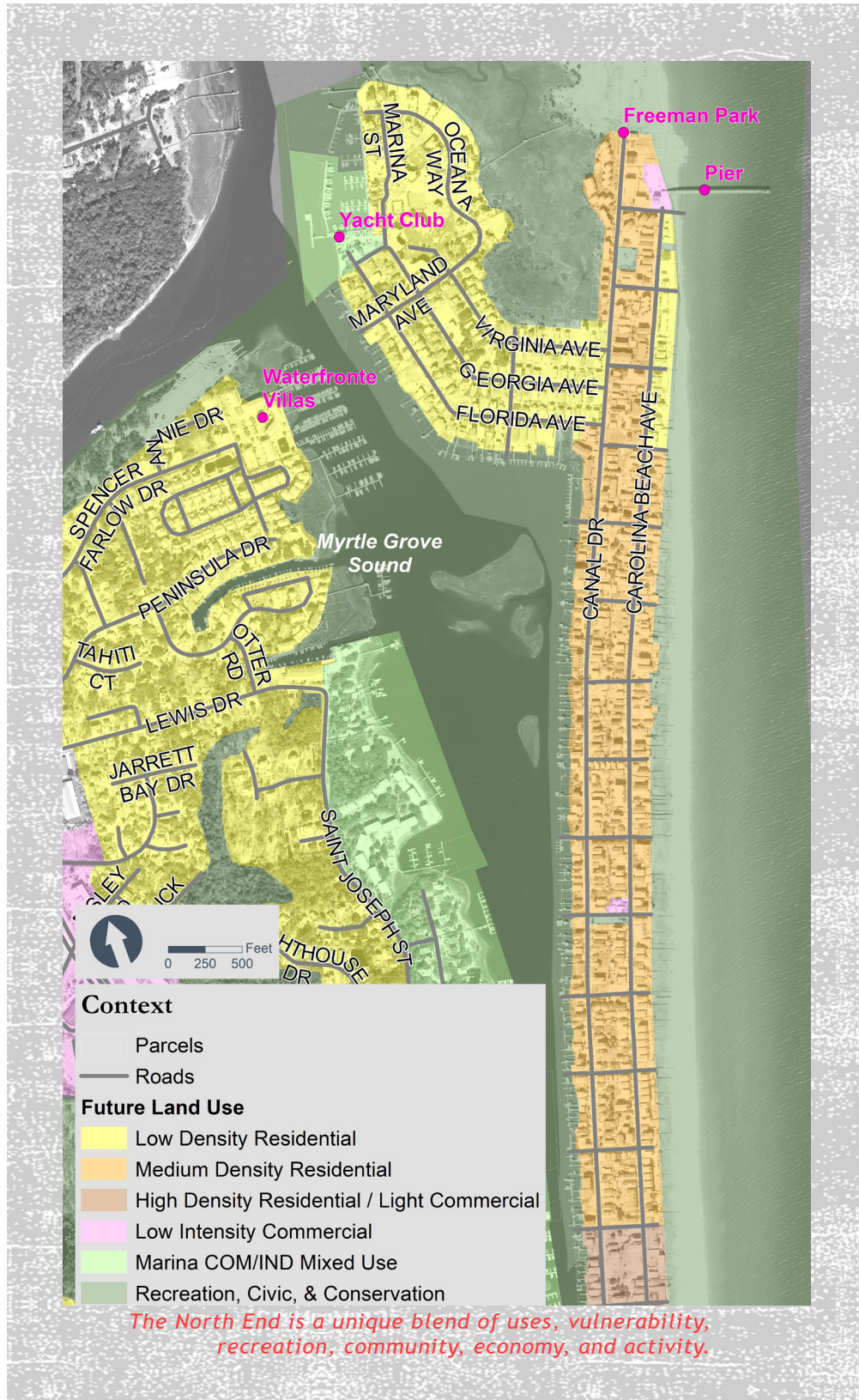
One of the unique areas in Carolina Beach is the North End - the spit of land that connects downtown to entrance of Freeman Park. The North End is served primarily by Canal Drive and Carolina Beach Avenue

North (CBAN), which handle fairly high traffic volumes due to the recreational draw of Freeman Park. These two roads, although designed to be local, neighborhood streets, handle much higher traffic volumes, in part due to the draw of Freeman Park. The existing land use pattern on the North End is primarily single family detached residential with some multifamily attached residential dispersed irregularly throughout.

The foundation of this narrow isthmus are old dunes, and the western side is built at least partially on spoils excavated during the dredging of the yacht basin. The low lying land surrounding Canal Drive and the "state" streets (Florida, Georgia, Virginia, and Delaware Avenues), is identified as particularly susceptible to sea level rise, storm surge, flooding, and king tides. The Florida Avenue / Canal Drive intersection regularly floods during king tides, and this areas is particularly vulnerable to sea level rise. There is a local high spot between Marina Street and Oceana Way, which is above the Coastal A flood hazard zone. The rock embankment from Freeman Park to almost Periwinkle Lane was installed to protect private property and CBAN from the erosion that has previously claimed homes along that stretch.

Due to the unique natural vulnerabilities of the North End, this area of the town is identified in the future land use map by character areas that are equal to or less intense than the current land uses. The different future land use character areas were chosen in recognition of the slightly more vulnerable conditions around Canal Drive and the state streets compared to the slightly higher ground around CBAN. This future land use strategy (which does not

downzone properties or take them for public use) allows existing uses to persist, but does not encourage future intensification in this vulnerable isthmus. Although seemingly counterintuitive to designate future land use in this way,

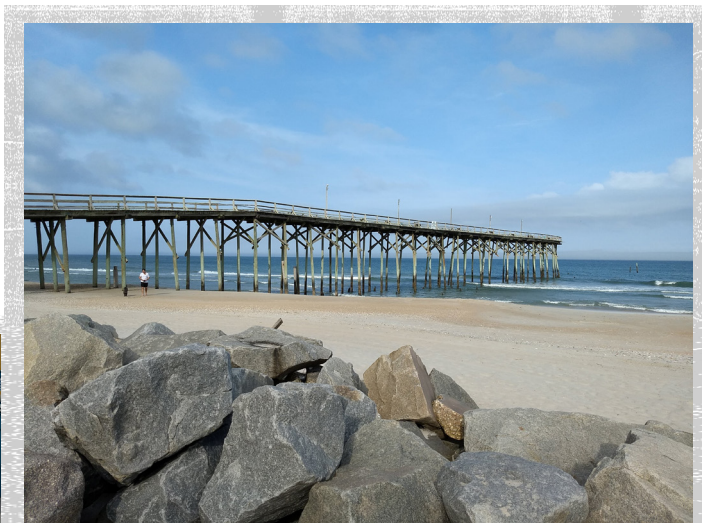


it strikes a balance between respecting investment that has already occurred, but not allowing future population to invest in this more vulnerable area.

# PART

# 6

## Tools for Managing Development





## Guide for Land Use Decision-Making

The Future Land Use Map and associated character area descriptions should be used by decision makers (in accordance with state requirements, such as NC G.S. §160A-383) when weighing rezoning and quasi-judicial permit requests. The land development regulations and ordinances of the town should also be reviewed and updated to better achieve the goals of this plan and the community.

## Action Plan and Implementation Schedule

See Action steps and anticipated timeline under each CAMA-required Land Use Plan Management Topic (Part 5).

## Development Program

The Town manages land use and zoning, subdivision, floodplain regulation, and development through a code of ordinances, which are available through the town's website.



# APPENDIX *A*

## Appendix





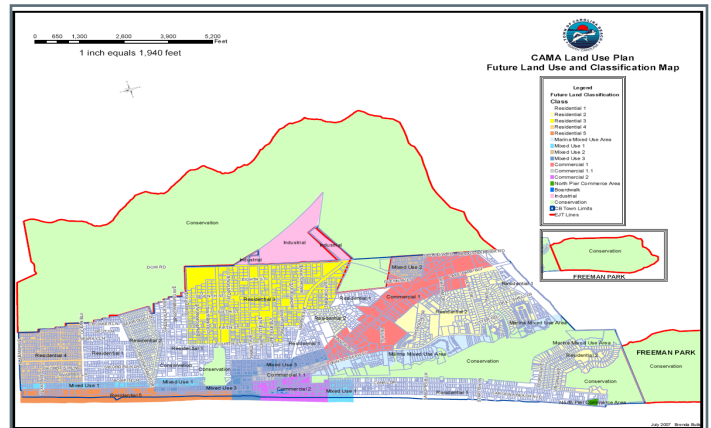
## PLAN ASSESSMENTS

The following plans were reviewed for the identification and incorporation of relevant information into the Land Use Plan update. These plans and informational resources were identified through either the initial Request for Proposal, scope of work, or through interviews with stakeholders or town staff. Where a year or date of the document is not specified, the appropriate documents and resources were identified by staff as relevant to the update process.

