



Onslow County Camp Lejeune

Joint Land Use Study Update

October 3, 2019



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

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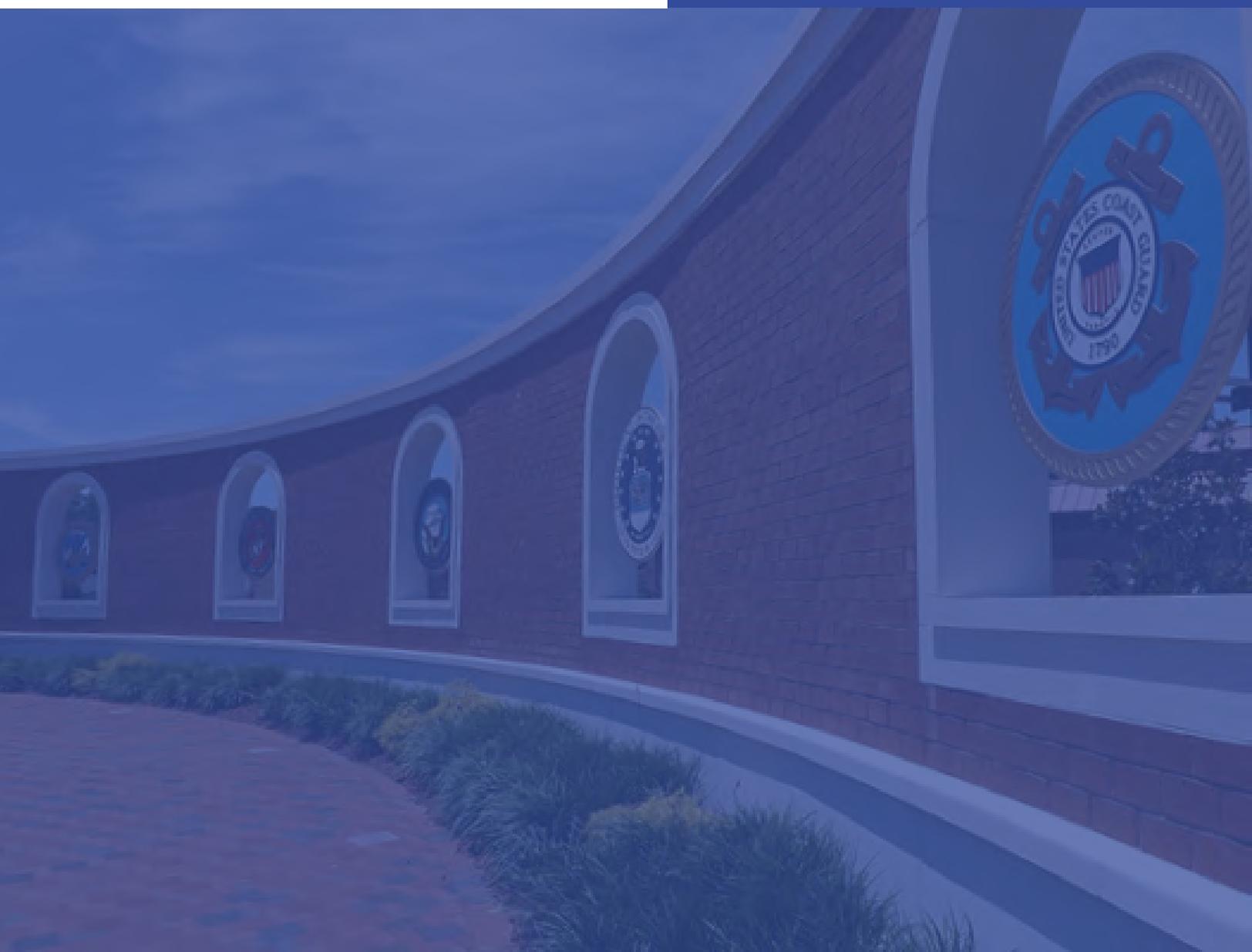
APPENDIX A: MAPS

APPENDIX B: SURVEY RESULTS



1.

Introduction and Overview



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1. INTRODUCTION AND OVERVIEW

1.1. JLUS Overview

A Joint Land Use Study (JLUS) is a collaborative planning effort among active military installations, surrounding communities, federal officials, residents, business owners, and other stakeholders. The objective is to identify compatible land uses and growth management guidelines to reduce encroachment adjacent to the military installation while continuing to foster growth within the community. Through the study process, communication and coordination is strengthened between the installation and the community. The process encourages them to act as a team to prevent or limit any encroachment issues caused by future mission expansion or local growth. This Study is funded primarily through the Department of Defense (DoD) Office of Economic Adjustment and administered by Onslow County, but is created by the community and for the community.



Source: Camp Lejeune



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From the community perspective, the primary objectives of a JLUS are:

- Protect the health, safety, and welfare of residents and maintain their quality of life.
- Ensure compatible development in the vicinity of military installations that will not interfere with the continued operations of the facilities.
- Provide for sustainable growth in an economically, environmentally, and socially conscious manner.
- Maintain the economic vitality of the community.
- Enhance communication between the community and the military.

From the military perspective, the primary objectives of a JLUS are:

- Promote the health, safety, and welfare of the military and civilian personnel living and working at or near the military installation.
- Ensure the ability of the installation to achieve its mission, maintain military readiness, and support national defense objectives.
- Preserve the ability of the installation to adjust or expand its mission.

It is important to note that the JLUS is not intended to be a study that rests on the shelf, but a set of recommendations and strategies that are implemented through local jurisdictions. The recommendations from the JLUS are used to help local jurisdictions guide community development that is compatible with military training, testing, and operational missions and seeks ways to reduce operational impacts on adjacent lands and waterways while supporting continued economic development and public health, safety, and general welfare of those living and working near an active military installation.

Throughout the process, municipalities, residents, businesses, and other stakeholders provided their input and support. By accepting the report, they are stating their continued community-based support for future implementation efforts. Typically, implementation measures involve some level of revisions to local policies. The intent is to continually ensure that future public and private development around the military installation will be compatible with both the military mission and the needs of the community.



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1.2. Onslow County / Camp Lejeune JLUS

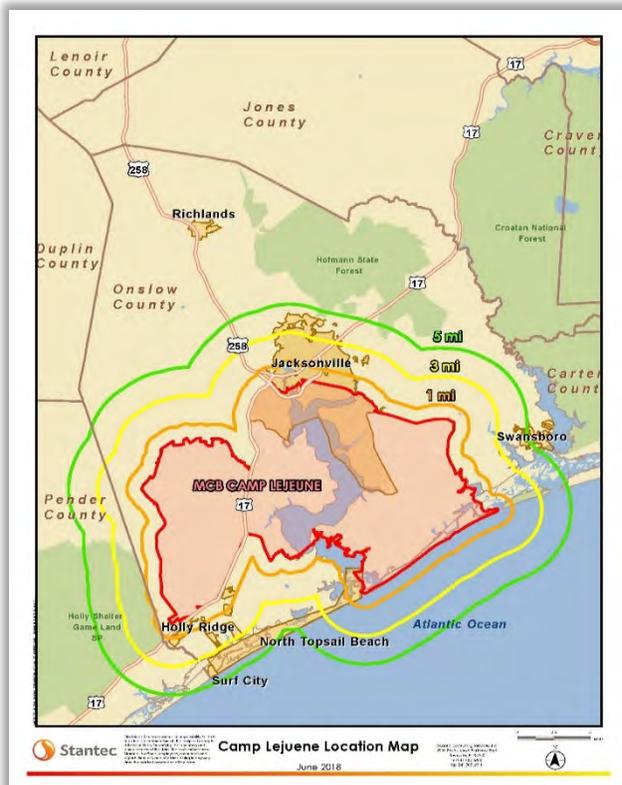
Camp Lejeune, which includes the New River Air Station, is located within Onslow County, North Carolina and is home to the II Marine Expeditionary Force. Onslow County is located along the south-central North Carolina coast, approximately 40 miles northeast of Wilmington, North Carolina. The County and the Installation are not accessible by an interstate; the Installation occupies approximately 1/4 of Onslow County's land area. The Installation has an economic impact of \$3.5 billion. Surrounding communities include Onslow County, the unincorporated area of Sneads Ferry, the City of Jacksonville, the Town of Swansboro, the Town of Richlands, the Town of Holly Ridge, and the



Town of North Topsail Beach. The Installation is integral to the overall U.S. military mission and important to the economy, security, and social fabric of Onslow County and the State of North Carolina.

1.2.1. Onslow County / Camp Lejeune Study Area

The JLUS concentrates on the compatibility of the land uses within one mile of the installation's boundary but examines the compatibility of land uses within five miles and along flight paths and noise zone contours. The Onslow County / Camp Lejeune JLUS Study Area covers approximately 142,763 acres and includes portions of Onslow County, the unincorporated area of Sneads Ferry, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, and the Town of North Topsail Beach. The Town of Richlands is not located within the five-mile Onslow County / Camp Lejeune JLUS Study Area but did participate as part of the JLUS process.



Camp Lejeune Study Area; see Appendix A for a full-size map. Source: Stantec 2019



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2.

Public Involvement



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2. PUBLIC INVOLVEMENT

Public Involvement is the backbone of the JLUS, without which the study would be unsuccessful. The community engagement process for the Onslow County / Camp Lejeune JLUS focused on the following goals:

- **Goal 1:** Develop a strategy that will allow all individuals and groups interested in the future of the Installation and the process to participate by:
 - Providing initial input on the issues and concerns of the study to be addressed.
 - Offering frequent, timely, and meaningful input throughout the study in ways that will help the analysis.
 - Staying informed about, and having multiple opportunities to provide comments on, the study and findings.
 - Disseminating current information about the study with their respective constituents.
 - Offering an easy-to-access and attractive multi-level approach tailored to the needs of the entire community, ranging from the military and local officials to area residents and other stakeholders.
- **Goal 2:** Provide a variety of engagement venues that range from hands-on meetings and workshops to interactive on-line tools to provide options for learning about and having input into the study process.

2.1. Committee Collaboration

The Policy Committee and Technical Working Group helped facilitate the JLUS planning process. Each participated directly with the project team to provide technical assistance, feedback, and decision-making throughout the planning process.

2.1.1. Policy Committee (PC)

The PC was responsible for the overall direction of the JLUS, policy recommendations, and approval of the draft and final written reports. The PC consists of decision-makers, chief administrative officers, and elected officials.



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Table 1.1: PC Members

Representative	Organization
Jack Bright	Onslow County
Sammy Phillips	City of Jacksonville
Col. Scott Baldwin	MCB Camp Lejeune
Col. Russell Burton	MCAS New River

2.1.2. Technical Working Group (TWG)

The TWG provided technical expertise through identification of issues and gave feedback to the JLUS team throughout the study process. The TWG included subject experts from surrounding jurisdictions, military planners, business and development representatives, and special organizations.

Table 1.2: TWG Members

Representative	Organization
David Cotton	Onslow County
Ben Warren	Onslow County
Jessie Rhue	Onslow County
Andrea Correll	Town of Swansboro
Marsha-Gray Kircher	Town of Holly Ridge
Greg Hines	Town of Holly Ridge
Richard Woodruff	City of Jacksonville
Ron Massey	City of Jacksonville
Ryan King	City of Jacksonville
Joe Ramirez	MCB Camp Lejeune
Tim McCurry	MCB Camp Lejeune
Sgt. Maj. Charles A. Metzger	MCAS New River
Laura Oxley	Town of N. Topsail Beach
Bryan Chadwick	Town of N. Topsail Beach
Gregg Whitehead	Town of Richlands
Kirk Kropinack	MCAS New River
Scott Anderson	MCAS New River
Carol McIntyre	Sneads Ferry



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2.2. Community Outreach

A series of public meetings were hosted to inform and obtain feedback from the community. Three rounds of public workshops and forums were held at three locations throughout the study area for a total of nine meetings.

The meetings were scheduled to provide the community information at three important milestones along the study process: a kick off workshop, a mid-term workshop, and a final workshop. The timing of each event was dependent upon the project milestones.



2.2.1. Kick-Off Workshop

The Onslow County/Camp Lejeune JLUS team held three community workshops to introduce the community to the JLUS and receive feedback from them. The workshops were held in three locations on subsequent nights to reach the most participants.

- Monday, June 25, 2018 from 5pm– 7pm at the Swansboro Town Hall Auditorium in Swansboro
- Tuesday, June 26, 2018 from 5pm – 7pm at the Onslow County Government Center in Jacksonville
- Wednesday, June 27, 2018 from 5pm – 7pm at the Sneads Ferry Community Center in Sneads Ferry



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Project Manager Ray Greer conducts a public workshop at Sneads Ferry. Source: Stantec 2019

2.2.2. Mid-Term Workshop

The Onslow County/Camp Lejeune JLUS team held three mid-term community workshops to update the community on the progress of the JLUS and receive feedback. The workshops were held in two locations on two nights to provide opportunity for most of the community to attend.

- Thursday, November 29, 2018 from 6pm – 7pm at the City of Jacksonville Commons Recreation Center in Jacksonville
- Friday, November 30, 2018 from 4pm – 5pm at the Town of Holly Ridge Town Hall in Holly Ridge
- Friday, November 30, 2018 from 6pm – 7pm at the Town of Holly Ridge Town Hall in Holly Ridge



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2.2.3. Final Workshop

The Onslow County/Camp Lejeune JLUS team held three final community workshops to present the final draft of the JLUS and receive feedback. The workshops were held in three locations on three nights to provide opportunity for most of the community to attend.

- Thursday, June 6, 2019, 6:30 PM at the Onslow County Planning Board Meeting at the Commissioners' Chambers at the Onslow County Government Center in Jacksonville
- Tuesday, June 18, 2019, 5:00 PM at the City of Jacksonville City Council Meeting at the City of Jacksonville City Hall in Jacksonville
- Wednesday, June 19, 4:00 to 6:00 PM at the Sneads Ferry Branch Library located in Sneads Ferry

2.3. Stakeholder Outreach

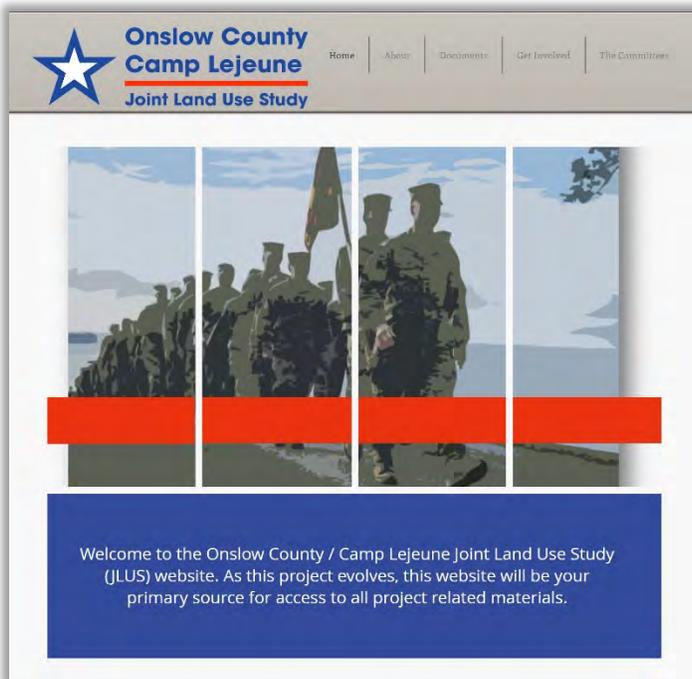
Stakeholder interviews occurred throughout the data and analysis tasks of the study. Recommendations were made from the PC and TWG to ensure that as many stakeholders as possible were contacted to fully understand the public engagement opportunities available to the community and The Installation. Stakeholders offered data, forecasts, and opinions to solidify the study. Stakeholders included representatives from the following:

- Jacksonville Onslow Economic Development
- Onslow County Water And Sewer Authority (ONWASA)
- Albert J. Ellis Airport
- Scientific Water
- Pluris
- Northwest Onslow Water Associates
- Onslow County
- City of Jacksonville
- Town of Holly Ridge
- Town of Swansboro
- Town of Richlands
- Town of North Topsail Beach
- Camp Lejeune
- Jacksonville Metropolitan Planning Organization
- The Nature Conservancy of North Carolina
- North Carolina Department of Agriculture
- Onslow Bight
- North Carolina Coastal Land Trust
- North Carolina Wildlife Resource Commission
- North Carolina Division of State Parks



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Screenshot from the Camp Lejeune JLUS website; Source: Stantec, 2019

The website was created at the inception of the project and will be utilized through implementation.

2.5. Survey Results

As part of the public outreach efforts for the JLUS, a sixteen-question survey was distributed to the community. The intent of the survey was to provide information to the PC, TWG, and project team regarding general demographics and a sense of the public's perceptions and interactions with the Installation.

The survey was made available for a five-month period (June 2018 – October 2018) using the project website and through attendance at

2.4. Public Information Tools

Reiterated throughout the process, the study could not be successful without the public – the individuals who are affected daily. In an effort to stay in contact with the community and provide information to those that may not have been able to attend meetings, an interactive website was created.

The website was utilized for sharing information with the general public, as well as receiving important feedback on the findings and results of the overall plan recommendations. The website included maps, surveys, draft reports, handout materials, photos, and contact information.



Example of results from the public survey; Source: Stantec 2019



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community events. A total of 322 surveys were completed. The survey questions are divided into the following categories:

- General Demographics
- Connection and Familiarity with the Installation
- Communication with the Installation
- Perception of the Installation in the Community
- Impacts of the Installation in the Community

A complete summary of the survey results, including graphics and tables, can be found in Appendix B.



Members of the public fill out JLUS surveys at the 2018 Shrimp Festival in Sneads Ferry; Source: Stantec, 2018



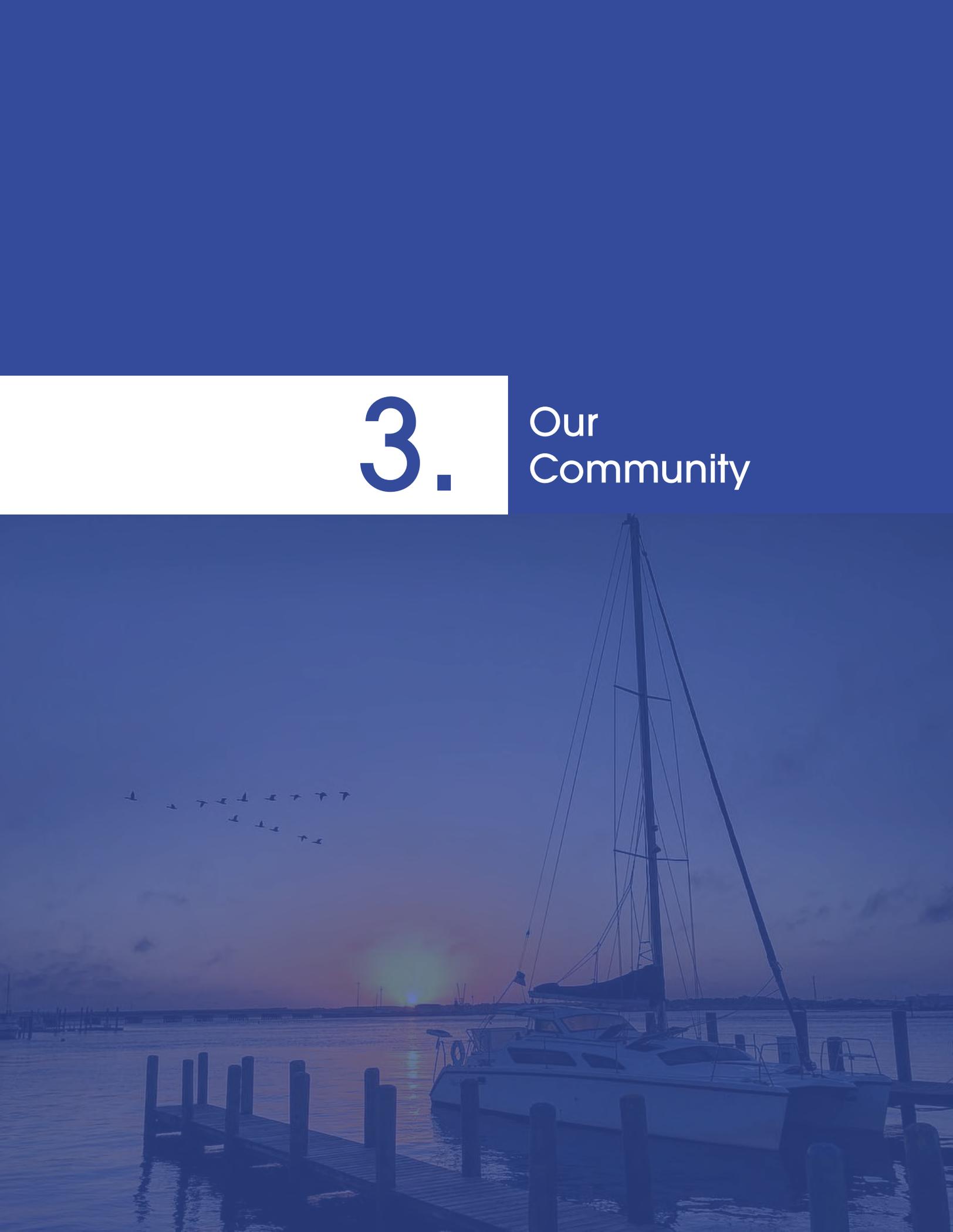
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3.

Our
Community



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3. OUR COMMUNITY

3.1. Community Profiles

The study area is comprised of portions of Onslow County, the unincorporated area of Sneads Ferry, the City of Jacksonville, The Town of Swansboro, The Town of Holly Ridge, and the Town of North Topsail Beach. The Town of Richlands is not within the five-mile study area but also participated in the JLUS. Military families live throughout the County, and the Installation's economic effect is felt in all the communities around it.

3.1.1. Onslow County

Onslow County is located in the coastal plain of North Carolina. The County's flat, gently rolling terrain covers 906 square miles (763 land 143 water) (according to the US Census Bureau) and is located 120 miles east of Raleigh and 40 miles north east of Wilmington. The County is home to approximately 185,000 people and includes the incorporated towns of Jacksonville, Holly Ridge, Richlands, Swansboro, North Topsail Beach, part of Surf City, and the unincorporated area of Sneads Ferry.

The County boasts a wide variety of natural settings that allow it to offer a diverse range of coastal recreation and sports with over 30 miles of beaches, in addition to rivers and oceans. The County also has large tracts of forests with abundant wildlife. The 50-mile long New River is contained entirely within the County, a unique situation for large rivers within the continental US.

Onslow County was formed in 1734 as Onslow Precinct and was named for Arthur Onslow, the longest serving Speaker of the British House of Commons.

The County's early economy was centered on naval stores, lumber, tobacco crops, and fishing.



Farmer's Market Area, Source: Onslow County



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Overharvesting of pine forests caused a decline in the turpentine industry in the early 20th century. The County continued to be populated with agrarian and maritime communities until the establishment of the Army's Camp Davis near present-day Holly Ridge and the establishment of the Installation in 1941. The creation of the military bases caused a dramatic increase in County population and generated growth in both the number of houses and businesses.



Sneads Ferry Sign; Source: Town of Sneads Ferry

Sneads Ferry

The unincorporated area of Snead Ferry in Onslow County is located immediately to the south of the southern gate to the Installation, between Jacksonville and Wilmington along the inlet where the New River flows into the Atlantic Ocean. Once a rural fishing village, Sneads Ferry has experienced a surge in development since 2000. Based on US Census data, the study area has grown from 2,248 residents in 2000 to approximately 2,910 residents in

2010, a 30% increase. Growth primarily has been driven by accessibility to the Installation from its southern gate.

In 1759, two ferries operated on the New River, one from each side. Robert Snead was the proprietor of the ferry on the north shore and the community that developed on the banks of the crossing site became known as "Sneads Ferry." The ferry was in place until 1939, when it was replaced with a bridge. Historically, the village has been heavily dependent on the seafood industry. The Town hosts an annual Shrimp Festival. The Town has one building on the National Register of Historic Places, the Yopps Meeting House. Sneads Ferry has a community council that is organized and operated to advance the civic, charitable, social, historic, educational, and economic interests of Sneads Ferry.

3.1.2. City of Jacksonville

After a devastating hurricane in 1752, the County Courthouse was relocated from its location at Town Point south of the New River to Wantland's Ferry. Wantland's Ferry was incorporated in 1842 and was



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named Jacksonville after President Andrew Jackson. Present-day Jacksonville's downtown waterfront park is built on the site of Wantland's Ferry.

The City of Jacksonville serves as the county seat, and the City and its environs serve as the major population center in the County. Like the County as whole, the City of Jacksonville experienced a large and rapid increase in population after the establishment of the Installation in 1941. In 1940, the City's population was 873. By 1950, it was 3,960, an increase of 354%. As of the 2010 Census, the City's population was 70,145. In 2014, Forbes magazine ranked Jacksonville as the fifth fastest-growing small city in the United States. The presence of so many soldiers has contributed to Jacksonville being the youngest city in the US with an average age of 22.8 years.

The primary industries within the City are retail sales and services. The City is also home to several sites listed on the National Register of Historic Places: Bank of Onslow, Jacksonville Masonic Temple, Mill Avenue Historic District, Pelletier House, and Wantland Spring. The City is home to a multitude of parks and recreation facilities, including 17 miles of trails and greenways and is host to festivals throughout the year.

The City is also home to Sturgeon City, a non-profit organization that provides civic and environmental education through programs and events to area youth and adults to cultivate a love and understanding of science and the environment. The nonprofit operates out of the administration building of the former Wilson Bay Wastewater Treatment Plant. The City and the Installation discharged wastewater into the New River for 40 years causing large amount of pollution. In the mid-1990s, citizens demanded a return of the river for recreation and commercial use. The Jacksonville City Council decided to close the Wilson Bay Wastewater



Freedom Fountain, City of Jacksonville; Source: City of Jacksonville



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Treatment Plant and open an environmentally friendly and expandable land treatment site that could safely treat wastewater and spread the effluent in a forested area. In addition, the City undertook a project to use oysters, aeration, restored wetlands, and stormwater mitigation to return high water quality to Wilson Bay. The property encompasses the former wastewater treatment plant, a city park, and boardwalks that allow for a combination of indoor and outdoor education and projects.

The City also hosts several commemorative sites honoring those who serve in the military. These sites include Lejeune Memorial Gardens. The gardens are located at Montford Landing Road and Lejeune Boulevard and contain the Beirut Memorial, the Vietnam Veterans Memorial, the Montford Point Marine Memorial, and the 9/11 Memorial Beam. Jacksonville's greenways and trails connect the gardens to the Installation and City trails.

Another commemorative site within the City is the Freedom Fountain. Located at Johnson Boulevard and New Bridge Street, the Fountain was created to recognize the pathway that many of the Marines and Sailors from the Installation take to get from the Installations in Onslow County to the port at Morehead City to be deployed. Neighboring communities along the route jointly support the recognition effort of the Installation, families, and the port. The route is known today as Freedom Way.

3.1.3. Town of Swansboro

Swansboro is a beautiful and historic waterfront community located at the mouth of the White Oak River, where the river joins the Atlantic Ocean. The Town of Swansboro was founded in 1783 and is known as the "Friendly City by the Sea." Named after Samuel Swann, speaker of the North Carolina House of Commons, the Town's early industry was based on shipbuilding, later on lumber and naval stores, and



Source: Town of Swansboro



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commercial fishing by the mid-twentieth century. Today, Swansboro's economy is bolstered by the presence of the Installation and from the growth of coastal tourism. According to the 2010 census, the Town's 2010 population was 2,663. The Town is home to Hammocks Beach State Park and a historic downtown district overlooking the water. Swansboro is located three miles from the Croatan National Forest and offers numerous opportunities for coastal recreation. The Town hosts a variety of events every year, including fishing tournaments, art festivals, and cook-offs.

3.1.4. Town of Richlands

Richlands is a community that is growing while maintaining its focus on the small-town history and feel of the community. Incorporated in 1880 and named for its rich soil, the Town was the first in the County to have its own library and museum and is home to the last standing Works Progress Administration structure, the Richlands Community Building, built in 1935. The Town also contains a historic district listed on the National Register of Historic Places and is the geographic high point of the County. The Town is home to Venters Park and Richlands Steed Park, a regional park with many recreational facilities. The Town is also home to two active civic groups: the Richlands Rotary Club and the Richlands Ruritan Club. The 2010 population of Richlands was 1,520 people. The Town celebrates its agrarian roots with a Farmer's Day Celebration, held each year on the first Saturday after Labor Day.



Town of Richlands Sign; Source: Town of Richlands



Liberty Fountain, Town of Holly Ridge; Source: Town of Holly Ridge

Celebrations include a parade, live music, local vendors, games, and food.

3.1.5. Town of Holly Ridge

The Town of Holly Ridge is the gateway to Topsail Island Beaches, offering abundant sporting and recreational opportunities in a natural coastal area. Incorporated before 1950, the Town experienced rapid growth with the establishment of Camp Davis, which borders the Town on the north. The Town's population declined with the closing of Camp Davis in 1944. The Town's 2010



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Population was 1,268. The Town is home to Liberty Fountain, a memorial fountain built to express gratitude to fallen service members and provide an area for reflection.

3.1.6. Town of North Topsail Beach

North Topsail Beach is located on Topsail Island, a 26-mile long barrier island lying south of Jacksonville. The northeastern edge of the island is the New River Inlet and the southwestern edge is Topsail Inlet. Along with its thick maritime forests, Topsail Island is a sanctuary for sea turtles and is known for its beautiful beaches. The northern part of the island is in Onslow County, and the southern part of the island is in Pender County. North Topsail Beach contains one of only two ways off the island, a high-rise bridge.



Source: Town of North Topsail Beach

Prior to World War II, Topsail Island was only accessible by boat. At the beginning of World War II, the U.S. Army built a large temporary anti-aircraft training base at Holly Ridge known as Camp Davis and took possession of the island. They built a road from Camp Davis to the sound and installed a pontoon bridge across the Intracoastal Waterway where the present bridge is located. The island continued to be used for a Navy project known as Project Bumblebee. The project ended in 1958 and the island was returned to its original owners. The roads, bridge, and other infrastructure were left intact and development of the island as a beach resort began in the 1950s.

Today the northern part of the island is occupied by the Town of North Topsail Beach. The Town had a population of 743 in the 2010 Census. The Town is home to two parks and numerous beach access points, as well as a bike and pedestrian path that runs from Town Hall to North Topsail Beach Park.



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3.2. Infrastructure

3.2.1. Roads

Strategic Highway Network (STRAHNET) routes and STRAHNET Connectors link over 200 important military installations and ports throughout the country. STRAHNET is designated by the Federal Highway Administration in coordination with the DoD as the minimum network of highways that are important to the US strategic defense policy, providing access, continuity, and emergency capabilities to military installations and ports. The Installation is served by two Non-Interstate STRAHNET routes; US 17 and NC 24, and one Major STRAHNET Connector; NC 172.

The North Carolina Department of Transportation (NCDOT) has identified a network of key multimodal transportation corridors called Strategic Transportation Corridors (STC). These corridors support smart planning, help to set long-term investment decisions, and ensure that North Carolina's economic prosperity goals are achieved. Complementing that effort, NCDOT has developed the North Carolina Transportation Network (NCTN), to define more clearly and consistently the role that all elements of the state's transportation system play in providing for personal and freight mobility and land access services.

The STC is intended to ensure transportation system connectivity, provide high levels of mobility, and improve access to important state and regional activity centers throughout the state. The NCTN builds upon the NC Multimodal Investment Network developed in 2004 and is envisioned to be a tool to aid long-range transportation planning throughout North Carolina. In updating these planning tools to guide and support transportation investment decision-making, NCDOT seeks to provide long-term direction to the innovative Strategic Transportation Investment funding program established in 2013.

A total of 25 STC across the state responding to regional and statewide issues and opportunities were identified. Of the 25 STC, three traverse Onslow County. They include "Corridor O" which is US 17 from the South Carolina state line to the Virginia state line, "Corridor W" which is US 401/NC 24/US 258 from I-74 in Scotland County to the Port at Morehead City, and "Corridor X" which is US 258/NC 11/US 13 from US 17 in Onslow County to US 64E in Edgecombe County. "Corridor X" is part of NCDOT's first bundle of STC Master Plans which will be vetted through Transportation Advisory Committees, Technical Coordination Committees, and Corridor Steering Committees; ultimately final plans will be developed.



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In addition to the three STRAHNET routes/connectors and NCDOT STC, the Installation is served by several other major arterial and collector roadways. Table 3.1 summarizes the major roadways serving the Installation.

Table 3.1: Major Roadways Serving the Installation

Roadway	Functional Classification	Part of STC	Part of STRAHNET
Jacksonville Pkwy	Freeway		
US 17	Principal Arterial/Freeway	x	x
US 17 Bus.	Principal Arterial		
NC 24	Principal Arterial	x	x
NC 53	Principal/Minor Arterial		
US 258	Minor Arterial	x	
NC 111	Minor Arterial		
NC 172	Minor Arterial		x
NC 210	Minor Arterial		
CR 1308	Minor Arterial		
CR 1336	Minor Arterial		
CR 1406	Minor Arterial		
CR 1413	Minor Arterial		
NC 50	Major Collector		
CR 1113	Major Collector		
CR 1211	Major Collector		
CR 1212	Major Collector		
CR 1213	Major Collector		
CR 1434	Major Collector		
CR 1503	Major Collector		
CR 1509	Major Collector		
CR 1515	Major Collector		
CR 1518	Major Collector		
CR 1519	Major Collector		



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Daily traffic volumes on the major roadways serving the Installation range from 1,800 vehicles per day to 51,000 vehicles per day. Figure 3.1 shows the 2016 annual average daily traffic (AADT) volumes near the Installation.

Figure 3.1: 2016 Average Annual Daily Traffic



Source: NCDOT AADT Mapping Application



ONSLOW COUNTY CAMP LEJEUNE

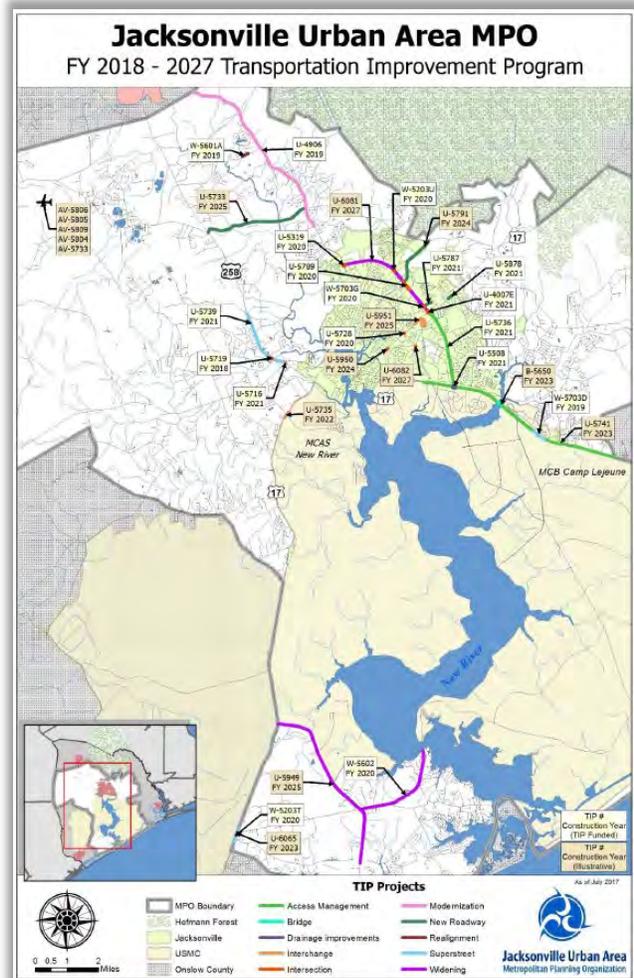
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The Jacksonville Urban Area Metropolitan Planning Organization (JUMPO) has identified 26 projects in their fiscal year (FY) 2018 to 2027 Transportation Improvement Program (TIP) which improve safety, provide access management, intersection operations, and roadway capacity. Projects programmed in the first four years (2018-2021) have committed funding, while the remaining six years (2022-2027) do not. The projects are shown in Figure 3.2. Additional detail on the JUMPO TIP projects can be found at <http://jumpo-nc.org/plans/>.

In addition to their FY 2018 – 2027 TIP, the JUMPO has an adopted 2040 Long Range Transportation Plan (LRTP). The plan addresses all modes of transportation and identifies projects and programs that are financially feasible within the timeframe of the plan. The JUMPO 2040 LRTP identifies the following guiding statements to establish goals and objectives, and prioritization of recommendations:

- Create a more efficient transportation system through improved connectivity, capacity, and operations.
- Support regional growth through a transportation network that serves inter- and intraregional accessibility and mobility needs for both people and goods.
- Preserve the social and environmental character of the region through an integrated transportation and land use strategy that addresses transportation solutions.

Figure 3.2: JUMPO TIP Projects



Source: JUMPO FY 2018-2027 TIP 1

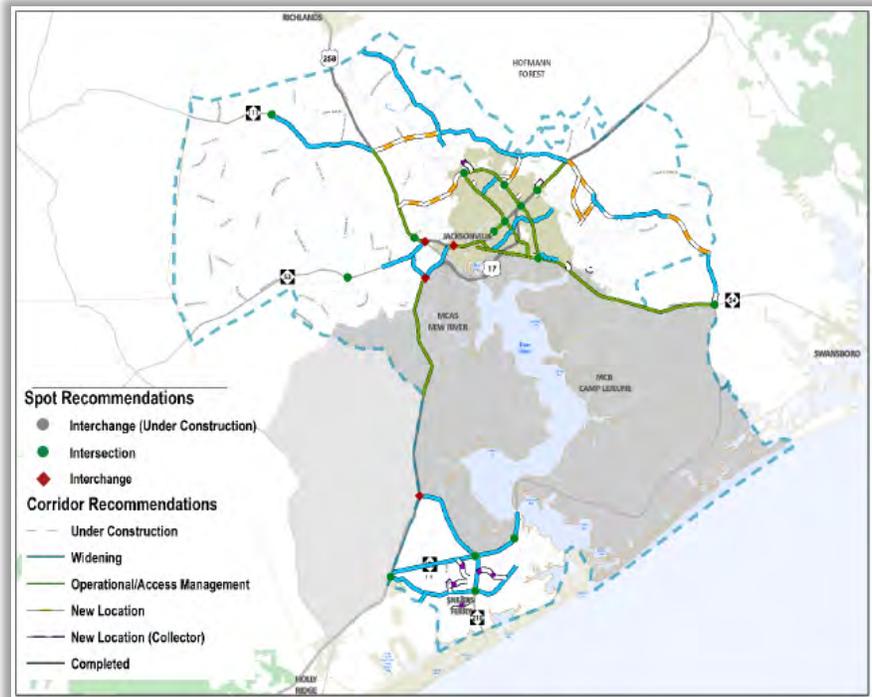


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- Provide an integrated transportation network that encourages use of all modes by offering travel choices that are accessible to all segments of the region's population.
- Promote a safer and more secure transportation network through crash reduction, enhanced reliability and predictability, and improved emergency coordination.

Figure 3.3: JUMPO 2040 LRTP Roadway Project



Source: JUMPO 2040 LRTP

- Extend the life of the transportation system by fostering a sustainable and maintainable system that addresses the long-term needs of the region.

The corridor and intersection improvements identified by the JUMPO over the next 25 years are shown in Figure 3.3. Additional detail on the JUMPO adopted 2040 LRTP projects can be found at <http://jumpo-nc.org/plans/>.

3.2.2. Railroads

The Camp Lejeune Railroad (CPLJ) is a 30-mile line that is connected to a Class I railroad operated by Norfolk Southern at Havelock, NC. The CPLJ extends through Craven, Carteret, and Onslow Counties in a southwesterly direction to its terminus at the Camp Lejeune Junction. The line was constructed to connect



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the Installation with the Cherry Point Marine Air Station and Port of Morehead City. The CPLJ is currently operated under agreement with Norfolk Southern. Approximately 275 carloads of military shipments are carried annually. There is no passenger service on the corridor, which includes approximately 12 public crossings and 20 private crossings. The corridor is mostly held in fee, except for an 80-acre easement within the Croatan National Forest in Carteret and Craven Counties.

The CPLJ is maintained to Class II track standards (designed for operating speeds no greater than 25 miles per hour) from NC 24 to the Havelock junction. The line is a low-density connector line on the Strategic Rail Corridor Network. A review of the track condition and maintenance records as part of a rail feasibility study from June of 2016 indicates that, the CPLJ can support additional commercial freight service in addition to the existing military use. Depending upon the number and frequency of freight shipments, the study recommends that sections of lighter weight rail within five curves (total length of one track-mile) be evaluated for replacement; these upgrades are estimated to cost between \$250,000 and \$350,000.

3.2.3. Airports

The Albert J. Ellis Airport (OAJ) is a county-owned, public-use airport covering approximately 775 acres and is located approximately 10 miles northwest of downtown Jacksonville. The airport has a single runway, three gates, and a recently opened air traffic control tower. OAJ provides air service for approximately 300,000 passengers annually. Two major airlines provide direct flights to Atlanta and Charlotte. As shown in Figure 3.2, five projects are identified



Albert J. Ellis Airport; Source: Onslow County

in the JUMPO FY 2018 to 2027 TIP. These include a project to add a 900-foot extension to the northeast end of the runway (lengthening the runway to 8,000 feet total) and projects to improve the airfield lighting and taxiways. The air traffic control tower coordinates air traffic between towers at new River Air Station, Wilmington, Cherry Point, Seymour Johnson Air Force Base, and New Bern.



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3.2.4. Bicycle and Pedestrian

Biking and walking are key elements to a healthy community’s transportation system. The City of Jacksonville has a comprehensive inventory of bicycle and pedestrian facilities which includes sidewalks adjacent to a particular roadway, multi-use trails and paths, crosswalks, mid-block crossings, driveway crossings, and several pedestrian and roadway bridge facilities that carry bicycle and pedestrian traffic. The inventory includes proposed facilities as well as the existing network. The Installation also has an inventory of existing, programmed, planned, and recommended bicycle and pedestrian facilities and multi-use trails or paths. Within the JUMPO study area there are approximately 180 linear miles of sidewalk, 100 miles of multi-use paths or trails, and 75 miles of existing on-road bicycle facilities. Table 3.2 lists the bicycle/pedestrian facility miles in the JUMPO study area.

Table 3.2: Bicycle/Pedestrian Facility Miles

Facility Type	City of Jacksonville	Camp Lejeune ¹	State Facilities	Total
Sidewalks	175.7	2.6	--	178.3
Multi-Use Paths/Trails	20.9	81.2	--	102.1
On-Street Bike Facilities	50.3 ²	--	24.4 ³	74.7

Source: JUMPO 2040 LRTP

¹ User must have a valid military ID for access

² Richland Route (39.6), City of Sea Route (10.7)

³ NC Bike Route 3

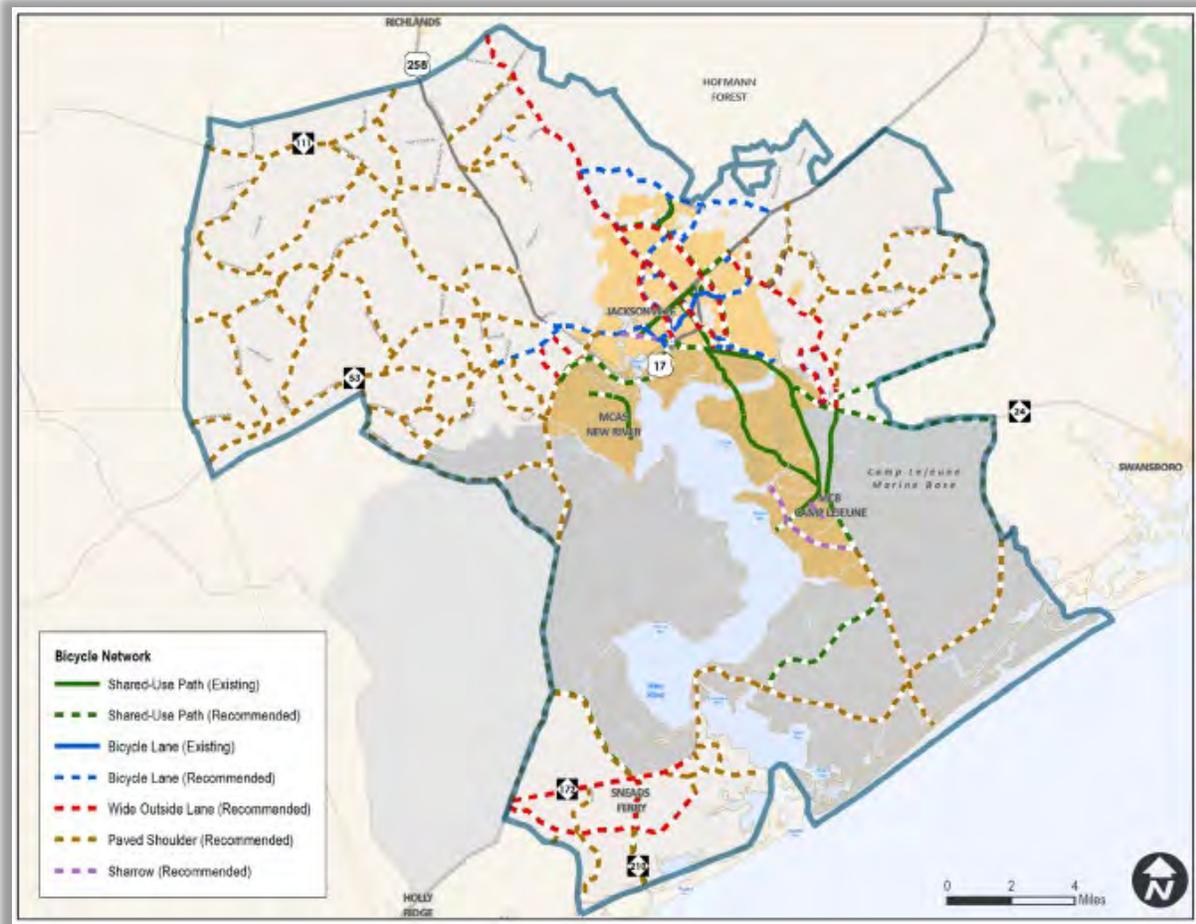
The JUMPO 2040 LRTP includes recommended bicycle network improvements consisting of on- and off-street facilities. It is recommended that an additional 40 miles of multi-use paths, 38 miles of bike lanes, 58 miles of wider outside lanes, 200 miles of paved shoulders, and 6 miles of sharrows be added to the transportation network to facilitate better bicycle connectivity and mobility. The bicycle facility recommendations are shown in Figure 3.4.



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Figure 3.4: JUMPO 2040 LRTP Bicycle Projects



Source: JUMPO 2040 LRTP

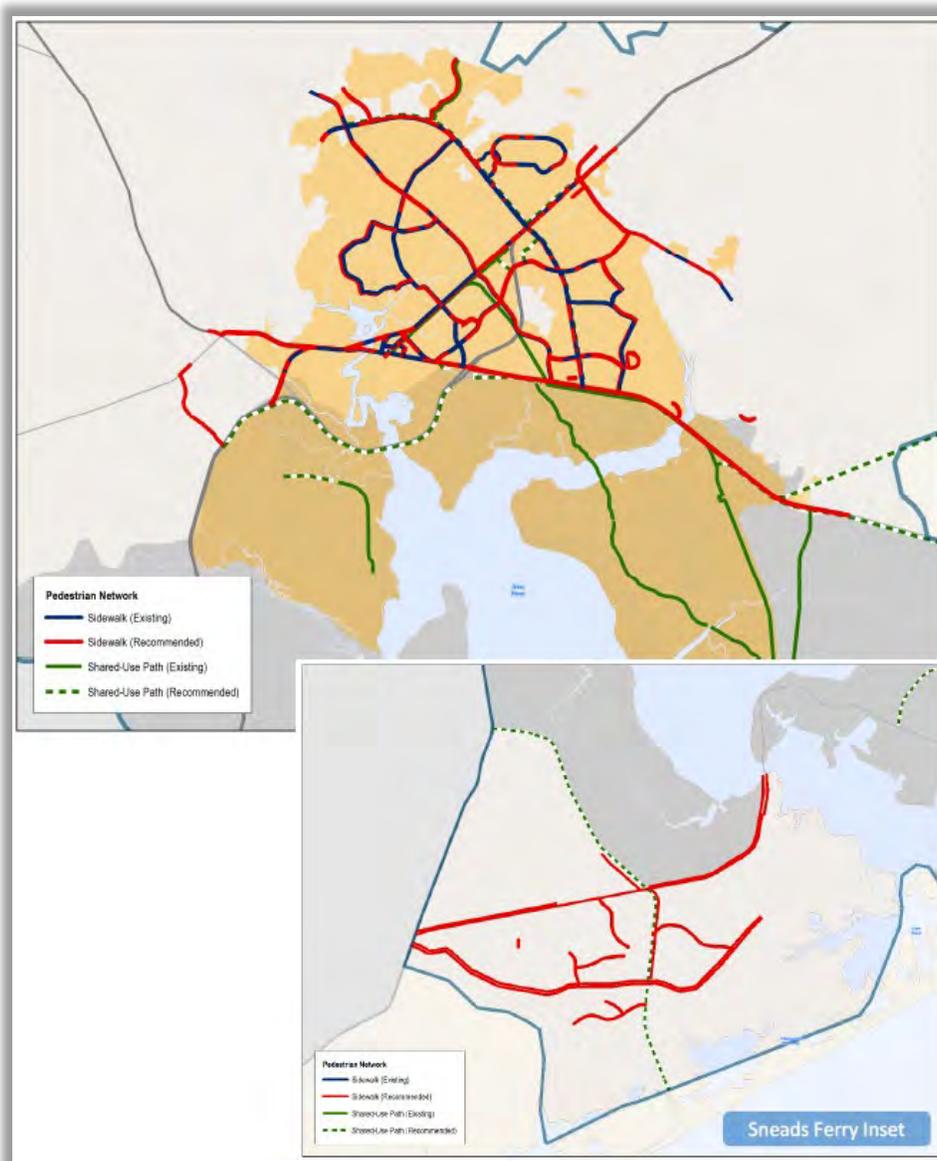
The JUMPO 2040 LRTP also includes recommended pedestrian network improvements consisting of 84 miles of new sidewalks. The new sidewalks aim to close gaps in the pedestrian network to promote greater use of the existing network, enhance pedestrian access to activity centers from residential or other activity centers, and perform regular maintenance of existing and future pedestrian facilities to maximize the effectiveness. The pedestrian facility recommendations are shown in Figure 3.5. Additional detail on the JUMPO adopted 2040 LRTP projects can be found at <http://jumponc.org/plans/>.



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Figure 3.5: JUMPO 2040 LRTP Pedestrian Projects



Source: JUMPO 2040 LRTP



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3.3. Community Utilities

There are two main providers of water and sewer facilities within Onslow County, the Onslow County Water and Sewer Authority (ONWASA) and the City of Jacksonville. The Town of North Topsail Beach also provides its own sewer. In addition, there are approximately 38 privately owned and operated package treatment plants monitored by the Onslow County Health Department and the North Carolina Department of Environment and Natural Resources (NCDENR).

3.3.1. ONWASA Water and Sewer Service

ONWASA provides water to the Towns of Holly Ridge, Swansboro, and North Topsail Beach, the Installation, and the Scientific Water and Sewer Company (a small private utility company that provides water and sewer to a few subdivisions around Gum Branch Road).



ONWASA leases water systems from Onslow County, Holly Ridge, Swansboro, and Richlands. The centralized water authority began operations in 2004 in order to provide water and sewer service to underserved areas of Onslow County and as a tool to enter into contracts with the Installation to purchase water. ONWASA operates 30 wells, two water treatment plants, 980 miles of lines (as of 2007) and is also a purchaser of water from the City of Jacksonville and the Town of Surf City. ONWASA's facilities have a finished water storage capacity of 16.275 million gallons and serves 38,787 metered water connections (2007). All raw water comes from groundwater wells installed in the Cretaceous and Castle-Hayne aquifers.

ONWASA's sewer system serves 2,736 sewer connections (2007). Its facilities encompass sewer collection pump stations and four wastewater treatment plants. There is one spray field in Holly Ridge; all other effluent is discharged to surface water. There is also one wastewater discharge interconnection with the City of Jacksonville.

3.3.2. City of Jacksonville

The City of Jacksonville has owned and operated a water system since the 1930's and is administered by the Public Utilities Department. The water system is responsible for the supply, treatment, storage, and delivery of facilities. The system serves the population within the City of Jacksonville, and a few residences outside the City limits but within the City's Extra Territorial Jurisdiction (ETJ). There are two residential



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development within the City that do not receive their water and sewer service from the City. The Evergreen Trailer Park (86 units) and the Park and Beacham Apartments (231 units) are served by private facilities. As the City annexes land, properties served by privately owned water systems are required to receive City service.

The City pumps water from the 26-well wellfield near the Town of Richlands and sends it to the treatment facility where it is chlorinated for disinfection. The capacity of the treatment facility is 6.9 Million Gallons per Day (MGD) and the average amount treated is 4 MGD. The water supply wells are within a North Carolina designated “capacity use area” which mandates that water withdrawals from the aquifer must be reduced by 75% by 2020. The average daily demand for the City of Jacksonville is 3.991 MGD and the total available supply is 5.707 MGD (2009). The water system is expected to expand to 28 well and provide 9 MGD by 2024.



The City’s wastewater collection system consists of 250 miles of sanitary sewer lines and 42 wastewater pumping stations. Wastewater is collected through a series of gravity and forced sewer lines with 82 pumps. The collected wastewater travels to the Jacksonville Land Treatment Facility and after treatment is used to irrigate a 6,270-acre pine plantation. The system is designed to treat 9.0 MGD.

3.3.3. North Topsail Beach

Central sewer service is provided to the Town of North Topsail Beach by North Topsail Utilities, a privately-owned utility. The utility has expanded beyond the boundaries of North Topsail Beach into unincorporated Onslow County. North Topsail Utilities’ wastewater treatment plan has an operating capacity of 0.874 MGD and is currently operating at capacity. The utility provides sewer service to approximately 70% of North Topsail Beach. All properties not served by central sanitary sewer are served by on-site septic tanks.

3.3.4. Camp Lejeune

Residents of the Installation are served by the Installation’s water treatment and distribution facilities. The Installation’s water treatment facilities have a 14.55 MGD permitted flow, but an average daily flow of 4.31 MGD (2010). The Installation’s wastewater facility has the capacity to treat 15 MGD, with an



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average treatment of 5.31 MGD (1998). The DoD may sell the excess capacity; community use of the excess capacity is an action that could benefit the military and the community through the more efficient, cost-effective use of the facility as well as using existing infrastructure to guide compatible development in preferred areas that support continued military operations.

3.4. Environmental Features

The NCDENR is the state body in charge of implementing environmental regulation, including the North Carolina Environmental Policy Act. NCDENR has regulatory oversight over activities that impact air quality, water quality, coastal management, forest resources, and wildlife resources.

3.4.1. Air Quality

National ambient air quality standards are defined in 40 CFR, Section 50, National Primary and Secondary Ambient Air Quality Standards. Primary standards are intended to protect human health; secondary standards are intended to protect the public welfare. The primary standard is 12 micrograms per cubic meter; the secondary standard is 15 micrograms per cubic meter. Onslow County's average daily density for fine particulate matter is 11.8 micrograms per cubic meter in 2016. This is just below the required standard and is slightly below that of North Carolina as a whole.



Source: Onslow County

3.4.2. Surface Waters

There are parts of three surface water basins in Onslow County. A small area on the western portion of the County flows into the Cape Fear River Basin. A larger portion on the eastern side of the County flows into the White Oak River Basin. The remainder of the County is within the New River Basin. Onslow County began surface water monitoring in late 1999 and 2000 with four



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objectives: identify areas that are affected by poor water quality; identify and possibly eliminate sources of pollution; be able to inform the public regarding water quality; and develop recommendations for improving water quality. There are currently 28 active monitoring sites throughout the New River and White Oak basins within the County. These locations are sampled every two weeks and results are shared with the Onslow County Board of County Commissioners annually. The data is also shared with the NCDENR. As of 2014, there were no major issues with Onslow County's surface water quality, excepting some localized elevated nitrate levels with no apparent source.

3.4.3. Wetlands

Approximately 33% (185,993 acres) of the County's area is wetlands. This include both freshwater wetlands and coastal wetlands. Coastal wetlands are defined as marsh that regularly or occasionally flood with lunar or wind tides and contains one or more specific salt marsh plant species. Coastal wetlands are part of the Coastal Area Management Act (CAMA) permit jurisdiction. The County's freshwater wetlands are protected by Section 404 of the Clean Water Act. Both types of wetlands are important to the County's environmental and economic health – they protect against flooding, help maintain water quality, provide habitat, and serve as part of the estuarine system.

3.4.4. Endangered Species

Onslow County is home to 23 endangered species, with two, the piping plover and loggerhead sea turtle also having critical habitat designations. The red cockaded woodpecker is one of the Installation's listed endangered species. The Installation is home to several pairs of nesting red cockaded woodpeckers. The Installation and Onslow County are also part of the Onslow Bight Landscape area of eastern North Carolina, a landform of barrier islands, marshes, riverine wetlands, pocosins, longleaf pine savannas, and many other coastal ecosystems. The Onslow Bight Conservation Forum is composed of several state and federal agencies and non-governmental organizations dedicated to sustainable natural resource management, with participants attempting to foresee potential resource conflicts and conservation opportunities and work to protect and maintain ecologically viable areas within the Onslow Bight, including the area's endangered species and their habitats.



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3.4.5. Climate Change and Sea Level Rise

Sea level is the average height of the sea with respect to a conceptual reference surface. There are two types of sea level rise relative to this surface: Relative (or local) Sea Level (RSL) rise is the result of local factors causing land or sea floor to move up or down; Mean Sea Level (MSL) rise is a measure of the increase in the volume of water in the oceans, expressed as a change in height of the



Aerial view of the Town of Swansboro; Source: Town of Swansboro

ocean. In North Carolina, RSL and MSL are measured by a series of tide gauges whose measurements span 50 years. These measurements, along with geological studies, show historic trends in RSL and MSL, and can be used to extrapolate sea level into the future using past trends. These data sources show that in North Carolina, RSL is expected to rise 15 to 55 inches (1.25 to 4.6 feet) over the next century.

3.5. Growth and Development

North Carolina is broken up into 18 regions based upon location for the purpose of coordinating planning efforts between neighboring counties. Regional planning efforts are led by a Council of Governments. Onslow County, along with Carteret, Craven, Duplin, Greene, Jones, Lenoir, Pamlico, and Wayne Counties, is located in Region P, also known as the Eastern Carolina Council (ECC).

3.5.1. Regional Growth Trends

Region P is home to three military installations: Cherry Point in Craven County; Camp Lejeune and New River Air Station in Onslow County; and Seymour Johnson Air Force Base in Wayne County. The buildup or drawdown of troops on these Installations impacts the population of the counties in which they are located and can impact the population of nearby counties as well. Figure 3.6 shows the populations for each county in Region P from 1970 until the present. Region P has increased from 410,123 people in 1970 to 648,747 people in 2017. There is a large difference in population between some of the counties; Onslow

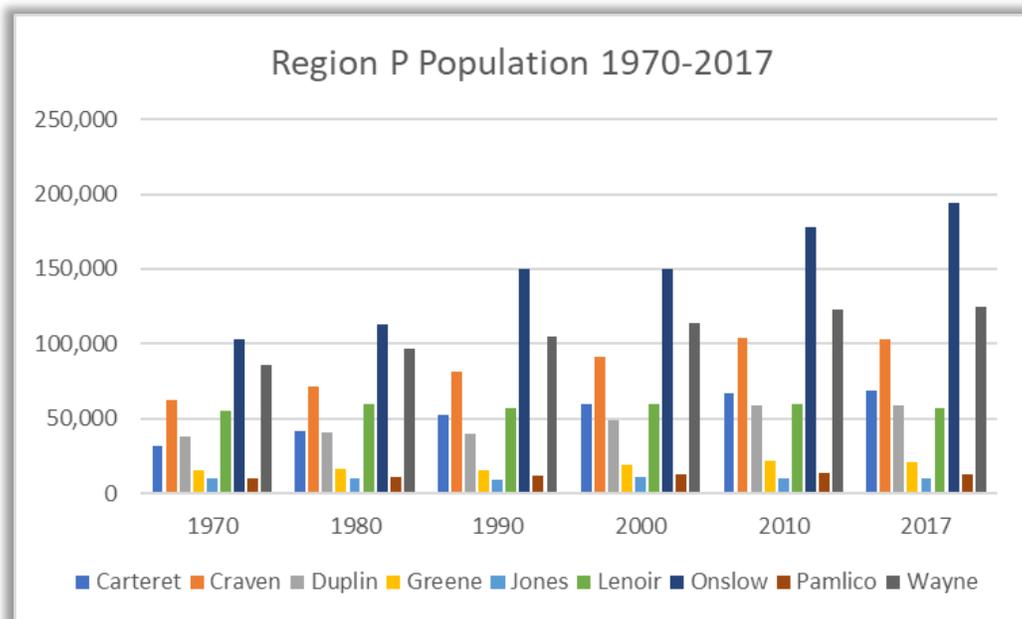


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County and other counties that have military installations have higher populations and increased growth when compared to other counties within the region. Also within the region there are a few counties that are near the Research Triangle area around Raleigh-Durham whose populations are affected by the growth trends in that area (Wayne and Greene Counties). The remaining counties are small rural counties whose growth is related to different factors. In addition, some coastal counties are experiencing growth related to an increasing number of retirees relocating to the area.

Figure 3.6: Region P Population, 1970-2017



Source: Stantec, 2018. Derived from US Census Data

3.5.2. Regional Economic Trends

Region P can be divided into two types of economic areas. The non-coastal counties (Wayne, Lenoir, Jones, Greene, and Duplin) rely on traditional agriculture and manufacturing for their economic base. The coastal counties (Onslow, Carteret, Craven, and Pamlico) rely on tourism, retirement and second home development, and Marine Corps facilities for their economic base. Other than the military Installations, the region relies on public sector and low-wage manufacturing and retail employment. The region's Council of Governments is focusing on attempting to transition the area to a knowledge and technology-based economy. The ECC is also trying to diversify the economy of the area – the military-based economy



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is at the mercy of deployments (fewer customers for local businesses) and the Base Realignment and Closure decisions of the U.S. Congress. Focusing on increasing skilled educational attainment to expand the region’s economic horizons, the ECC also identifies a lack of diversification as a threat to the region’s economic stability.

3.5.3. Agricultural Trends

Every five years, the United States Department of Agriculture (USDA) performs an agricultural census. This census is an accounting of all U.S. farms and ranches and the people who operate them. The census examines land ownership, operator characteristics, production practices, income, and expenditures. This census provides the only source of uniform, comprehensive, and impartial agricultural data for every county in the nation. A farm, as identified by the Census, is any place that produced or sold, or would have produced or sold \$1,000 or more of agricultural products during the census year.

Between 2002 and 2012, the amount of agricultural land within Onslow County decreased by 6,161 acres, or 9.65%. The number of farms decreased as well by 57, a 14.1% decrease. These decreases are more severe than those of North Carolina as a whole, which saw decreases of 6.9% and 7.3%, respectively. Onslow County has seen 2,432 acres of farmland go back into production since the agricultural census in 2007, contrary to the trend statewide, which has seen a decline in the amount of farmland in production since 2002. In addition, the farms in Onslow County have been increasing in size (an average increase of 5% per farm) and has seen the market value of its products increase by 108% since 2002. In the state as a whole, the size of farms decreased in 2007, but rebounded to 2002 levels in 2012.

Table 3.3: Loss of Agricultural Land, North Carolina and Onslow County, 2002-2012

	2002		2007		2012	
	Onslow County	North Carolina	Onslow County	North Carolina	Onslow County	North Carolina
Number of Farms	404	53,930	401	52,913	347	50,218
Acres in Farmland	63,804	9,079,001	55,211	8,474,671	57,643	8,414,756
Average Size of Farm	158 acres	168 acres	138 acres	160 acres	166 acres	168 acres
Market Value of Products Sold	\$90.0 Million	\$6.9 Billion	\$159.0 Million	\$10.3 Billion	\$187.7 Million	\$12.6 Billion

Source: Stantec, 2018, derived from USDA Agricultural Census, 2002-2012



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This data indicates that farmland in Onslow County is being consolidated into larger farms, and the market value of crops is increasing. While the farming economy of Onslow County is more robust than that of the state as a whole, the industry is still subject to pressures that could result in the continued reduction of available farmland and the number of farming enterprises in the County.

3.6. Community Features

Onslow County is composed of approximately 579,840 acres. The Installation occupies approximately 142,763 acres, or 25% of the County's land area. As of 2012, agricultural land, composed of woodlands, cropland, pastureland, and other agricultural land, occupied 58,529 acres, or approximately 10% of the County's land area. Agriculture continues to be an economic force in the area, with the County producing tobacco, fruits, vegetables, cattle, swine, and poultry.

Tourism is also an economic force within the County. In 2016, tourism contributed \$222 million to the County's economy and employed 1,780 people. Many visitors to the area come to visit those stationed at the Installation and some come to enjoy the area's natural features. Onslow County is rich with opportunities to enjoy the great outdoors. The New River provides opportunities for paddling, boating, and fishing, and there are extensive biking and hiking trails within the County. Onslow County contains approximately half of Hofmann Forest, an 80,000-acre research forest located in Onslow and Jones Counties. The forest, acquired in 1934 for use by North Carolina State University, has hiking trails and is available to the Installation for training exercises. In addition, the 160,000-acre Croatan National Forest is located in the adjacent county and has numerous opportunities for camping, hiking, and paddling.

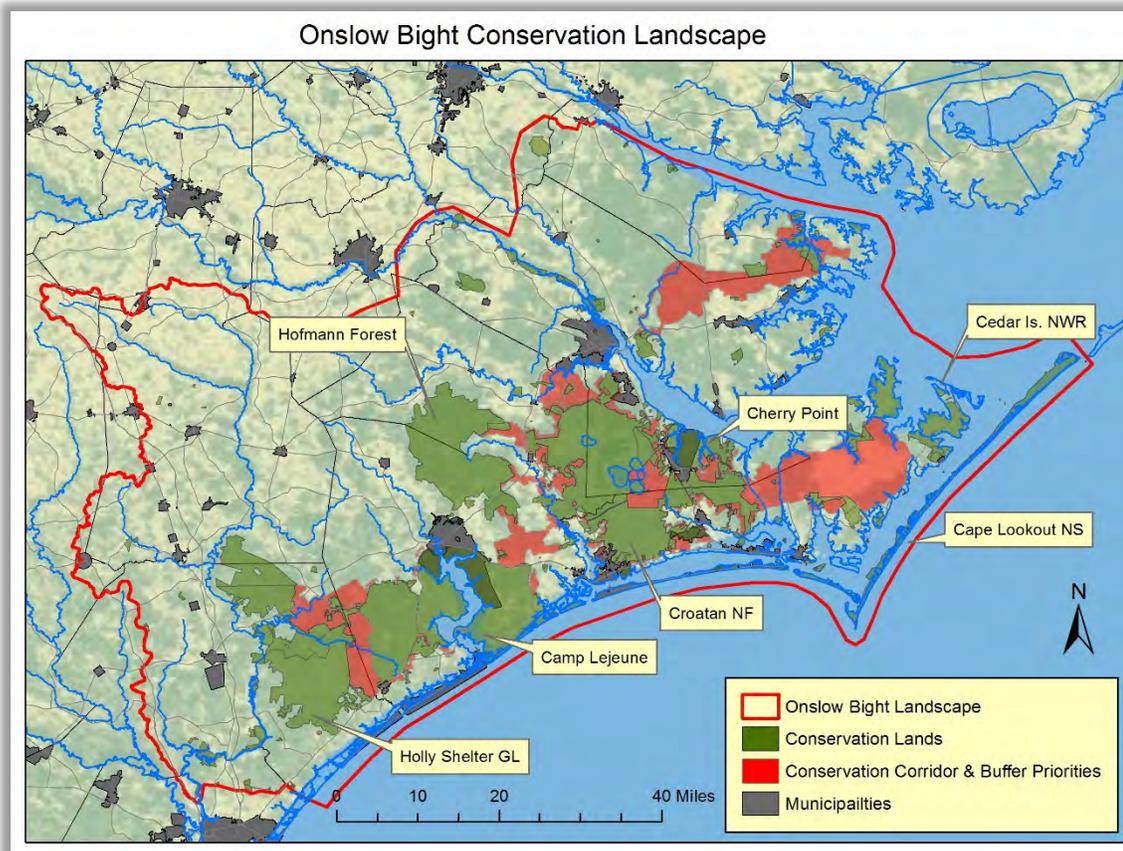
Onslow County is also located within the Onslow Bight, a unique landform of barrier islands, marshes, riverine wetlands, pocosins, longleaf pine savannas and many other coastal ecosystems. The area spans the region extending from the lower Northeast Cape Fear River to the Pamlico River and from offshore waters to approximately 30 miles inland and supports nationally significant occurrences of animal and plant communities, several of which are endemic to the region. The rural character of the area, coupled with the flora and fauna and supporting geophysical characteristics, have created a natural environment with abundant opportunities to enjoy fishing, hunting, camping, hiking, canoeing, and other resource-based outdoor recreational opportunities.



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Figure 3.7: Onslow Bight



Extent of Onslow Bight; Source: The Longleaf Alliance: <https://www.longleafalliance.org/ncobcf/about-ncobcf>

Onslow County is home to numerous annual festivals. Topsail Island Jeep Week is a three-day festival for Jeep enthusiasts featuring social events, a Jeep parade, live music, and a Jeep obstacle course. The Shrimp Fest is hosted annually by Sneads Ferry, and features a parade, arts and crafts, a car show, food, a beauty pageant, games, live music, cooking demonstrations, and fair rides. Swansboro’s Mullet Festival has been held annually for 64 years and features a street carnival and “mullet toss” in addition to many other events. Onslow County also hosts Oktoberfest, featuring a beer garden and food court as well as a softball tournament and other events. Slide the City, a giant waterslide that tours the country was hosted in Swansboro in 2017, the only North Carolina town to do so.



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Onslow County is also home to 15 locations that are on the National Register of Historical Places. These include historic districts, houses, farms, plantations, springs, the Bank of Onslow, and Jacksonville Masonic Temple. The Pelletier House, one of the only houses on the list, is the oldest and only remaining antebellum home in Jacksonville. Onslow County has a 15,000 square-foot museum in Richlands that details the history of Onslow County and contains numerous historical artifacts.