### 2007 CAMA Land Use Plan

It has been over 10 years since the adoption of the previous CAMA Land Use Plan for the Town. Some previously identified issues will likely continue to be a concern, such as traffic congestion and stormwater management, while other issues may be less pressing today than they were a decade ago. As the town nears build-out,

the types of development pressures and land use interactions change from those in the past. However, the natural resources and natural areas may have changed little over this time, especially since the constraints on the largest of these areas (the state park and the federal buffer zone) are imposed by outside government agencies. There are many current Future Land Use categories, and these tend to read more like zoning and development code than as future land use policy guidance. Some of





source pollution are the major environmental impacts to the basin. There are no fish or shellfish nursery areas within the harbor.

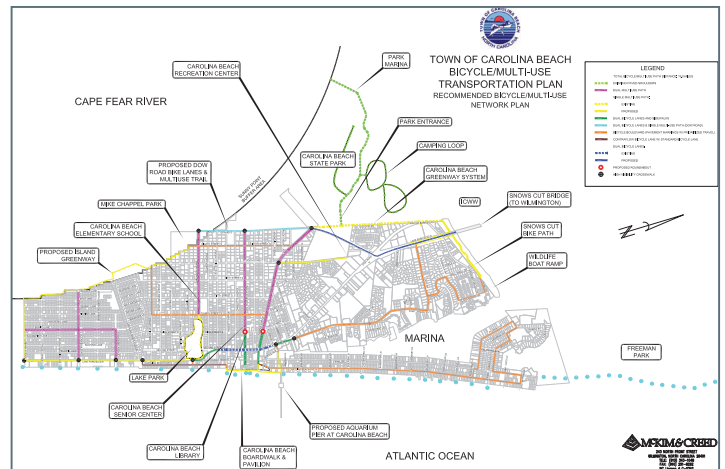
This plan recommends the following:

- » **Protect the harbor’s sensitive public trust resources from degradation**
- » **Increase public access to the harbor and its shoreline**
- » **Preserve traditional water dependent uses like marinas**
- » **Protect riparian rights of shoreline land owners**
- » **Minimize user conflict associated with uses of the harbor area**

Recommendations include a recognition of increased boater demand and associated demands on the mooring and marina facilities, maximizing the use of the municipal marina, development of additional boat launch facilities, and increasing public access to the harbor. Concurrently with these recommendations, there are needs to reduce user conflicts and minimize negative water quality and environmental impacts, especially related to stormwater management. Since the adoption of the plan, the Town has renovated the public marina and improved mooring conditions.

### *Bicycle Multi-Use Transportation Plan (2011)*

The stated purpose of this plan is to connect the town’s various destinations by bicycle and multi-use paths. The plans’ goals also recognize the desire for improving safety, usage, recognition, and mileage of this non-auto network. Proposed projects are laid out by priority and time horizon, and include physical construction projects as well as educational and programmatic programs.



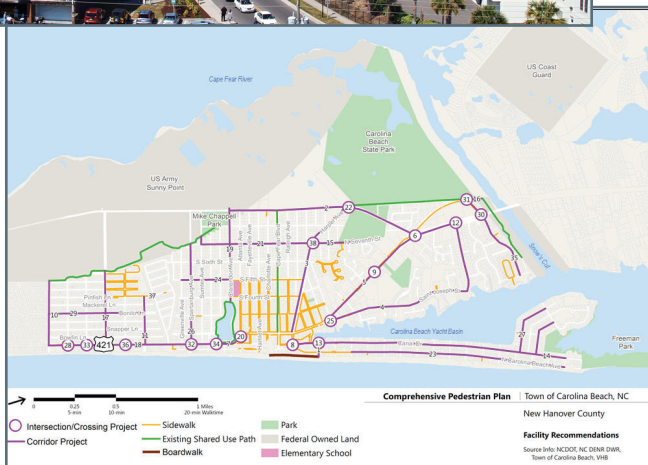
The plan proposes a total of 19 miles of bicycle multi-use paths, which is fairly ambitious for a town of this size. However, past and current multi-use path construction projects suggest that the town will likely achieve this goal. The overall goal to link destinations through a cohesive pedestrian and bicycle network can be integrated with land use planning to reinforce community cohesion while also strengthening sense of place. Some of the key recommendations in this plan were the expansion of the greenway network and to improve safety on existing bike routes. A total of 48 projects were identified in the plan. The following corridor projects identified in the plan have been completed:

- » **Cape Fear Blvd Multi-Use Path:** A 10’ wide multi-use path serving bicyclists and pedestrians was recently constructed from N 3rd Street to Dow Rd along Cape Fear Boulevard.
- » **Island Greenway Extension:** A 1.2 mile section of the Island Greenway was completed in 2019. The multi-use path now serves bicyclists and pedestrians between Mike Chappell Park to the intersection of Alabama Ave and Spot Lane.

## Pedestrian Master Plan (2018)

The vision of this master plan is to create an appealing, walkable environment. Primary plan goals include:

- » **Promote a culture of walking and active living.**
- » **Enhance access to local businesses, neighborhoods, parks, and the beach by foot.**
- » **Emphasize the safety of pedestrians while accommodating motorized traffic in an efficient manner.**
- » **Create an aesthetically attractive environment that will appeal to residents and visitors.**



Proposed projects are ranked and coordinated with existing facilities and destinations. The primary and secondary corridors identified provide for a well-connected

pedestrian environment. In addition to suggested facility improvements, recommendations are also provided for programs and policies to enhance the pedestrian experience. The town is currently in the process of establishing enhanced pedestrian facilities along major pedestrian corridors, and has been particularly successful at incorporating these efforts into other public infrastructure upgrade projects.

This plan identified priority corridors and itemized 38 recommended intersection and corridor improvement projects. Four of the projects were selected as pilot projects:

- » Multi-use path on Alabama Avenue between the Island Greenway to Lake Park Boulevard
- » Sidewalk on Canal Drive from Carolina Beach Avenue to Salt Marsh Ln
- » Intersection improvements at Lake Park Boulevard and Atlanta Ave
- » Intersection improvements to improve multi-use trail crossing at Dow Rd and Harper Avenue

## Central Business District (CBD) Master Development Plan (2008)

The fundamental purpose of this plan is “to provide a clear and exciting vision for the CBD that stimulates revitalization and provides guidance and direction to the Town as it endeavors to pursue its future.” Although already a decade old, the goals of the plan for the CBD are largely still relevant, including creating a mix of uses, supporting economic development, creating a unique built environment, protecting natural resources, and facilitating multi-modal circulation. Many of the recommendations and goals



### *Traffic Study Recommendations - N. Lake Park Boulevard Corridor Study (2018)*

A study of the main entrance corridor to Carolina Beach was conducted in order “to explore [potential improvements to] peak and off-peak hour congestion, enhance mobility through improved connectivity, and create an enhanced equilibrium for all travel modes along the corridor.” The 1.1-mile long section of roadway is owned by NCDOT, carries significant traffic volumes, and has a high crash rate. It is also the primary route for cars to get on and off the island. Most signalized intersections are already failing (level of service lower than “C”). Two alternatives for the corridor were proposed: 1) a five-lane section and 2) a “couplet” that splits a portion of the road corridor into two one-way roads, cutting through the proposed Harris Teeter and Publix sites.

### *Thoroughfare Plan*

The Towns of Carolina Beach and Kure Beach originally adopted a thoroughfare plan in 1973 which was updated most recently in 1992. As of the 2000 Census, the expansion of the Wilmington Urbanized Area resulted in Carolina Beach’s inclusion as part of the Wilmington Urban Area Metropolitan Transportation Planning Organization (MPO). As part of the membership, the Town will be included in the MPO’s Thoroughfare Plan update.

### *North Carolina 2018-2027 State Transportation Improvement Plan (STIP)*

There are currently no projects within

Carolina Beach jurisdiction programmed in the current STIP. Within the draft 2020-2029 STIP, a multi-use path along Dow Rd from Clarendon Ave to Lake Park Blvd is planned to improve multi-modal access and safety.

### *Wilmington MPO Comprehensive Transportation Plan (2016)*

Several multi-use paths, on-road bicycle facilities and sidewalks are recommended throughout Carolina Beach and are documented in the most recent Comprehensive Transportation Plan (CTP)

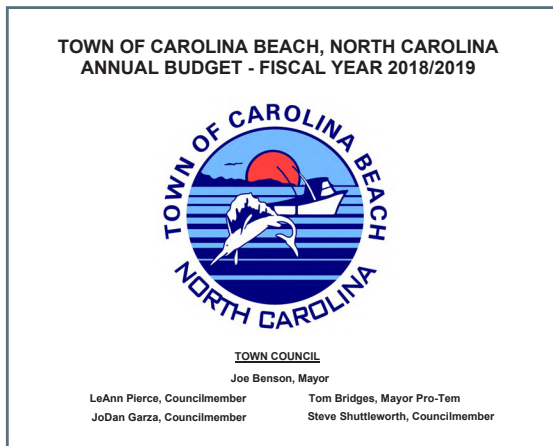
### *North End Traffic and Circulation Study*

In Spring 2004, the Town adopted the study and selected a set of improvements from the recommended traffic scenario alternatives. The traffic improvements include (current status indicated in parentheses):

- » Implementing two right-turn lanes on Carl Winner Avenue outbound to US 421 northbound with expanded storage bays. (Implemented)
- » Establishing Carolina Beach Avenue North to Sandpiper as a one-way traffic pattern and introducing sidewalks, bicycle lanes and traffic calming devices on Carolina Beach Avenue North and Canal Drive. (Not fully Implemented, incremental improvements have been made)
- » Adding a landscaped median, bicycle lanes, expanded sidewalks on US 421 between Harper and Charlotte. Relocate parking to the adjacent blocks on Harper and Cape Fear. (Not implemented)
- » Establishing bicycle lanes on US 421 south from Charlotte to Carolina Sands. (Not implemented)

## Capital Improvement Plan (2018)

The Capital Improvement Plan sets out the Town's major priority projects for the upcoming 10 years. These projects are above and beyond the regular operations and expenditures, although they may include major maintenance projects.