With two hospitals, the Naval Medical Center Camp Lejeune and Onslow Memorial Hospital, Onslow County and Jacksonville serve as the area's medical center. The Naval Medical Center sits on a 162-acre site on Northeast Creek and occupies a compact 4-story clinical and support building, with a bed capacity of 205, which is expandable to 236 beds. The surgical suite consists of 5 operating rooms, and the Obstetrical Suite has 5 labor rooms and 3 delivery rooms.



The Pelletier House; Source: <https://www.onslowcountync.gov/838/Pelletier-House>

Onslow Memorial Hospital is a 162-bed facility founded in 1944. The hospital offers a vast array of healthcare services with state-of-the-art diagnostic services and has a modern Labor and Delivery suite with a state-of-the-art monitoring system, Neonatal Intensive Care Unit, Newborn Nursery, Intensive Care Unit/Coronary Care Unit, Medical and Surgical Services, and Rehabilitation Services (including Physical, Occupational, and Speech Therapy). A responsive Emergency Department and Minor Emergency Care Unit treat more than 50,000 patients annually. In recent years, a robust array of online services and portals have been developed to provide access to timely information and insights.



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4.

Our
Military



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4. OUR MILITARY

4.1. Regional Influence

The economies of the counties surrounding Onslow County still rely on agriculture and manufacturing as their base. Likewise, their historic population numbers have been tied to troop expansions or contractions at the Installation.



Source: Camp Lejeune

4.1.1. Population Impact

The Installation has a direct effect on the population of Onslow County. The 1940 population of the County was 17,939. By 1950, just ten years later, the population had increased by 134% to 42,047. The County's growth rate is tied to the number of troops stationed at the Installation. The County's population growth and reduction are linked directly to troop increases and drawdowns at the Installation.

Each community in the County houses some population that is employed by the military. Since 2010, the military-employed population has increased for most jurisdictions within the Study Area, with the exception of the City of Jacksonville. County-wide, which includes both unincorporated and incorporated areas of Onslow County, the military-employed population has decreased by 4.7%. These figures indicate that the military-employed population is decreasing slightly within the County but that population is becoming more dispersed around the County.

Table 4.1: Onslow County Military Employment, 2010-2016

	In Labor Force		Military Employment		Percentage		Change 2010-2016
	2010	2016	2010	2016	2010	2016	
Onslow County (total)	94,232	100,077	32,585	29,886	34.6%	29.9%	-4.7%
Holly Ridge	394	989	32	187	8.1%	18.9%	10.8%



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	In Labor Force		Military Employment		Percentage		Change 2010-2016
	2010	2016	2010	2016	2010	2016	
Jacksonville	41,747	39,877	22,632	18,411	54.2%	46.2%	-8.0%
North Topsail Beach	561	623	80	103	14.3%	16.5%	2.3%
Richlands	672	1,164	113	329	16.8%	28.3%	11.4%
Sneads Ferry	1,162	1,931	186	371	16.0%	19.2%	3.2%
Swansboro	1,341	1,570	137	197	10.2%	12.5%	2.3%

Source: Stantec, 2018, derived from US Census and American Community Survey

4.1.2. Economic Impact

The economy of Onslow County is heavily intertwined with its military installations which serve as economic engines supporting tens of thousands of military and civilians in the region and providing some of the area's highest wages. The Installation supports a population of 116,627 (active duty military, civilians, and retired military and civilians) through salaries totaling more than \$2.5 billion. In addition, the installation spends over \$1 billion on construction, material, supplies, and other expenses. The majority of these funds are spent within Onslow County, where the money spent by personnel on housing, goods,

and services supports a multitude of other businesses. The population increases and decreases in the County can be tied to troop buildup or drawdown, and the economy experiences ups and downs relative to these overall changes in troop numbers or deployment.



Source: Camp Lejeune

4.2. Camp Lejeune / New River Air Station

The Installation is located entirely within Onslow County. The Installation began as a 115,000-acre tract and is now comprised



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of 142,763 acres, occupying approximately 25% of Onslow County's land. The Installation takes up most of the County's midsection and shoreline. Onslow Beach, occupying 11 miles of shoreline, is the only amphibious training area on the East Coast. The Installation houses 50,000 Marines, the largest of any installation.

4.3. History

The Installation was established in 1941 after the need for an amphibious training facility was identified after the outbreak of World War II. The Department of the Navy purchased 115,000 acres of swamp and sand dunes. The site was chosen due to the fact that it lies almost equidistant from the ports of Moorhead City and Wilmington, making it an excellent logistical location. In addition, the forests and beaches offered excellent training environments for troops entering the Pacific theater. The Marine Corps also purchased the New River Air Station in 1941, when the Installation officials investigated the area in search of an existing airfield to support aircraft for amphibious operations. In 1944, the area of land around New River Air Station was commissioned as the Marine Corps Auxiliary Airfield Camp Lejeune, marking its official founding as a Marine Corps Installation. Today the New River Air Station is the premier Marine Corps helicopter operating facility on the East Coast and is the first Marine Corps facility to house the MV-22B Osprey tilt-rotor aircraft.



Royal Marines make their way to their first infiltration point for a ground insertion operation during Bold Alligator 17 at Marine Corps Base Camp Lejeune, Oct. 20, 2017. Bold Alligator 17 is a training exercise focused on a regimental amphibious assault that allows the Navy and Marine Corps team to train with partner nations to refine and strengthen core amphibious competencies critical to maritime power projection. Photo By: Lance Cpl. Taylor Cooper

The Installation has had roughly the same footprint from 1941 until 1992, when the government acquired 41,000 acres (some through condemnation) adjacent to the Installation to provide additional "fire and maneuver" land space to supplement existing ranges and training areas. This area became the Great Sandy Run Area (GSRA).



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From 2006 to 2009, the Marine Corps increased the number of troops stationed at the Installation by 9,100 through its Grow the Force initiative. These troops were accompanied by approximately 8,500 family members. This buildup of troops has led to increased development around the cantonment areas as well as in the City of Jacksonville, neighboring towns, and unincorporated areas of the County.

4.4. Land Uses and Facilities

There are generally two types of areas within the Installation – cantonment areas and range areas. The cantonment areas contain residences, offices, and other buildings to maintain the Installation’s military forces. The range areas provide training areas to carry out the Installation’s mission.

4.4.1. Cantonment Areas

The cantonment areas are described briefly below:

- **MCAS New River.** The New River Air Station provides administrative, logistics, operational support, and maintenance support to the USMC Combat Element. Occupying 2,600 acres of land, it is home to several tenant commands.
- **Hadnot Point.** Hadnot Point houses 50% of the permanent Installation population on 1,700 acres of land and is home to the 2d Marine Division and the elements of the II Marine Expeditionary Forces (MEF).
- **Stone Bay.** Consisting of approximately 4,300 acres on the south side of the Installation, Stone Bay is separated from the eastern side of the Installation by the New River. It is home to the US Marine Corps Forces Special Operations Command (MARSOC) and the Weapons Training Battalion. Ranges associated with Stone Bay act as the primary facility for weapons qualifications on three rifle ranges, two pistol ranges, and one sniper range.
- **Wallace Creek.** Wallace Creek is home to the most recent expansion of the Installation. Composing approximately 610 acres, North Wallace Creek and the Wallace Creek Regimental Complex were planned to accommodate growth from the II MEF that cannot be accommodated at Hadnot Point and four new battalions that were created in conjunction with the Grow the Force initiative.
- **Camp Geiger.** Camp Geiger is home to the School of Infantry East. The Camp covers 676 acres, approximately half of which is unusable due to environmental and regulatory constraints.
- **Courthouse Bay.** Covering approximately 1,200 acres, Courthouse Bay is located across the New River from the community of Sneads Ferry. It houses the Marine Corps Engineers School, Engineer Center of Excellence, the 2d Assault Amphibian Battalion, the 2d Forces Reconnaissance



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Company, the 2d Reconnaissance Battalion, and the US Coast Guard Special Mission Training Center.

- **Camp Johnson.** Camp Johnson consists of approximately 1,500 acres and is located adjacent to downtown Jacksonville and is home to the Marine Corps Combat Service Support School. Camp Johnson was the first training base for black Marines. Originally known as Montford Point, black



Source: Camp Lejeune

Marines attended boot camp here while the nation was still racially segregated. It was named in honor of Sergeant Major Gilbert H. “Hashmark” Johnson in 1974.

- **French Creek.** Comprised of approximately 1,600 acres, French Creek is located immediately south of Hadnot Point on the eastern bank of the New River and houses the 2d Marine Logistics Group providing combat service support to the II MEF.

4.4.2. Range Areas

There are several types of ranges located at the Installation. The range areas of the Installation provide the necessary space on which to train. While there are large areas of the Installation occupied by ranges, they struggle to accommodate all of the needs of soldiers training there during times of heavy deployment. Protecting the functions of the ranges is imperative to the continuing mission of the Installation. The range areas are described briefly below.

- **Training/Maneuver Areas.** The Installation maintains 82 designated training and maneuver areas in and around the live-fire ranges and impact areas. Four of the areas are designated for amphibious exercises and beach training; the remaining 78 are tactical maneuver areas.
- **Impact Areas.** There are three impact areas that support direct and indirect fire, air to ground offensive air support, and naval surface fire support.



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- **Engineering training areas.** The primary function of the engineer training areas is to provide operational engineering units and the Marine Corps Engineer School with facilities to conduct engineer demolition training.
- **Military Operations in Urban Training (MOUT) Facility.** The MOUT Facility is composed of 176 buildings that train soldiers for combat in urban areas. Within the MOUT Facility, there are six live-fire assault courses.
- **GSRA Ranges.** GSRA provides an area for tank, light armored vehicle, amphibious assault vehicle, and infantry platoon training. The Marine Corps Outlying Landing Field is located at the southern end of the GSRA.
- **Stone Bay Ranges.** All Installation Marines conduct annual marksmanship qualifications at the Stone Bay facility. The Weapons Training Battalion maintains and operates these pistol and rifle ranges. Eight additional ranges are used for Special Operations Training.
- **Area F Ranges.** These ranges include seven live-fire ranges for small arms and maneuver training,



Source: Camp Lejeune

hand grenade training, range and pistol qualification, and machine gun field firing, and a fast-roping tower.

- **Area D and I Ranges.** These ranges provide areas for pistol qualification and re-qualification.

- **Landing Zones.** These areas include two types of helicopter landing zones: tactical and administrative. The tactical landing zones (50 in all) are used for assault support operations. There are 24 administrative landing zones.

- **Drop Zones.** These are tactical areas designated for parachute operations. There are 12 drop zones and five additional water drop zones.



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4.5. Primary Users

The Installation is the Marine Corp's largest amphibious training base and is home to approximately 50,000 Marines and sailors. It is the single largest concentration of Marines in the world.

- **II MEF.** This is one of three MEFs in the Marine Corps. It has a combined arms force consisting of ground, air, and logistics forces and it has the capability to engage in combat while sustaining itself for 60 days. It includes the 2d Marine Division, the 2d Marine Aircraft Wing, the 2d Marine Logistics Group, the II MEF Headquarters Group and three East Coast Marine Expedition units (the 22d, 24th, and 26th MEU).
 - **2d Marine Division.** This group is the ground combat element of the II MEF. It includes 15,000 enlisted Marines and sailors and 1,000 officers in the 2d, 6th, and 8th Marine Regiments, 10th Marine Regiment, 2d Tank Battalion, 2d Reconnaissance Battalion, and the 2d Armored Reconnaissance Battalion.
 - **2d Marine Logistics.** This group provides the combat service support element of the II MEF and provides major sources of heavy combat service support for the 2d Marine Division, the 2d Marine Aircraft Wing, and the command element of the II MEF. This support includes supply, maintenance, transportation, engineering, landing support, health services, and other services. It is composed of approximately 7,400 Marines and sailors and 400 officers in three regiments (CLR-2, CLR-25, and CLR-27) and two battalions (8th Engineer Support Battalion and the 2d Dental Battalion).
- **Naval Hospital.** The hospital provides health services to more than 90,000 military beneficiaries, including active duty military, retired Navy and Marine Corps personnel, families, and survivors.



Source: Camp Lejeune



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- **Marine Corps Installation East (MCIEAST).** This group is responsible for implementing policies, developing regional strategies and plans, prioritizes resources, and provides services, direction, and oversight through assigned Marine Corps installations in order to support operating forces, commands, and activities. Marine Corps installations under the guidance of MCIEAST include Marine Corps Base Camp Lejeune, Marine Corps Air Stations New River, Beaufort, and Cherry Point, Marine Corps Logistics Base Albany, and Marine Corps Security Forces Blount Island.
- **MARSOC.** MARSOC is the Marine Corps component of the US Special Operations Command. This group is tasked with training, organizing, equipping, and deploying special operations forces in support of combatant commanders and other agencies. This command includes the Marine Special Operations Regiment, Marine Special Operations Support Group, 1st, 2d, and 3d Marine Special Operations Battalions, the Marine Special Operations School, and the Marine Special Operations Battalion.
- **Marine Corps School of Infantry.** This group provides primary Military Occupational Specialty training for Marines bound for US Marine Corps infantry battalions. There are two training battalions – the Infantry Training Battalion and the Marine Combat Training Battalion. These two battalions train more than 18,000 Marines annually.
- **Marine Corps Engineering School.** The mission of the Engineering School is to prepare officers and enlisted personnel for duty with operating forces.
- **Marine Corps Combat Service Support School (MCCSSS).** This school is the primary military occupation specialty training site for Marines designated in Personnel administration/Legal services, Logistics Operations, Financial Management, and Ground Supply. The MCCSSS also hosts the Combat Water Survival Swimming School East and Instructional Management School East.
- **The Weapons Training Battalion.** The Weapons Training Battalion’s mission is to train approximately 25,000 Marines annually on rifle and pistol marksmanship. The Battalion is also home to the Eastern Rifle and Pistol Matches as well as the Marine Corps Championship Rifle and Pistol Competition.
- **Field Medical Training Battalion (East).** The Field Medical Training Battalion’s mission is to train Navy Medical Department and Religious Ministry Personnel in preparing for their initial assignment to ground, aviation, and combat service support units of the operating forces. This group trains Hospital Corpsmen, Religious Program Specialists, Chaplains, Medical Department Officers, including Medical Corps, Dental Corps, Medical Service Corps, and Nurse Corps Officers.
- **Joint Maritime Training Center.** The primary mission of the Joint Maritime Training Center is to provide Maritime Security Training and Operational Testing and Evaluation in support of the DoD



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and Department of Homeland Security missions and is a designated Center of Excellence for less-lethal technologies and Fast Boats.

- **Marine Corps Air Station New River.** The New River Air Station is the largest Marine Corps assault support training facility on the East Coast. The Air Station's mission is to support and enhance the combat readiness of the Marine Corps Aviation Combat Element and other units while improving the quality of life of military personnel, their families, and the air station's workforce. Marine Air Group 26 and Marine Air Group 29 conduct rotary-wing and tilt-rotor operations in support of II MEF.



Pfc. Erich B. Vlaar conducts a foot patrol during a scout sniper screener at Marine Corps Base Camp Lejeune, N.C., April 3, 2017. The screener tested the Marines' ability to accomplish basic infantry tasks to find the most qualified candidates for the Scout Sniper Basic Course. Vlaar is a basic rifleman with 2d Battalion, 8th Marine Regiment, 2d Marine Division. Photo By: Sgt. Clemente Garcia



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4.6. Mission and Operations

The Installation's mission is to support the combat readiness of expeditionary forces by providing training and logistic, garrison, mobilization, and deployment support as well as quality-of-life services, including housing, safety and security, medical and dental care, family services, off-duty education, and recreation. The Installation's mission includes providing a suitable training environment essential to prepare operating forces for deployment around the world. The Installation supports the II MEF's Marine Air-Ground Task Force and other tenant commands, including elements of the Navy and US Coast Guard.



A V-22 Osprey lands to insert Marines with 2nd Battalion, 8th Marine Regiment during a platoon attack training event at Marine Corps Base Camp Lejeune, N.C., April 12, 2016. The training was focused on ensuring the Marines understood the fundamentals of operating efficiently on a larger scale to prepare for potential future engagements. Photo By: Lance Cpl. Samuel Guerra

4.6.1. Current Mission Operations

Currently, the Installation provides essential training areas for Marines prepping for operations in amphibious, rural, urban, and riverine environments. The Installation's primary training support mission is to provide modern and state-of-the-art training ranges, training facilities, and maneuver areas that



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promote realistic and relevant training for combat units destined for deployment throughout the world. The Installation provides the best available opportunities and capabilities that support amphibious training, live-fire training, tactical vehicle maneuver training, and ultimately combined arms tactical maneuver with live fire training.

4.6.2. Proposed Expansions and Operational Changes

In the future, the Installation will continue to support tenant commands' efforts to conduct mission-essential tasks to prepare for current and future operations. New technology is leading to new weapons systems and platforms, which will lead to the need for new or improved training ranges for these weapons and systems. In the future, ranges will need to allow for an increase in training in urban and complex terrain, and new range and air space requirements for new weapons and aircraft.



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5.

Compatibility Tools



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5. COMPATIBILITY TOOLS

There are numerous programs and plans available to assist in the compatibility efforts between military installations and the local communities that surround them. These tools are available at the federal, state, regional, and local government levels. The following sections provide an overview of the tools that are available and should be considered a non-exhaustive general summary.

5.1. Federal Programs and Plans

5.1.1. Marine Corps Installation Encroachment Control Plan (ECP)

An ECP is designed to create a comprehensive plan to mitigate encroachment issues and their impacts to installations' operations. The ECP is intended to be a guide to pursuing encroachment partnering opportunities with local, state, non-governmental organizations, and interested citizens in order to optimize land use. The ECP seeks to protect land from development that is incompatible with military requirements and proactively engage federal, state, and local governments to protect against loss of assets and flexibility due to encroachment. An ECP will also plan for reducing the impact of operations and training on local communities.

The Installation's last ECP was done in 2010. The ECP noted that at the time the Installation did not face significant encroachment threats.

5.1.2. Range Compatible Use Zone (RCUZ) Program

The RCUZ program helps protect the public's health, safety, and welfare by minimizing both local community and on-installation exposure to noise and potential safety hazards resulting from military training activities while protecting the operational capacity of the range training complex. The program promotes compatibility with surrounding communities by forming working partnerships with local governments. It provides compatible land use recommendations for communities to consider in their local planning efforts.

The 2015 RCUZ was the first approved for the Installation. There are multiple ranges throughout the extent of the Installation, and the RCUZ uses a composite of Range Compatibility Zones (RCZ) and noise contours to define the RCUZ footprint – the area impacted by range activities. The RCZs translate ordnance delivery safety concerns into land use recommendations and is based upon the types of range operations



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Source: Camp Lejeune

performed. Noise contours map the noise, by decibel (dB) range (i.e. 65-70 dB), produced by range activities. These two metrics determine the likelihood of range activities impacting activities outside the installation.

For the Installation, the 2015 RCUZ determined that RCZ I and II, which have the most stringent restrictions, are contained entirely within the Installation. There are some areas outside the Installation, most notably the area to the east around the unincorporated areas of Bear Creek and Hubert and an area around the Great Sandy

Run Area, that fall within the RCZ III area. No large caliber range operation noise contours above 70 dB extend beyond the boundary of the Installation, except over water.

5.1.3. Air Installation Compatible Use Zone (AICUZ) Program

The AICUZ program was established in 1977 by the DoD in response to encroachment pressures around military airfields across the Country. Its purpose is to promote land use and development compatible with air installations while protecting public health and safety as well as promoting the operational capability of the air installation. This is accomplished through the adoption of compatible local land use controls and by seeking cooperative efforts with surrounding stakeholders to minimize noise and aircraft accident potential. The AICUZ recommends land uses that will be compatible with aircraft noise, accident potential, and obstruction clearance criteria associated with military airfield operations.



The recommendations from an AICUZ are implemented at the local level through the development of an installation-specific study that serves as a planning resource for local planners, developers, governments, and other interested parties to help them anticipate, identify, and implement appropriate land use regulations and other actions. Each AICUZ is prepared to address future changes in



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mission, aircraft, and projected operational levels that are expected within the next 10-15 years. New River Air Station prepared an AICUZ in 2001, which was updated in 2011. The AICUZ identified three areas along the Installation boundary to the north, west, and south that fall within Noise Zone 1 (60-64 dB level) whose type of development may be incompatible with Installation activities.

5.1.4. Readiness and Environmental Protection Initiative (REPI) Program

The DoD's REPI program is a key tool for combating encroachment that can limit or restrict military training, testing, and operations. The program protects military missions by helping remove or avoid land use conflicts near installations. Administered by the Office of the Secretary of Defense, the program allows DoD to enter into cost-sharing agreements with state and local governments and conservation organizations to promote compatible land uses and reserve habitats near to military installations and ranges. Protecting these lands through the REPI program is more cost-effective than training workarounds, replacing compromised assets with new ranges, or relocating missions. In addition, cooperative land protection provides direct benefits to partners and neighboring communities through the preservation of limited resources shared by the institution and its neighbors. These efforts contribute to the longevity of working farms, forests, and ranchlands, increase recreational and open space opportunities for nearby residents and military families, and protect against mission reductions that can affect local economies. There are several key partners for Camp Lejeune within the REPI program:

- Conservation Forestry;
- The Nature Conservancy;
- North Carolina Clan Water Management and Trust Fund;
- North Carolina Coastal Land Trust;
- North Carolina Division of Parks and Recreation;
- Onslow County;
- State of North Carolina; and
- U.S. Fish and Wildlife Service.

In 2017, the REPI Challenge was awarded to the Eastern North Carolina Sentinel Landscape Partnership, which includes three installations including MCAS New River and MCB Camp Lejeune. Through 2017, 19 parcels around the Installation have been protected totaling 19,574 acres at a cost of \$40,579,528.

Through REPI, the Department of Defense, in partnership with the State of North Carolina, The Nature Conservancy (TNC) and the National Fish and Wildlife Foundation, has made strong commitments to



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increase off base habitats through the Recovery and Sustainment Program at Camp Lejeune. Land protection easements have focused on noise zones around Camp Lejeune and enhancement of Red Cockaded Woodpecker habitat.

5.1.5. Sentinel Landscapes

The US Department of Agriculture (USDA), DoD, and the Department of the Interior established the Sentinel Landscapes partnership through a Memorandum of Understanding in 2013. The Partnership is a federal, local, and private collaboration dedicated to promoting natural resource sustainability and the preservation of agricultural and conservation land uses in areas surrounding military installations. Agencies from the three Departments coordinate the Partnership at the national level through the Sentinel Landscapes Federal Coordination Committee.

Sentinel Landscapes are working or natural lands important to the Nation's defense mission – places where preserving the working and rural character of key landscapes strengthens the economies of farms, ranches, and forests; conserves habitat and natural resources and protects vital test and training missions conducted on those military installations that anchor such landscapes.

The Sentinel Landscapes Partnership seeks to incentivize landowners to continue maintaining these landscapes in ways that contribute to the Nation's defense. Where shared interests can be identified within a landscape, the Partnership coordinates mutually beneficial programs and strategies to preserve, enhance, or protect habitat and working lands near military installations in order to reduce, prevent, or eliminate restrictions due to incompatible development that inhibit military testing and training. In North Carolina, the Sentinel Landscapes program was used as a statewide conservation initiative, involving several installations over a large area, the first state to do so.

5.1.6. USMC Installations Strategic Plan

The Strategic Plan sets the course of action by which Marine Corps Installations Command will meet challenges and provide installation support into the future. The Strategic Plan is an overarching plan supported by subordinate plans which will be implemented to support accomplishment of strategic goals. There are five strategic goals: enhance installation support of warfighting readiness; ensure long-term viability of all installations; provide high quality, sustainable, and affordable installation support; optimize workforce excellence; and promote critical partnerships. The Plan seeks to ensure long-term viability of



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critical training and maneuver areas through strong partnerships with surrounding communities and local and state governments through sharing resources, providing mutual support, and joint land use master planning.

The Plan proposes to use the Marine Corps Installation Encroachment Control Plan, the Installation Master Plan, and the Joint Land Use Study Process to meet its strategic goals that relate to land use in areas critical to the mission of the Installation.

5.1.7. Integrated Natural Resources Management Plan (INRMP)

The Installation is home to nine endangered species: red cockaded woodpecker, green sea turtle, logger head sea turtle, rough-leaved loosestrife, seabeach amaranth, piping plover, Rufa red knot, Hirst's panic grass, and the American Alligator, as well as several species that inhabit the waters offshore near the Installation. Each military Installation that has suitable habitat for conserving and managing natural ecosystems is required to prepare, maintain, and implement an INRMP. The purpose of the INRMP is to ensure that installation resources are managed and conserved for long-term mission sustainability and ensures that natural resources management and other mission activities are conducted in accordance with the Endangered Species Act, Migratory Bird Treaty Act, Clean Water Act, and a suite of additional federal laws and regulations governing natural resource protection and management on military installations.

5.1.8. DoD Sustainable Ranges Initiative

The DoD Sustainable Ranges Initiative ensures the long-term viability and continuity of military training and testing ranges while providing good stewardship for the land. Through a framework of continuing, cooperative, and coordinated efforts within government, and partnerships with groups beyond installation boundaries, the Sustainable Range Initiative is safeguarding America and sustaining our lands and resources for years to come.



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5.1.9. Forest Legacy Program (FLP)

The FLP was authorized by the Food, Agriculture, Conservation, and Trade Act of 1990 to identify and protect environmentally important private forestland threatened with conversion to non-forest uses. The FLP is a USDA Forest Service Program that works in partnership with the state to support local efforts to protect these forests through land acquisition and conservation easements.



5.2. State and Regional Programs and Plans

Instead of a broad delegation of authority as found in a home rule state, The State of North Carolina grants authority to the municipalities within in it (counties, cities, and towns) through subject-specific statutes and local acts. The remainder of the authority resides with the state government. Therefore, some of the programs and plans that are available to create compatibility between military bases and local communities will have state oversight, while others will have local government oversight (see Section 5.3 for local government programs). This section covers both programs that operate as part of the State government as well as programs that are not part of the State government but that operate state-wide.

5.2.1. Coastal Area Management Act (CAMA)

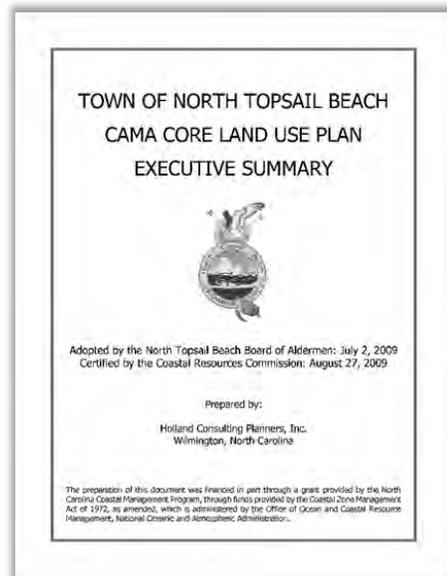
The North Carolina CAMA requires each of the 20 coastal counties to have a local land use plan in accordance with guidelines established by the Coastal Resources Commission (CRC). These guidelines provide a common format for each plan and a set of issues that must be addressed during the planning process. Prior to adoption of the CAMA Land Use Plan, the local government holds a public hearing to allow members of the public and other stakeholders to present comments and recommendations. The CRC then reviews the plans to determine whether the plans have been properly prepared. Once certified by the CRC, the Division of Coastal Management uses the plans for making permit decisions and federal consistency determinations. Proposed projects and activities must be consistent with the policies of a local land use plan. Cities and towns may adopt their own land use plans or rely on the CAMA plans of the county in which they are located.



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At the local level, land use plans can act as a comprehensive plan, providing guidance for both individual projects and a broad range of policy issues such as the development of regulatory ordinances and public investment programs. While not specifically identified as one of the issues that must be considered within the CAMA plan, military base compatibility can be included within the land use plan. CAMA land use plans provide one of the best opportunities for public involvement; the process gives citizens the opportunity to help shape the policies that will guide CAMA permit decisions and how the community will grow. This also provides an opportunity for a military base to engage in the process and encourage the inclusion of policies that will help protect their interests.



5.2.2. North Carolina Military Affairs Commission



Established by North Carolina General Statute §143B-1310, the North Carolina Military Affairs Commission provides advice, counsel, and recommendations to the General Assembly, the Secretary of Military and Veterans Affairs, and other State agencies on initiatives, programs, and legislation that will continue and increase the role that North Carolina's military installations, the National Guard, and the Reserves play in America's defense strategy and the economic health and vitality of the state. The Commission coordinates with the state government and agencies to protect military installations' operations. They cooperate with

military installations to facilitate missions, identify ways to provide a built environment conducive to supporting current and former members of the military and their families, lead the State's initiative to prepare for the next round of Base Realignment and Closure, identify and support economic development that supports military installations' missions, provide state assistance on affairs that affect military installations, support the long-term goal of a viable and prosperous military presence in the state, share information, and coordinate efforts with federal representatives.



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5.2.3. North Carolina Planning and Regulation of Development

North Carolina has two statutes concerning planning and the regulation of development. Planning within counties is regulated by North Carolina General Statutes §153A-320; cities are regulated by North Carolina General Statutes § 160A-360 through 459. Both statutes have sections regulating the subdivision of land, zoning, development agreements of large-scale developments, building inspection, and community development. The statute regulating planning and development within cities includes sections on extra-jurisdictional planning (within one mile of the city's boundary), open space acquisition, historic preservation, and community appearance. Both regulations require that a military base be notified if an adoption or modification action taken by the planning board would result in a change within five miles of the military installation. The installation must be notified 10 to 25 days before the public hearing considering such an action, and the base has 30 days from notification to respond. Planning and development statute requirements also include a requirement for a public participation component through the public hearing or items prior to adoption; these public hearings can provide an additional way for the military to participate in the planning process.

5.2.4. North Carolina Building Code

Pursuant to North Carolina General Statutes §143-138, the North Carolina Building Code Council adopts and amends the North Carolina State Building Codes. The Codes contain standards for repairs, alterations, changes in occupancy, historic buildings, relocated buildings, performance compliance methods, and construction safeguards. The current building code was adopted in 2015 and was updated in 2018.

5.2.5. North Carolina Department of Agriculture and Consumer Services (DACS) Programs

In 2005, North Carolina's Agricultural Development and Farmland Preservation Trust Fund was established. This program encourages the preservation of agricultural, horticultural, and forest lands to foster the growth, development, and sustainability of family farms by providing grants to county governments and non-profit organizations for perpetual and term conservation easements, county agricultural plans, and agriculture and agribusiness development projects. To be eligible for the funding of a conservation easement, the property must be used for agriculture, horticulture, or forestry in North Carolina, must remain in private ownership, and be applied for by counties or non-profit conservation organizations on behalf of a landowner. As of August 2018, the Trust Fund had preserved 18,498 acres of farm and forest lands.



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In addition, DACS Farmland Preservation Division works with counties to enact Farmland Protection Plans and Voluntary Agricultural Districts. Farmland Protection Plans are plans developed to increase the viability of the agricultural economy by examining the types of agriculture in a county and the challenges and opportunities facing it. Voluntary Agricultural Districts provide recognition for farms, protect farms from development for 10 years, and establish an Agricultural Advisory Board in the county. Onslow County participates in both of these programs.



DACS has drafted the framework for a new Private Landowner Incentive Program for Farmland and Forestland Conservation/Preservation focused around military operations throughout the state of North Carolina. The program concept was presented to DoD REPI for funding consideration. However, the current legal authority supporting the REPI program, 10 U.S.C. § 2684a, doesn't provide the authority to support the proposed North Carolina initiative. The REPI program authority is based upon real estate authorities to support conservation and natural resource management activities, to include conservation easements. The proposed North Carolina private landowner incentive program is predominantly focused upon providing funds for forest management and not considered an eligible "conservation activity" under REPI program authority.

However, the proposed North Carolina program is similar to an existing U.S. Department of Agriculture Natural Resources and Conservation Service (NRCS) program. The NRCS program offers 10-, 15- and 20-year contracts to landowners, and the program is seen as a first step for landowners to eventually agree to permanent conservation easements for their land. More than 97% of landowners participating in the contracts eventually convert to permanent easements. The program is seen as much less expensive than permanent easements.

Congress may consider providing additional funds from the DoD budget to NRCS to expand their program activity to support and preserve military operations throughout the country with consideration given for a North Carolina pilot project prior to permanent expanded NRCS program authority. A North Carolina pilot program would include identification of eligible properties that lie within the existing Sentinel Landscape boundaries and comply with existing priorities established for the North Carolina Sentinel Landscape initiative.



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5.2.6. The Nature Conservancy (TNC) in North Carolina



The Nature Conservancy and the military have a long history of working together in North Carolina. TNC North Carolina Chapter has taken a leadership role to respond to the rapid development in the Onslow Bight Landscape area surrounding

Camp Lejeune and MCAS Cherry Point. The Onslow Bight Landscape area of eastern North Carolina is a unique landform of barrier islands, marshes, riverine wetlands, pocosins, longleaf pine savannas and many other coastal ecosystems that provide abundant opportunities for fishing, hunting, camping, hiking, canoeing, and other resource-based outdoor recreational opportunities. The Onslow Bight region, stretching from Cape Lookout to Cape Fear, is developing rapidly and beginning to lose its rural character and ecological integrity.

In response to this rapid development threatening the critical natural habitat, several government agencies and private conservation groups with land holdings, as well as other interested agencies and groups, found common ground in the need to maintain and enhance conservation. As a result of these concerns, 12 agencies and organizations signed a Memorandum of Understanding (MOU) to establish the North Carolina Onslow Bight Conservation Forum to enhance cooperation and communication regarding long-term conservation and management issues within the Onslow Bight landscape and support land uses compatible with military operations.

The Nature Conservancy in North Carolina is a secondary partner in the North Carolina Sentinel Landscape Initiative and views the effort with a strong focus on working lands. However, the opportunity exists to further engage The Nature Conservancy with a focus on habitat preservation actions to also support military operations. Consider preservation of a minimum quarter-mile wildlife corridor from Camp Lejeune to other core preservation areas in support of high-quality long leaf pine habitat and bear migration. Please see the illustration on the following page for identified areas for corridor preservation.

The Onslow Bight Conservation Forum

TNC and Camp Lejeune jointly initiated the Onslow Bight Conservation Forum in response to encroachment issues at the military installation. Most of the partners own land in the region, representing a broad spectrum of land managers and conservation advocates who are working to identify areas that

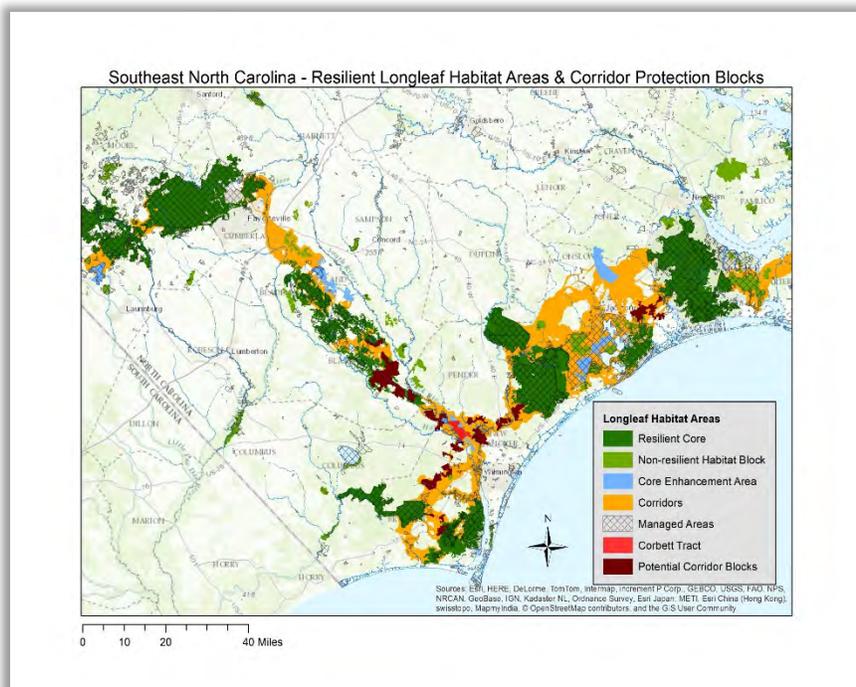


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should remain natural, develop political support for land acquisition, and work toward acquiring these lands.