Major scheduled projects for the next 5 years include:

- » **Fiscal Year 2018/19:**
  - Park facilities
    - » Phase 1 of Ryder Lewis Park
    - » Playground at Carolina Beach Lake Park
  - Water distribution, particularly potable well improvements
  - Wastewater facilities, particularly a lift station upgrade
  - Stormwater management, particularly maintenance to Heniker Ditch
  - Various equipment and vehicle replacements
- » **Future years**
  - Potable water system projects:

- » New 3-million-gallon water tank
- » Major water line replacement projects
- » New Water Treatment Plan
- Wastewater system projects - major sewer (north end) and wastewater line repair and replacement projects
- Stormwater system projects - stormwater repairs (north end) and replacement projects
- Marina - southside and east-side improvement projects
- » **Other projects where a timeline for construction has not yet been identified:**
  - Canal Drive stormwater solution
  - Expansion of Police Department building
  - New lifeguard station
  - Swimming pool
  - Community center
  - Parking deck

## Information on Proposed / Potential Development / Redevelopment Projects

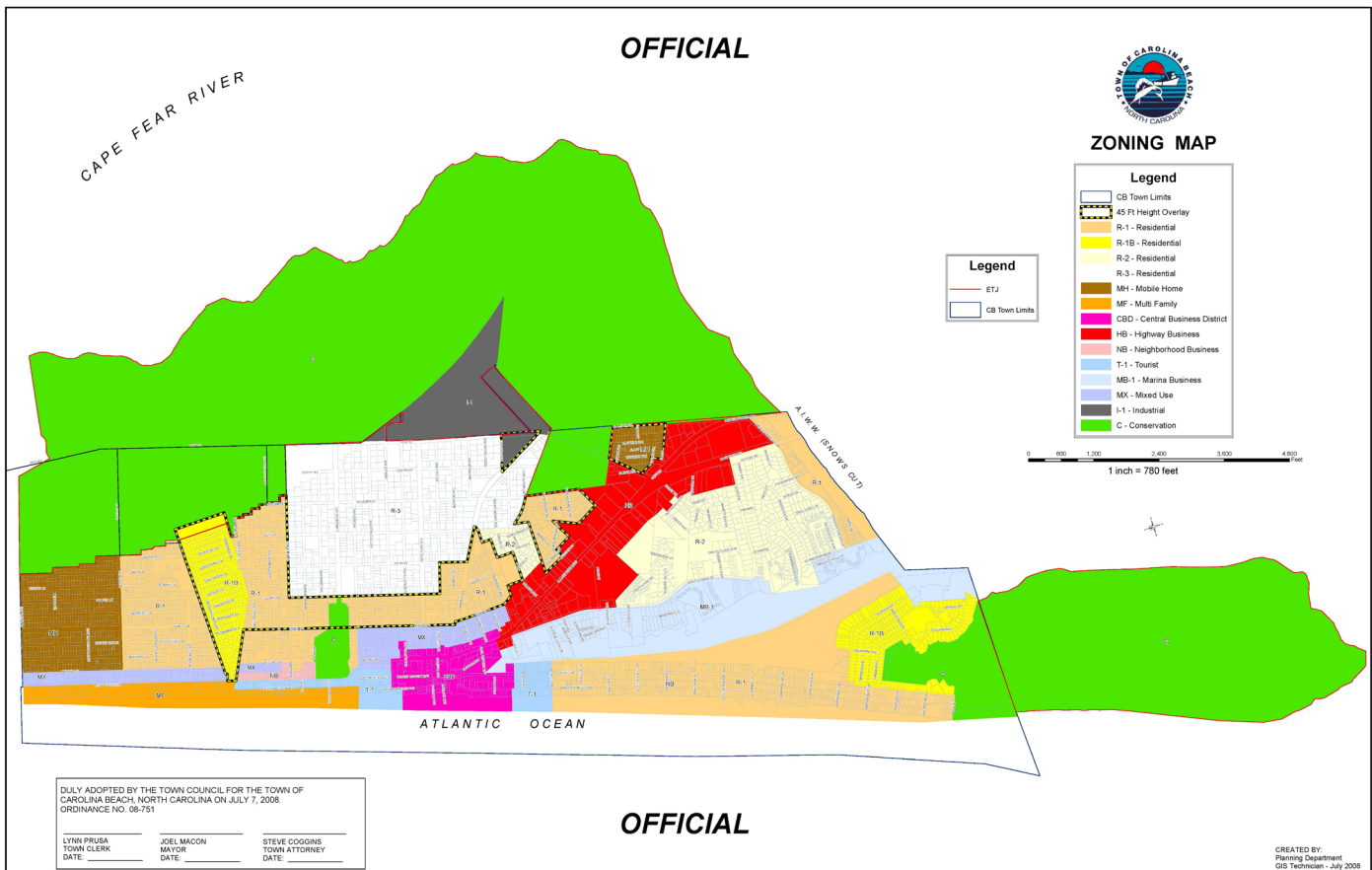
At present, the largest and possibly most impactful redevelopment project is the Harris Teeter / Publix site on Lake Park Boulevard. This vacant shopping center has been demolished and redeveloped into a commercial shopping plaza. This redevelopment represents a fairly large investment, but has not happened yet, and a date-certain for commencement of construction is uncertain. The Town is also developing a park property in close proximity to this site. These two high profile projects are on the main community gateway, Lake Park Boulevard.

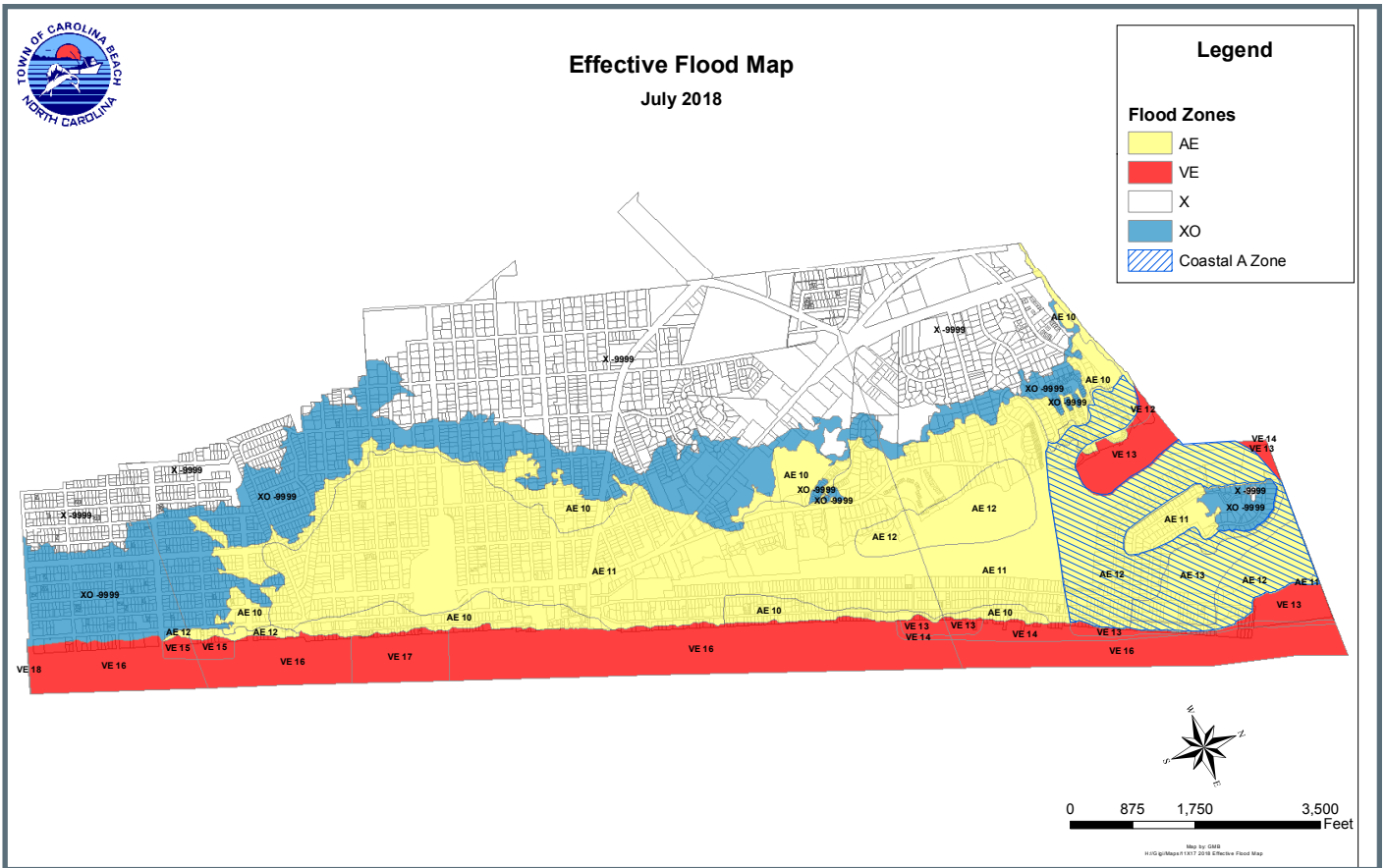
## Zoning and Subdivision Ordinances, and Official Zoning Map