On January 11, 2002, the Forum created the “Reserve Design” subcommittee to share “priorities amongst the various members, collecting information from all relevant sources, and creating a coordinated conservation vision for the region.” The Onslow Bight Conservation Design Plan is the first iteration of this conservation vision, setting forth a vision for one coastal region, the Onslow Bight landscape, and seeking to preserve for future generations conservation values while ensuring the continued production and processing of forest and agricultural products, new industry, tourism, military training and the growth these varied activities bring. The Conservation Design Plan presents conservation targets, conservation priorities, and actions the Forum members may take individually or in mutual cooperation. The Conservation Design Plan also presents acquisition/protection strategies, as well as management and action strategies.



Core Preservation and Corridor Areas; Source: The Nature Conservancy

The Onslow Bight Stewardship Alliance MOU was executed in April of 2017 among the following participating agencies and organizations:

- North Carolina Wildlife Resources Commission
- North Carolina Division of Forest Resources
- North Carolina Division of Parks and Recreation



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- The Nature Conservancy
- U.S. Forest Service
- MCB Camp Lejeune
- MCAS Cherry Point

The Alliance, a unique public/private landowner collaboration, has agreed to collectively initiate and implement a strategy for the restoration, management, and conservation of the natural resources in more than one million acres in southeastern North Carolina, an area TNC has identified as a national “hot spot” of biodiversity threatened by incompatible development and habitat fragmentation. The area consists of the longleaf and pond pine ecosystems around a coastal embayment area that hosts MCB Camp Lejeune, MCAS Cherry Point, Croatan National Forest, several State Game Lands, State Parks, and forested privately owned properties such as the Green Swamp and Maple Hill Savannas.

Due to the complex and resource intensive nature of land management in the region, no one landowner or agency has the capacity to address all the stewardship issues, but partnerships for mutual benefit can collectively address the land management challenges. Chief among these challenges is prescribed fire, with routine and wide-ranging fires of various cycles from the two- to three-year burning rotation of a longleaf pine-wiregrass savannah to the longer burn cycles of pocosin. The Alliance MOU establishes a framework to provide staffing and equipment for prescribed fires on lands the participating parties administer, cooperate with fire training and education opportunities, and promote public understanding and acceptance of prescribed fire in the region.

The Onslow Bight Conservation Forum was instrumental in protecting 2,400 acres adjacent to the Camp Lejeune tank and rifle ranges—land once slated for development with more than 3,000 housing units. Besides being a serious encroachment threat to the Marine Corps, development in this area had a large potential for noise complaints from homeowners. Development would have caused further habitat loss and placed greater demands on federal and state lands to maintain the region’s biodiversity. In 2003, TNC purchased the parcel using funds pooled from participants. In exchange for its contribution, the Marine Corps obtained a restrictive easement governing property development. For its contribution, the State of North Carolina obtained title to the property, which is now part of the state’s game preserve system, and is open for public use.



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5.2.7. North Carolina Coastal Land Trust

The mission of the North Carolina Coastal Land Trust is to enrich the coastal communities of North Carolina through conservation of natural areas, education and promotion of good land stewardship throughout 31 counties along the entire coastal plain. Founded in 1992, the North Carolina Coastal Land Trust saves and restores special places in the coastal plain, including barrier islands, nature parks and preserves, family farms, and longleaf pine forests. Working since 2005, the North Carolina Coastal Land Trust acquired, through the DoD REPI program, two clean water management easements in Sneads Ferry that fall within the Camp Lejeune Military Restricted Overlay District - 148 acres in 2007 for \$1.7 million, and 92 acres in 2011 for \$742,500. As an Onslow Bight Forum partner, the North Carolina Coastal Land Trust works closely with the North Carolina Coastal Federation, who has preserved more than 9,000 acres around MCAS Cherry Point, with acquisition of an additional 54,000 acres underway.

5.2.8. North Carolina Coastal Federation (NCCF)

Since 1982, the NCCF has worked to protect and restore coastal water quality and habitats throughout the North Carolina coast. Their goals include:

- Coastal water quality that supports fishing, swimming and a vibrant coastal economy;
- Natural and productive estuarine shorelines;
- Oysters that thrive and support vibrant fisheries and habitat, good water quality and a strong Coastal economy;
- A coast that is free of marine debris; and
- Effective coastal management that protects and restores the North Carolina coast.

The NCCF is a collaborative, grassroots organization that brings together traditional and nontraditional organizations, government agencies and businesses, providing a united voice to the need for long-term coastal management in North Carolina, restoring miles of North Carolina coastline, and training and educating students, adults and communities to take actions to support cleaner coastal waters and leave a legacy of clean water for future generations. Their efforts have led to restoration and protection of thousands of acres of special lands and waters along the North Carolina coast; forming partnerships and finding common ground among diverse groups, interests and unlikely alliances; promoting economic development and environmental connections; incorporating coastal resiliency to address shoreline erosion, coastal flooding, saltwater intrusion and stormwater runoff; and advocating for compatible land use and water use.



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The NCCF has undertaken two significant projects in support of Camp Lejeune continued military operations – North River Farms wetlands preservation and White Oak River Watershed restoration to protect shell fishing. The 6,000 acres North River Farms project represents the largest wetland restoration project east of the Mississippi River. The White Oak River is 48 miles long and runs through Jones, Onslow and, Carteret counties. Along the river are saltwater marshes and hardwood swamps that are home to a variety of fish and wildlife, providing for fishing, swimming, kayaking and boating and have cultural and historical significance. The White Oak River Restoration Plan includes simple solutions to reduce polluted runoff flowing into Dubling Creek, Boathouse Creek, Hills Bay and the waters north of the N.C. 24 bridges in Cedar Point, on the Carteret County side of the river through infiltration.

In 2006, the NCCF teamed up with the Town of Cedar Point, the North Carolina Department of Transportation, North Carolina Division of Energy, Mineral and Land Resources, and community members to prepare a study and restoration plan for a portion of the river. The study found that polluted stormwater runoff from parking lots, driveways, rooftops and other hard surfaces is the primary cause of water quality impairment in the river. About two-thirds of the lower White Oak River is now permanently closed to shell fishing or closes temporarily after a moderate rain. Many dedicated partners including the NCCF, the U.S. Forest Service, the Town of Cedar Point and East Carolina University worked together to reduce runoff and restore the river.

5.2.9. North Carolina Wildlife Resources Commission (WRC)

The North Carolina WRC works to conserve and sustain the state’s fish and wildlife resources through research, scientific management, wise use, and public input. The WRC is the regulatory agency responsible for the enforcement of North Carolina fishing, hunting, trapping and boating laws. The WRC is an important partner in supporting compatible land uses and Dark-Sky airspace, particularly in Onslow and Pender counties, that are necessary for continued military operations.

The WRC sponsors a variety of conservation programs to conserve and sustain North Carolina’s wildlife resources. Preservation of priority habitats helps to safeguard Camp Lejeune’s invaluable training lands, ranges, and training routes, while sustaining the North Carolina coastal plain and assisting red-cockaded woodpecker recovery. Some Resources Commission programs that support Camp Lejeune military operations include the following.

- Cooperative Upland-habitat Restoration and Enhancement
- Game Lands Programs



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- Green Growth Toolbox
- Habitat Conservation Program
- North Carolina Partners in Amphibian and Reptile Conservation
- North Carolina Wildlife Action Plan
- Safe Harbor Program

The WRC manages the Wildlife Conservation Program that allows landowners, who have owned their property for at least five (5) years and want to manage for protected wildlife species or priority wildlife habitats to apply for a reduced property tax assessment. Only land with protected wildlife species or priority habitats qualify. Six priority habitats have been identified – longleaf pine forest, early successional habitat, small wetland community, stream and riparian zone, rock outcrop, and bat cave. A landowner must have at least 20 contiguous qualifying acres of wildlife habitat designated as priority habitat or habitat to conserve a protected wildlife species. No more than 100 acres of an owner’s land in a county may be classified as wildlife conservation land. Wildlife conservation land is managed under a written Wildlife Habitat Conservation Agreement to describe the management strategies and appropriate timelines to ensure the continued existence of the protected species, priority habitat, or both. With a Wildlife Habitat Conservation Agreement in place, the county assessor determines if the land qualifies for an assessment at reduced value.

The Green Growth Toolbox is a technical assistance tool designed to help counties, towns, and cities guide growth that conserves high quality habitats for wildlife and natural resources alongside new homes, workplaces, and shopping centers. The Green Growth Toolbox consists of a handbook, packaged GIS dataset, training workshops and technical assistance that is introduced to local government staff, advisory boards and consultants. The assistance supports incorporation of habitat conservation into land use plans, policies and ordinances, and development siting, review and design.

The North Carolina Red-cockaded Woodpecker (RCW) Safe Harbor Program is designed to encourage and facilitate restoration and enhancement of RCW nesting and foraging habitat on non-federal lands and help private landowners by removing some of the regulatory restrictions imposed through the Federal Endangered Species Act.

The WRC developed North Carolina’s Wildlife Action Plan, a comprehensive planning tool to help conserve and enhance the state’s full array of fish and wildlife species and their habitats. The plan was developed in cooperation with numerous partners, including federal and state agencies, conservation organizations,



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and stakeholders. The Wildlife Plan is intended to provide a foundation for state and federal agencies and other conservation partners to think strategically about their individual roles and coordinate prioritizing conservation efforts throughout the state. At minimum, the Plan is comprehensively evaluated and revised every 10 years, with interim updates as new information discovered about the status of species and natural communities.

5.3. Local Programs and Plans

Individual municipalities maintain CAMA land use plans and zoning ordinances allowing them to formulate plans that best reflect how they want their communities to grow. The following provides a brief review of these documents and the sections of each plan and ordinance that relate to the Installation.

The plans for the communities of Onslow County, City of Jacksonville, Town of North Topsail Beach, and Town of Swansboro were analyzed. The Town of Richlands and the Town of Holly Ridge are included within the land use plan and zoning ordinance for Onslow County. The Community Plan for Sneads Ferry, an unincorporated community within Onslow County, is considered as well.

5.3.1. Onslow County's Comprehensive Plan/CAMA Core Land Use Plan

The Comprehensive Plan/CAMA Core Land Use Plan identifies policies to provide guidance for the physical development within the County. The Plan contains data, analysis, goals, objectives, and actions that are used to implement the policies. The Plan is organized into seven sections – Introduction, History, Regional Setting, Onslow County Concerns and Aspirations, Analysis of Existing and Emerging Conditions, Plan for the Future, and Tools for Managing Development. In addition to being used by the State of North Carolina to determine if development requiring a Major CAMA Permit is consistent with the policies of the CAMA Plan, the Land Use Plan is used in land development decisions, specifically changes to ordinances and zoning changes. The initial CAMA Plan was first adopted in 1991, and the first Comprehensive Plan was adopted in 1994. Both plans were subsequently updated in 1997 and 2003, respectively, and were updated again and combined into one document in 2014.

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Most of the Installation is surrounded by unincorporated Onslow County. The Land Use Plan recognizes the close relationship between the Installation and the County's growth and economic well-being through a series of policies and implementing actions located in Section VI, Plan for the Future:

- Policies – Economic Development:



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- P. 145: Onslow County supports the Marine Corps Base Camp Lejeune and the New River Air Station as the primary economic engines of the local economy. County actions shall be consistent with preserving and protecting this pivotal major industry.
- Policies – Military/Community Cooperation:
 - P.158: Onslow County will support coordinated intergovernmental and military-community planning for land use and development, transportation, utilities, environmental management, law enforcement and public safety, education, recreation, tourism, and economic development.
 - P.159: Onslow County encourages special committees, advisory panels, educational forums, workshops, leadership seminars, community meetings, and media contacts to enhance the level of community involvement and awareness of military community issues.
 - P.160: Onslow County supports working proactively with the Marine Corps Base Camp Lejeune, and the New River Air Station, to determine those policies and actions that will strengthen the operational viability of the military while also enhancing the community at large.
 - P. 161: In support of military personnel, Onslow County will provide for an enhanced quality of life in the area, including better housing, more and better parks, cleaner coastal waters, better schools, more efficient land use patterns, more attractive development and scenic beauty, protect important natural resources, and continued economic development.
- Implementing Actions – Military/Community Cooperation
 - I.100: Onslow County will continue to support the recommendations of the Onslow County Joint Land Use Study, February 2003. Schedule: Continuing Activity.



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- I.101: Onslow County will review its zoning in those areas adjoining the Marine Corps Base to provide buffer areas to mitigate encroachment by incompatible land uses. This will be accomplished during preparation of the Onslow County Unified Development Ordinance. Schedule: Fiscal Year 2008-2009 and continuing.
- I.102: Onslow County will continue to work cooperatively for the effective operation of ONWASA, the Onslow Water and Sewer Authority. Operations employ utilities extensions wisely to direct new growth to locations away from mission critical activity areas of the military base. Schedule: Continuing Activity.
- I.103: Onslow County will continue to support cooperative agreements with the military for the provision of police, fire, and EMS services. Schedule: Continuing Activity.
- I.104: During the implementation of this plan, Onslow County will support the following mutually supporting interests which are identified in the 2003 Citizen's Comprehensive Plan for Onslow County:
 - What the Installation Believes the Community Wants
 - A base that maintains or expands its current population;
 - Continued good relations with the base;
 - More tax revenues;
 - Continued cooperation in police, fire, EMS, emergency response;
 - More access to base land for recreation (hunting, boating);
 - Base waste water capacity;
 - Base water;
 - A voice in base infrastructure and economic development that impacts the community;
 - Improved quality of life;
 - Better schools;
 - Wide range of jobs;



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- Better commercial air service;
- Expanded business development and less competition from the base;
- Minimize range noise.
- What the Installation Wants
 - Improved operational viability in future years;
 - Continued good relations with community;
 - Support for Department of Defense mission;
 - Continued cooperation in police, fire, EMS, and emergency response;
 - Support of infrastructure improvements to facilitate strategic deployment;
 - Buffer areas to mitigate encroachment;
 - Local government actions that ensure compatible development adjacent to base boundaries;
 - Joint planning with community for utilities and land use;
 - Improved quality of life;
 - Better schools;
 - Wide range of jobs;
 - Improved off base housing;
 - Community support for PPV business development on base;
 - Improve the percent of eligible families supported with on-base housing.

Onslow County Future Land Use Map

The Future Land Use Map supports Onslow County's and CAMA's goals. The Future Land Use Map and specified development goals are based community concerns identified as part of the public participation process and the future needs and demands identified elsewhere in the CAMA Plan. The Future Land Use Map is used to guide land use decisions and identify areas for growth and areas for preservation as well as carry out the policies identified elsewhere in the plan.



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5.3.2. Onslow County Zoning Ordinance



Source: Onslow County

The Zoning Ordinance creates different districts used to define how the land within each district can be used. The regulations include a list of the allowable land use types within each district, as well as specific requirements for building setbacks, parking, buffers, etc. The Ordinance consists of the regulations and an associated zoning map. Although the Onslow County Comprehensive Plan/CAMA Core Land Use Plan applies

to the Towns of Richlands and Holly Ridge as well as Onslow County, the provisions of the Onslow County Zoning Ordinance are applicable only to Onslow County.

Application to Camp Lejeune Joint Land Use Study

There are several specific requirements in the Zoning Ordinance that are intended to further compatibility between the Installation and the community:

- Section 403.A: Provides that if an amendment would change the zoning classification or uses on land within five miles of the outer boundaries of a military base, written notice of the public hearing shall be sent to the base commander by certified mail, return receipt requested, not less than 10 nor more than 25 days before the hearing date.
- Section 710.2 Flight Path Overlay District:
 - A. Purpose. The main purpose of this district is to ensure the compatibility between air operations associated with Marine Corps Base Camp Lejeune and Marine Corps Air Station New River and land uses on properties near these military bases, in terms of potential interference with safe aircraft operations, potential threats from falling aircraft, and potential impacts of aircraft noise.
 - B. Establishment. The Flight Path Overlay District (FPOD) is hereby established as a district that overlays land within and immediately adjacent to designated flight paths towards fixed-wing landing areas and around helicopter landing areas within Marine Corps Base



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Camp Lejeune and Marine Corps Air Station New River, as delineated on the Onslow County Zoning Map.

- C. Special Uses. To the extent that any of the following uses are permitted by the underlying zoning district, they shall be permitted in the Flight Path Overlay District only with a Special Use Permit approved under Article XIII and subject to the additional standards of this subparagraph:
1. Sanitary landfills. This use—which potentially involves significant attraction of birds—shall be allowed only if its size, location, design, and operations are such that the potential impact of interference with overhead aircraft due to the flocks of birds attracted to the landfill is not substantial.
 2. Colleges, schools, child care centers with more than 30 children, hospitals, nursing homes, libraries, churches or assembly halls seating more than 150 people, spectator-oriented sports complexes or stadiums, fairgrounds, racetracks, theaters, auditoriums, hotels and motels with three or more stories, and shopping centers with more than 500,000 square feet of floor area. These uses—which potentially involve high concentrations of people and/or activities particularly vulnerable to sensitive to noise—shall be allowed only if their size, location, design, and operations are such that the potential loss of life and injury due to falling aircraft and/or the potential adverse impacts on normal activities from noise created by overhead aircraft are not substantial.
 3. Mining and quarrying, fertilizer manufacturing and storage, concrete products production, and asphalt products manufacturing. These uses—which potentially involve significant airborne emissions of dust—shall be allowed only if their size, location, design, and operations are such that the potential impairment of pilot visibility for overhead aircraft due to the emission of dust is not substantial.
 4. Chemical manufacturing, fertilizer manufacturing and storage, plastic products manufacturing, pharmaceuticals manufacturing, asphalt products manufacturing, refineries, above ground bulk storage of oil and gasoline, or other similar use that is subject to the accidental release prevention requirements in 40 CFR part 68. These uses—which potentially involve use and/or storage of significant amounts of materials that are highly explosive, flammable, toxic, corrosive, or otherwise hazardous—shall be allowed only if their size, location, design, and operations are



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such that the potential loss of life and injury due to the impacts of falling aircraft is not substantial.

- D. Prohibited Uses, Development, Activities. Any use, development, or activity is prohibited if it:
 - 1. Produces smoke, dust, or other airborne substances in such amounts as to impair pilot visibility or otherwise interfere with the safe operation of overhead aircraft;
 - 2. Produces light emissions - either direct or indirect (reflective) - of such intensity and directed in such directions as to impair pilot visibility or otherwise interfere with the safe operation of overhead aircraft; or
 - 3. Produces electronic emissions that interfere with navigation signals or radio communications between aircraft and landing control facilities or with the aircraft's navigational or communication equipment.
- E. Height Limits. Irrespective of building height limits in the underlying zoning districts, no structure within the Flight Path Overlay District shall have a height of more than 100 feet.

5.3.3. City of Jacksonville CAMA Land Use Plan

The CAMA Land Use Plan is a foundation for all land use and development decisions made by the City, serving both short-term and long-term functions. It serves as a reference for applicants regarding the type of development the City has planned for and as a guide for elected and appointed decision-makers reviewing development applications. It also serves as a long-term guide for decisions about capital expenditures and facilities. Through the public participation process, the City identified development patterns that do not create an impediment to continued military operations as a local concern. The Land Use Plan is organized into six chapters – Executive Summary, Community Concerns and Aspirations, Analysis of Existing and Emerging Conditions, Goals and Policies, Future Land Use Map, and Tools for Managing Development.

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The City of Jacksonville CAMA Land Use Plan, adopted In June 2011, addresses military support and related policies. (CAMA Goal 15, Policies 15.1 through 15.6 are repeated as locally adopted policies, CAMA Goal 43, Policies 43.1 through 43.6. in Appendix III of the Plan.)

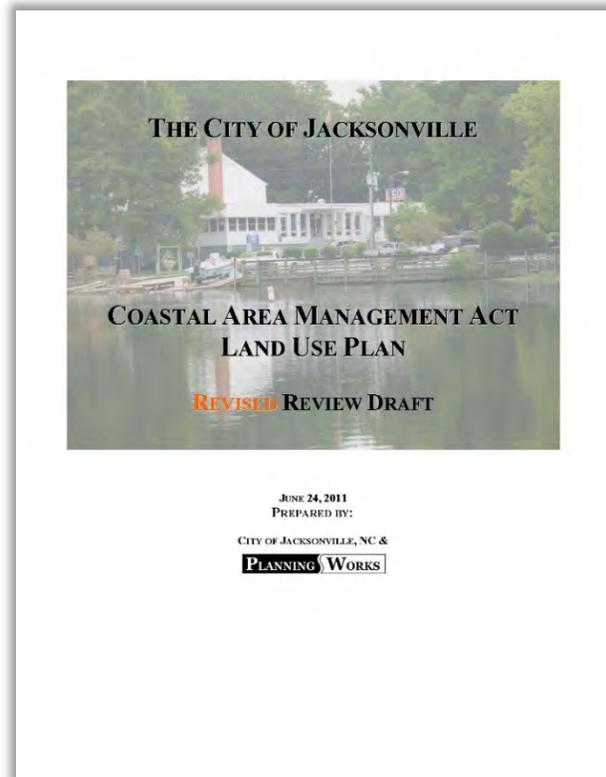
- CAMA Goal 15: Support a strong partnership between the community and the military facilities to ensure that bases are able to meet present and future military requirements.



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- Policy 15.1: Support the long-term viability of Camp Lejeune and the New River Marine Corps Air Station (“military facilities”) operations by supporting a framework for military-community partnerships and planning efforts which involve joint land use planning, facility and resource sharing and public/private economic ventures.
- Policy 15.2: Encourage development of an intergovernmental agreement between the City and military facilities to define land use compatibility issues and agreeing to resolve land use disputes through mutually acceptable techniques.
- Policy 15.3: Coordinate with the military facilities to identify off-base properties within the City under federal control that are available exclusively for military operations, housing, personnel, recreation, and similar ancillary military facilities or environmental habitat preservation.
- Policy 15.4: Establish long-range compatibility standards and land use regulations that preserve the military missions of Camp Lejeune and the New River Marine Corps Air Station while accommodating the growth of Jacksonville.
- Policy 15.5: Development that may have an impact on current and future military facility activities should be considered by the City as a component of the development review process.
- Policy 15.6: Encourage development of an intergovernmental agreement between the City and military facilities to establish opportunities to plan for and provide public facilities and services.



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The Action Plan is the short-term work program that establishes a reasonable timeline for key plan implementation tasks.

- Task 1.19 Establish regular contact with Military facility representatives to discuss and resolve military short and long-term land use needs, both on- and off-base.
- Task 1.29 Establish a City-County land use planning working group to address issues of mutual concern, including redevelopment of the Jacksonville downtown, consolidating County operations, the proposed correctional facility, downtown parking, supporting military facility operations, development partnerships and the role of the industrial park.
- Task 2.14 Revise zoning and subdivision codes to limit residential development or require mitigation (e.g., sound-buffering) in areas subject to projected airport, military or highway noise levels more than 60 dBA. Consider creation of noise overlay zones.

City of Jacksonville Future Land Use Map

The CAMA Plan's Future Land Use Map illustrates the distribution and type of land uses and is used to guide land use and development decisions. It's associated policy, Policy 33.2 of the Land Use Compatibility Section, directs the County to establish a mechanism to allow interpretations and minor boundary adjustments without requiring formal plan amendments. The Map includes three Residential categories, two Commercial categories, a Mixed-use category, an Office category, an Industrial, Public / Institutional category, and a Conservation category. The Plan also includes a table indicating compatibility of the CAMA map with the zoning map.

5.3.4. City of Jacksonville Unified Development Code

The City of Jacksonville Unified Development Code became effective July 1, 2014 and last amended on March 20, 2018. The UDC includes five Residential Single-Family Districts of varying intensity, two Residential Multi-Family Districts, seven Non-residential Districts, a Corridor Commercial District, an Industrial District, and several Mixed-Use Zoning Districts including a Downtown Residential District, Office and Institutional District, Neighborhood Commercial District, and Downtown Business District.

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The Code also includes a Military Reservation District which identifies military installations under federal authority and provides a zoning district classification of all lands held by the military that might be declared surplus or otherwise privatized in the future. There are also three Planned Development Districts and six Overlay Districts including a Flight Path Overlay District (FPO). The FPO applies to lands, depicted



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on the official zoning map, within and immediately adjacent to designated flight paths towards fixed-wing landing areas and around helicopter landing areas within the Installation. The language for the FPO is identical to that for Onslow County, creating a seamless FPO with unified standards.

5.3.5. Holly Ridge Comprehensive Growth Strategy

The Holly Ridge Comprehensive Growth Strategy, adopted in 2008, is a goal-setting guide with a 20-year horizon. It outlines the “direction the Town is moving in terms of growth, density, land uses, and expected places where growth will be placed.” The Growth Strategy contains six sections with the following goals:

- Aggressively pursue economic and community development opportunities for the Town.
- Expand facilities to further unite all residents and provide a sense of community.
- Expand and promote aquaculture, recreation, and cultural resources within the Town and preserve natural resource access areas.
- Provide the means to transport people efficiently throughout the Town.
- Meet the needs of a rapidly growing community.
- Attract retirees, working families and individuals to the Town and provide a wide range of housing types to meet their needs.
- Elect, appoint, and hire leaders that are open to change and will help the Town grow at a sustainable pace.

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While the recommendations do not focus on compatibility with the Installation, they do provide direction for accommodating future growth in the area that may be related to population increases at the Installation.



Source: Town of Holly Ridge



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5.3.6. Town of Holly Ridge Zoning Ordinance

Under this Zoning Ordinance, adopted in September 1986, the Town uses a Planning Board to “develop plans, policies and procedures and to advise the Town Council on planning and zoning matters,” plus a Board of Adjustment. The document includes nine residential districts, two commercial districts, an industrial district, an open area district, and a rural agricultural district. Property adjacent to the Installation is zoned Open Area/Recreational, Commercial, Rural Agriculture, and Light Industrial.

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There are several specific requirements in the Zoning Ordinance that are intended to further compatibility between the Installation and the community:

- Building height is limited to 40 feet for all districts; chimneys, church spires, water towers, and the like are exempt from this requirement and may be constructed to any height (Section 7-3-24).
- Wireless communications towers require a special permit and are limited in height to 350 feet (Section 7-4-10). There is an option for the Town to require an applicant to apply to the Federal Aviation Administration (FAA) for compliance with FAA standards for a dual lighting system rather than a red and white marking pattern, when the review and decision-making body determines such a marking pattern would cause aesthetic blight due to the visibility of the tower.
- Section 7-3-19 of the zoning regulations reserves the right to adopt overlay districts, but the Town has not adopted any yet.
- There are no lighting limitations other than those that require shielded lighting in parking areas.
- There are no provisions for flight paths.
- Section 7-7-6 contains a notice requirement if the amendment would change the zoning classification or uses permitted on land within five (5) miles of the outer boundaries of a military base, written notice of the hearing shall be sent to the base commander by certified mail, return receipt requested, not less than ten (10) nor more than twenty-five (25) days before the hearing date, consistent with state requirements.

5.3.7. Town of North Topsail Beach Unified Development Code

Article 3 of the Unified Development Code, Zoning Districts, sets forth the zoning regulations for North Topsail Beach. Included is a Conservation District, seven Residential districts ranging in density from a low density Residential-Agricultural District to a high-density Multi-Family Residential District. There are two Business Districts and a Coastal Forest Overlay District.



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The Town's Unified Development Code combines traditional zoning and subdivision regulations, along with design guidelines, sign regulations, and floodplain and stormwater management, into one document. The following requirements of the Unified Development Code are related to general development concerns for military bases:

- Section 5.02: Restricts building height to 48 feet in all zoning districts.
- Section 2.02.03 requires legal notice to adjacent property owners and all owners of property within the area under consideration for rezoning.
- Section 4.03.17(C)(9) limits the height of communication towers to 100 feet.
- Section 4.03.17(C)(10) places restrictions on the types of illumination that are allowed on the wireless communication tower.

5.3.8. Town of Richlands Code of Ordinances

Title XV, Land Usage, includes a General Provisions Chapter and Chapters on Flood Damage Prevention, Subdivisions, Zoning, and Vacant Property Maintenance. There are multiple Zoning Districts: nine Residential districts, three Commercial districts, one Office district, one Institutional district, two Industrial districts, and a section providing for the establishment of Planned Unit Developments. Most of the Town is zoned R-20, a Rural Residential District designed to accommodate low-density single-family dwellings with lots 20,000 square feet at a minimum.

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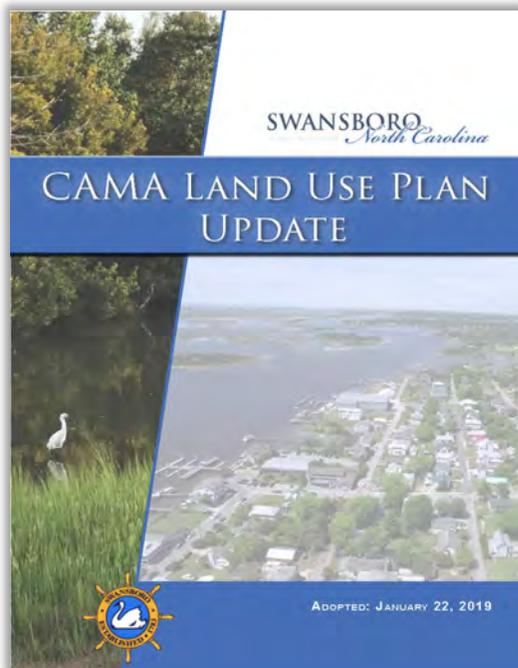
The Town's Code of Ordinances combines traditional zoning and subdivision regulations with floodplain and stormwater management into one document. The following requirements of the Code are related to general development concerns for military bases:

- Section 153.144 limits building height to 35 feet; structures between 35 and 50 feet require a special use permit, and structures more than 50 feet require a conditional use permit.
- Section 153.396 requires notice of zoning map amendments to be sent to the owners of all parcels of land situated within 100 feet of the subject parcel.



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5.3.9. Town of Swansboro CAMA Land Use Plan

The Town adopted an updated CAMA Land Use Plan on January 22, 2019. The updated Land Use Plan is built on citizen input and focuses on public water access, land use compatibility, infrastructure carrying capacity, natural hazard areas, and water quality.

Application to the Camp Lejeune Joint Land Use Study

The Town's 2009 and updated CAMA Land Use Plans do not provide policies related to the Installation. According to survey results, there are a small number of active duty military personnel living in the town, and the Town's population skews heavily toward retirement age.

5.3.10. Town of Swansboro Unified Development Ordinance (UDO)

The UDO provides guidance to the Planning and Zoning Board, the Board of Adjustment, the Historic Preservation Commission, and to citizens/developers who submit applications to these boards.

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The Town's UDO combines traditional zoning and subdivision regulations, along with design guidelines, sign regulations, and floodplain and stormwater management, into one document. The following requirements of the UDO are related to general development concerns for military bases:

- Zoning Districts and Map: The Town has a conservation zone, eight residential zones, four mobile home zones, an office/institutional zone, governmental/education zone, three commercial zones, a historic district overlay, an industrial zone, and a planned unit development district. Commercial zoning lines Highway 24 with residential and other uses behind.
- Section 152.195 defines the Town's height limitations; height is limited to 35 feet with some modifications allowed. Concealed wireless communication facilities can exceed this requirement and can be allowed with a Special Use Permit.

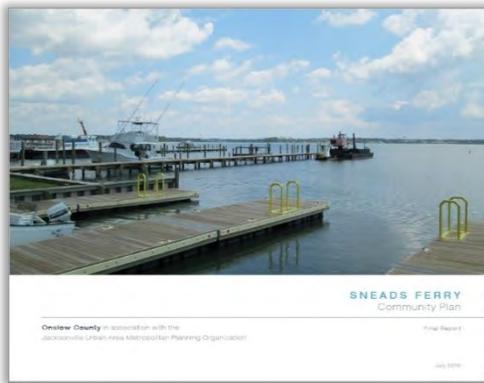


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- Sections 152.503 through 152.509 of the Ordinance detail the Town’s lighting requirements and provide that outdoor lighting be designed to protect against spillover onto adjacent properties and protect against glare onto public rights-of-way.
- Swansboro’s development impacts Highway 24, a roadway that provides the Installation’s main access and serves as its connection to auxiliary facilities. Section 152.312 of the UDO requires a traffic study to assess the transportation impact of proposed development.

5.3.11. Sneads Ferry Community Plan



While the Comprehensive Plan/CAMA Core Land Use Plan is the adopted plan for the unincorporated county jurisdiction that includes Sneads Ferry, the Sneads Ferry Community Plan was developed by the community in partnership with Onslow County and the Jacksonville Urban Area Metropolitan Planning Organization to address future transportation needs and establish a realistic land use vision for the community. The Plan includes seven chapters: Introduction and Process Overview, Existing Conditions, Community Vision, Land Use Strategy, Focus Area Concepts, Transportation Strategy and Recommendations. The Community Plan and its preferred

land use strategy serves as the foundation for the multimodal transportation strategy.

Application to the Onslow County Joint Land Use Study

The Sneads Ferry gate is considered The Installation’s ‘back door.’ With this easy access, the community provides a significant amount of the housing for military families living off base and military retirees. The Community Plan includes a Future Land Use Map that indicates how and where the community plans to grow. The Sneads Ferry Community Plan efforts resulted in several recommendations that were divided into five groups: Focused Growth, Quality of Life, Community Engagement, Working Waterfront and Environmentally Sensitive Areas, and Transportation. The recommendations do not focus on compatibility with the military installation but do provide a detailed land use plan for areas adjacent to the Installation.



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6.

Development Compatibility Analysis



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6. DEVELOPMENT COMPATIBILITY ANALYSIS

Military installations were traditionally established in rural areas with little development outside of the gates. As cities and counties have grown, development surrounding installations has blossomed. Communities have found that siting residential and non-residential uses in proximity to installations provided an economic boom for the community and fulfilled housing and commercial needs for military personnel and their dependents. However, without the proper tools in place, growth surrounding the Installation can harm the mission of the military by encroaching on the facility, thereby leading to reduced or restricted trainings, altered missions, and/or closure.

The Development Compatibility and Encroachment Analysis is an important component of the JLUS process, as it effectively evaluates the study area's potential for new development and the relationship with the mission of the Installation. The magnitude of this information and the interdependence of military and civilian interests reinforces the needs for safeguarding the Installation as an asset to US Military and an engine for continued economic growth and development in Onslow County.



Source: Camp Lejeune



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The intent of the JLUS is to increase compatibility and reduce encroachment – an interrelated concept with both military and civilian implications. Compatibility can be described as the balance between the goals and needs of the community and the mission requirements of the military. Encroachment “runs both ways” and it takes many forms. Encroachment, as defined by the U.S. DoD, referring to incompatible uses of land, air, water and other resources, is “the cumulative impact of urban and rural development that can hamper the military’s ability to carry out its testing and training mission.” For the civilian community, encroachment can affect quality of life from noise and smoke to traffic and housing. Land use controls that can help sustain mission capability, can also be seen as encroaching on the rights of property owners, affecting property values, and leading to a potential loss of income from development.