The Town's zoning and subdivision ordinances govern how land is used and developed. It is important to survey and evaluate the land use and regulatory landscape that currently exists in order to determine any potential deficiencies or other opportunities that might inform the land use plan development process. Ultimately, these regulations may be amended to better reflect the new Land Use Plan.

The Official Zoning Map does not allow a general mixing of uses, although in several places in town, there are a close relationship (both vertical and horizontal) between

dissimilar uses. Strip zoning along the major entrance corridor, Lake Park Boulevard, has created a large swath of commercial uses with multiple driveways directly on the highway. This has increased congestion on this corridor. Some incongruencies also exist between large districts zoned for multi-family, where single family and other uses have been allowed to intersperse in an unpredictable pattern.





### *Current Future Land Use Map, Flood Zones Map, and GIS files and resources*

These existing resources were reviewed for their potential impact on and potential to be impacted by the land use plan update. The Future Land Use Map will likely be superseded by an updated map to accompany the updated land use plan. Flood zone maps will not change, although this information will inform the decisions made throughout the update process regarding risk and the appropriate location of certain land uses. Geographic Information Systems (GIS) files are geospatial data resources from the town, regional and state agencies, and other sources that are used throughout

the update process to document resources, analyze trends and patterns, communicate information, and gather feedback from the Steering Committee. The datasets and information necessary for a CAMA Land Use Plan have been gathered for this plan update.

## Development Character and Preference Survey

Meeting attendees at the first public open house workshop ranked various types of residential and commercial development.

### Residential

In terms of residential development, the majority of respondents showed strong support for single-family detached homes and duplexes. Attendees also expressed moderate support for low-rise attached residential units with 2-3 stories, although there was little support for mid-rise attached units with 3-5 stories.

- » **Single-family detached homes, front-, side- or rear-driveways, small yards**



Likes: 34 Dislikes: 2 No Opinion: 0

(Plus, four attendees noted dislike for small yards)

- » **Duplexes (two-family homes), front- or rear-garages underneath, small yards**



Likes: 25 Dislikes: 9 No Opinion: 0

- » **Low-rise attached residential, 2- to 3-stories, pedestrian-scaled, private or shared parking**



Likes: 14 Dislikes: 20 No Opinion: 2

- » **Mid-rise attached residential, 3- to 5-stories, shared parking**



Likes: 3 Dislikes: 34 No Opinion: 0

## Commercial

Attendees showed more balanced preference for various commercial development styles. Mixed use commercial centers and small-scale commercial development mixed into neighborhoods were most popular. Overall, meeting attendees expressed support for walkable commercial centers and aesthetically appealing development.



Likes: 8 Dislikes: 28 No Opinion: 0

» **Lifestyle center, outdoor seating, ample landscaping, auto-oriented destination**



Likes: 23 Dislikes: 13 No Opinion: 0

(Plus, four attendees noted dislike for auto-oriented)

» **Neighborhood commercial and office, mixed in and around residential neighborhoods, small-scale, walkable**



Likes: 37 Dislikes: 4 No Opinion: 0

» **Mix of uses, walkable, outdoor activity, retail and restaurants below with residences or offices above**



Likes: 35 Dislikes: 2 No Opinion: 0

» **Traditional commercial, convenience-driven, auto-oriented destination**

## Stakeholder Interviews

The following major themes were identified in the stakeholder interviews. These interviews were held over a full day and involved in-depth conversations with stakeholders representing the following groups:

- » **Neighborhood leaders, citizen and advisory boards, and Homeowner association representatives**
- » **Developers, builders, realtors, and appraisers**
- » **Land planners, architects, engineers, surveyors, stormwater and environmental groups, and parks and open space advocates**
- » **Business groups, chamber of commerce, economic development and industrial business representatives**
- » **Town staff, state parks representative, federal (MOTSU), NCDOT, and Kure Beach leadership**

The following themes either came up frequently or are otherwise important to informing or developing the plan.

### *Stormwater and Flooding*

In general, there are concerns about stormwater and flooding. Hurricane Florence exacerbated problems that already existed. In particular, the following areas came up frequently:

- » **Carolina Lake**
  - Dredging project is progressing, but slower than most would prefer. (Note: the dredging project has since been sped up and is nearing completion.)
  - Additional pumps have been installed.
- » **Canal Drive – floods during high tides, stormwater drains fail**

- Committee has been formed to generate ideas.
- Current working plan is increase sea wall height and install pumps.

### *Parking*

Parking is perceived as lacking, particularly in downtown and particularly during the summer / tourist season. Some questions were raised about a previous plan for a public parking garage. The Town currently manages on-street parking in downtown through meters.

### *Elementary School*

The school is a critical and prized community resource but is limited in space and has some difficulty with regular operations, especially parking. Current plans or desires for facility expansions are for enhancing or upgrading facilities, not to add capacity for additional students.

### *Inlet, Marina and Beach*

These areas are critical to driving and diversifying the local economy. Maintenance costs are also high and include inlet maintenance and beach renourishment. Public and private marinas provide recreational tourism and help support the local maritime culture and industry.

### *Redevelopment*

A lot of concern revolves around how to allow redevelopment, especially if it results in a more intense development pattern. A tension exists between maintaining the charm and character of the town, while also allowing redevelopment, especially with land costs as high as they are. New



development is rarely “affordable” for blue collar folks. Tension also exists between wanting to increase building height (which is often a way to make more housing affordable and bring residents to the downtown area) and keeping the lower height buildings that contribute to the charm, particularly at the boardwalk / downtown / central business district. Other select areas throughout town also present significant redevelopment opportunities.

### *Character & Improvement*

Nearly every group prizes the family-friendly character and vibe of the town. Several groups expressed desire for upgraded appearance requirements for the most publicly visible parts of town – Lake Park Drive and the boardwalk / downtown area. Some desire exists for increasing quality through enhanced development standards.

### *Pedestrian & Cyclist Connectivity*

The Town is engaged in increasing connectivity and upgrading pedestrian and cyclist facilities throughout town. Many groups expressed a desire for even more of these projects. There is some debate about needing sidewalks everywhere, especially along small, narrow, low traffic residential streets, but major corridors and connections are ripe for enhanced pedestrian and multi-use facilities. Some obstacles currently exist when considering extending the greenway through Kure Beach (to the ferry) and across the Snow Cut bridge (to the greater Wilmington area).

### *Recreation*

Community recreation is important and helps define the family-friendly character of the town.

#### » **Public (local)**

- The Boardwalk and greenway system.
- Fitness center is a success.
- Mike Chappell Park, Carolina Lake, and other local parks.
- Music stages in boardwalk / downtown area.
- Some desire for a public community pool.

#### » **Public (state and federal)**

- Carolina Beach State Park, especially hiking trails.
- Compatibility of public recreation with Sunny Point is uncertain, at best.

#### » **Private**

- Carnival rides in the boardwalk / downtown area were never intended to be permanent, and are now being phased out by development.
- Mini-golf course.

#### » **Freeman Park**

- Future of this resource is uncertain, but it is a major community asset

## Strengths, Weaknesses, Opportunities, and Threats (SWOT Analysis)

During the first Steering Committee meeting on 11/27/2018, members identified the community's Strengths, Weaknesses, Opportunities, and Threats (SWOT). This information furthers the conversation about land use and other issues facing the town that a land use plan can address.

A summary of the SWOT analysis is below:

### *Strengths:*

- » Tourism, including shoulder seasons (5 votes)
- » Parks and rec (3 votes)
- » Unique character, family-friendly atmosphere, small community (3 votes)
- » Implementation, planning of infrastructure, and coordinated improvements (3 votes)
- » Location / lots of amenities and events (3 votes)
- » Diversity (2 votes)
- » Healthy development trend, economy (2 votes)
- » Bicycle / pedestrian connectivity and vision (2 votes)
- » Effective Town staff
- » High quality elementary school
- » First responders
- » Self-sufficiency (aka "no OTB")
- » High ratio of commercial uses (tax base)
- » Mix of land uses – commercial next to residential
- » Entrepreneurial spirit

### *Weaknesses:*

- » Parking, esp. in tourist season (6 votes)
- » Flooding (4 votes)
- » Flooding / stormwater, esp. Canal St and Carolina Beach Lake (3 votes)
- » Traffic / congestion (2 votes)
- » Local, year-round employment opportunities (2 votes)
- » Stormwater issues, drainage (2 votes)
- » Land-locked / future ETJ expansions unlikely
- » Infrastructure
- » Need traffic lights and crosswalks
- » Central Drive
- » Texas Ave pump
- » Staffing for project management
- » Limited public space
- » Limited fund balance
- » Overly strict regulation of commercial development
- » Traffic safety / congestion and lack of cooperation from NCDOT
- » Affordable / workforce housing
- » Disjointed



### *Opportunities:*

- » **Parks and recreation (2 votes)**
- » **Expand walking / biking opportunities (2 votes)**
- » **Flooding / stormwater management (2 votes)**
- » **Historical preservation**
- » **Carolina Beach State Park**
- » **Carolina Beach Lake**
- » **Military Ocean Terminal Sunny Point (MOTSU) – expand uses on military buffer land**
- » **Parking**
- » **Affordable housing**
- » **Solar/wind power**
- » **Finding ways to connect community facilities**
- » **Expansion of resources**
- » **Family activities**
- » **Tourism**
- » **Some undeveloped land still exists**

### *Threats:*

- » **Flooding (2 votes)**
- » **MOTSU (2 votes)**
- » **Parking (2 votes)**
- » **Development could outpace supporting infrastructure (2 votes)**
- » **Too much tourism / overcrowding (2 votes)**
- » **High density growth**
- » **Deferred infrastructure maintenance costs**
- » **Stormwater infrastructure improvements**
- » **Aging multi-family structures**
- » **Staff / Town Council turnover**
- » **Sea level rise**
- » **Erosion**
- » **Only one way on and off the island (Snow Cut Bridge)**

## Seasonal Population Calculation Methodology

Similar to many coastal communities, Carolina Beach’s population fluctuates throughout the year between high and low seasons. When planning for infrastructure, housing, commerce transportation and recreation it is important to consider the impacts of visitors and temporary residents. People who live inside the Town limits for much of the year and refer to Carolina Beach as their primary residence make up the Permanent Population. Seasonal population estimates are difficult to calculate and require making assumptions based on demographics, habits of visitors, and available data. While there is no standard method for calculating seasonal population for a given jurisdiction, we employ two differing methods to estimate the influx of visitors based on available data: water usage rates and overnight lodging room and occupancy data. The figure reported is the peak seasonal population based on the combination of overnight tourists that visit on a peak summer weekend day rather than a typical weekday. Day-travelers are not accounted for in these calculations and may be significant, especially for popular festivals and

events. Both methods yielded estimates in a similar range with the water usage method estimate falling between the high and low estimate for the peak season based on the overnight visitor method. An average of the two methods is used to calculate seasonal population projections. Population types are defined as:

- » **Peak Population**
  - Permanent plus seasonal population.
  - This is an approximation of the planning area’s population on a “typical” peak day during the high season.
- » **Permanent Population**
  - Persons who usually reside in the planning area.
- » **Peak Seasonal Population**
  - Persons who are temporarily residing in the planning area, such as tourists and vacationers, but who normally reside in another location. This estimate does not include day-trippers.

### Water Usage

For this estimate, we utilize current well pumping data from 2017 and 2018 to determine and average water usage volumes for

Total Well Pumping Volume in Carolina Beach (i) by Month Measured in MGD (ii)												
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
2017	25.5	23.0	23.5	--	32.8	36.0	42.0	36.8	29.0	28.3	24.5	24.0
2018	22.0	23.5	53.0	28.5	29.0	39.0	42.0	36.0	30.0	30.0	24.0	22.5
Avg	23.8	23.3	38.3	28.5	30.9	37.5	42.0	36.4	29.5	29.2	24.3	23.3

*i) Combined data from 8 Wells, does not include Kure Beach pumping volume; data from April 2017 omitted due to missing data from 4 wells*

*ii) Millions of Gallons per Day*



**Estimated Seasonal Population Increase in Water Usage Measured Against Low Season Baseline**

Low Season Average		Difference from Low Season									
Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov
23.4	14.8	5.1	7.5	14.1	18.6	13.0	6.1	5.7	0.8		

**Estimated Seasonal Population Increase by Month**

Water Usage per Resident (iii)

Mar	Apr	May	June	July	Aug	Sept	Oct	Nov		
0.003735		3,970	1,360	2,000	3,770	4,980	3,480	1,630	1,540	220

*iii) Based on Low Season Average and Carolina Beach Population Estimate of 6,270 residents (American Community Survey 2017 population estimates)*

**Peak Seasonal Population Estimate**

**Method I – Water Usage**

Low Season Baseline	Mar	Apr	May	June	July (iv)	Aug	Sept	Oct	Nov
6,270	10,240	7,630	8,270	10,040	11,250	9,750	7,900	7,810	6,490
Percent Above Baseline	63%	22%	32%	60%	79%	56%	26%	25%	4%

*iv) July estimates are used the for peak seasonal population projection.*

the peak period. Assuming that water usage volumes during the low season are based generally on the permanent population, we use this data to estimate the increase in population during the rest of the year.

**Overnight Visitor Method**

This method reviews data from four types of available lodging to determine the peak overnight visitor population in Carolina Beach. A low and high estimate was calculated for four following occupancy types

within Carolina Beach: short-term rentals, guests of year-round residents, room counts (including full-service, limited-service and bed and breakfasts), and campgrounds. For the peak season this yielded an additional seasonal population estimate of between 9,671 and 11,379 overnight visitors in the high season. A description of the assumptions and methods follows.

## Short-Term Rentals

### Peak Seasonal Population Estimate

#### Method II – Overnight Visitors

	Low Estimate	High Estimate
Short-Term Rentals	5,301	6,925
Guests of Year-Round Residents	628	2,513
Rooms - Hotel/Motel/B&Bs	1,347	2,597
Campgrounds	594	1,145
Total	7,870	13,180

**Average 10,525**

### Estimated Peak Seasonal Occupancy for Short-Term Rentals

# Bedrooms	Occupancy		Occupancy	
	Rate	Units	Low Est.	High Est.
Studio	90%	18	17	33
1 bedroom	9%	83	150	293
2 bedrooms	33%	320	1,438	1,985
3 bedrooms	41%	392	2,467	3,137
4 bedrooms	13%	120	972	1,177
5+ bedrooms	3%	26	257	301
<b>Subtotal</b>		<b>960</b>	<b>5,300</b>	<b>6,923</b>

*Source: American Community Survey 2016 data on unit distribution in Carolina Beach*

AirDNA data pulled from February 2019 indicates a peak month of July with a 90% occupancy, an average rental size of 2.8 bedrooms, with an average of 7.4 guests per rental, and an average occupancy of 2.6 persons per bedroom. Data on the overall

number of short-term rentals is difficult to ascertain. While the most current data from the 2010 U.S. Census indicates there are 2,126 vacant housing units for seasonal or recreational use, there are only 571 vacation rentals that have been verified with New Hanover County Tourism Development



Authority in 2018. For comparison, AirDNA indicate 369 active rentals, though this only accounts for listings active on Airbnb and not the whole short-term rental market. The following assumptions are made:

- » **Number of Short-Term Rentals is equal to the verified seasonal vacation rentals (571) plus 25% of the remaining vacant housing units (389) reported from the census data for a total of 960 short-term rentals.**
- » **The short-term rentals reflect the general housing stock within all of Carolina Beach (based on the number of bedrooms and unit distribution).**

- » **Peak occupancy rate for units is 90% for the peak month of July.**
- » **Occupancy ranges from 1-13 persons per housing unit are assigned based on the number of bedrooms. A low and high estimate of persons is used based on bedrooms for each type of housing unit.**

### Guests of Year-Round Residents

Overnight guests of the permanent population also factor into the peak seasonal population. A low estimate of 0.25 guests per permanently occupied housing unit and a high estimate of one guest per unit is used to estimate peak seasonal guests.