Current plans, policies, and ordinances for local governments; expanding utility service areas; the military mission footprint of the Installation; and the region’s urbanization will keep land use compatibility and establishing the balance between competing interests important for future years. Identifying potential conflict areas and enumerating their impacts should inform recommendations for the JLUS and help stakeholders prioritize their implementation.

To perform this analysis, plans, policies, ordinances, the military mission, utility services, and other sources of information were consulted to analyze sources of conflict and points of potential improvement between the military mission and the potential growth of the community. A GIS analysis through the program CommunityViz™ was also used to combine and compare some of the information used in the analysis. Future growth and development potential surrounding the Installation was analyzed within the overall study area. As the conditions were analyzed, it was determined that the focus of the analysis should encompass the entire study area extending 5 miles out from the Installation. The five-mile area was selected to ensure that the impacts from the mission at the Installation were accounted for and apply to the appropriate lands. The analysis was used to determine if, when, or where conditions might occur that create (or exacerbate) conflicts between military operations and nearby development types, location, patterns, or intensities.

6.1. CommunityViz Analysis

The magnitude, timing, and location of future growth in the region were measured and evaluated using CommunityViz. The GIS-based software provides a framework for studying the impacts of physical



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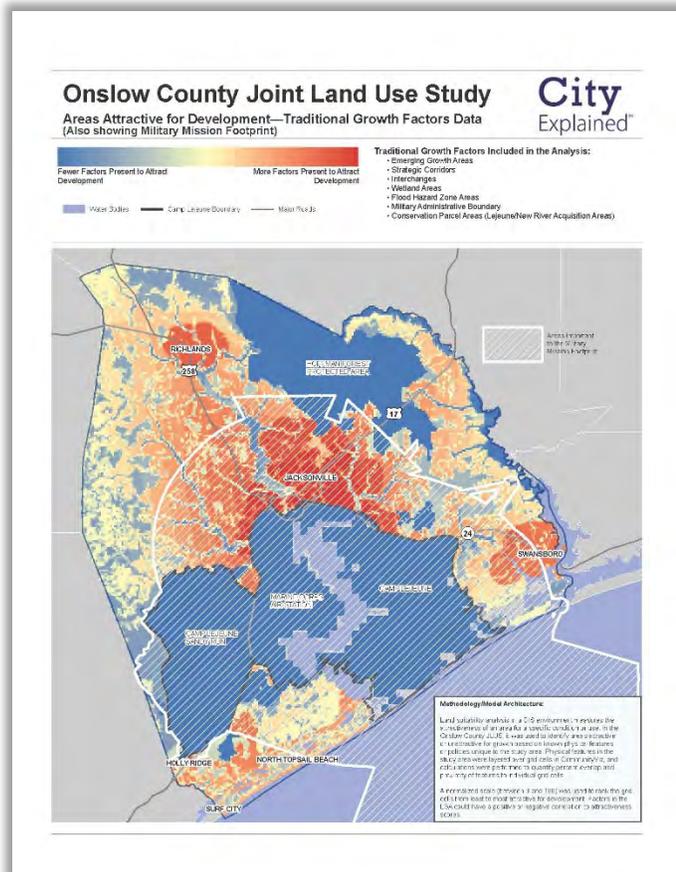
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development or policy decisions using localized data and a series of user-defined parameters. The parameters used included the following:

- **Highly Constrained Areas for Development.** Some land in the study area will never develop because of physical conditions on the site, land ownership, or the existence of federal, state or local policies that prohibit development. These areas — referred to as highly-constrained areas for development — were removed from the CommunityViz model to more accurately estimate buildable area in the region.

Features in the region used to represent highly constrained areas for development include military land, land protected from development through conservation designations or easements, Hoffman Forest, wetlands, flood hazard areas, major water bodies, and road rights of way. Approximately 44% of the study area is not expected to develop because of the presence of one or more features listed above.

- **Development Attractors.** The Onslow County JLUS evaluated development attractors unique to the region to identify 1) locations attractive for future growth and 2) locations important for preserving military operations. Physical features in and immediately surrounding the study area were layered over grid cells in CommunityViz, and calculations performed to determine either



Community Viz Development Suitability Map, 2019



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percent overlap or proximity of features to individual grid cells. A normalized scale (between 0 and 100) was used to rank the grid cells from least to most attractive for future development. Factors in the study could have a positive or negative correlation on development attractor scores. Factors assumed to attract future development to specific areas of the region include presence in an existing or emerging growth area, proximity to strategic corridors, and proximity to major highway interchanges.

- **Military Mission Footprint Factors.** Several factors important to preserving the military mission footprint for the Installation were evaluated separate from the general development attractors (listed above) to identify areas of concern for the JLUS. The military mission footprint factors include Noise Zones, Airfield Imaginary Surfaces, Flight Path Overlay District Areas, Military Drop Zones, Military Ranges, Military Surface Danger Zone Areas, Military Training Locations, and Military Administrative Boundaries.

6.2. Policies and Plans

Many of the day-to-day policies and planning efforts engaged in by local governments have an impact on the functionality of the Installation. In analyzing each local government's plan, attention was paid to the specific policies that address compatibility with the Installation, and those that directly affect the Installation's activities, such as lighting and height restrictions. Land use plans and zoning maps for each jurisdiction were also analyzed to determine where each municipality plans to grow in the future, with a particular focus on the proximity of this growth to the Installation's off-site impacts, such as noise and vibration. These factors together inform the compatibility and encroachment analysis.

Due to the dynamic nature of the military operations and training exercises, many different types of development can qualify as encroachment. Incompatible uses adjacent to the Installation, particularly when located within noise contours or safety zones include the following:

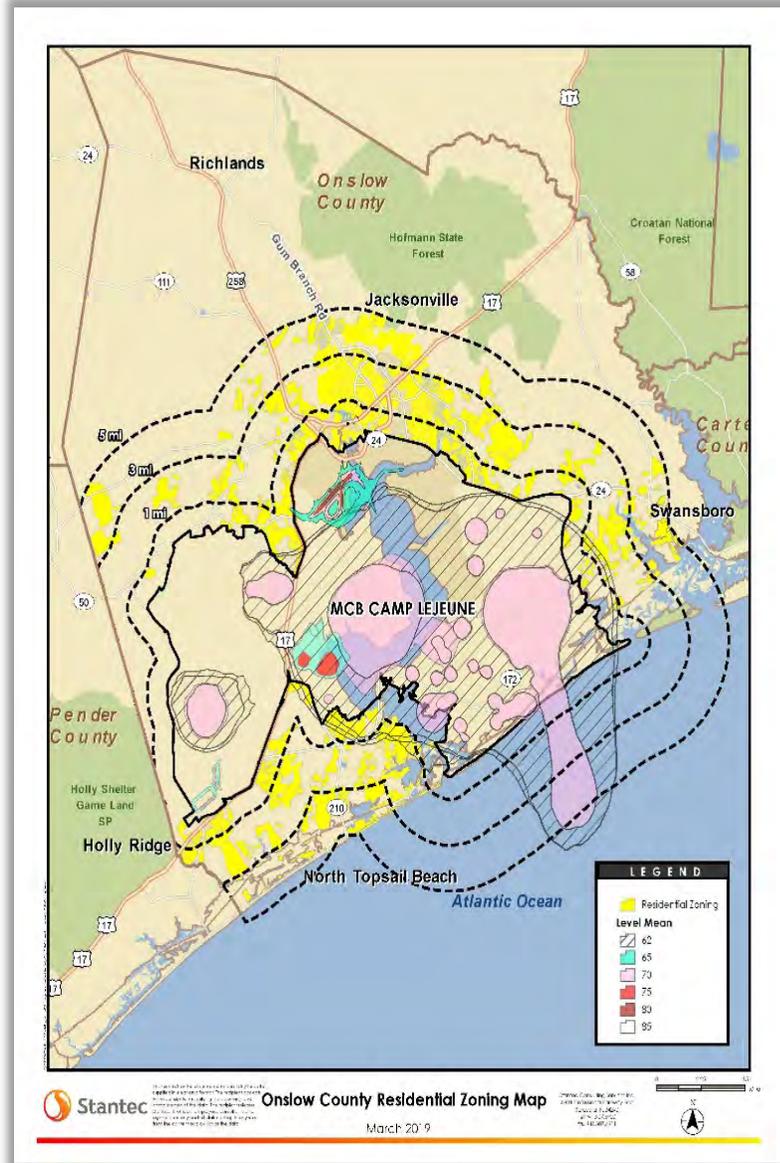
- Uses that concentrate people in small areas;
- Uses that emit frequency interference;
- Uses that attract birds;
- Uses that produce excessive lighting;
- Sensitive land uses such as hospitals, schools, or day cares; and
- Uses that release smoke, dust, or steam.



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The initial area for analysis was a one-mile buffer area around the Installation. However, when analyzing the activities and off-site impacts of the Installation's activities, a three-mile and five-mile buffer were added to the analysis to determine if all impacts were being captured. Through the analysis, it was determined that the five-mile buffer area was needed to capture all of the off-site impacts and areas of potential land use conflict with the activities of the Installation. The five-mile area includes the impacts of the New River Air Station and its associated noise zone, the Greater Sandy Run Area, and the impact area and its noise zone. Table 6.1, below, shows the zoning districts, consolidated into larger use types, that are within the 5-mile buffer area. Please see Onslow County Zoning Map, for a map showing the zoning districts within the five-mile buffer area.



Source: Stantec 2019



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Table 6.1. Zoning Within the 5-mile Buffer Area

Municipality	Zoning District Type						Total
	Agriculture	Residential	Commercial	Industrial	Conservation	Recreation/ Municipal	
Onslow County	90,007.78	35,953.80	3,777.92	429.48	10,267.84	-	140,436.82
City of Jacksonville	-	12,309.60	4,162.49	637.08	-	-	17,109.17
Town of Swansboro	133.70	772.40	156.75	35.77	-	138.31	1,236.93
Town of Holly Ridge	1,164.87	3,174.06	375.86	544.95	-	64.52	5,324.26
Town of North Topsail Beach	107.15	1,577.29	-	-	2,301.25	-	3,985.69
Total	91,413.50	53,787.15	8,473.02	1,647.28	12,569.09	202.83	168,092.87

Source: Stantec, 2019

Of the 168,092.87 acres within the 5-mile study area, 104,060.78 acres have a zoning designation of Agriculture or Conservation. These uses pose the least threat of encroachment as they are low-intensity and do not concentrate people near the activities of the Installation. However, 53,787.15 acres have a residential zoning designation. This type of development increases the risk of encroachment as it concentrates people near the Installation and its off-site impacts. The Onslow County Residential Zoning Map on the previous page shows the location of the residential land within the 5-mile buffer area.

Through this analysis, three areas of concern were identified as areas where incompatibilities may have a higher potential for impact on the community and / or the mission of the Installation. The three areas include the Hubert Area, an area adjacent to New River Air Station, and an area to the west of the Greater Sandy Run area. All three of these areas are located within unincorporated Onslow County. These areas show a potential for a higher concentration of residential land uses within areas of high noise and activity from the Installation.

As described in Section 5.2.1 of this report, for coastal counties in North Carolina, much of the planning is carried out through the Coastal Area Management Act (CAMA). At the local level, these CAMA land use plans can act as a comprehensive plan, providing guidance for both individual projects and a broad range of policy issues such as the development of regulatory ordinances and public investment programs, and may include military installation compatibility. CAMA land use plans provide one of the best opportunities



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for public involvement; the process gives citizens the opportunity to help shape the policies that will guide CAMA permit decisions and how the community will grow. This also provides an opportunity for an Installation to engage in the process and encourage the inclusion of policies that will help protect their interests. In addition, local governments have a land development code to guide the location of uses and how properties develop.

In order to understand the lands and development potential surrounding the installation, the municipalities' CAMA plans and zoning ordinances were collected and reviewed.

Onslow County

The County's CAMA Land Use Plan (LUP) includes policies that recognize the Installation's economic impact to the County, support the Installation's efforts and personnel, and encourages cooperation between the Installation and the community. The CAMA Plan also includes implementing actions to support those policies, including reviewing the zoning adjacent to the Installation, directing the expansion of the infrastructure away from the Installation. The LUP also includes land use planning for the Towns of Richlands and Holly Ridge. Zoning regulations include notice requirements for land use changes within five miles of military bases consistent with state statutes and a flight overlay district. These policies could be strengthened to provide more coordination with the Installation, and to include a non-voting representative of the Installation on the council that reviews development plans in order to more actively involve the military in the County's planning efforts.

Hubert. The Hubert area is located within a few miles of the G -10 impact area. Training in this area creates both noise and vibration that can be felt as far to the east as Swansboro. Trainings involve the dropping of large munitions from aircraft as well as large munitions being fired from offshore. The Hubert area is composed primarily of older residential with a smattering of commercial uses and is an unincorporated area of Onslow County. Although this area is currently developed with residential uses, care should be taken to direct new high-density residential uses away from the area or provide for noise attenuation.

New River Air Station Area. The area adjacent to the New River Air Station is one of the few areas around the Installation where the noise contours from the Installation's activities extend beyond the boundaries of the Installation. This area is subject the 67 dB or less noise contour created from helicopter and plane takeoffs and landings. This area is also primarily developed with older



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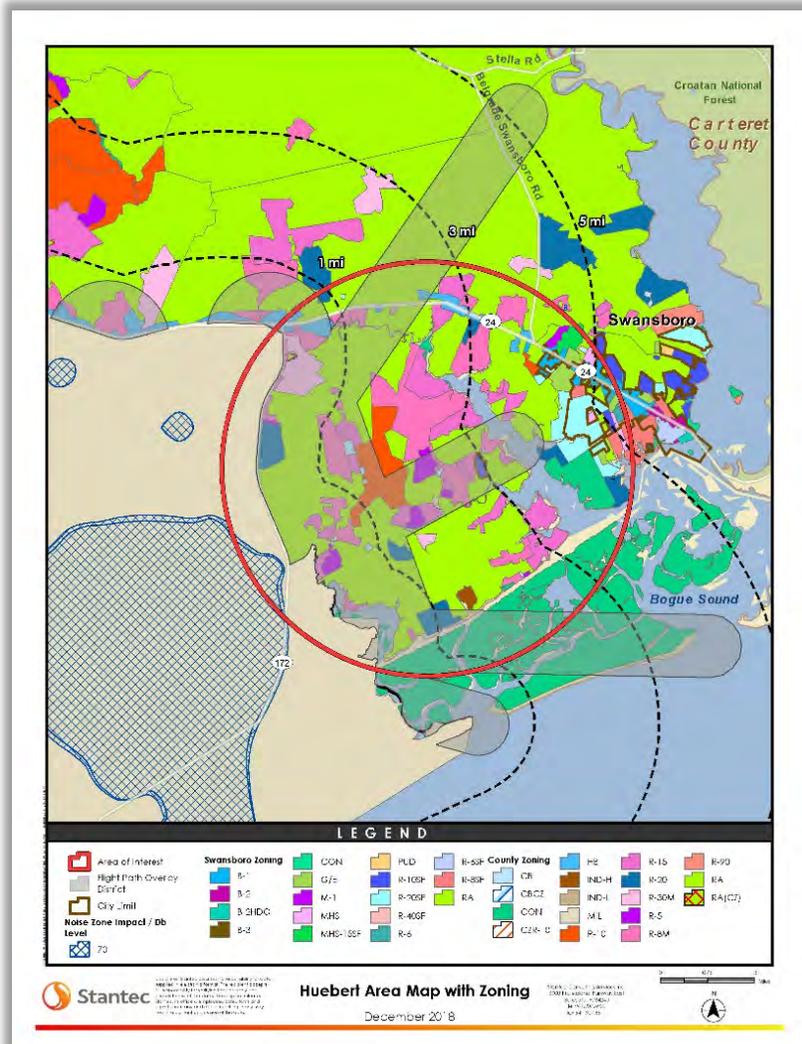
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residential, and care should be taken to direct new residential uses away from this area or provide for noise attenuation.

Greater Sandy Run Area.

The area of concern is located to the west of the Greater Sandy Run Area, between the Installation and the County boundary. This area is located within a flight path for training activities at the Installation. Currently, the area is developed with agriculture and silviculture uses. Future development should be directed away from this area.

Each area of concern has a unique development pattern and interface with the military footprint. The majority of the areas are substantially built out and the development patterns have been able to adapt to the impacts of the military actions. However, these areas still feel the impacts from the Installation's training activities.



Hubert Area Map with Zoning, Stantec, 2019



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City of Jacksonville

The City of Jacksonville's CAMA LUP includes policies that promote partnerships and encourage collaboration on land use compatibility issues. The City also has an Urban Development Code, which contains a Military Reservation District that identifies military installations under federal authority and contains a zoning classification for those parcels that are part of the Installation, since part of the Installation falls within the City of Jacksonville city limits. The Code also includes a provision for notifying military bases of land use changes within five miles of their boundaries and a Flight Path Overlay district with equivalent standards to that of the County.

Since the City of Jacksonville is so close in proximity to the Installation, and includes part of the Installation within its boundaries, close coordination on development is important. The City should include a non-voting representative on the council that reviews development plans to provide more coordination with the Installation.

Town of Swansboro

The CAMA Plan does not include compatibility provisions for military bases. Swansboro recently updated their CAMA Plan (January 2019). The Swansboro Unified Development Code provides height and lighting limitations; but does not include compatibility provisions for the state notification requirement for military bases. These requirements should be added to the Code to provide for additional coordination with the Installation.

Town of Holly Ridge

The Town of Holly Ridge Zoning Ordinance provides height and wireless communication tower restrictions but does not include compatibility provisions for the military base beyond the state notification requirement. Holly Ridge is in the process of updating their current CAMA Plan. Like the City of Jacksonville, the Town of Holly Ridge is located in close proximity to the Installation. The Town should provide more coordination with the Installation as well, including a non-voting representative on the council that reviews development plans.

Town of North Topsail Beach

The Town of North Topsail Beach's UDO provides height and wireless communication tower restrictions but does not include compatibility provisions for the state notification requirement for military bases. Although further from the Installation, the Town is within 5 miles of its boundaries.



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The required notification of land use changes should be added to the Town's Development Ordinance.

Town of Richlands

The Town of Richlands' Code of Ordinances provides height restrictions and a notice requirement for properties within 100 feet of a proposed land use or zoning change but does not include compatibility provisions for the Installation. The Town is located more than five miles from the Installation and is not subject to this requirement. However, the Robert J. Ellis Airport is located near Richlands and is frequently used by military aircraft. For this reason, the Town may want to notify the Installation of any proposed land use changes that may affect the function of the airport and codify this requirement within the Code of Ordinances.

The community has a great working relationship with the military. Since 2009, the Installation and local municipalities have been involved in a Cooperative Planning Group (CPG). This Group consists of the Chairman of the Board of County Commissioners, the mayor of the City of Jacksonville, the Camp Lejeune Base Commander, and the New River Air Station Base Commander. The mission of the CPG is to coordinate the various issues of the Installation and the community and to address sustainability of the Installation, as it is the economic engine of Onslow County and its municipalities. North Carolina statutes require that notice and an opportunity to comment be provided to military installations for development that changes the land use or zoning on a parcel within five miles of its boundaries. Onslow County and the City of Jacksonville have a formal process for contacting the Installation on land use issues. However, not all jurisdictions within the 5-mile area include this provision within their land development regulations. Review by the Installation is not standardized and, in some instances, occurs at the public hearing where the matter is being considered for adoption.

The CPG is utilized as one method of addressing community-wide issues and relaying information to the public. A more formalized communication process will aid in solidifying the relationship. To promote greater coordination, the military should be given the opportunity to comment earlier in the review process, rather than at the public hearing for approval.

The implementation of the recommendations that are developed as a result of the JLUS process depends heavily on the mechanisms for the changes being formalized within the plans, policies, and practices of the local governments. Without adequate and complete implementation, a JLUS is just a document on a shelf. Implementation is the key to a successful process and the only way to promote compatibility and



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defend against encroachment. The recommendations must be codified within the governing and operating documents of the municipalities.

Formation of a JLUS Implementation Committee is one way to continue the momentum that was established during the JLUS process throughout the implementations process. An interlocal agreement establishing a formal committee, or using the CPG, and requiring staffing of the committee is a good way to ensure that the recommendations get carried forward into implementation and the communication between the Installation and the municipalities continues. The Committee will be the driving force through the implementation phase and ultimately complete the goals the JLUS set out to accomplish. The Committee can use the data that has been gathered during the JLUS process and build on the existing relationships established between the communities.

In addition, a centralized GIS database composed of all information gathered to perform the JLUS analyses can store relevant data. GIS data was gathered from each local government to form the basis of the analyses, including the analysis done by CommunityViz®. The data was and can be used to analyze the area, compare facts, and graphically display information. The municipalities within the study area have varying levels of data and in some situations, the JLUS team was able to create new data where none previously existed. Moving forward with the implementation of the JLUS, local governments in the study area would benefit from a regional database to share relevant GIS-based data that has already been gathered and / or created during the JLUS process. The establishment of a data repository, in particular for GIS data, can save time and money when moving forward with the implementation of the study.

6.3. Built Environment

The built environment has a direct impact on the mission of the Installation. The built environment can cause hazards through vertical obstructions and excessive nighttime light and glare. The development of infrastructure, such as water supply and transportation facilities, can direct growth into areas that could interfere with the continuing mission of the Installation.

Vertical obstructions are structures of a height that can interfere with the flight operations of the Installation. Since the Installation's training missions do not always follow along specific flight paths, but use much of the County for training, any tall structure can pose a threat to flying aircraft. As well as interfering with the success of training missions, the introduction of vertical obstructions can interfere



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A water tower in the vicinity of the Hubert area; Source: Stantec, 2018

with the safe operations of the airport. Vertical obstructions can include not only trees and buildings but also telecommunication towers and wind turbines.

The issues created by the height of these structures can be compounded by interference with military communication equipment caused by public telecommunication and infrastructure. Additionally, there is some evidence that wind turbines can interfere with radar. To this end, Onslow County has adopted recent requirements for wind energy facilities that establish siting and coordination procedures with the Installation and Albert J. Ellis Airport. These requirements are in addition to State of North Carolina permitting and siting regulations found in Article 21C (§143-215.115 through §143-215.126) Additionally, Onslow County and the City of Jacksonville have adopted Flight

Path Overlay Districts to ensure that tall structures are not impacting the flight approach and departure areas of the Installation.

Lighting controls and standards for new development are not codified in all jurisdictions or could be strengthened within some jurisdictions. There is potential for new development to impact flight paths and training missions through glare or lighting. Light and glare can reduce visibility and degrade night vision systems depending on severity, wind, and altitude of aircraft, etc. The City of Jacksonville has implemented dark sky polices; other jurisdictions within the area should implement similar policies.



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Transportation facilities to and from the Installation and the location of roadways in general can inform where development occurs as well create issues with traffic congestion. Ingress and egress to the Installation can contribute to the regional traffic congestion that occurs on a regular basis. A limited number of access points to the Installation can cause traffic to back up at access points. The City of Jacksonville is the host agency for the MPO for the Onslow/Jacksonville urban area. To address traffic congestion, the City has installed an intelligent traffic management system that allows for the timing of traffic lights. This system can be adjusted to address the release of personnel from the Installation and alleviates congestion around the Installation's main gate.

Traffic is currently an ongoing issue in Sneads Ferry, both around the Installation access point as well as in the residential and commercial areas along Highway 210 and in the Four Corners Area. This area has experienced tremendous growth in the past five years, and the traffic congestion is both a result of the additional growth and the Installation's increased activities within the area.

New River Air Station could benefit from another ingress/egress point. The Station's two gates are located within close proximity to one another. An additional gate more removed from the current gates, or at minimum an additional egress point, would alleviate traffic congestion and provide an alternative access point in case of an emergency. In addition, US 17 is elevated as it goes by the Installation's parade grounds; passersby routinely stop on the shoulder creating a potential security risk.

The potable water supply wells for both the Installation and City of Jacksonville are located near to each other and all of the wells draw from the Castle Hayne Aquifer. Overdraw from this aquifer could result in saltwater intrusion that could jeopardize the sustainability of the wells serving Camp Lejeune and those serving the City of Jacksonville. Coordination on withdrawals of potable water are important to ensure continued capacity in the future. Coordination on the expansion of potable water infrastructure, which can spur development at greater densities than would otherwise be allowed, should also be coordinated closely with the Installation to direct growth away from areas that may conflict with the Installation's mission.

Another area where the built environment can come into conflict with the mission of the Installation is when off-site impacts of training missions spill over into already built neighborhoods. The primary source of noise at the Installation comes from the daily aircraft operations from New River Air Station and noise within the training areas and the G-10 impact area. The current training activities at the Installation can generate high levels of noise; future activities may increase the frequency of noise-generating events. For



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example, New River Air Station periodically increases its number of aircraft and ranges within the Greater Sandy Run Area. The use and location of operational areas of the Installation may need to be modified. These factors could increase the level and frequency of noise-generating events.

The area closest to the G-10 impact area, which creates high levels of noise and vibration, allows for residential development on the Future Land Use Map. Urban development along the boundaries of the Installation can limit the Installation's ability to use its areas flexibly or to allow expansions of future training and to maximize all land for existing or new missions. Additionally, urban development may also result in community requests to curtail the hours of operation for certain activities. The noise and safety zones associated with New River Air Station generally do not extend beyond the boundary of the Installation; however, the Installation's flight paths extend over urban areas within the City of Jacksonville and the unincorporated areas of Onslow County.

North Carolina Residential Property Disclosure Act (G.S. 47E) requires owners of residential real estate (single-family homes, individual condominiums, townhouses, and the like, and buildings with up to four dwelling units) to furnish buyers a Residential Property and Owners' Association Disclosure Statement which includes disclosing properties subject to military noise, smoke etc. To monitor its off-installation noise, a Blast Analysis and Monitor (BLAM) system was installed in 2001 to monitor the noise resulting from firing operations. When the noise measured by the BLAM system exceeds a certain level, the training activity causing the noise is shut down.

6.4. Natural Environment

Preservation of the natural environment around the Installation is one of its best defenses against incompatible development and encroachment. Natural areas, as well as agricultural areas, have low populations. As a large landowner with lots of 'undeveloped' property, preservation of natural areas off the Installation is in the Installation's best interests to ensure that the natural areas on the Installation are available to be used for training, and not for habitat preservation.

The Installation and the surrounding communities provide habitat for wildlife as well as significant wetlands and marshes. Onslow County is home to 23 endangered species including the red cockaded woodpecker. Two of these endangered species, the piping plover and loggerhead sea turtle, also have critical habitat designations. There is a significant amount of wetland and marsh areas on the Installation as well as several nesting sites for the cockaded woodpecker. Impacts to these areas have to meet state,

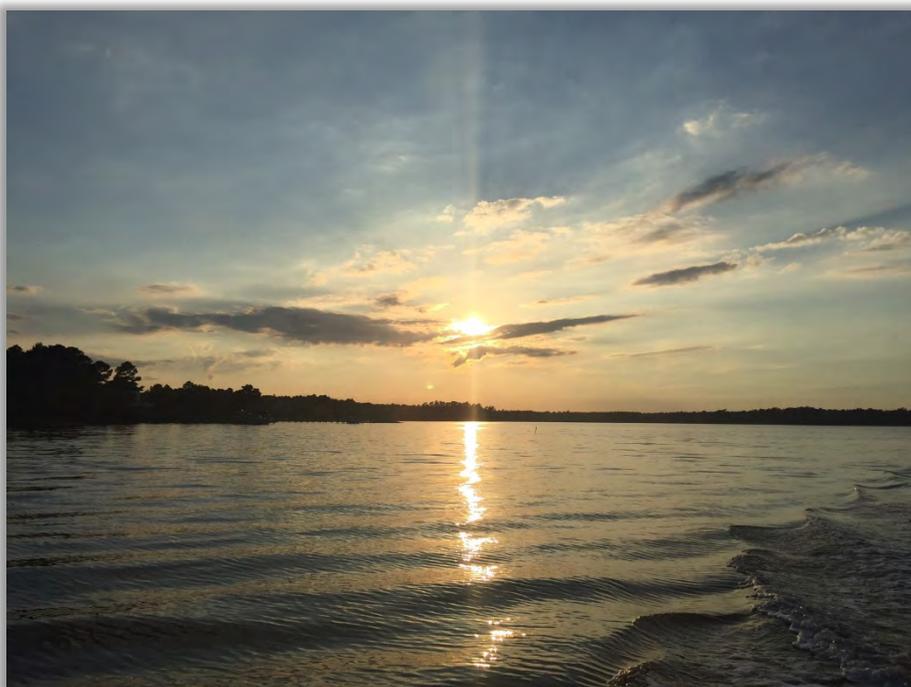


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local, and federal permits requirements. Red cockaded woodpeckers are located within the Installation and have required buffer areas that must be maintained. Environmental preservation – in particular preservation of wildlife – was of significant concern to the survey respondents. Preservation of these habits and natural areas will help to ensure the continued mission on the Installation.

In addition, preservation of the marsh and wetland areas may help to alleviate the impacts of Sea Level Rise (SLR). SLR and coastal flooding is affecting both the Installation and external properties, infrastructure, and resources within the community. Onslow County may be further affected by SLR and coastal flooding, with impacts projected along the coast and along the New River. Although



New River; Source: Onslow County

Onslow County and the City of Jacksonville are not exhibiting as widespread problems as other localities from flooding under normal conditions, major natural events such as hurricanes do impact many properties, infrastructure, and resources of the installation and the community.

SLR research and mapping efforts compiled by the National Oceanic and Atmospheric Administration (NOAA) and the North Carolina Coastal Resources Commission, and others, have identified areas that are predicted to be inundated or affected under current SLR trends. Although much of the projected land loss from SLR is within the marsh areas and waterways on Installation, there could be other effects to the Installation operations, cultural resources areas, etc. which need to be assessed. NOAA has developed a Flood Impact Analysis Tool to help assess SLR and coastal flooding risks for the Installation. In addition,



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draft Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) are being reviewed by the City of Jacksonville and Onslow County to determine if the projected flow zones and minimum elevations are correct. Once finalized, the maps must be adopted by the local governments and will become the basis for FEMA insurance claims. Perimeter marsh areas are known to help to dissipate storm surge and provide broader coastal flood benefits beyond the immediate site. The extent of these areas and their potential to mitigate SLR should be examined further.

The New River's channel is currently impassable, due to the length of time that has passed since the last time the channel was dredged. Dredging and dredge disposal solutions are needed for long-term dredging needs, since periodic dredging of the New River's inlet and navigation channel is required to sustain military operations, commercial fishing, and recreational boating. Periodic maintenance of the Atlantic Intracoastal Water Way, Browns Waterway, and Bogue Inlet are necessary to support military amphibious operations. The current federal authorization limits the New River navigation channel to 90 feet wide and six feet plus two feet deep. Federal funding for waterway maintenance is no longer available. As a result, the New River Inlet and waterway navigation channel are not dredged on a regular, consistent schedule. The expansion potential of existing dredge disposal areas may be limited due to large potential impacts to jurisdictional wetlands and waters.

No open channel passable by boats at New River Inlet limits the training exercises that can be performed at the Installation. No onsite dredge disposal area has been identified to date. Disposing of future dredged material offsite would greatly increase dredge costs. Developing a consistent schedule and funding source for the dredging of the New River Inlet would greatly increase the flexibility of military amphibious operations.

6.5. Installation Borders

The Installation's boundaries exist to keep both the Installation personnel and public safe. However, trespass of these borders sometimes occurs. This trespass can take the form of access via the New River, interference with the Installation's airspace, encroachment on gate security, and encroachment on the frequency spectrum that the Installation uses to conduct its missions.

The New River is located entirely within Onslow County. Most of the River's length is taken up by the Installation along both shorelines. The Installation is concerned that private citizens may access its property during training or discover unexploded ordinance while accessing the public water ways that cut



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through the Installation. The Installation performs amphibious training within the river and periodically blocks access to the River for the public's safety. Boats and fishermen in unauthorized areas have been an ongoing minor challenge at the Installation, driven by those wanting to fish or paddle on the River who are unaware of the ongoing training exercises. The Installation also has an extensive boundary along the sea shore, creating additional opportunities for trespassing.



Kayakers and other boaters sometimes enter onto the Installation unaware that training may be taking place; Source: Onslow County

Past and ongoing training exercises have left unexploded ordinance in the K2 area and water surrounding it. This area should be particularly protected from unauthorized trespassing to protect the public. A portion of the coast is also used for training exercises; boaters should be educated about the dangers of accessing this portion of the base from the water. To ensure the safety of the public, designated Danger Areas need to be protected around the firing ranges. The Installation has signs with flashing lights that provide a warning when training is ongoing. The entrance to

the waterway is also equipped with sensors that alert installation personnel that someone has entered the New River Waterway.

Coordination between New River Air Station and the Albert J. Ellis Airport (OAJ) as well as the military entities using the airport is essential for continued airspace management. New River Air Station and OAJ airspace are in close proximity to one another, and the military routinely uses OAJ for training and after hours refueling. Current projects for the OAJ include the addition of a 900-foot extension to the northeast end of the runway (lengthening the runway to 8,000 feet total) and projects to improve the airfield lighting and taxiways.



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Bird species, including various gulls, Canada geese [the largest concern for Bird/Animal Aircraft Strike Hazard (BASH) requirements], and blackbirds, create potential hazards because of their attraction to the short turf grass in the airfield clear zone for loafing and feeding. Other birds that present a potential hazard are killdeer, which are attracted to old taxiways and bare ground, and turkey vultures and raptors, which circle over food sources and fields when hunting. Wading birds, such as herons and egrets, are also a potential threat. White-tailed deer also represent a potential hazard to aircraft operations during takeoffs and landings. The airfield has been maintained at the BASH Plan recommended height, keeping goose presence to a minimum. These BASH standards should be maintained and extended to the OAJ airport.

Private Unmanned Aircraft Systems (UAS), commonly referred to as drones, are prohibited from flying over the Installation. In addition, the Onslow County Airport restricts unmanned aircraft, and the City of Jacksonville prohibits the use of drones in City parks and within its Overlay flight path zones. The Installation should coordinate with the local police force to enforce these restrictions.

Land Use and building design outside the Installation's gates could lead to safety concerns for the Installation. These concerns center around incompatible development issues posed by development outside the gates, which creates potential security threats due to line-of-site issues and design features that have the potential to threaten gate security.

As development increases and urban areas expand, additional stress is put on the frequency spectrum to accommodate civilian uses. These uses can curtail the availability of the spectrum to serve the needs of the military. The Installation relies on a range of frequency spectrum for effective and safe command and control of units, using the frequency spectrum for military radios, radar, and navigations. These uses are in direct conflict with civilian uses leading to incompatible sources of electromagnetic interference, frequency interference, and competition for available frequencies. Concerns include the placement of a telecommunication tower or microwave site near the Installation and/or increased competition for use of the frequency spectrum. The potential for increased development leads to increased competition and the possibility for frequency interference in the future.



7.

Recommendations



ONslow COUNTY CAMP LEJEUNE

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7. RECOMMENDATIONS

The Recommendations portion of the report provides a list of strategies and actions that can be used to resolve, prevent, and mitigate issues identified within the Compatibility Analysis. The recommendations are intended to be general so that each local government has the ability to tailor them to meet their needs during the implementation phase. Some of the recommendations provide multiple strategies to achieve the same objective. Therefore, if one recommendation is implemented there may be another that is no longer necessary. Through the tailored implementation phase, each local government will be able to determine the methodology that best suits their community.