Estimated Peak Seasonal Occupancy for Short-Term Rentals						
Number of Bedrooms	Occupancy Rate		Housing Unit Distribution (i)			Housing Units
	Low	High	Occupancy Estimate	Low	High	
Studio	90%	2%	18	17	33	
1 bedroom		9%	83	150	293	
2 bedrooms		33%	320	1,438	1,985	
3 bedrooms		41%	392	2,467	3,137	
4 bedrooms		13%	120	972	1,177	
5 or more bedrooms			3%	26	257	301
			960	5,300	6,923	

*i) American Community Survey 2016 data on unit distribution in Carolina Beach*

## Part A: Appendix

### Nightly Lodging - Hotel/Motel/ B&Bs

Nightly lodging makes up a portion of the overnight visitor options for Carolina Beach. Full-Service lodging makes up the majority of options, while some limited-service and bed and breakfasts also contribute to the number of rooms available. The lodging unit data from 23 verified businesses were obtained from the New Hanover County Tourism Development Authority. A high estimate assumes 90% of the inventory is available while a low estimate of 70% inventory availability is given due to properties being renovated or partially closed.

### Campgrounds / RV Parks

Carolina Beach has two campgrounds and one RV Park which also contribute to the overnight population. Data was obtained from websites to determine the overall number of sites. A high estimate assumes 90% of the inventory is available while a low estimate of 70% inventory availability is used.

### Peak Seasonal Population Projection

Using the average of the two methods, the peak population in Carolina Beach is estimated to be 10,887 people using the water usage estimates (Method I, 11,250) and the estimate of overnight visitors (Method II 7,870 - 13,180). This equates to a peak seasonal population that is as much as 74% higher than the permanent population, not taking into account day-trippers to the

#### Estimated Peak Seasonal Guests of Year-Round Residents

Persons per Unit (i)	2.29	
Permanently occupied housing units (ii)	2,513	
	Low Estimate	High Estimate
Guests of Year-Round Residents	0.25	1
	628	2,513

*(i, ii) 2016 American Community Survey data on Permanently Occupied Housing Units*

#### Estimated Peak Seasonal Nightly Lodging

	Units	Low Estimate	High Estimate
Full Service (2)	244	342	659
Limited Service (20)	711	995	1,920
Bed and Breakfast (1)	7	10	19
<b>Total</b>	<b>962</b>	<b>1,347</b>	<b>2,597</b>

Estimated Peak Seasonal Camping / RV Sites			
	Sites	Low est.	High est.
Carolina Bch State Park	91	63.7	81.9
Winner's RV Park	21	14.7	18.9
Freeman Park	100	70	90
Subtotal	212	594	1,145

sharing economy could also greatly impact this projection.

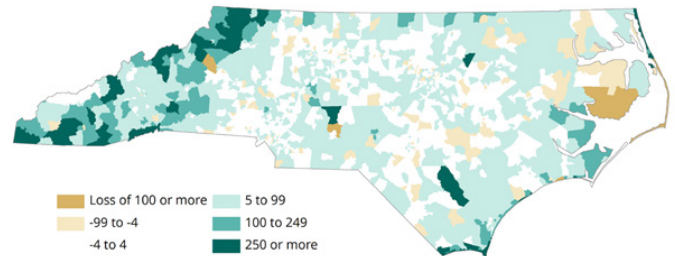
The second is based on occupancy of short-term rentals, guests of year round residents, rooms in full/limited service hotels, and campgrounds in the peak season.

island. Using the average of these methods, a peak seasonal population of 10,887 as a baseline, we apply a 1.36% growth rate to match the most recent growth rate from 2010-2017 to determine peak seasonal population projections for the planning period. This yields a peak seasonal population estimate of 16,793 in 2050.

This growth in this figure is dependent on factors that influence seasonal population including an increase in second or vacation homes. Historical data indicates there has been a trend in an increase in the number of seasonal housing units. Data from 2000 indicates that 30% of the city's housing units were being used for seasonal, recreational, or occasional use. By 2010 this proportion had increased to 38%. Between 2000 and 2010 the number of seasonal, recreational or occasional use housing units were experiencing an annual growth rate of 5.6%, much higher than the growth rate in housing units. This indicates a portion of the existing housing units have been converted to occasional use. Seasonal population increases would be highly dependent upon an increase in the number of housing units, hotel rooms or other accommodations that would be built or expanded during the planning period. An increase or decrease in the overall number of short-term rentals due to expansion or regulation of the residential

### Seasonal Data from UNC Carolina Demography:

Vacation Home Change by NC Census Tract, 2000 to 2010



Date: 2000 and 2010 Census Summary File 1, 2000 Census tracts normalized to 2010 tract boundaries by Carolina Demography

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### 9 of 10 places with the most vacation homes are on the coast

North Carolina communities with largest number of vacation homes, 2010

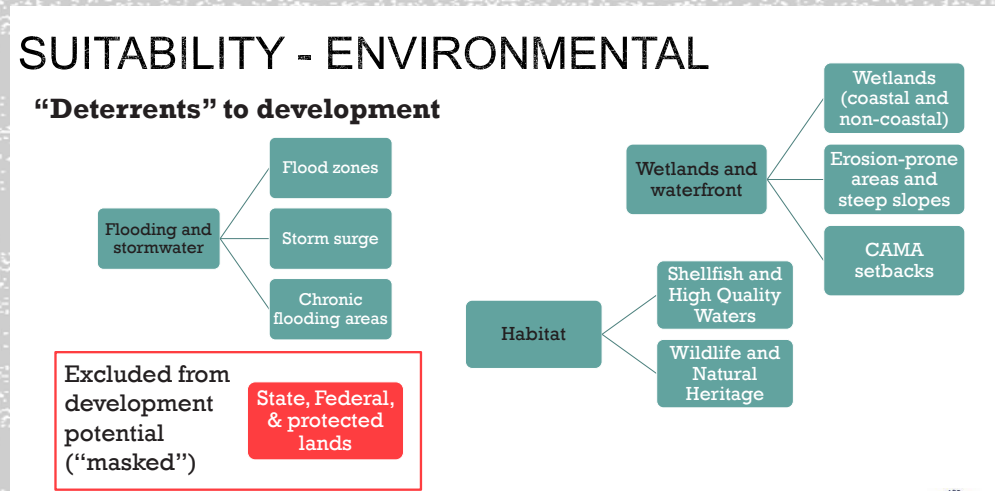
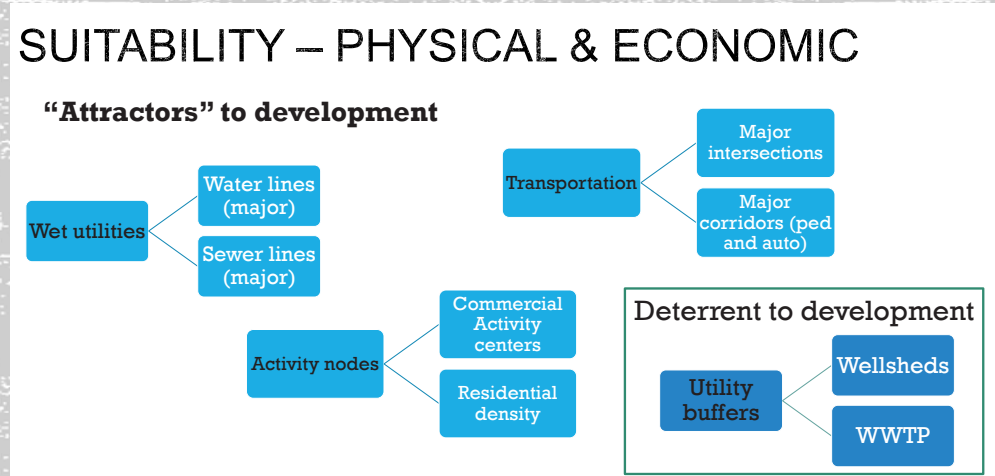
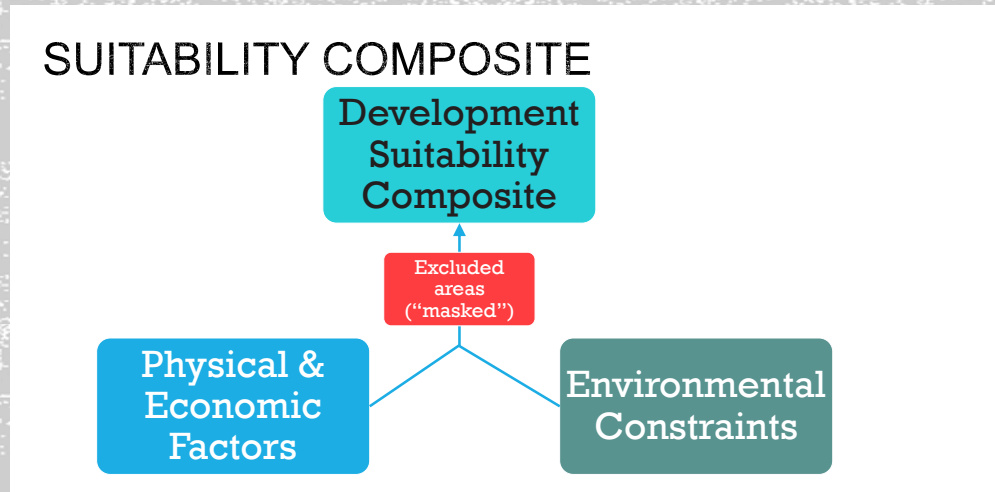
Rank	Name	Housing Units		Seasonal Share
		Total	Seasonal	
1	Oak Island town	8,686	4,709	54%
2	Atlantic Beach town	4,935	3,972	80%
3	Emerald Isle town	6,735	3,931	58%
4	Kill Devil Hills town	6,617	3,486	53%
5	Duck town	2,722	2,500	92%
6	Nags Head town	4,884	2,474	51%
7	Sunset Beach town	5,110	2,420	47%
8	Ocean Isle Beach town	3,206	2,407	75%
9	Carolina Beach town	5,626	2,126	38%
10	Beech Mountain town	2,287	2,049	90%

Data Source: 2010 Census

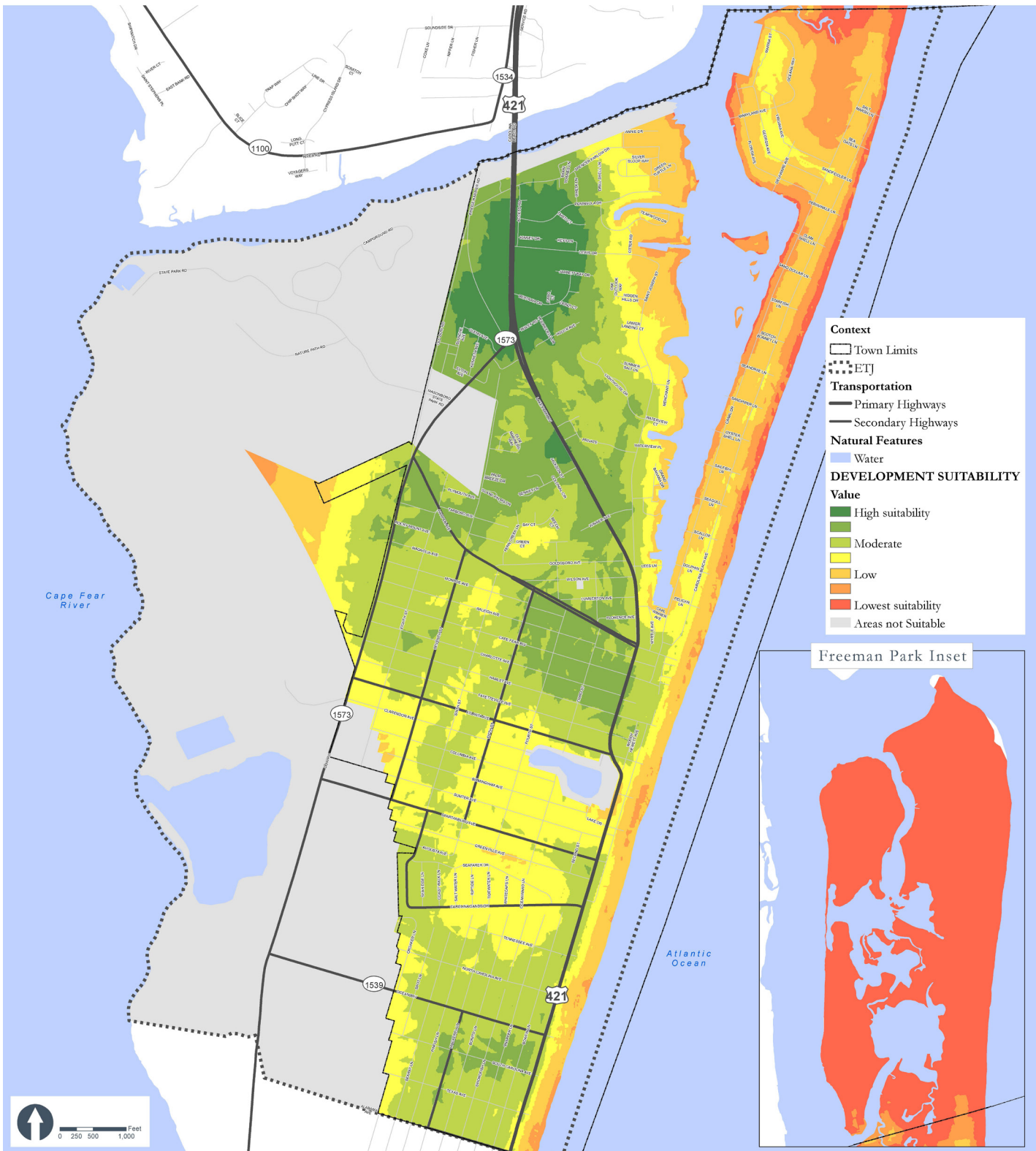
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# Land Suitability Analysis

A suitability analysis quantifies the factors of land that contribute to its economic and physical suitability. These factors, both constraints and attractors, work together and against each other to help inform land use decisions. This type of analysis does not judge the willingness of owners to sell or develop property, but speaks more to the investments in and near land that make it suitable for development, as well as the environmental constraints that deter development or make it more costly to develop. Taken together, these physical, economic, and environmental factors create an overall suitability map. This information, along with many other data points and perspectives, contributed to the creation of the future land use map. A summary of factors is shown to the right, as well as the composite land use suitability map.



Summary of factors that contribute to suitability



Land Use Suitability composite map.

# Matrix for Land Use Plan Elements - 15A NCAC 7B .0702

Matrix for Land Use Plan Elements – 15A NCAC 7B .0702	
	Page Reference(s)
<b>Organization of the Plan</b>	
<ul style="list-style-type: none"> <li>Matrix that shows the location of the required elements as set forth in this Rule</li> </ul>	97
<b>Community Concerns and Aspirations</b>	
<ul style="list-style-type: none"> <li>Description of the dominant growth-related conditions that influence land use, development, water quality and other environmental concerns in the planning area</li> </ul>	12-13
Description of the land use and development topics most important to the future of the planning area, including:	
<ul style="list-style-type: none"> <li>Public Access</li> </ul>	48-50
<ul style="list-style-type: none"> <li>Land Use Compatibility</li> </ul>	50-52
<ul style="list-style-type: none"> <li>Infrastructure Carrying Capacity</li> </ul>	52-54
<ul style="list-style-type: none"> <li>Natural Hazard Areas</li> </ul>	54-58
<ul style="list-style-type: none"> <li>Water Quality</li> </ul>	58-60
<b>Community Vision</b>	
<ul style="list-style-type: none"> <li>Description of the general physical appearance and form that represents the local government’s plan for the future. It shall include objectives to be achieved by the plan and identify changes that may be needed to achieve the planning vision.</li> </ul>	9-10, 43-46
<b>Existing and Emerging Conditions</b>	
<b>Population, Housing and Economy</b>	
Discussion of the following data and trends:	
<ul style="list-style-type: none"> <li>Permanent population growth trends using data from the two most decennial Censuses</li> </ul>	12-13
<ul style="list-style-type: none"> <li>Current permanent and seasonal population estimates</li> </ul>	12-13
<ul style="list-style-type: none"> <li>Key population characteristics including age and income</li> </ul>	13-14
<ul style="list-style-type: none"> <li>Thirty-year projections of permanent and seasonal population in five-year increments</li> </ul>	13
<ul style="list-style-type: none"> <li>Estimate of current housing stock, including permanent and seasonal units, tenure, and types of units (single-family, multifamily, and manufactured)</li> </ul>	14-15
<ul style="list-style-type: none"> <li>Description of employment by major sectors and community economic activity</li> </ul>	15
<b>Natural Systems</b>	
Description of natural features in the planning jurisdiction to include:	
<ul style="list-style-type: none"> <li>Areas of Environmental Concern (AECs) as set forth in Subchapter 15A NCAC 07H</li> </ul>	17-20
<ul style="list-style-type: none"> <li>Soil characteristics, including limitations for septic tanks, erodibility, and other factors related to development</li> </ul>	25-26