Recommendations are divided up into an area of interest and tagged with related compatibility and encroachment factors. These factors were identified and analyzed in order to assess the Installation’s impact on the local community, as well as the community’s impact on the Installation’s operations.

Table 7.0 shows the 24 compatibility and encroachment factors identified.

Table 7.0 Compatibility and Encroachment Factors

Development Factors		
	Land Use	Comprehensive growth policy plans and zoning ordinances
	Land Suitability Analysis	A comprehensive inventory and assessment of development conditions and features
	Safety Zones	Restricted areas due to higher risks to public safety
	Vertical Obstructions	Features, such as buildings and trees, that can lead to frequency interference and flight obstructions
	Housing Availability	Adequate supply of and access to housing
	Infrastructure Extensions and Capacity	The extension or provision of infrastructure including transportation, solid waste, water, etc.



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Development Factors		
	Antiterrorism / Force Protection	Safety of personnel, facilities, and information from outside threats
	Noise and Vibration	Unwanted levels of noise and vibrations
	Dust / Smoke / Steam	Dust, smoke, or steam in sufficient quantity to disrupt flight operations or quality of life
	Light and Glare	Manmade lighting or excessive glare
	Energy Development	Alternative energy sources can cause glare, vertical obstructions, or radar interference
	Frequency Spectrum	Frequency Spectrum capacity is a limited resource that is critical for military and civilian communications
	UXO and Munitions	Potential for unexploded ordnances (UXO) and munitions

People Factors		
	Coordination / Communication	Collaboration and communication between military installations, jurisdictions, land and resource agencies, conservation authorities, and other regulatory agencies
	Public and Military Safety	Issues such as public trespassing could compromise the safety of the military and the civilians
	Legislative Initiatives	Federal, state, or local regulations that may impact the military mission or civilian interaction
	Cultural Resources	Cultural resources in the community or on the military installation may require development constraints or prevent development from occurring



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Natural Resource Factors		
	Land / Air / Water Spaces	Land, air, and water spaces must be available and of sufficient size to meet the needs of both the military and the community
	Air Quality	Pollutants that may limit visibility and non-attainment of air quality standards that may restrict future operations
	Scarce Natural Resources	The location of valuable natural resources can impact land utilization
	Climate Adaptation	The effect of climate change may result in storm frequencies, extreme temperatures, drought, sea level rise and recurrent flooding
	Threatened and Endangered Species	Sensitive biological resources may require special development considerations
	Marine Environment	Regulatory or permit requirements protecting marine and ocean resources
	Water Quality / Quantity	The availability of quality water with an adequate supply

Each of the compatibility factors was informed by available data and pertinent documents, reports, and studies; input from PC and TWG members and key stakeholders, including local government staff; and input received during public meetings. These factors represent the primary land use compatibility challenges used to assess impacts from the perspective of both the surrounding community and the Installation. All of the factors were reviewed; however, not all of the factors were applicable. If a factor was deemed unnecessary, it was removed from the following discussion. Several of the factors were grouped together under “Areas of Interest” in order to streamline the analysis and reduce duplication.

Each Area of Interest was presented to the PC and TWG in a meeting held November 28, 2018. The TWG reviewed each Area of Interest and provided revisions to the language and ranked them based on priority. A discussion of the Areas of Interest, their impact on the community and the military, their priority ranking, and the compatibility factors considered can be found in the following section.



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Each section lists the **Area of Interest** (in blue) and the **recommendation** (in grey). If additional details are necessary to fully understand the recommendation, they are provided immediately following. Lastly the responsible entity is listed. Because the implementation plan is tailored for each government, not every jurisdiction will be required to implement every recommendation. The primary responsible entity is the one that will take the lead role in implementation. The partner entity will assist the primary entity in implementation.

A summary table at the end of this chapter lists the recommendation and the responsible entity. The black square (■) denotes the entity that will be primarily responsible for implementing the recommendation. The white square (□) denotes the partner entity that will be necessary to assist with the implementation. If a lead entity is needed to take a leadership role for the recommendation, Onslow County will be identified as the primary responsible entity as they are the Study sponsor.



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.1. Policy Reinforcement (PR)

Area of Interest

The Installation’s activities affect multiple jurisdictions and adequate local regulations are not in place within every municipality, or need strengthening, in order to provide protection standards for the military and continued community growth.

<i>Implementation Timing</i>
Within 1-3 years

7.1.1. Policy Reinforcement (PR1)

Establish, within each applicable jurisdiction’s land use regulations, a Military Influence Area (MIA) with a Military Influence Overlay District (MIOD). Consider potential boundaries for the MIOD, such as the five-mile study area and the entirety of the Towns of Swansboro, Holly Ridge, North Topsail Beach, and the City of Jacksonville.

The adoption of a MIA with a MIOD encompassing the area within five miles of the Installation and including portions of Onslow County, the City of Jacksonville, and the Towns of Swansboro, Holly Ridge, and North Topsail Beach would provide a defined area in which to allow greater coordination between the Installation and the municipalities. The MIOD could consist of the following:

- Noise MIOD
- Renewable Energy Development MIOD
- Vertical Obstructions MIOD
- Safety Zone MIOD
- Dark Skies Policies for residential and commercial uses
- Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
- Limit density near high noise areas

<i>Responsible Entity</i>	
Camp Lejeune	
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	■
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.1.2. Policy Reinforcement (PR2)

Update existing planning documents to include provisions of the MIA and MIOD.

Update CAMA Land Use Plans to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.

<i>Responsible Entity</i>	
Camp Lejeune	
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	■
Town of North Topsail Beach	■

7.1.3. Policy Reinforcement (PR3)

Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.

Develop an informational sheet that provides existing and future property owners within the MIOD information regarding the applicable regulations that govern development within the MIOD. This document can be provided to local real estate agents to provide to clients and posted on the Installation's and municipalities' websites. Through this, and the development and dissemination of brochures and pamphlets, the public can become educated on the new changes and how they apply to their property.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	■
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.1.4. Policy Reinforcement (PR4)

Expand existing Land Development Regulation military compatibility provisions.

Expand existing Installation notification policies within the land development regulations of each jurisdiction that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.

<i>Responsible Entity</i>	
Camp Lejeune	
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	■
Town of North Topsail Beach	■

7.1.5. Policy Reinforcement (PR5)

Involve the Installation in Planning Decisions and Committees. Seek regular input from the Installation for technical assistance (e.g. code updates, land use plan updates, and development review processes).

Representatives from the Installation are great resources to help local governments when drafting policies that may have an impact on the military. It is important to set up a system that allows an easy exchange of ideas and feedback on a regular basis.

Use the MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	■
Town of North Topsail Beach	■



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Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, and development review processes). Include in the MOU a process to review jurisdictional Capital Improvement Plans (CIP) to identify projects and expansion of infrastructure that may conflict with the mission of the installation.

Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.

7.1.6. Policy Reinforcement (PR6)

Coordinate the extension of public facilities to ensure compatibility with the mission of the Installation.

Conduct annual reviews of jurisdictional CIP with the Installation to determine compatibility with the mission of the Installation.

Conduct a study to evaluate the effects of personnel increases on public facilities, including school facilities. A study should be conducted for the current proposed increase in MARSOC personnel as well as additional Installation personnel increases in the future. Evaluations should include school facilities, water, sewer, transportation, and housing availability.

Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from developments that would conflict with the training mission of the Installation.

Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing extensions of public facilities away from these areas.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



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7.1.7. Policy Reinforcement (PR7)

Promote the mission of the Installation by preserving agricultural lands around the Installation and training areas.

Conduct a study to examine the land uses around training facilities used by Camp Lejeune that are remote to the Installation. These areas include training facilities in Jones and Pender Counties as well as other areas. The land uses around these facilities should be examined for compatibility with the training activities occurring at these locations; the study should contain recommendations regarding preserving or increasing the compatibility of surrounding land uses as well as their operations and maintenance.

Conduct a study to analyze the transfer of development rights from agricultural areas adjacent to the Installation’s training areas.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.2. Waterway Access (WA)

Area of Interest

The New River is located entirely within Onslow County; the Installation takes up most of the River’s length along both shorelines. The Installation performs amphibious training within the River and periodically blocks access to the River for the public’s safety.

Implementation Timing

Within 1-3 years



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.2.1. Waterway Access (WA1)

Prepare a study of water-based users of the New River.

Establish a subcommittee of the CPG, including representatives of local governments, the Installation, boaters, fishermen, and other groups as necessary to conduct a study of water-based users to identify who the users are, launch areas, and primary use of the River. Consider using the New River Round Table group as this subcommittee.

Determine compatibility measures and develop strategies to inform various waterway users of military operations.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	<input type="checkbox"/>

7.2.2. Waterway Access (WA2)

Notify the public on the activities of the Installation and potential safety concerns.

Expand outreach to the boating and fishing community including the following:

- Engagement of boating community through marinas and boating associations,
- Expanded radio communications,
- Add information to Coast Guard publications,
- Add information to Division of Marine Fisheries publications,
- Evaluate and monitor signage and buoy placement.
- Prepare and distribute maps that clearly define the sections of the New River, Atlantic Intracoastal Water Way, and Browns Inlet used by the military for training.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>



ONSTLOW COUNTY CAMP LEJEUNE

Joint Land Use Study

- Provide educational material on Municipal and County websites and associated agencies (including the Division of Marine Fisheries) to notify the public of the potential dangers of entering the training areas.
- Provide additional signage at boat ramps and trailheads to notify commercial and recreational users of the River, inlets, and Atlantic Intracoastal Water Way of existing training on Marine Corps lands and the dangers of UXO and Munitions areas.

7.2.3. Waterway Access (WA3)

Improve coordination with local, state, and federal agencies performing reef mediation and reconstruction work along the New River.

Establish a process to coordinate with local, state, and federal agencies. Explore expanding existing coordination through state groups such as the North Carolina Military Affairs Commission and local groups such as the New River Round Table as well as creating new coordination linkages through the state’s Department of Marine Fisheries and other state and federal agencies.

Coordinate with the City of Jacksonville on the location and construction of the proposed “oyster highway” within the New River.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



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7.3. Vertical Obstructions (VO)

<p><i>Area of Interest</i></p> <p>The introduction of vertical obstructions can interfere with the success of training missions as well as the safe operations of the airport. The vertical obstructions can include not only trees and buildings but also telecommunication towers and wind turbines.</p>		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;"><i>Implementation Timing</i></td> </tr> <tr> <td style="text-align: center;">Within 1-3 years</td> </tr> </table>	<i>Implementation Timing</i>	Within 1-3 years
<i>Implementation Timing</i>		
Within 1-3 years		

7.3.1. Vertical Obstructions (VO1)

Prepare and adopt consistent vertical obstruction standards.

Review and update maps of areas of concern for vertical obstructions.

Conduct a study to evaluate and update the current Flight Path Overlay Districts. This action could include:

- Identify existing vertical obstruction issues
- Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
- Ensure that each jurisdiction’s current development standards are clearly defined.

Amend each jurisdictions’ land development regulations as needed to be consistent and address all identified issues and locations.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



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7.3.2. Vertical Obstructions (V02)

Develop formal process to include the Installation on telecommunication tower siting and approval process.

Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.

Create a MOU that involves Installation staff with the approval process for communication tower siting and wind energy siting and approval.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■

7.3.3. Vertical Obstructions (V03)

Increase public awareness of the issues resulting from vertical obstructions and the impacts to the New River Air Station, Camp Davis Air Field, and Albert J. Ellis Airport.

Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.4. Transportation (T)

Area of Interest

Ingress and egress to the Installation can contribute to the regional traffic congestion that occurs on a regular basis.

**Implementation
Timing**

Within 1-3 years

7.4.1. Transportation (T1)

Coordinate with the North Carolina Department of Transportation and other transportation groups to address current transportation needs.

- Use the CPG to coordinate a study between the Installation, MPO, NCDOT, and other agencies as necessary to evaluate the need and potential locations for an additional gate for New River Air Station.
- Address potential security issues on US 17 along the parade grounds and place “No Parking” and/or “No Stopping” signs along this portion of the roadway.

Responsible Entity	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.4.2. Transportation (T2)

Establish coordination between the Installation and community.

- Continue Coordination between the MPO and the Installation regarding transportation issues.
- Consider establishing a transportation subcommittee of the CPG consisting of County and Municipal staff, NCDOT, and Installation personnel to monitor and address transportation issues affecting the Installation and the community.
- Continue to work with the Installation to implement the Rail Study and allow the joint use of the Installation’s freight line, thereby expanding the economic base of the community and potentially saving the Installation costs associated with maintenance of the rail line.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.4.3. Transportation (T3)

Evaluate transit opportunities around the Installation, especially in the area around Sneads Ferry.

- Coordinate with the MPO to conduct a study to expand current transit routes available to the Installation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.5. JLUS Implementation

Area of Interest

The success of the JLUS lies in its implementation and is dependent upon a commitment to continue to work as one community to address the needs of the community to grow and the needs of the Installation for the protection of the training mission.

<i>Implementation Timing</i>
Within 1-3 years

7.5.1. JLUS Implementation (JI1)

The Camp Lejeune JLUS TWG should transition to a JLUS Implementation Committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.

- The TWG is familiar with the JLUS process, as well as the strategies that have been formulated. Their familiarity would allow them to transition to an Implementation Committee and carry the program through to application. The Committee should meet on a regular basis and be responsible for coordinating and addressing the concerns presented within the Camp Lejeune JLUS.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



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7.5.2. JLUS Implementation (JI2)

Establish a GIS database that includes the Installation and the municipalities that fall within the study area.

- The Camp Lejeune JLUS GIS database would include data from the Installation and the municipalities that fall within the study area. The Camp Lejeune JLUS Database would incorporate all the JLUS GIS data layers as well as other regional, state, and federal data sets to be utilized by City and County governments during the development approval process. One entity would be primarily responsible for the database while all of the municipalities and the Installation would supply the data.

<i>Responsible Entity</i>	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>

7.6. Airspace Management

Area of Interest

Coordination between New River Air Station and the Albert J. Ellis Airport, as well as the military entities using the airports, is essential for continued airspace management.

***Implementation
Timing***

Within 1-3 years



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7.6.1. Airspace Management (AM1)

Establish an Airport Overlay District for Albert J. Ellis Airport.

- Establish an Airport Overlay District for Albert J. Ellis Airport to protect the airport’s flight path from development encroachment.
- Update each jurisdiction’s respective land development regulations to include the overlay district. Incorporate BASH standards into each jurisdictions’ land development regulations within the overlay district.

<i>Responsible Entity</i>	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	
Town of North Topsail Beach	

7.6.2. Airspace Management (AM2)

Educate the public on reducing hazardous bird and wildlife attractions.

- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input checked="" type="checkbox"/>
Town of Swansboro	<input checked="" type="checkbox"/>
Town of Richlands	<input checked="" type="checkbox"/>
Town of Holly Ridge	<input checked="" type="checkbox"/>
Town of North Topsail Beach	<input checked="" type="checkbox"/>



ONslow COUNTY CAMP LEJEUNE

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7.7. Dredging and Disposal

<p>Area of Interest</p> <p>Dredging and dredge disposal solutions are needed to address long-term dredging needs.</p>		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">Implementation Timing</td> </tr> <tr> <td style="text-align: center;">Within 1-3 years</td> </tr> </table>	Implementation Timing	Within 1-3 years
Implementation Timing		
Within 1-3 years		

7.7.1. Dredging and Disposal (DD1)

Coordinate with the North Carolina Beach and Inland Waterway Association on dredging activities.

- Open dialogue between the Installation and the North Carolina Beach and Inland Waterways Association to explore opportunities for the use of dredged materials. Meetings should be held as necessary to explore the opportunities available.

Responsible Entity	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

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7.7.2. Dredging and Disposal (DD2)

Identify funding for dredging activities.

- Identify program and funding sources to maintenance dredge the New River’s Inlet and navigation channel quarterly.
- Identify strategies and funding sources to conduct maintenance operations within the Atlantic Intracoastal Water Way, Browns Inlet, and Bogue Inlet.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	□

7.7.3. Dredging and Disposal (DD3)

Develop strategies for the disposal of dredge materials.

- Evaluate onsite locations for new dredge disposal areas, to avoid offsite disposal.
- Consider options for onsite beneficial re-use of dredge material, pending current water quality conditions and general characteristics of dredged sediment. This may include, but is not limited to, tidal marsh establishments and enhancement at various locations along the shoreline, supplement to past shoreline erosion controls and nourishment activities, elevation increases at range areas, etc.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	□
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	□



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Joint Land Use Study

7.7.4. Dredging and Disposal (DD4)

Explore additional ways to maintain navigation channels.

- Evaluate hardened structures and/or more permanent means of maintaining the New River navigation channel.
- Evaluate options for modifying the authorized dredging width and depth of the New River Navigation Channel (possibly through the advanced maintenance process).

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.8. Unmanned Aircraft Systems

Area of Interest

Private UAS, commonly referred to as drones, are prohibited from flying over the Installation. The general public may not be educated on the requirements.

Implementation Timing

Within 1-3 years



ONslow COUNTY CAMP LEJEUNE

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7.8.1. Unmanned Aircraft Systems (UA1)

Educate the general public on the potential dangers of flying drones near the Installation.

- Create an education program to alert those flying drones of the potential danger to military equipment and the potential loss of life caused by the collision of a drone with various flight equipment and that flying drones over Installation property, near Albert J. Ellis Airport, and certain areas of the City of Jacksonville is prohibited.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□

7.8.2. Unmanned Aircraft Systems (UA2)

Establish coordination between the Installation and the community regarding the flying of UAS.

- Establish MOU with the Installation and local Police Departments to coordinate issues and establish standards for notifying drone users.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



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7.8.3. Unmanned Aircraft Systems (UA3)

Establish restrictions within the MIOD for the operation of UAS.

- Establish drone restrictions within the MIOD for the New River Air Station and Albert J. Ellis Airport approach zones and portions of the airspace.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□

7.9. Water Supply (WS)

Area of Interest

The Installation’s potable water sources are near some of the water sources for the City of Jacksonville. Overdraw from this aquifer could result in saltwater intrusion that could jeopardize the sustainability of the wells serving Camp Lejeune and the community at large.

Implementation Timing

Within 1-3 years



ONSLow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.9.1. Water Supply (WS1)

Work with the Installation, City of Jacksonville, and ONWASA to study the effect the current well drawdown is having on the aquifer.

- Use a MOU between the Installation and the City of Jacksonville to coordinate the study and identification of issues surrounding the drawdown of the aquifer in the vicinity of the supply wells.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	■
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.9.2. Water Supply (WS2)

Work with the Installation, City of Jacksonville, and ONWASA to formulate solutions to the issues revealed within the aquifer drawdown study.

- Work with the Installation and City of Jacksonville to formulate solutions to the issues revealed within the aquifer drawdown study. These solutions may include alternative water supply sources, water conservation efforts, and the use of reclaimed water.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	■
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.10. Urbanization and Land Use Compatibility (UL)

<p>Area of Interest</p> <p>Continue development as currently planned to minimize impacts to the training missions of the Installation.</p>		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">Implementation Timing</td> </tr> <tr> <td style="text-align: center;">Within 4-6 years</td> </tr> </table>	Implementation Timing	Within 4-6 years
Implementation Timing		
Within 4-6 years		

7.10.1. Urbanization and Land Use Compatibility (UL1)

Educate the general public on the Installation’s importance, both nationally and locally.

- Increase public understanding of the training mission of the Installation, its unique nature, and importance for national security. Explain noise sources, including the purpose of the training ranges such as the G-10/ship-to-shore impact area and Greater Sandy Run Area, the diversity of the users of the area, and the importance of the area. Use such resources as: the local media, newsletters, text alerts, brochures, government television programs, public meetings, and informational sessions, and annual outreach functions.

Responsible Entity	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.10.2. Urbanization and Land Use Compatibility (UL2)

Establish coordination procedures for areas of concern within the MIOD to minimize future incompatibilities from proposed land use of zoning changes.

- Evaluate adopted Future Land Use Plans and current zoning to identify strategies, where needed, to address the “areas of concern” located in the unincorporated portion of the County north of the Town of Holly Ridge and west of the Installation boundary.

<i>Responsible Entity</i>	
Camp Lejeune	☐
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.10.3. Urbanization and Land Use Compatibility (UL3)

Expand agricultural land protections outside of the Installation.

- Expand agricultural land protections and programs within the MIOD. Continue to work with the federal and state governments to identify funding opportunities for the creation of long-term leases that enable farmlands to remain in agricultural use.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.10.4. Urbanization and Land Use Compatibility (UL4)

Coordinate with Pender County on land use near the Installation to ensure its continued mission.

- Conduct a study to identify areas within Pender County that present greatest risks to the Installation training mission and develop strategies to mitigate such risks.
- Coordinate with Pender County on land use decisions in close proximity to the western boundary of the Installation to ensure that land use decisions in the adjacent county do not adversely affect the Installation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.11. Installation Access (IA)

Area of Interest

The potential for unauthorized visitors to enter the Installation exists due to the Installation’s extensive boundary and its location on either side of the New River.

Implementation Timing

Within 4-6 years



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.11.1. Installation Access (IA1)

Educate the general public on where the Installation’s boundaries are and the dangers of UXO.

- Prepare maps that clearly define the areas used by the military for training and distribute to the public for educational purposes.
- Provide educational material on local government and associated agencies websites to notify the public of the potential dangers of entering the area and what steps to take if UXO are discovered (its presence, dangers, and what to do).

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	□
Town of North Topsail Beach	

7.12. Noise (N)

Area of Interest

Noise generated from Installation exercises, including small arms weapons firing, daily aircraft operations, and impact area G-10 can create concerns for the citizens of the community.

***Implementation
Timing***

Within 4-6 years



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.12.1. Noise (N1)

Educate the general public regarding potential noise and mitigation.

- Provide information to jurisdictions, developers, and interested citizens regarding to Installation training areas and the potential noise levels from such activities.
- Educate the community on issues including noise frequency, intensity, and efforts the Installation undertakes to reduce noise or to reduce the impact on the community.
- Develop education materials regarding Installation noise and require the materials to be utilized by local real estate agents and distributed to potential property buyers to inform them of Installation noise and the state’s real estate disclosure requirements and purposes.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□

7.12.2. Noise (N2)

Limit development in areas of high noise potential.

- Through the land development regulations for each jurisdiction, limit the development of nursing homes, churches, hospitals, schools, manufactured home parks, and other similar uses within specified noise contours.
- Incorporate noise contour maps into municipal planning documents.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.12.3. Noise (N3)

Provide current and adequate information to facilitate informed decisions by jurisdictions, developers, and interested citizens relative to a property’s location and nearby military impacts.

- Provide training to local officials and municipal departments so they can deliver an educated response to the community in regard to military impacts associated with noise. Additionally, at least annually, hold open houses where interested citizens are able to gather information.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>

7.12.4. Noise (N4)

Educate the community on any changes in noise frequency and intensity.

- Increase community awareness of training schedules and military operations through the use of local media sources, websites, newsletters, and outreach functions.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.12.5. Noise (N5)

Develop a list of potential noise attenuation standards that could be given to homeowners when remodeling or building new structures.

- Develop a list of recommended noise attenuation standards that could be given to developers and homeowners for their use in the attenuation of noise from the Installation. Explain the differences between concussive noise (unable to be mitigated) and audible noise (able to be mitigated).

<i>Responsible Entity</i>	
Camp Lejeune	
Onslow County	■
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	

7.13. Light and Glare (LG)

Area of Interest

Lighting controls and standards for new development are not codified in all jurisdictions. Additionally, existing codes could be strengthened. New development has the potential for impacting flight paths and training missions by creating glare from lighting, reflective surfaces, and similar hardened surfaces.

Implementation Timing

Within 4-6 years



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.13.1. Light and Glare (LG1)

Identify areas of greatest light pollution.

- Coordinate with the Installation to determine the locations off the Installation with the greatest concerns relative to existing or future light and glare potential.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□

7.13.2. Light and Glare (LG2)

Limit development in areas of high light pollution.

- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for lighting for safety. Partner with Duke Energy and the Jones-Onslow Electric Membership Corporation in this effort.

<i>Responsible Entity</i>	
Camp Lejeune	□
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.14. Alternative Energy Development (AE)

Area of Interest		
Alternative energy development has the potential to create adverse effects on military operations.		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">Implementation Timing</td> </tr> <tr> <td style="text-align: center;">Within 4-6 years</td> </tr> </table>	Implementation Timing	Within 4-6 years
Implementation Timing		
Within 4-6 years		

7.14.1. Alternative Energy Development (AE1)

Coordinate alternative energy projects with the Installation.

- Require review and coordination with the Installation for any proposed alternative energy project within the Installation’s area of activity. Prohibit the Installation of such projects within established Flight Path Overlay Districts.
- Involve the Installation in the development of any future proposed wind turbine ordinances.

Responsible Entity	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.14.2. Alternative Energy Development (AE2)

Limit the locations where alternative energy developments can be located.

- Develop siting guidelines for commercial solar farms and wind turbine farms to be included in the County and municipal land development regulations.
- Develop solar siting guidelines to include updating zoning ordinances to specify non-reflective panels for non-residential applications.

<i>Responsible Entity</i>	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>

7.15. Formalized Communication (FC)

Area of Interest

The community has a great working relationship with the military. In 2009, the CPG was established to coordinate the various issues of the Installation and the community and to address sustainability of the Installation. A more formalized communication process will aid in solidifying the relationship.

Implementation Timing

Within 4-6 years



ONSLow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.15.1. Formalized Communication (FC1)

Expand on the existing coordination and communication efforts to strengthen the connection between the Installation and the community.

- Consider establishing a subcommittee of the CPG to address communications between the Installation and the community.
- Standardize the land use notification requirements utilized by the various governmental agencies for the entire military overlay district.
- Identify appropriate methods of contact, contact numbers, and expected response time.
- Appoint a representative from the Installation to sit on all participating agency’s Planning Committees as an Ex Officio member.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■

7.15.2. Formalized Communication (FC2)

Create a public outreach plan to inform the public of the Installation’s activities and how to reach out to the Installation.

- Establish a clearinghouse website to provide updates to the community on Installation issues such as scheduled training events, controlled burns, night training, mariner notices, etc.
- Expand community outreach efforts to promote social media sites, websites, and other platforms utilized by the Installation to inform the public of ongoing and upcoming issues and events.
- Update jurisdictions and regional planning organizations websites and link to the Installation’s web page, provide contact information, relevant activities, etc.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

- Identify and publish points of contact for the community and the Installation to make the methods of contacting the Installation widely known and easily identifiable.
- Establish a community outreach program that includes tours of the Installation, educational brochures, and cyclical community open houses. The open houses would provide an overview of training activities, construction projects, and other items of interest while providing citizens the opportunity to be heard.

7.15.3. Formalized Communication (FC3)

Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

- A MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of Richlands, and the Town of North Topsail Beach would provide a clear outline of communication procedures to ensure that everyone is adequately informed.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	■
Town of Holly Ridge	■
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.15.4. Formalized Communication (FC4)

Create a Communication Coordination Manual to be shared with identified individuals.

- A Communication Coordination Manual, to be updated yearly, would identify necessary individuals within the local governments and at the Installation. The Manual would provide detailed information such as City Council and County Board of Commissioners meeting dates, departmental contact information, city hall location, etc. By updating the Manual on a yearly basis, the contacts would stay current.

<i>Responsible Entity</i>	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>

7.15.5. Formalized Communication (FC5)

Establish regularly scheduled meetings between local jurisdictions and the Installation to discuss proposed land use changes, environmental concerns, construction projects, and other issues.

- Set quarterly or biennial meetings for local jurisdictions and representatives from the Installation to discuss current issues in the area. Other entities may need to be included such as transportation planning groups, environmental organizations, state entities, or others. The meetings could have designated representatives or could have voluntary attendees depending on the agenda topics.

<i>Responsible Entity</i>	
Camp Lejeune	<input type="checkbox"/>
Onslow County	<input checked="" type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	<input type="checkbox"/>
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>



ONSLow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.16. Sea Level Rise and Coastal Flooding

<p>Area of Interest</p> <p>SLR and coastal flooding may affect the Installation, the community, and external properties, infrastructure, and resources within the community.</p>		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">Implementation Timing</td> </tr> <tr> <td style="text-align: center;">Within 4-6 years</td> </tr> </table>	Implementation Timing	Within 4-6 years
Implementation Timing		
Within 4-6 years		

7.16.1. Sea Level Rise and Coastal Flooding (SLR1)

Identify the elevations associated with sustainment of various operations and resources and compare them to the various SLR projections to better understand the risk to each.

- Conduct a study to identify the critical elevations and infrastructure associated with sustainment of various operations and resources on the Installation and within the community and compare them to the various SLR projections to better understand the risk to each. This may include, but is not limited to, finished floor elevations of the different buildings, edge of pavement elevations, fixed piers or waterfront structures, maneuver trails, range features, etc.
- Roadways serving the Installation, interior access routes, and railroad embankments should also be evaluated to understand their risk to coastal flooding and possible effects to training operations.
- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.

Responsible Entity	
Camp Lejeune	■
Onslow County	
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONSLow COUNTY CAMP LEJEUNE

Joint Land Use Study

- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion and/or shoreline change.

7.16.2. Sea Level Rise and Coastal Flooding (SLR2)

Perform a feasibility study and model the benefits that large-scale marsh protection/enhancement of coastal flood storage systems could have on dissipating storm surge within the broader vicinity of the Installation.

- Perform a feasibility study and model the benefits that large-scale marsh protection/enhancement or coastal flood storage systems could have on dissipating storm surge within the broader vicinity of the Installation and how such efforts could help other external infrastructure, properties, and resources within Onslow County. Explore collaborative funding approaches or grants to allow for the more aggressive implementation options.
- Evaluate options for large expansion of tidal marsh areas to help increase tidal surge dissipation and flood protection benefits to the Installation and the surrounding community. Among other alternatives, consider whether forested areas could be utilized, as a tradeoff from one natural resource to another.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

- Evaluate alternatives on how to protect regionally identified high priority wetlands onsite from erosion and inundation to SLR. Consider implementation of widespread marsh sills to reduce erosion, headland controls, marsh enhancement and nourishment activities, re-creation of nearshore marsh islands, beneficial re-use of dredged material, etc.
- Consider integrating natural resource areas for resilience with ongoing conservation efforts, easements, and land acquisitions that promote uses and activities compatible with military operations.

7.16.3. Sea Level Rise and Coastal Flooding (SLR3)

Explore adaptive management techniques for mitigating the effects of SLR.

- Although less conventional, and environmental concerns would need to be addressed, the feasibility of incorporating perimeter barriers in tandem with water level controls and adaptive management techniques to provide coastal flooding reduction within the vicinity should be assessed. This may include, but is not limited to modifying maneuver trails, railroad embankments, and existing culvert/bridge crossings to serve as levee systems for flood control storage, storm surge dissipation, and future wetland management in areas otherwise at risk of inundation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	□



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.16.4. Sea Level Rise and Coastal Flooding (SLR4)

Develop a long-range strategic plan for mitigating the impacts of SLR.

- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include evaluation of the natural, built and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.
- Use the results of the studies in recommendations SLR1-3 as well as the study described above to develop a long-range regional strategic plan to mitigate the effects of SLR.
- Consider partnering with the North Carolina Interagency Leadership Team to further mitigation and adaptation efforts.
- Integrate hazard mitigation, emergency preparedness and resilience with existing community planning policies, ordinances and development decisions to ensure long-term viability, public health and safety of people, the economy, and natural and built environments.
- State and local governments, together with Camp Lejeune, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies parties responsible for those actions.
- Local governments should integrate sea level rise and flooding considerations into comprehensive plans, floodplain ordinances, and incorporate resilience activities into capital improvement plans.
- Consider development of a community hazard/disaster education and outreach plan.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	■



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7.16.5. Sea Level Rise and Coastal Flooding (SLR5)

Monitor sea level and river levels to stay abreast of changes.

- Review the NOAA Flood Impact Analysis Tool to determine if its scope is sufficient to address the Installation’s flood risk assessment and work to incorporate more detailed information as needed to refine the results and management benefits.
- Continue to monitor the draft FEMA FIRM maps to ensure the correct minimum elevations and special flood hazard areas are adopted.
- Add additional water level monitoring gauges within the New River.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	■

7.16.6. Sea Level Rise and Coastal Flooding (SLR6)

Upgrade infrastructure to address potential impacts from SLR when funding permits.

- Encourage and/or participate in efforts to evaluate upgrades to interior and exterior roads to increase resiliency against SLR and coastal flooding if it is determined critical to long-term access/operations for the Installation.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONSLow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.16.7. Sea Level Rise and Coastal Flooding (SLR7)

Flooding crosses jurisdictional and property boundaries. The Installation and surrounding municipalities should coordinate to provide a regional approach to flood mitigation.

- Climate adaptation, resilience efforts, and flood mitigation efforts should link to the Federal Emergency Management Administration’s Community Rating System to encourage community floodplain management practices that exceed minimum National Flood Insurance Premium standards to provide reduced flood insurance premiums for the policy holders.
- Consider updating community land use regulations and installation/facility management criteria to encourage use of green infrastructure approaches for stormwater management.
- Consider offering community economic incentives for property owners that willingly implement flood risk reduction practices on their property.
- Consider local hazard disclosure policy requiring hazard disclosure by real estate agents, private sellers, and/or by municipal officials for properties located in the FEMA-designated regulatory floodplain and/or other flood hazard areas, such as storm surge and sea level rise.
- Identify vulnerable populations located in areas at risk to existing and potential future flood hazards.
- Inventory and map total property value within areas subject to existing and potential future flood hazards and assess the financial impacts and subsequent impacts to the local tax base. Inventory should include infrastructure, facilities, public and private property.
- Identify level of flood insurance coverage in flood hazard areas.
- Identify strategies for protecting or relocating culturally or historically significant

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	■
Town of Swansboro	■
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	■



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

artifacts/structures located in existing and/or potential future flood hazard areas.

7.17. Wildlife and Habitat Preservation (HP)

Area of Interest

The Installation and the surrounding communities provide habitat for wildlife as well as significant wetlands and marshes.

Implementation Timing
Within 4-6 years

7.17.1. Wildlife and Habitat Preservation (HP1)

Establish a Regional Committee to continue coordination between the Installation and the community on preserving wildlife habitat, prioritize and focus conservation efforts, and reduce duplication of efforts.

- Establish a Regional Committee composed of representatives from the Installation, municipalities, and local environmental groups to coordinate and focus conservation and habitat preservation efforts.
- Continue to share resources and provide assistance where needed between the Installation and municipalities to ensure the requirements of the National Environmental Policy Act, as well as other state and federal regulations, are met.
- Renew the Onslow Bight Stewardship Resource Management Sharing Agreement.

Responsible Entity	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.17.2. Wildlife and Habitat Preservation (HP2)

Pursue funding through the Readiness and Environmental Protection Initiative (REPI), Sentinel Landscapes Partnership Program, and other programs to provide opportunities for habitat funding.

- Federal programs provide opportunities for additional funding sources in an effort to preserve lands and habitat.
- Explore using the Wildlife Green Growth Tool Box for small grant opportunities.
- Focus efforts on establishing a wildlife corridor between Camp Lejeune and Holly Game Shelter
- Expand Habitat Preservation efforts beyond the Red Cockaded Woodpecker to include other imperiled species, such as the Gopher Tortoise

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□

7.17.3. Wildlife and Habitat Preservation (HP3)

Educate the public on how the Installation helps to preserve habitat and protects threatened and endangered species.