<ul style="list-style-type: none"> <li>Environmental Management Commission (EMC) water quality classifications and related use support designations</li> </ul>	25-26
<ul style="list-style-type: none"> <li>Division of Marine Fisheries (DMF) shellfish growing areas and water quality conditions</li> </ul>	23
<ul style="list-style-type: none"> <li>Flood and other natural hazard areas</li> </ul>	27-30
<ul style="list-style-type: none"> <li>Storm surge areas</li> </ul>	30
<ul style="list-style-type: none"> <li>Non-coastal wetlands, including forested wetlands, shrub-scrub wetlands and freshwater marshes</li> </ul>	20-22
<ul style="list-style-type: none"> <li>Water supply watersheds or wellhead protection areas</li> </ul>	31
<ul style="list-style-type: none"> <li>Primary nursery areas</li> </ul>	23
<ul style="list-style-type: none"> <li>Environmentally fragile areas, such as wetlands, natural heritage areas, areas containing endangered species, prime wildlife habitats, or maritime forests</li> </ul>	21-23
<b>Natural Systems, contd.</b>	<b>Page Reference(s)</b>
<ul style="list-style-type: none"> <li>Additional natural features or conditions identified by the local government</li> </ul>	18-20, 33
<b>Environmental Conditions</b>	
Discussion of environmental conditions within the planning jurisdiction to include an assessment of the following conditions and features:	
<ul style="list-style-type: none"> <li>Status and changes of surface water quality; including: <ul style="list-style-type: none"> <li>Impaired streams from the most recent Division of Water Resources (DWR) Basin Planning Branch Reports</li> <li>Clean Water Act 303 (d) List</li> <li>Other comparable data</li> </ul> </li> </ul>	
<ul style="list-style-type: none"> <li>Current situation and trends on permanent and temporary closures of shellfishing waters as determined by the Report of Sanitary Survey by the Shellfish Sanitation and Recreational Water Quality Section of the DMF</li> </ul>	22-23
<ul style="list-style-type: none"> <li>Areas experiencing chronic wastewater treatment malfunctions</li> </ul>	3, 53
<ul style="list-style-type: none"> <li>Areas with water quality or public health problems related to non-point source pollution</li> </ul>	25-26
<ul style="list-style-type: none"> <li>Areas subject to recurrent flooding, storm surges and high winds</li> </ul>	27-30
<ul style="list-style-type: none"> <li>Areas experiencing significant shoreline erosion as evidenced by the presence of threatened structures or public facilities</li> </ul>	25-29
<ul style="list-style-type: none"> <li>Environmentally fragile areas (as defined in Part (c)(2)(A)(ix) of this Rule) or areas where resources functions are impacted as a result of development</li> </ul>	21-22
<ul style="list-style-type: none"> <li>Natural resource areas that are being impacted or lost as a result of incompatible development. These may include, but are not limited to the following: coastal wetlands, protected open space, and agricultural land.</li> </ul>	17-22
<b>Existing Land Use and Development</b>	
MAP of existing land use patterns	35
<ul style="list-style-type: none"> <li>Description of the existing land use patterns</li> </ul>	36
<ul style="list-style-type: none"> <li>Estimates of the land area allocated to each land use category</li> </ul>	36
<ul style="list-style-type: none"> <li>Characteristics of each land use category</li> </ul>	36, 44-46
MAP of historic, cultural, and scenic areas designated by a state or federal agency or by the local government	38

## Part A: Appendix

<ul style="list-style-type: none"> <li>• Descriptions of the historic, cultural and scenic areas</li> </ul>	37	
<b>Community Facilities</b>		
Evaluation of existing and planned capacity, location and adequacy of community facilities to include:		
MAP of existing and planned public and private water supply service areas	32	
<ul style="list-style-type: none"> <li>• Description of existing public and private water supply systems to include:</li> </ul>		
<ul style="list-style-type: none"> <li>- Existing condition</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Existing capacity</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Documented overflows, bypasses or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Future water supply needs based on population projections</li> </ul>	31	
MAP of existing and planned public and private wastewater service areas	32	
<ul style="list-style-type: none"> <li>• Description of existing public and private wastewater systems to include:</li> </ul>		
<ul style="list-style-type: none"> <li>- Existing condition</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Existing capacity</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Documented overflows, bypasses or other problems that may degrade water quality or constitute a threat to public health as documented by the DWR</li> </ul>	31	
<ul style="list-style-type: none"> <li>- Future wastewater system needs based on population projections</li> </ul>	31	
MAP of existing and planned multimodal transportation systems and port and airport facilities	39	
<ul style="list-style-type: none"> <li>• Description of any highway segments deemed by the NC Department of Transportation (NCDOT) as having unacceptable service as documented in the most recent NCDOT Transportation and/or Thoroughfare Plan</li> </ul>	37-40	
<b>Community Facilities, contd.</b>	<b>Page Reference(s)</b>	
<ul style="list-style-type: none"> <li>• Description of highway facilities on the current thoroughfare plan or current transportation improvement plan</li> </ul>	37-40	
<ul style="list-style-type: none"> <li>• Description of the impact of existing transportation facilities on land use patterns</li> </ul>	35-40	
<ul style="list-style-type: none"> <li>• Description of the existing public stormwater management system</li> </ul>	31	
<ul style="list-style-type: none"> <li>• Identification of existing drainage problems and water quality issues related to point-source discharges of stormwater runoff</li> </ul>	31-32	
	<b>Policy Citation(s)</b>	<b>Page Reference(s)</b>
<b>Future Land Use</b>		
<b>Policies</b>		
<ul style="list-style-type: none"> <li>• Policies that exceed the use standards and permitting requirements found in Subchapter 7H, State Guidelines for Areas of Environmental Concern</li> </ul>	LU 1.1 – LU 4.2, IC 1.2 – IC 2.5	51-52, 53-54
Policies that address the Coastal Resources Commission's (CRC's) management topics:		



<b>Public Access</b> Management Goal:		
<i>Maximize public access to the beaches and the public trust waters of the coastal region.</i>		
The planning objectives for public access are local government plan policies that:		
<ul style="list-style-type: none"> <li>Address access needs and opportunities</li> </ul>	PA 1.1-6.1	49-50
<ul style="list-style-type: none"> <li>Identify strategies to develop public access</li> </ul>	PA 1.1-6.1	49-50
<ul style="list-style-type: none"> <li>Address provisions for all segments of the community, including persons with disabilities</li> </ul>	PA 1.1-6.1	49-50
<ul style="list-style-type: none"> <li>For oceanfront communities, establish access policies for beach areas targeted for nourishment</li> </ul>	PA 3.1, 5.1	49-50
<b>Land Use Compatibility</b> Management Goal:		
<i>Ensure that development and use of resources or preservation of land balance protection of natural resources and fragile areas with economic development, and avoids risks to public health, safety, and welfare.</i>		
The planning objectives for land use compatibility are local government plan policies that:		
<ul style="list-style-type: none"> <li>Characterize future land use and development patterns</li> </ul>	LU1.1 - 1.2	51
<ul style="list-style-type: none"> <li>Establish mitigation criteria and concepts to minimize conflicts</li> </ul>	LU 2.2-4.2	51-52
<b>Infrastructure Carrying Capacity</b> Management Goal:		
<i>Ensure that public infrastructure systems are sized, located, and managed so the quality and productivity of AECs and other fragile areas are protected or restored.</i>		
The planning objectives for infrastructure carrying capacity are local government plan policies that:		
<ul style="list-style-type: none"> <li>Establish service criteria</li> </ul>	IC 1.3, 2.1-2.4	53
<ul style="list-style-type: none"> <li>Ensure improvements minimize impacts to AECs and other fragile areas</li> </ul>	IC 1.1-1.3, 2.2	53
<b>Natural Hazard Areas</b> Management Goal:		
<i>Conserve and maintain barrier dunes, beaches, floodplains, and other coastal features for their natural storm protection functions and their natural resources giving recognition to public health, safety, and welfare issues.</i>		
The planning objectives for natural hazard areas are local government plan policies that:		
<ul style="list-style-type: none"> <li>Establish mitigation and adaptation concepts and criteria for development and redevelopment, including public facilities</li> </ul>	NH 1.1 – 7.1	54 - 58
<ul style="list-style-type: none"> <li>Minimize threats to life, property and natural resources resulting from erosion, high winds, storm surge, flooding, or other natural hazards</li> </ul>	NH 1.1 – 7.1	54 - 58
<b>Water Quality</b> Management Goal:		
<i>Maintain, protect and where possible enhance water quality in all coastal wetlands, rivers, streams, and estuaries.</i>		
The planning objectives for water quality are local government plan policies that:		
<ul style="list-style-type: none"> <li>Establish strategies and practices to prevent or control nonpoint source pollution</li> </ul>	WQ 1.1 – 5.5	59 - 60
<ul style="list-style-type: none"> <li>Establish strategies and practices to maintain or improve water quality</li> </ul>	WQ 1.1 – 5.5	59 - 60
<b>Future Land Use Map</b>	<b>Page Reference(s)</b>	

## Part A: Appendix

MAP of future land uses that depicts the policies for growth and development and the desired future patterns of land use and development with consideration given to natural system constraints and infrastructure	43
<ul style="list-style-type: none"> <li>• Descriptions of land uses and development associated with the future land use map designations</li> </ul>	44
<b>Tools for Managing Development</b>	
<ul style="list-style-type: none"> <li>• Description of the role of plan policies, including the future land use map, in local decisions regarding land use and development</li> </ul>	72
<ul style="list-style-type: none"> <li>• Description of the community's development management program, including local ordinances, codes, and other plans and policies</li> </ul>	72
<b>Action Plan and Implementation Schedule</b>	
<ul style="list-style-type: none"> <li>• Description of actions that will be taken by the local government to implement policies that meet the CRC's management topic goals and objectives, specifying fiscal year(s) in which each action is anticipated to start and finish</li> </ul>	48-70
<ul style="list-style-type: none"> <li>• Identification of specific steps the local government plans to take to implement the policies, including adoption and amendment of local ordinances, other plans, and special projects</li> </ul>	48-56, 58-63, 65, 66, 69



Saltmarsh  
Carolina Beach N Ave



STEWART