- Develop and disseminate a brochure detailing the Installation’s efforts to preserve listed species and critical habitats.
- Continue to monitor delisted species in order to provide updates to the public on their status.
- Create educational materials to explain the need for controlled burns on the Installation and the benefits to private and Installation property.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□



ONslow COUNTY CAMP LEJEUNE

Joint Land Use Study

7.18. Gate Security and Access (GS)

<p>Area of Interest</p> <p>Land use and building design outside the Installation's gates could lead to safety concerns for the Installation.</p>		
<table border="1" style="margin: auto;"> <tr> <td style="text-align: center;">Implementation Timing</td> </tr> <tr> <td style="text-align: center;">Within 10 years</td> </tr> </table>	Implementation Timing	Within 10 years
Implementation Timing		
Within 10 years		

7.18.1. Gate Security and Access (GS1)

Study gate security threats across the Installation.

- Conduct a study to address gate security concerns across the Installation.

Responsible Entity	
Camp Lejeune	■
Onslow County	
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



ONslow COUNTY CAMP LEJEUNE

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7.18.2. Gate Security and Access (GS2)

Establish coordination between the Installation and the surrounding communities regarding urban design at Installation access points.

- Establish coordination between the Installation and surrounding municipalities regarding off-Installation use and design around installation access points to ensure public and Installation safety.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	□
City of Jacksonville	□
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	□
Town of North Topsail Beach	

7.18.3. Gate Security and Access (GS3)

Evaluate the feasibility of encroachment partnering agreements (allowed pursuant to Title 10 USC 2684a) with eligible entities to protect the Installation’s gates from incompatible development.

- Title 10 USC 2684a allows the Secretary of Defense or the secretary of a military department to partner with an eligible entity to acquire ecologically related real property in the vicinity of a military installation to limit incompatible development, preserve habitat, or protect the mission of the installation from encroachment. Eligible entities include the state, a political subdivision of the state, or a private entity that has the goal of conservation, restoration, or preservation of land and natural resources.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	
City of Jacksonville	
Town of Swansboro	
Town of Richlands	
Town of Holly Ridge	
Town of North Topsail Beach	



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7.19. Spectrum Encroachment (SE)

Area of Interest

As urbanization increases, additional stress is placed on the frequency spectrum available for military uses in order to accommodate civilian uses. The results can curtail the availability of the spectrum to serve the needs of the military.

<i>Implementation Timing</i>
Within 10 years

7.19.1. Spectrum Encroachment (SE1)

Identify the areas most at risk for spectrum encroachment.

- Coordinate with the Installation to determine what areas within the 5-mile study area are at greatest risk of creating frequency interferences.

<i>Responsible Entity</i>	
Camp Lejeune	■
Onslow County	■
City of Jacksonville	□
Town of Swansboro	□
Town of Richlands	□
Town of Holly Ridge	□
Town of North Topsail Beach	□



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7.19.2. Spectrum Encroachment (SE2)

Continue coordination between the Installation and the community regarding spectrum encroachment.

- Coordinate with municipalities to establish procedures to identify proposed projects that may potentially involve a source of frequency emissions (including large scale Wi-Fi).
- Include the Installation in the telecommunication tower siting and approval process.

<i>Responsible Entity</i>	
Camp Lejeune	<input checked="" type="checkbox"/>
Onslow County	<input type="checkbox"/>
City of Jacksonville	<input type="checkbox"/>
Town of Swansboro	<input type="checkbox"/>
Town of Richlands	
Town of Holly Ridge	<input type="checkbox"/>
Town of North Topsail Beach	<input type="checkbox"/>



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7.20. Recommendation Summary

	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
7.1 Policy Reinforcement (PR)	The Installation affects multiple jurisdictions and adequate local regulations are not in place within every municipality, or need strengthening, in order to provide protection standards for the military and continued community growth.						
Implementation Timing: Within 1-3 years							
PR1. Establish, within each applicable jurisdiction’s land use regulations, a Military Influence Area (MIA) with a Military Influence Overlay District (MIOD). Consider potential boundaries for the MIOD, such as the five-mile study area and the entire Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the City of Jacksonville.	■	■	■	■	■	■	■
PR2. Update existing planning documents to include provisions of the MIA and MIOD.	■	■	■	■	■	■	■
PR3. Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.	■	■	■	■	■	■	■



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
PR4. Expand existing Land Development Regulation military compatibility provisions.		■	■	■		■	■
PR5. Involve the Installation in planning decisions and committees. Seek regular input from the Installation for technical assistance (e.g. code updates, land use plan updates, and development review processes.)	■	■	■	■		■	■
PR6. Coordinate the extension of public facilities to ensure compatibility with the mission of the Installation.	■	■	■	■	■	■	■
PR7. Promote the mission of the Installation by preserving agricultural lands around the Installation and training areas.	■	■					
7.2 Waterway Access (WA)	The New River is located entirely within Onslow County; the Installation takes up most of the River's length along both shorelines. The Installation performs amphibious training within the River and periodically blocks access to the River for the public's safety.						
Implementation Timing: Within 1-3 years							
WA1. Prepare a study of water-based users of the New River.	■	□	□	□			□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
WA2. Notify the public on the activities of the Installation and potential safety concerns.	■	□	□	□		□	□
WA3. Improve coordination with local, state, and federal agencies performing reef mediation and reconstruction work along the New River.	■	□	□				
7.3 Vertical Obstructions (VO)	The introduction of vertical obstructions can interfere with the success of training missions as well as the safe operations of the airport. The vertical obstructions can include not only trees and buildings but also telecommunication towers.						
Implementation Timing: Within 1-3 years							
VO1. Prepare and adopt consistent vertical obstruction standards.	■	■	■	■	■	■	■
VO2. Develop formal process to include the Installation on telecommunication tower siting and approval process.	■	■	■	■	■	■	■
VO3. Increase public awareness of the issues resulting from vertical obstructions and the impacts to the New River Air Station, Camp Davis Air Field, and Albert J. Ellis Airport.	■	■	■	■	■	■	■
7.4 Transportation (T)	Ingress and egress to the Installation can contribute to the regional traffic congestion that occurs on a regular basis.						
Implementation Timing:							



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
Within 1-3 years							
T1. Coordinate with NCDOT and other transportation groups to address current transportation needs.	■	■	■				
T2. Establish coordination between the Installation and community.	■	□	□				
T3. Evaluate transit opportunities around the Installation, especially in the area around Sneads Ferry.	■	■	■				
7.5 JLUS Implementation (JI)	The success of the JLUS lies in its implementation and is dependent upon a commitment to continue to work as one community to address the needs of the community to grow and the needs of the Installation for the protection of the training mission.						
Implementation Timing: Within 1-3 years							
J11. The Camp Lejeune JLUS TWG should transition to a JLUS Implementation Committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.	■	■	■	■	■	■	■



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
J12. Establish a GIS database that includes the Installation and the municipalities that fall within the study area.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.6 Airspace Management (AM)	Coordination between New River Air Station and the Albert J. Ellis Airport, as well as the military entities using the airports, is essential for continued airspace management.						
Implementation Timing: Within 1-3 years							
AM1. Establish an Airport Overlay District for Albert J. Ellis Airport.	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>		
AM2. Educate the public on reducing hazardous bird and wildlife attractions.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
7.7 Dredging and Disposal (DD)	Dredging and dredge disposal solutions are needed to address long-term dredging needs.						
Implementation Timing: Within 1-3 years							
DD1. Coordinate with the North Carolina Beach and Inland Waterway Association on dredging activities.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
DD2. Identify funding for dredging activities.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>
DD3. Develop strategies for the disposal of dredge materials.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
DD4. Explore additional ways to maintain navigation channels.	■	■					
7.8 Unmanned Aircraft Systems (UA)	Private UAS, commonly referred to as drones, are prohibited from flying over the Installation. The general public may not be educated on the requirements.						
Implementation Timing: Within 1-3 years							
UA1. Educate the general public on the potential dangers of flying drones near Installation.	■	■	□	□	□	□	□
UA2. Establish coordination between the Installation and the community regarding the flying of UAS.	■	■	■	■	■	■	■
UA3. Establish restrictions within the MIOD for the operation on UAS.	■	■	■	□	□	□	□
7.9 Water Supply (WS)	The Installation’s potable water sources are near some of the water sources for the City of Jacksonville. Overdraw from this aquifer could result in saltwater intrusion that could jeopardize the sustainability of the wells serving Camp Lejeune and the community at large.						
Implementation Timing: Within 1-3 years							
WS1. Work with the Installation and the City of Jacksonville to study the effect the current well drawdown is having on the aquifer.	■	□	■				



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
WS2. Work with the Installation and the City of Jacksonville to formulate solutions to the issues revealed within the aquifer drawdown study.	■	□	■				
7.10 Urbanization and Land Use Compatibility (UL)	Continue development as currently planned to minimize impacts to the training missions of the Installation.						
Implementation Timing: Within 4-6 years							
UL1. Educate the general public on the Installation’s importance, both nationally and locally.	■	■					
UL2. Evaluate adopted Future Land Use Plans and current zoning to identify strategies, where needed, to address the “areas of concern” located in the unincorporated portion of the County north of the Town of Holly Ridge and west of the Installation boundary.	□	■					
UL3. Expand agricultural land protections outside of the Installation.	■	■					



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
UL4. Coordinate with Pender County on land use near the Installation to ensure its continued mission.	■	■					
7.11 Installation Access (IA)	The potential for unauthorized visitors to enter the Installation exists due to the Installation's extensive boundary and its location on either side of the New River.						
Implementation Timing: Within 4-6 years							
IA1. Educate the general public on where the Installation's boundaries are and the dangers of UXO.	■	□	□			□	
7.12 Noise (N)	Noise generated from Installation exercises, including small arms weapons firing, daily aircraft operations, and impact area G-10 can create concerns for the citizens of the community.						
Implementation Timing: Within 4-6 years							
N1. Educate the general public regarding potential noise and mitigation.	■	■	□	□	□	□	□
N2. Limit development in areas of high noise potential.	■	□	□				
N3. Provide current and adequate information to facilitate informed decisions by jurisdictions, developers, and interested citizens relative to a property's location and nearby military impacts.	■	□	□	□	□	□	□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
N4. Educate the community on any changes in noise frequency and intensity.	■						
N5. Develop a list of potential noise attenuation standards that could be given to homeowners when remodeling or building new structures.		■					
7.13 Light and Glare (LG)	Lighting controls and standards for new development are not codified in all jurisdictions. Additionally, existing codes could be strengthened. New development has the potential for impacting flight paths and training missions by creating glare from lighting, reflective surfaces, and similar hardened surfaces.						
Implementation Timing: Within 4-6 years							
LG1. Identify areas of greatest light pollution.	■	□	□	□	□	□	□
LG2. Limit development in areas of high light pollution.	□	■	■	■	■	■	■
7.14 Alternative Energy Development (AE)	Alternative energy development has the potential to create adverse effects on military operations.						
Implementation Timing: Within 4-6 years							
AE1. Coordinate alternative energy projects with the Installation.	□	■	□	□	□	□	□
AE2. Limit the locations where alternative energy developments can be located.	□	■	□	□	□	□	□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
7.15 Formalized Communication (FC)	Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.						
Implementation Timing: Within 4-6 years							
FC1. Expand on the existing coordination and communication efforts to strengthen the connection between the Installation and the community.	■	■	■	■	■	■	■
FC2. Create a public outreach plan to inform the public of the Installation’s activities and how to reach out to the Installation.	■	■	□	□	□	□	□
FC3. Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, and the Town of Richlands outlining a procedure for future communications.	■	■	■	■	■	■	■
FC4. Create a Communication Coordination Manual to be shared with identified individuals.	□	■	□	□	□	□	□
FC5. Establish regularly scheduled meetings between local jurisdictions and	□	■	□	□	□	□	□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
the Installation to discuss proposed land use changes, environmental concerns, construction projects, and other issues.							
7.16 Sea Level Rise and Coastal Flooding (SLR)	SLR and coastal flooding may affect the Installation, the community, and external properties, infrastructure, and resources within the community.						
Implementation Timing: Within 4-6 years							
SLR1. Identify the elevations associated with sustainment of various operations and resources and compare them to the various SLR projections to better understand the risk to each.	■						
SLR2. Perform a feasibility study and model the benefits that large-scale marsh protection/enhancement of coastal flood storage systems could have on dissipating storm surge within the broader vicinity of the Installation.	■	□	□	□			□
SLR3. Explore adaptive management techniques for mitigating the effects of SLR.	■	□	□	□			□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
SLR4. Develop a long-range strategic plan for mitigating the impacts of SLR.	■	■	■	■			■
SLR5. Monitor sea level and river levels to stay abreast of changes.	■	■	■	■			■
SLR6. Upgrade infrastructure to address potential impacts from SLR when funding permits.	■	■	■				
SLR7. Flooding crosses jurisdictional and property boundaries. The Installation and surrounding municipalities should coordinate to provide a regional approach to flood mitigation.	■	■	■	■			■
7.17 Wildlife and Habitat Preservation (HP)	The Installation and the surrounding communities provide habitat for wildlife as well as significant wetlands and marshes.						
Implementation Timing: Within 4-6 years							
HP1. Establish a regional committee to continue coordination between the Installation and the community on preserving wildlife habitat.	■	□	□	□	□	□	□
HP2. Pursue funding through the Readiness and Environmental Protection Initiative	■	□	□	□	□	□	□



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
(REPI) and Sentinel Landscapes Partnership Program to provide opportunities for habitat funding.							
HP3. Educate the public on how the Installation helps to preserve habitat and protects threatened and endangered species.	■	□	□	□	□	□	□
7.18 Gate Security and Access (GS)	Land use and building design outside the Installation’s gates could lead to safety concerns for the community.						
Implementation Timing: Within 10 years							
GS1. Study gate security threats across the Installation.	■						
GS2. Establish coordination between the Installation and the surrounding communities regarding urban design at Installation access points.	■	□	□			□	
GS3. Evaluate the feasibility of encroachment partnering agreements (allowed pursuant to Title 10 USC 2684a) with eligible entities to protect the Installation’s gates from incompatible development.	■						



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	Camp Lejeune	Onslow County	Jacksonville	Swansboro	Richlands	Holly Ridge	N Topsail Beach
7.19 Spectrum Encroachment (SE)	As urbanization increases, additional stress is placed on the frequency spectrum available for military uses in order to accommodate civilian uses. The results can curtail the availability of the spectrum to serve the needs of the military.						
Implementation Timing: Within 10 years							
SE1. Identify the areas most at risk for spectrum encroachment.	■	■	□	□	□	□	□
SE2. Continue coordination between the Installation and the community regarding spectrum encroachment.	■	□	□	□		□	□



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8.

Implementation Plan



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8. IMPLEMENTATION PLAN

The foundation of the Onslow County / Camp Lejeune JLUS is a community-driven, cooperative, strategic planning process among the Installation, Onslow County, City of Jacksonville, Town of Swansboro, Town of Richlands, Town of Holly Ridge, and Town of North Topsail Beach. As such, the coordinated project represents a truly collaborative planning process. The 63 recommendations in the previous section are the product of consensus among the JLUS participants. They provide a practical, coordinated approach to continued regional planning for military and civilian compatibility.

Each of the recommendations incorporates one or more actions that can be implemented to promote compatible land use, prevent encroachments upon the military mission, mitigate existing incompatibilities, facilitate compatible future development, and provide mechanisms to foster communication and coordination. The recommended strategies function as tools to aid the community in their goal of ensuring the continued sustainability of the military mission at the Installation. Collectively, these strategies represent an assertive and coordinated approach that demonstrate the community's commitment to that goal.

The question then becomes, "How do we implement the recommendations?" The process for implementation can be confusing and complicated. The recommendations themselves vary as well as the processes and procedures of the municipalities implementing them. However, if the recommendations remain as words in a report, the intent of the study is not accomplished. Through actual implementation, the community and the military are able to fulfill the goal of the JLUS and work together to create a thriving community while maintaining support for the mission of the Installation.

The recommendation strategies have been categorized into groups that provide a general description of what they entail. They consist of:

- **Communication and Coordination.** Recommendations in the Communication and Coordination category would provide opportunities and strategies for increased communication or coordination between the Installation, the community, stakeholders, elected officials, civilians, and military families.
- **Education.** Recommendations under the Education category will help educate the community on facts and details that might help to clarify information or provide new information.



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- **Policy.** Policy recommendations include changes to regulatory documents such as the comprehensive plan, zoning ordinances, and/or building codes.
- **Program or Process.** A program or process may need to be established to address a specified area of interest.
- **Study.** Studies or reports may be needed to determine additional information, conduct additional analyses, and research before the next steps can be determined.

The following Implementation Plan will provide a general overview for each municipality to put into place the recommendations set forth within the JLUS.

8.1. Onslow County

The Installation is located primarily within Onslow County. It is important for the County to assist in the establishment of the Camp Lejeune JLUS Implementation Committee and to serve as an active member of the Committee. The Camp Lejeune JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the needs of Onslow County with guidance from the overall committee. The process below provides a general overview of the steps that Onslow County can take to implement their portion of the JLUS process. Only the recommendations that identified Onslow County as the primary responsible party are discussed. However, as Onslow County is the Study Sponsor, they have also been identified as the responsible entity when a leadership role is required for the recommendation.

8.1.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as MOU or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.

Communication Procedures

Communication procedures are important to establish to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action.



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They aid is establishing the role of each party within and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, and communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from area of development would conflict with the training mission of the Installation.
- Establish a MOU with the Installation and local police departments to coordinate issues and establish standards for notifying drone users of applicable rules and regulations..
- Coordinate with Pender County on land use decisions in close proximity to the western boundary of the Installation to ensure that land use decisions in the adjacent county do not adversely affect the Installation.
- Coordinate the siting of alternative energy projects with the Installation.
- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.
- A Communication Coordination Manual, to be updated yearly, would identify necessary individuals within the local governments and at the Installation. The Manual would provide detailed information such as City Council and County Board of Commissioners meeting dates, departmental contact information, city hall location, etc.

Committees

- Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.
- Use the CPG to coordinate a study between the Installation, MPO, NCDOT, and other agencies as necessary to evaluate the need and potential locations for an additional gate for New River Air Station.



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- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation Committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS; work with other municipalities and the Installation to achieve this.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Work with other municipalities and the Installation to establish a JLUS coordination committee.

Activities

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.
- Establish a clearinghouse website to provide updates to the community on Installation issues such as scheduled training events, controlled burns, night training, mariner notices, etc.
- Expand community outreach efforts to promote social media sites, websites, and other platforms utilized by the Installation to inform the public of ongoing and upcoming issues and events.
- Update jurisdictions and regional planning organizations websites and link to the Installation's web page, provide contact information, relevant activities, etc.
- Identify and publish points of contact for the community and the Installation to make the methods of contacting the Installation widely known and easily identifiable.
- Establish a community outreach program that includes tours of the installation, educational brochures, and cyclical community open houses. The open houses would provide an overview of training activities, construction projects, and other items of interest while providing citizens the opportunity to be heard.
- Establish regularly scheduled meetings between local jurisdictions and the Installation to discuss proposed land use changes, environmental concerns, construction projects, and other issues.

8.1.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and Camp Lejeune to learn from one another. Educational programs include the following:



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- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.
- Educate the general public on the Installation's importance, both nationally and locally.
- Provide information to jurisdictions, developers and interested citizens relative to Installation training areas and the potential noise levels from such activities.
- Educate the community on issues including noise frequency and intensity and efforts the Installation undertakes to reduce noise or to schedule exercises to reduce the impact on the community.
- Develop a list of potential noise attenuation standards that could be given to homeowners when remodeling or building new structures.
- Consider development of a community hazard/disaster education and outreach plan.

8.1.3. Policy

A crucial step for implementing the JLUS within the Onslow County is to lay the foundation within the County's Land Development Regulations and comprehensive plan by establishing a MIOD or another similar alternative. The MIOD is a geographic boundary consisting of the JLUS study area boundary located within Onslow County. Within the MIOD, specific concerns can be addressed through the MIA. The MIAs should incorporate areas related to specific issues within the MIOD: noise areas, renewable energy development, vertical obstructions, safety zones, dark skies areas. The exact boundaries of the overlay and MIAs should be determined through discussions with Onslow County and the Installation.

As part of the continued coordination between the Marine Corps and Onslow County, review of development and proposed land use changes need to be shared, particularly when they are located within the MIOD. The zoning ordinance or land development regulations should be updated to incorporate a Camp Lejeune Representative in the review process to ensure that copies of the development proposals, comprehensive plan amendments, rezonings, and other land use or regulation changes are reviewed for



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impacts to the installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval if located within the MIOD.

Additional standards that should be incorporated into regulatory documents include:

- Establish, within each applicable jurisdiction’s land use regulations, a MIA with a MIOD. Consider potential boundaries for the MIOD, such as the five-mile study area and the entire Town of Swansboro, the Town of Holly Ridge, North Topsail Beach, and the City of Jacksonville.
 - Noise MIOD
 - Renewable Energy Development MIOD
 - Vertical Obstructions MIOD
 - Safety Zone MIOD
 - Dark Skies Policies for residential and commercial uses
 - Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
 - Limit density near high noise areas
- Update CAMA LUPs to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.
- Expand existing Installation notification policies within the land development regulations of each jurisdiction that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.
- Review and update maps of areas of concern for vertical obstructions. Amend the land development regulations as needed to be consistent and address all identified issues and locations.
- Establish an Airport Overlay District for Albert J. Ellis Airport.
- Establish drone restrictions within the MIOD for the New River Air Station and Albert J. Ellis Airport approach zones and portions of the airspace.
- Establish coordination procedures for areas of concern within the MIOD to minimize future incompatibilities from proposed land use or zoning changes.
- Establish Dark Sky Lighting requirements, where appropriate, within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for



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lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.

- Limit the locations where alternative energy developments can be located.
- Integrate sea level rise and flooding considerations into comprehensive plans, floodplain ordinances, and incorporate resilience activities into capital improvement plans.
- Integrate hazard mitigation, emergency preparedness and resilience with existing community planning policies, ordinances and development decisions to ensure long-term viability, public health, and safety of people, the economy, and natural and built environments.
- Consider updating community land use regulations and installation/facility management criteria to encourage the use of green infrastructure approaches for stormwater management.
- Consider offering community economic incentives for property owners that willingly implement flood risk reduction practices on their property.

8.1.4. Program or Process

Many programs and processes are currently in place to aid local governments within the study area and the Installation in achieving their objectives. The JLUS identified some additional programs and processes or modifications to those that are already in place to help achieve the goals of the JLUS.

- Establish a GIS database that includes the Installation and the municipalities that fall within the study area. The Camp Lejeune JLUS GIS database would include data from the Installation and the municipalities that fall within the study area. The Camp Lejeune JLUS Database would incorporate all the JLUS GIS data layers as well as other regional, state, and federal data sets to be utilized by City and County governments during the development approval process. One entity would be primarily responsible for the database while all of the municipalities and the Installation would supply the data.
- Expand agricultural land protections and programs within the MIOD. Continue to work with the federal and state governments to identify funding opportunities for the creation of long-term leases that enable farmlands to remain in agricultural use.
- Develop a long-range strategic plan for mitigating the impacts of SLR.
- Monitor sea level and river levels to stay abreast of changes in water levels.
- Upgrade infrastructure to address potential impacts from SLR when funding permits.
- Coordinate with the North Carolina Beach and Inland Waterway Association on dredging activities.



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- Identify funding for dredging activities.
- Develop strategies for the disposal of dredge materials.
- Develop strategies for minimizing potential conflict by directing public facilities away from sensitive areas with the greatest potential to impact the training mission of the Installation.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion and/or shoreline change.
- State and local governments, together with the Installation, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies the parties responsible for those actions.
- Climate adaptation and resilience efforts should link to the Federal Emergency Management Administration's Community Rating System to encourage community floodplain management practices that exceed minimum National Flood Insurance Premium standards to provide reduced flood insurance premiums for the policy holders.

8.1.5. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the County into the next phases of implementation:

- Conduct a study to evaluate the effects of personnel increases on public facilities, including school facilities. A study should be conducted for the current proposed increase in MARSOC personnel as well as additional Installation personnel increases in the future. Evaluations should include school facilities, water, sewer, transportation, and housing availability.
- Conduct a study to examine the land uses around training facilities used by Camp Lejeune that are remote to the Installation. These areas include training facilities in Jones and Pender Counties as well as other areas. The land uses around these facilities should be examined for compatibility with the training activities occurring at these locations; the study should contain recommendations regarding preserving or increasing the compatibility of surrounding land uses as well as their operations and maintenance.
- Conduct a study to analyze the transfer of development rights from agricultural areas adjacent to the Installation's training areas.



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- Conduct a study to evaluate and update the current Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction’s current development standards are clearly defined.
- Coordinate with the MPO to conduct a study to expand current transit routes available to the Installation.
- Conduct a study to identify areas within Pender County that present the greatest risks to the Installation training mission and develop strategies to mitigate such risks.
- Identify the areas most at risk for spectrum encroachment.
- Use a MOU between the Installation, the City of Jacksonville, and Onslow County to coordinate the study and identification of issues surrounding the drawdown of the aquifer in the vicinity of the supply wells.
- Evaluate adopted Future Land Use Plans and current zoning to identify strategies, where needed, to address the “area of concern” located in the unincorporated portion of the County north of the Town of Holly Ridge and west of the Installation boundary.
- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.
- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.
- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include evaluation of the



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natural, built and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.

- Identify vulnerable populations located in areas at risk to existing and potential future flood hazards.
- Inventory and map total property value within areas subject to existing and potential future flood hazards and assess the financial impacts and subsequent impacts to the local tax base. Inventory should include infrastructure, facilities, and public and private property.
- Identify level of flood insurance coverage in flood hazard areas.
- Identify strategies for protecting or relocating culturally or historically significant artifacts/structures located in existing and/or potential future flood hazard areas.

8.2. City of Jacksonville

A portion of the Installation is located within the City of Jacksonville, and its impacts are felt throughout the community. It is important for the City to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the City's needs with guidance from the overall committee. The process below provides a general overview of the steps that the City can take to implement their portion of the JLUS process. Only the recommendations that identified the City as the primary or one of the primary responsible parties are discussed.

8.2.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as memorandums of understanding (MOU) or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.



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Communication Procedures

Establishment of communication procedures are important to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, and communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the Installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from developments that would conflict with the training mission of the Installation.
- Establish a MOU with the Installation and local police departments to coordinate issues and establish standards for notifying drone users of applicable rules and regulations.
- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

Committees

- Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.
- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee.



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Activities

- Conduct annual reviews of jurisdictional Capital Improvement Plans with the Installation to determine compatibility with the mission of the Installation.

8.2.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and Camp Lejeune to learn from one another. Educational programs include the following:

- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Address potential security issues on US 17 along the parade grounds and place “No Parking” and/or “No Stopping” signs along this portion of the roadway.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.
- Educate the general public on the potential dangers of flying drones near the military installation.
- Consider development of a community hazard/disaster education and outreach plan.

8.2.3. Policy

A crucial step for implementing the JLUS within the City is to lay the foundation within the City’s Land Development Regulations and comprehensive plan by establishing a MIOD or another similar alternative. The MIOD is a geographic boundary consisting of the JLUS study area boundary located within the City. Within the MIOD, specific concerns can be addresses through the MIA. The MIAs should incorporate the lands that include areas related to specific issues within the MIOD: noise areas, renewable energy development, vertical obstructions, safety zones, dark skies areas. The exact boundaries of the overlay and MIAs should be determined through discussions with the City and the Installation.



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As part of the continued coordination between the Marine Corps and the City, review of development and proposed land use changes need to be shared, particularly when they are located within the MIOD. The zoning ordinance of land development regulations should be updated to incorporate an Installation Representative in the review process to ensure that copies of the development proposals, comprehensive plan amendments, rezonings, and other land use or regulation changes are reviewed for impacts to the Installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval if located within the MIOD.

Additional standards that should be incorporated into regulatory documents include:

- Establish, within the land use regulations, a MIA with a MIOD. Consider potential boundaries for the MIOD, such as the 5-mile study area and the entire City of Jacksonville.
 - Noise MIOD
 - Renewable Energy Development MIOD
 - Vertical Obstructions MIOD
 - Safety Zone MIOD
 - Dark Skies Policies for residential and commercial uses
 - Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
 - Limit density near high noise areas
- Update CAMA Land Use Plans to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.
- Expand existing Installation notification policies within the land development regulations of each jurisdiction that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.
- Review and Update maps of areas of concern for vertical obstructions. Amend the land development regulations as needed to be consistent and address all identified issues and locations.
- Establish drone restrictions within the MIOD for the New River Air Station.
- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for



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- lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.
- Local governments should integrate sea level rise and flooding considerations into comprehensive plans, floodplain ordinances, and incorporate resilience activities into capital improvement plans.
 - Integrate hazard mitigation, emergency preparedness and resilience with existing community planning policies, ordinances and development decisions to ensure long-term viability, public health and safety of people, the economy, and natural and built environments.
 - Consider updating community land use regulations and installation/facility management criteria to encourage use of green infrastructure approaches for stormwater management.
 - Consider offering community economic incentives for property owners that willingly implement flood risk reduction practices on their property.
 - Consider local policy requiring hazard disclosure by real estate agents, private sellers, and/or by municipal officials for properties located in the FEMA-designated regulatory floodplain and/or other flood hazard areas, such as storm surge and sea level rise.

8.2.4. Program or Process

Many programs and processes are currently in place to aid the local governments within the study area and the Installation in achieving their objectives. The JLUS identified some additional programs and processes or modifications to those that are already in place.

- Develop a long-range strategic plan for mitigating the impacts of SLR.
- Monitor sea level and river levels to stay abreast of changes to water levels.
- Upgrade infrastructure to address potential impacts from SLR when funding permits.
- Work with the Installation, and Onslow County to formulate solutions to the issues revealed within the aquifer drawdown study. These solutions may include alternative water supply sources, water conservation efforts, and the use of reclaimed water.
- Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing public facilities away from these locations.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion, and/or shoreline change.



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- State and local governments, together with Camp Lejeune, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies parties responsible for those actions.
- Climate adaptation and resilience efforts should link to the Federal Emergency Management Administration's Community Rating System to encourage community floodplain management practices that exceed minimum National Flood Insurance Premium standards to provide reduced flood insurance premiums for the policy holders.

8.2.5. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the City into the next phases of implementation:

- Conduct a study to evaluate the effects of personnel increases on public facilities, including school facilities. A study should be conducted for the current proposed increase in MARSOC personnel as well as additional Installation personnel increases in the future. Evaluations should include school facilities, water, sewer, transportation, and housing availability.
- Conduct a study to evaluate and update the current Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction's current development standards are clearly defined.
- Coordinate with the MPO to conduct a study to expand current transit routes available to the Installation.
- Use the CPG to coordinate a study between the Installation, MPO, NCDOT, and other agencies as necessary to evaluate the need and potential locations for an additional gate for New River Air Station.
- Use a MOU between the Installation, the City of Jacksonville, and Onslow County to coordinate the study and identification of issues surrounding the drawdown of the aquifer in the vicinity of the supply wells.



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- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.
- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.
- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include an evaluation of the natural, built, and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.
- Identify vulnerable populations located in areas at risk to existing and potential future flood hazards.
- Inventory and map total property value within areas subject to existing and potential future flood hazards and assess the financial impacts and subsequent impacts to the local tax base. Inventory should include infrastructure, facilities, public and private property.
- Identify level of flood insurance coverage in flood hazard areas.
- Identify strategies for protecting or relocating culturally or historically significant artifacts/structures located in existing and/or potential future flood hazard areas.

8.3. Town of Swansboro

A portion of the Town of Swansboro is located within the 5-mile study area around the Installation, and its impacts are felt within the community. It is important for the Town to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS



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Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the Town's needs with guidance of the overall committee. The process below provides a general overview of the steps that the Town can take to implement their portion of the JLUS process. Only the recommendations that identified the Town as the primary or one of the primary responsible parties are discussed.

8.3.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as MOU or formal processes such as recurring meetings.

Communication Procedures

Communication procedures are important to establish to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, and communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from areas where development would conflict with the training mission of the Installation.
- Establish MOU with the Installation and local Police Departments to coordinate issues and establish standards for notifying drone users of applicable rules and regulations.



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- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

Committees

- Expand the membership of all planning Boards/Committees to include an ex officio member from the Installation.
- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee

Activities

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.

8.3.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and the Installation to learn from one another. Educational programs include the following:

- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.
- Consider development of a community hazard/disaster education and outreach plan.



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8.3.3. Policy

A crucial step for implementing the JLUS within the Town is to lay the foundation within the Town's Land Development Regulations and comprehensive plan by establishing a MIOD or another similar alternative. The MIOD is a geographic boundary consisting of the JLUS study area boundary located within the City. Within the MIOD, specific concerns can be addressed through the MIA. The MIAs should incorporate the lands that include areas related to specific issues within the MIOD: noise areas, renewable energy development, vertical obstructions, safety zones, dark skies areas. The exact boundaries of the overlay and MIAs should be determined through discussions with the Town and the Installation.

As part of the continued coordination between the Marine Corps and the Town, review of development and proposed land use changes need to be shared, particularly when they are located within the MIOD. The zoning ordinance of land development regulations should be updated to incorporate an Installation Representative in the review process to ensure that copies of the development proposals, comprehensive plan amendments, rezonings, and other land use or regulation changes are reviewed for impacts to the Installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval if located within the MIOD.

Additional standards that should be incorporated into regulatory documents include:

- Establish, within each applicable jurisdiction's land use regulations, a MIA with a MIOD. Consider potential boundaries for the MIOD, such as the 5-mile study area and the entire Town of Swansboro.
 - Noise MIOD
 - Renewable Energy Development MIOD
 - Vertical Obstructions MIOD
 - Safety Zone MIOD
 - Dark Skies Policies for residential and commercial uses
 - Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
 - Limit density near high noise areas
- Update CAMA LUPs to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.



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- Expand existing Installation notification policies within the land development regulations that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.
- Review and Update maps of areas of concern for vertical obstructions. Amend each the land development regulations as needed to be consistent and address all identified issues and locations.
- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.
- Local governments should integrate sea level rise and flooding considerations into comprehensive plans, floodplain ordinances, and incorporate resilience activities into capital improvement plans.
- Integrate hazard mitigation, emergency preparedness and resilience with existing community planning policies, ordinances and development decisions to ensure long-term viability, public health and safety of people, the economy, and natural and built environments.
- Consider updating community land use regulations and installation/facility management criteria to encourage use of green infrastructure approaches for stormwater management.
- Consider offering community economic incentives for property owners that willingly implement flood risk reduction practices on their property.
- Consider local hazard disclosure policy requiring hazard disclosure by real estate agents, private sellers, and/or by municipal officials for properties located in the FEMA-designated regulatory floodplain and/or other flood hazard areas, such as storm surge and sea level rise.

8.3.4. Program or Process

Many programs and processes are currently in place to aid the local governments within the study area and the Installation in achieving their objectives. The JLUS identified some additional programs and processes or modifications to those that are already in place.

- Develop a long-range strategic plan for mitigating the impacts of SLR.



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- Monitor sea level and river levels to stay abreast of changes.
- Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing public facilities away from these locations.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion and/or shoreline change.
- State and local governments, together with Camp Lejeune, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies parties responsible for those actions.
- Climate adaptation and resilience efforts should link to the Federal Emergency Management Administration's Community Rating System to encourage community floodplain management practices that exceed minimum National Flood Insurance Premium standards to provide reduced flood insurance premiums for the policy holders.

8.3.5. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the Town into the next phases of implementation:

- Conduct a study to evaluate potential Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction's current development standards are clearly defined.
- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.
- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps



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should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.

- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include evaluation of the natural, built and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.
- Identify vulnerable populations located in areas at risk to existing and potential future flood hazards.
- Inventory and map total property value within areas subject to existing and potential future flood hazards and assess the financial impacts and subsequent impacts to the local tax base. Inventory should include infrastructure, facilities, public and private property.
- Identify level of flood insurance coverage in flood hazard areas.
- Identify strategies for protecting or relocating culturally or historically significant artifacts/structures located in existing and/or potential future flood hazard areas.

8.4. Town of Richlands

The Town of Richlands is located outside of the five-mile study area; however, it is located within close proximity to the Albert J. Ellis Airport, and the airport's activities inform the development of the Town. It is important for the Town to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the Town's needs with guidance of the overall committee. The process below provides a general overview of the steps that the Town can take to implement their portion of the JLUS process. Only the recommendations that identified the Town as the primary or one of the primary responsible parties are discussed.

8.4.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback.



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Communication and coordination strategies include establishing formal procedures such as MOUs or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.

Communication Procedures

Communication procedures are important to establish to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from developments that would conflict with the training mission of the Installation.
- Establish MOU with the Installation and local Police Departments to coordinate issues and establish standards for notifying drone users.
- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

Committees

- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee.

Activities

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.
- Review and Update maps of areas of concern for vertical obstructions. Amend each jurisdiction's land development regulations as needed to be consistent and address all identified issues and locations.



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8.4.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and the Installation to learn from one another. Educational programs include the following:

- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.

8.4.3. Policy

A crucial step for implementing the JLUS within the Town is to lay the foundation within the Town's Land Development Regulations and through the review of development and proposed land use changes. The zoning ordinance or land development regulations should be updated to incorporate an Installation Representative in the review process to ensure that copies of the development proposals, comprehensive plan amendments, rezonings, and other land use or regulation changes are reviewed for impacts to the Installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval.

Additional standards that should be incorporated into regulatory documents include:

- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.
- Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing public facilities away from these locations.



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8.4.4. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the Town into the next phases of implementation:

- Conduct a study to evaluate potential Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction's current development standards are clearly defined.

8.5. Town of Holly Ridge

A portion of the Installation is located adjacent the Town of Holly Ridge, and its impacts are felt throughout the community. It is important for the Town to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the Town's needs with guidance of the overall committee. The process below provides a general overview of the steps that the Town can take to implement their portion of the JLUS process. Only the recommendations that identified the Town as the primary or one of the primary responsible parties are discussed.

8.5.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as MOUs or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.



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Communication Procedures

Communication procedures are important to establish to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, and communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from areas where development would conflict with the training mission of the Installation.
- Establish MOU with the Installation and local Police Departments to coordinate issues and establish standards for notifying drone users of applicable rules and regulations.
- Prepare and adopt a communication memorandum of understanding (MOU) between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

Committees

- Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.
- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee.



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Activities

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.

8.5.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and the Installation to learn from one another. Educational programs include the following:

- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.

8.5.3. Policy

A crucial step for implementing the JLUS within the Town is to lay the foundation within the Town's Land Development Regulations and comprehensive plan by establishing a MIOD or another similar alternative. The MIOD is a geographic boundary consisting of the JLUS study area boundary located within the City. Within the MIOD, specific concerns can be addressed through the MIA. The MIAs should incorporate the lands that include areas related to specific issues within the MIOD: noise areas, renewable energy development, vertical obstructions, safety zones, dark skies areas. The exact boundaries of the overlay and MIAs should be determined through discussions with the Town and the Installation.

As part of the continued coordination between the Marine Corps and the Town, review of development and proposed land use changes need to be shared, particularly when they are located within the MIOD. The zoning ordinance of land development regulations should be updated to incorporate an Installation Representative in the review process to ensure that copies of the development proposals, comprehensive plan amendments, rezonings, and other land use or regulation changes are reviewed for impacts to the



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Installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval if located within the MIOD.

Additional standards that should be incorporated into regulatory documents include:

- Establish, within each applicable jurisdiction’s land use regulations, a MIA with a MIOD. Consider potential boundaries for the MIOD, such as the 5-mile study area and the entire Town of Holly Ridge.
 - Noise MIOD
 - Renewable Energy Development MIOD
 - Vertical Obstructions MIOD
 - Safety Zone MIOD
 - Dark Skies Policies for residential and commercial uses
 - Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
 - Limit density near high noise areas
- Update CAMA LUPs to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.
- Expand existing Installation notification policies within the land development regulations of each jurisdiction that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.
- Review and Update maps of areas of concern for vertical obstructions. Amend each jurisdictions’ land development regulations as needed to be consistent and address all identified issues and locations.
- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.
- Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing public facilities away from these locations.



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8.5.4. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the Town into the next phases of implementation:

- Conduct a study to evaluate potential Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction's current development standards are clearly defined.

8.6. Town of North Topsail Beach

A portion of the Town of North Topsail Beach falls within the five-mile study area, and the activities of the Installation impact the community. It is important for the Town to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

The recommendations summarized in the following section are crafted specifically to meet the Town's needs with guidance of the overall committee. The process below provides a general overview of the steps that the Town can take to implement their portion of the JLUS process. Only the recommendations that identified the Town as the primary or one of the primary responsible parties are discussed.

8.6.1. Communication and Coordination

Communication and Coordination measures can help resolve many of the concerns that were identified within the JLUS and provides opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as MOU or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.



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Communication Procedures

Communication procedures are important to establish to easily facilitate discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, and communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from areas where development would conflict with the training mission of the Installation.
- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.

Committees

- Expand the membership of all Planning Boards/Committees to include an ex officio member from the Installation.
- The Camp Lejeune JLUS TWG should transition to a JLUS Implementation committee and be responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Encourage the Installation to appoint a representative to sit on the City/County Civic Affairs Committee.
- Establish a JLUS coordination committee.



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Activities

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.

8.6.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and the Installation to learn from one another. Educational programs include the following:

- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to distribute information about the impacts of vertical obstructions on the mission of the Installation.
- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.
- Consider development of a community hazard/disaster education and outreach plan.

8.6.3. Policy

A crucial step for implementing the JLUS within the Town is to lay the foundation within the Town's Land Development Regulations and comprehensive plan by establishing a MIOD or another similar alternative. The MIOD is a geographic boundary consisting of the JLUS study area boundary located within the City. Within the MIOD, specific concerns can be addresses through the MIA. The MIAs should incorporate the lands that include areas related to specific issues within the MIOD: noise areas, renewable energy development, vertical obstructions, safety zones, dark skies areas. The exact boundaries of the overlay and MIAs should be determined through discussions with the Town and the Installation.

As part of the continued coordination between the Marine Corps and the Town, review of development and proposed land use changes need to be shared, particularly when they are located within the MIOD. The zoning ordinance of land development regulations should be updated to incorporate an Installation Representative in the review process to ensure that copies of the development proposals, comprehensive



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plan amendments, rezonings, and other land use or regulation changes are reviewed for impacts to the Installation. In particular, telecommunication towers and renewable energy projects should receive input from the Installation before approval if located within the MIOD.

Additional standards that should be incorporated into regulatory documents include:

- Establish, within each applicable jurisdiction’s land use regulations, a MIA with a MIOD. Consider potential boundaries for the MIOD, such as the 5-mile study area and the entire Town of North Topsail Beach.
 - Noise MIOD
 - Renewable Energy Development MIOD
 - Vertical Obstructions MIOD
 - Safety Zone MIOD
 - Dark Skies Policies for residential and commercial uses
 - Restrictions of the placement of churches, schools, meeting halls, and other large assembly uses near high noise areas
 - Limit density near high noise areas
- Update CAMA LUPs to incorporate the MIA, MIOD, and other military compatibility policies. Update and adopt future land use maps, supporting goals, objectives, and policies. Update zoning regulations to incorporate MIA and MIOD.
- Expand existing Installation notification policies within the land development regulations of each jurisdiction that require formal notification of land use and zoning changes to include providing detailed site plans, project build out descriptions, elevations and construction plans, when necessary and where appropriate.
- Review and update maps of areas of concern for vertical obstructions. Amend each the land development regulations as needed to be consistent and address all identified issues and locations.
- Establish Dark Sky Lighting requirements where appropriate within the study area to minimize urban sky glow and light trespassing into adjacent properties. Incorporate development standards into zoning regulations and building codes, including caveats for lighting for safety. Partner with Duke Energy and Jones-Onslow Electric Membership Corporation in this effort.
- Local governments should integrate sea level rise and flooding considerations into comprehensive plans, floodplain ordinances, and incorporate resilience activities into capital improvement plans.



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- Integrate hazard mitigation, emergency preparedness, and resilience with existing community planning policies, ordinances and development decisions to ensure long-term viability, public health and safety of people, the economy, and natural and built environments.
- Consider updating community land use regulations and installation/facility management criteria to encourage use of green infrastructure approaches for stormwater management.
- Consider offering community economic incentives for property owners that willingly implement flood risk reduction practices on their property.
- Consider local policy requiring hazard disclosure by real estate agents, private sellers, and/or by municipal officials for properties located in the FEMA-designated regulatory floodplain and/or other flood hazard areas, such as storm surge and sea level rise.

8.6.4. Program or Process

Many programs and processes are currently in place to aid the local governments within the study area and the Installation in achieving their objectives. The JLUS identified some additional programs and processes or modifications to those that are already in place.

- Develop a long-range strategic plan for mitigating the impacts of SLR.
- Monitor sea level and river levels to stay abreast of changes.
- Develop strategies for minimizing potential conflict in identified sensitive areas with the greatest potential to impact the training mission of the Installation by directing public facilities away from these locations.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion and/or shoreline change.
- State and local governments, together with Camp Lejeune, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies parties responsible for those actions.
- Climate adaptation and resilience efforts should link to the Federal Emergency Management Administration's Community Rating System to encourage community floodplain management practices that exceed minimum National Flood Insurance Premium standards to provide reduced flood insurance premiums for the policy holders.



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8.6.5. Study

The implementation of the JLUS may lead to additional studies or projects that need to take place before the next steps can be implemented. The following projects or studies will lead the Town into the next phases of implementation:

- Conduct a study to evaluate potential Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction’s current development standards are clearly defined.
- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.
- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.
- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include evaluation of the natural, built and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.
- Identify vulnerable populations located in areas at risk to existing and potential future flood hazards.
- Inventory and map total property value within areas subject to existing and potential future flood hazards and assess the financial impacts and subsequent impacts to the local tax base. Inventory should include infrastructure, facilities, public and private property.



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- Identify level of flood insurance coverage in flood hazard areas.
- Identify strategies for protecting or relocating culturally or historically significant artifacts/structures located in existing and/or potential future flood hazard areas.

8.7. Camp Lejeune

Although the JLUS is focused primarily on policies, programs, plans, and studies that can be conducted by local governments, the Installation can contribute as well. The recommendations summarized in the following section are specific to the needs and abilities of the Installation. The process below provides a general overview of the steps that the Installation can take to implement their portion of the JLUS process. Only the recommendations that identified the Installation as the primary responsible party were discussed.

It is important for the Installation to assist in the establishment of the JLUS Implementation Committee and to serve as an active member of the committee. The JLUS Implementation Committee will be responsible for monitoring and coordinating with all participating entities for the overall implementation of the JLUS.

8.7.1. Communication and Coordination

Communication and coordination measures can help resolve many of the concerns that were identified within the JLUS. Communication and coordination provide opportunities to share information and a forum to receive feedback. Communication and coordination strategies include establishing formal procedures such as a MOU or formal processes such as recurring meetings. These recommendations have been broken down into communication procedures, committees, and activities.

Communication Procedures

Communication procedures are important to establish to easily facilitated discussion when the need arises. A frequently used method is a MOU. A MOU is a formal agreement established between multiple parties. Although it is not legally binding, it is a valuable agreement that indicates an intended common action. They aid in establishing the role of each party and can provide guidance for intended future actions. The MOU provides a tool that can be referenced when a question arises.

- Use a MOU to identify and describe a formal development notification process among the jurisdictions / agencies and the Installation. Outline the stage in the development coordination process timeline where a formal response is required by the Installation. Use



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the MOU to establish formal policies and a mechanism to seek regular input from the Installation representatives for technical assistance (i.e. code updates, comprehensive plan updates, development review processes, communication tower siting). Include in the MOU a process to review jurisdictional CIPs to identify projects and expansion of infrastructure that may conflict with the mission of the installation.

- Conduct annual reviews of jurisdictional CIPs with the Installation to determine compatibility with the mission of the Installation.
- Work with ONWASA, Pluris, and the municipalities to establish policies to guide water and sewer away from areas where development would conflict with the training mission of the Installation.
- Establish a process to coordinate with state and federal agencies. Explore expanding existing coordination through state groups such as the North Carolina Military Affairs Commission and local groups such as the New River Round Table as well as creating new coordination linkages through the state's Department of Marine Fisheries and other state and federal agencies.
- Use the CPG to coordinate a study between the Installation, MPO, NCDOT, and other agencies as necessary to evaluate the need and potential locations for an additional gate for New River Air Station.
- Continue coordination between the MPO and RPO and the installation regarding transportation issues.
- Coordinate with the North Carolina Beach and Inland Waterway Association on dredging activities.
- Establish MOU a with the Installation and local police departments to coordinate issues and establish standards for notifying drone users.
- Coordinate with Pender County on land use decisions in close proximity to the western boundary of the installation to ensure that land use decisions in the adjacent county do not adversely affect the Installation.
- Prepare and adopt a communication MOU between the Installation, Onslow County, the City of Jacksonville, the Town of Swansboro, the Town of Holly Ridge, the Town of North Topsail Beach, and the Town of Richlands outlining a procedure for future communications.
- Establish regularly scheduled meetings between local jurisdictions and the Installation to discuss proposed land use changes, environmental concerns, construction projects, and other issues.
- Establish coordination between the Installation and the surrounding communities regarding urban design at Installation access points.



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Committees

- Coordinate with municipalities to establish procedures to identify proposed projects that may potentially involve a source of frequency emissions (including large scale Wi-Fi).
- Designate a person from the Installation to serve as an ex officio member of Planning Boards for the municipalities around the Installation.
- Establish a subcommittee of the CPG, including representatives of local governments, the Installation, boaters, fishermen, and other groups as necessary to conduct a study of water-based users to identify who the users are, launch areas, and primary use of the River. Consider using the New River Round Table group as this subcommittee.
- Consider establishing a transportation subcommittee of the CPG consisting of County and Municipal staff, NCDOT, and Installation personnel to monitor and address transportation issues affecting the Installation and the community.
- Participate in the transition of the Camp Lejeune JLUS TWG into a JLUS Implementation committee responsible for monitoring the implementation of the recommended JLUS strategies and act as a forum for continued communication and sharing of information and current events associated with the JLUS.
- Designate a representative to sit on the City/County Civic Affairs Committee.
- Participate in the establishment of a JLUS coordination committee.

Activities

- Expand outreach to the boating and fishing community including the following:
 - Engagement of boating community through marinas and boating associations,
 - Expanded radio communications,
 - Add information to Coast Guard publications,
 - Add information to Division of Marine Fisheries publications,
 - Evaluate and monitor signage and buoy placement.
 - Prepare and distribute maps that clearly define the sections of the New River, Atlantic Intracoastal Water Way, and Browns Inlet used by the military for training.
 - Provide educational material on Municipal and County websites and associated agencies (including the Division of Marine Fisheries) to notify of the potential dangers of entering the training areas.
 - Provide additional signage at boat ramps and trailheads to notify commercial and recreational users of the River, inlets, and Atlantic Intracoastal Water Way of existing training on Marine Corps lands and the dangers of UXO and Munitions areas.



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- Coordinate with the City of Jacksonville on the location and construction of the proposed “oyster highway” within the New River.
- Through review of the land development regulations for each jurisdiction, encourage the local government to limit the development of nursing homes, churches, hospitals, schools, manufactured home parks, and other similar uses within specified noise contours.
- Through review of municipal planning documents, encourage local governments to incorporate noise contour maps into municipal planning documents.
- Establish a clearinghouse website to provide updates to the community on Installation issues such as scheduled training events, controlled burns, night training, mariner notices, etc.
- Expand community outreach efforts to promote social media sites, websites, and other platforms utilized by the Installation to inform the public of ongoing and upcoming issues and events.
- Provide links to the Installation’s web page, contact information, relevant activities, etc. to municipalities for posting on municipal web pages.
- Identify and publish points of contact for the community and the Installation to make the methods of contacting the Installation widely known and easily identifiable.
- Establish a community outreach program that includes tours of the Installation, educational brochures, and cyclical community open houses. The open houses would provide an overview of training activities, construction projects, and other items of interest while providing citizens the opportunity to be heard.
- Participate in local governments’ telecommunication tower siting and approval process.

8.7.2. Education

An informed community can minimize misunderstandings and provide the knowledge needed leading to more informed decision making. Several recommendations throughout the JLUS provide opportunities for the community and the Installation to learn from one another. Educational programs include the following:

- Develop and distribute information to property owners to provide details on applicable regulations that govern development within the MIOD.
- Craft educational materials including pamphlets, brochures, or handouts, and share with builders, landowners, and other interested parties through websites and meetings to



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distribute information about the impacts of vertical obstructions on the mission of the Installation.

- Provide educational information (such as a pamphlet or website) on reducing the potential for hazardous bird and wildlife attractions that may impede safe air operations to local jurisdictions, agencies, and landowners in the region.
- Educate the general public on the potential dangers of flying drones near the military installation.
- Educate the general public on the Installation's importance, both nationally and locally.
- Educate the general public on where the Installation's boundaries are and the dangers of unexploded munitions.
- Provide information to jurisdictions, developers and interested citizens relative to Installation training areas and the potential noise levels from such activities.
- Educate the community on issues including noise frequency and intensity and efforts the Installation undertakes to reduce noise or to schedule exercises to reduce the impact on the community.
- Provide training to local officials and municipal departments so they can deliver an educated response to the community in regard to military impacts associated with noise. Additionally, at least annually, hold open houses where interested citizens are able to gather information.
- Increase community awareness of training schedules and military operations through the use of local media sources, websites, newsletters, and outreach functions.
- Educate the public on how the Installation helps to preserve habitat and protects threatened and endangered species.

8.7.3. Program or Process

Many programs and processes are currently in place to aid the local governments within the study area and the Installation in achieving their objectives. The JLUS resulted in some additional programs and processes or modification to those that are already in place.

- Continue to implement the Rail Study and allow the joint use of the Installation's freight line, thereby expanding the economic base of the community and potentially saving the Installation costs associated with maintenance of the rail line.
- Identify funding for dredging activities.
- Develop strategies for the disposal of dredge materials.
- Explore additional ways to maintain navigation channels.



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- Expand agricultural land protections and programs within the MIOD. Continue to work with the Federal and State governments to identify funding opportunities for the creation of long-term leases that enable farm lands to remain in Agricultural use.
- Develop a long-range strategic plan for mitigating the impacts of SLR.
- Monitor sea level and river levels to stay abreast of changes.
- Upgrade infrastructure to address potential impacts from SLR when funding permits.
- Work with local governments and non-profit organizations to establish a regional committee to continue coordination between the Installation and the community on preserving wildlife habitat, prioritize and focus conservation efforts, and reduce duplication of efforts.
- Pursue funding through the REPI and Sentinel Landscapes Partnership Program to provide opportunities for habitat funding.
- Establish drone restrictions within the MIOD for the New River Air Station and Albert J. Ellis Airport approach zones and portions of the airspace.
- Work with the City of Jacksonville and Onslow County to formulate solutions to the issues revealed within the aquifer drawdown study. These solutions may include alternative water supply sources, water conservation efforts, and the use of reclaimed water.
- Consider updating community land use regulations and installation/facility management criteria to encourage use of green infrastructure approaches for stormwater management.
- When planning new critical infrastructure and facilities, consider existing and potential future impacts from coastal hazards, including coastal flooding, storm surge, sea level rise, coastal erosion and/or shoreline change.
- Consider integrating natural resource areas for resilience with ongoing conservation efforts, easements, and land acquisitions that promote uses and activities compatible with military operations.
- State and local governments, together with Camp Lejeune, should develop a disaster response and recovery plan that includes short- and long-term actions and policies and identifies parties responsible for those actions.

8.7.4. Study

The implementation of the JLUS can often lead to additional studies or projects that need to take place before the next steps can be implemented. The studies are primarily related to sea level rise and dredging



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but also include land acquisition, traffic, and other subject matter. The following projects or studies will lead the Installation into the next phase of implementation:

- Work with local governments to conduct a study to evaluate the effects of personnel increases on public facilities, including school facilities. A study should be conducted for the current proposed increase in MARSOC personnel as well as additional Installation personnel increases in the future. Evaluations should include school facilities, water, sewer, transportation, and housing availability.
- Conduct a study to examine the land uses around training facilities used by Camp Lejeune that are remote to the Installation. These areas include training facilities in Jones and Pender Counties as well as other areas. The land uses around these facilities should be examined for compatibility with the training activities occurring at these locations; the study should contain recommendations regarding preserving or increasing the compatibility of surrounding land uses as well as their operations and maintenance.
- Work with local governments to conduct a study to analyze the transfer of development rights from agricultural areas adjacent to the Installation's training areas.
- Work with local governments to conduct a study to evaluate and update the current Flight Path Overlay Districts. This action could include:
 - Identify existing vertical obstruction issues
 - Ensure compliance with FAA Part 77 requirements when establishing height regulations or restrictions
 - Ensure that each jurisdiction's current development standards are clearly defined.
- Coordinate with the MPO to conduct a study to expand current transit routes available to the Installation.
- Conduct a study to identify areas within Pender County that present greatest risks to the Installation training mission and develop strategies to mitigate such risks
- Identify areas of greatest light pollution.
- Conduct a study to identify the critical elevations associated with sustainment of various operations and resources on the Installation and within the community and compare them to the various SLR projections to better understand the risk to each. This may include, but is not limited to finished floor elevations of the different buildings, edge of pavement elevations, fixed piers or waterfront structures, maneuver trails, range features, etc.



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- Roadways serving the Installation, interior access routes, and railroad embankments should also be evaluated to understand their risk to coastal flooding and possible effects to training operations.
- Perform a feasibility study and model the benefits that large-scale marsh protection/enhancement of coastal flood storage systems could have on dissipating storm surge within the broader vicinity of the Installation.
- Explore adaptive management techniques for mitigating the effects of sea level rise.
- Conduct a study to address gate security concerns across the installation.
- Evaluate the feasibility of encroachment partnering agreements (allowed pursuant to Title 10 USC 2684a) with eligible entities to protect the Installation's gates from incompatible development.
- Identify the areas most at risk for spectrum encroachment.
- Use a MOU between the Installation, the City of Jacksonville, and Onslow County to coordinate the study and identification of issues surrounding the drawdown of the aquifer in the vicinity of the supply wells.
- State and local officials, together with Camp Lejeune, should identify critical infrastructure and facilities vulnerable to sea level rise and flooding that could impact the ability of those assets to properly function, ensure continued military operations, and serve the communities. Identified flood hazards should be incorporated into operations and planning procedures.
- State and local officials, together with Camp Lejeune, should develop a detailed inventory of critical infrastructure and facilities necessary for continued military operations. Maps should be prepared of the critical facilities, transportation network, water and wastewater systems, power grid, and energy networks, including elevations and location in relation to existing and potential future flood hazards areas. Operation and maintenance plans and policies should be developed for the identified critical infrastructure and facilities.
- Local governments and the State of North Carolina, together with Camp Lejeune, should assess how well positioned they are to prepare for, respond to, and recover from sea level rise and coastal flooding. The assessment framework should include evaluation of the natural, built and social environments; identify specific points for intervention; and respond to opportunities to enhance flood resilience.



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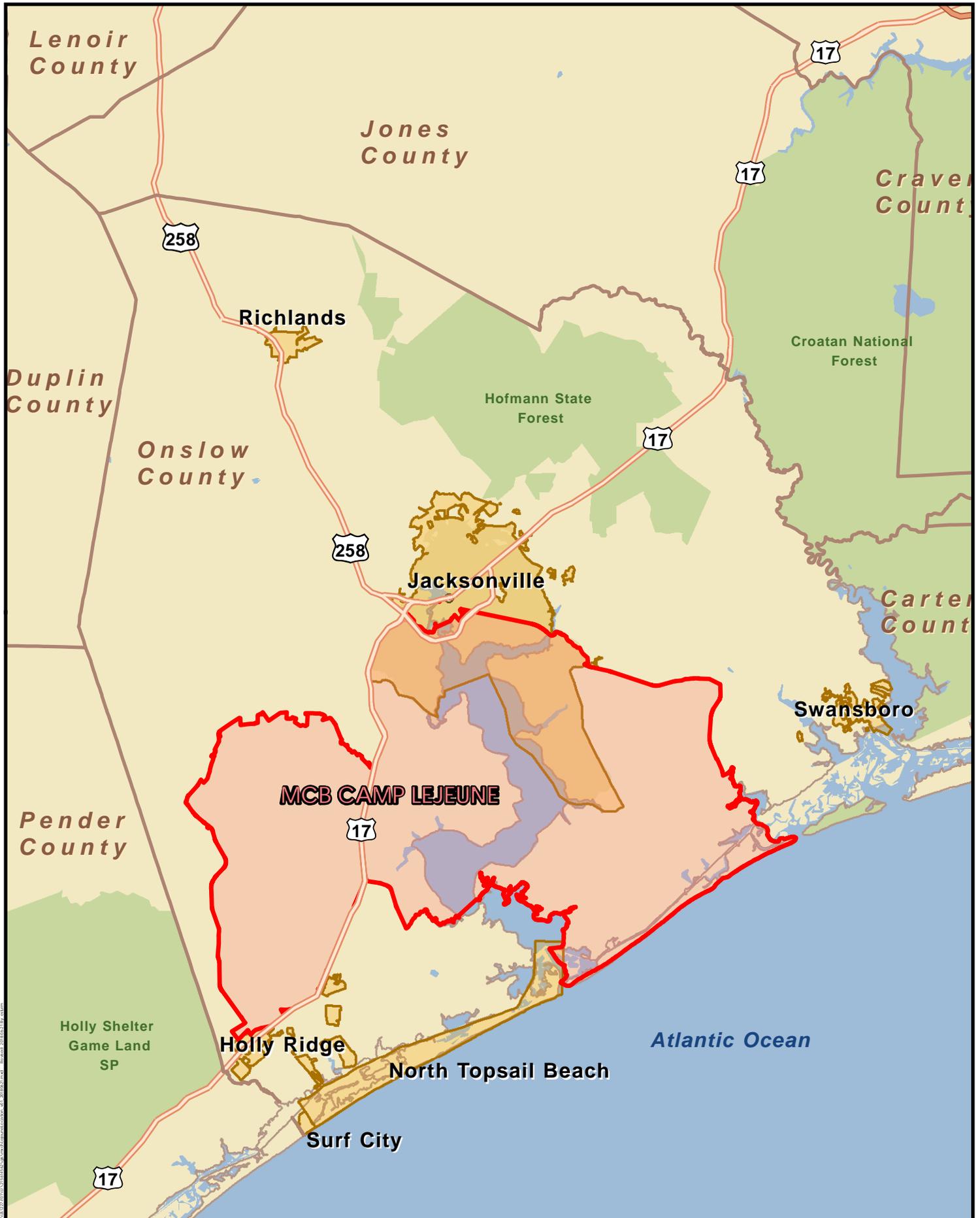
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- Identify strategies for protecting or relocating culturally or historically significant artifacts/structures located in existing and/or potential future flood hazard areas.



Appendix A Maps





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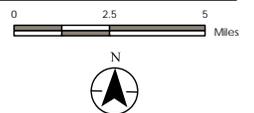


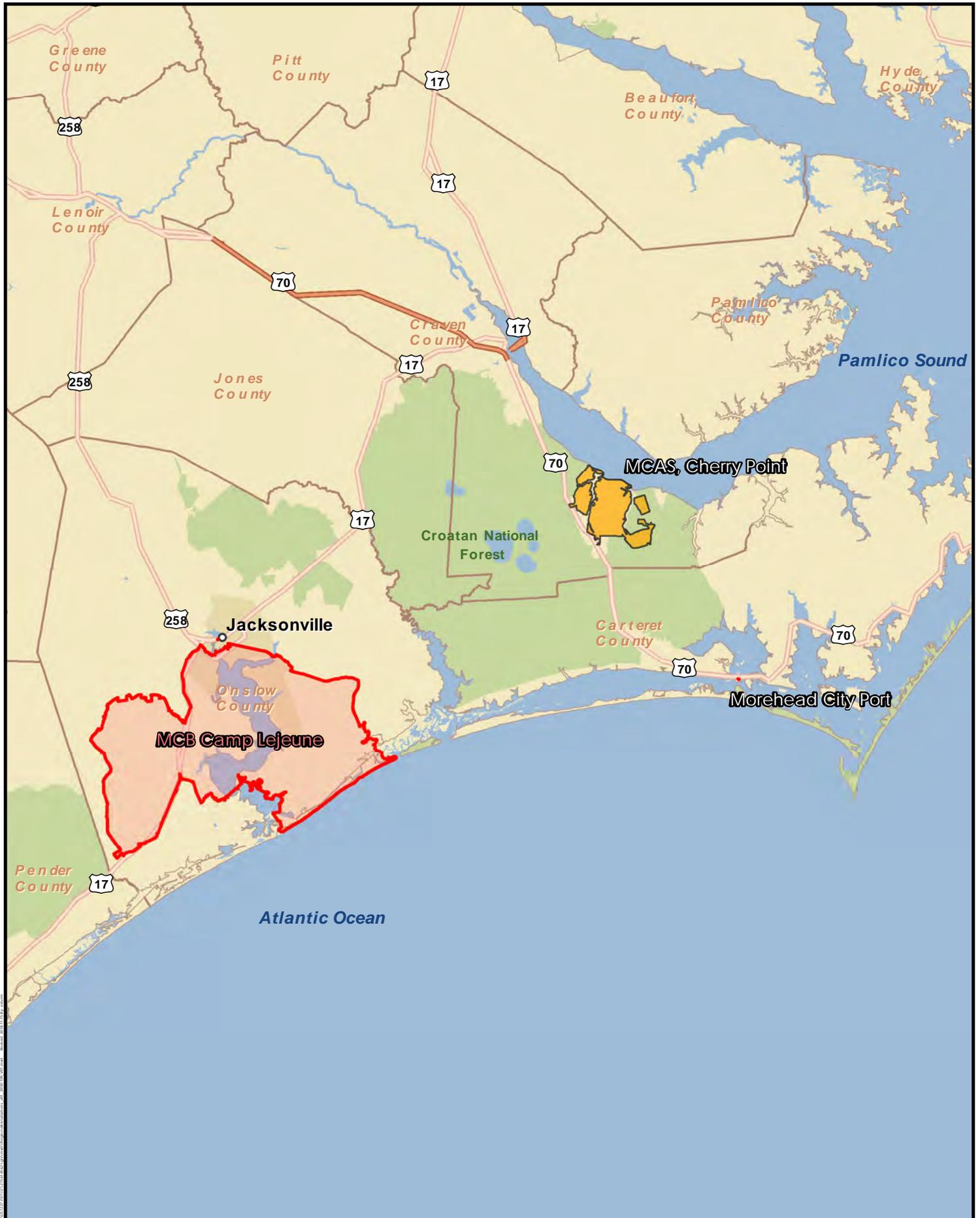
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Camp Lejeune Location Map

June 2018

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tel 941.907.6900
fax 941.907.6911





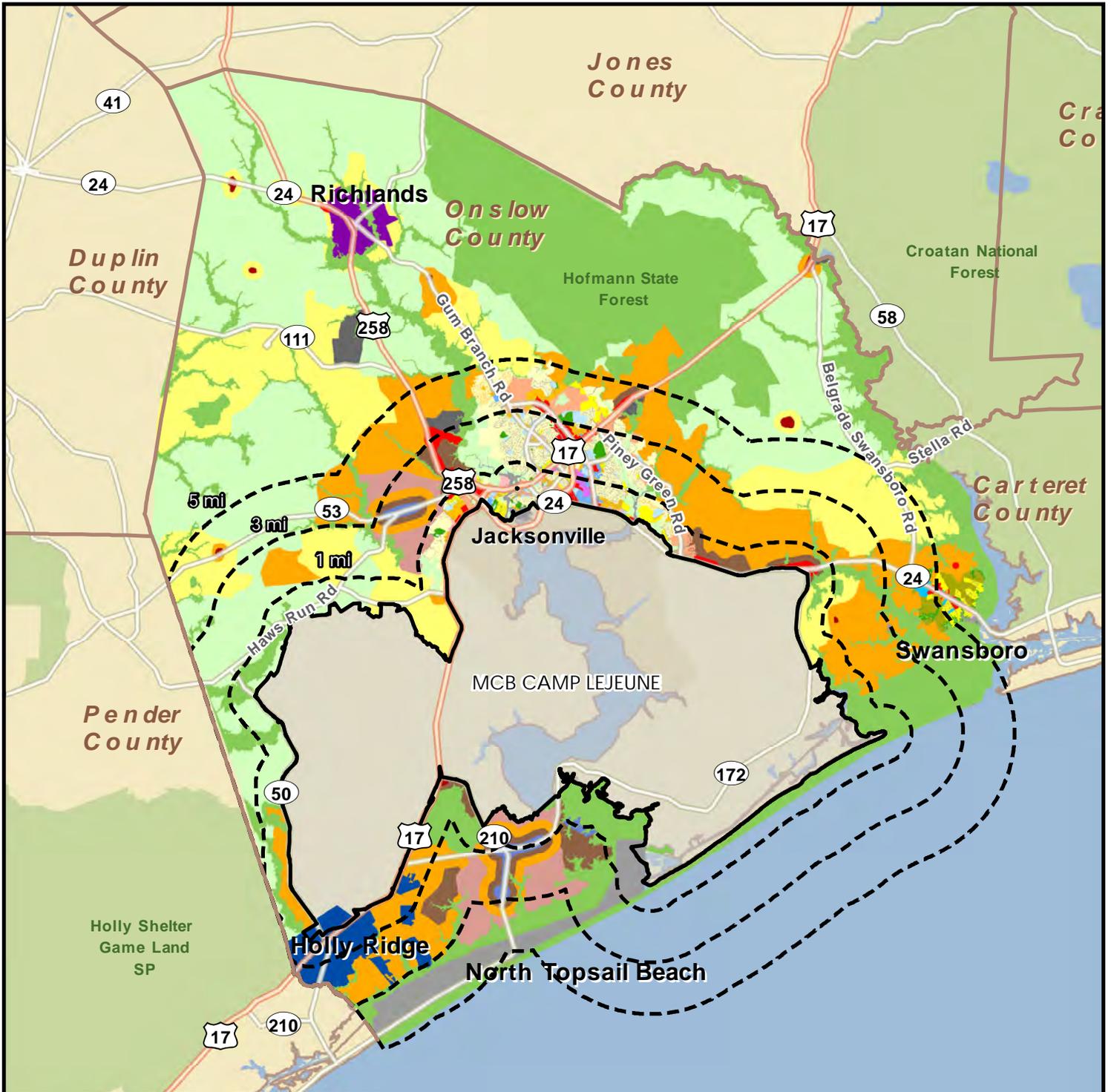
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Camp Lejeune Regional Installation Map

November 2018

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LEGEND

Lejeune Boundary	City of Jacksonville FLU Conservation	Regional Commercial	Industrial
Swansboro FLU Commercial	City of Jacksonville FLU Park	Industrial	Local Commercial Activity Center
Swansboro FLU Commercial Central Business	City of Jacksonville FLU Low Density Residential	Onslow County FLU Agriculture/Forestry	Medium Density Residential
Swansboro FLU Office Institutional	City of Jacksonville FLU Moderate Density Residential	Area Wide Commercial Activity Center	Military
Swansboro FLU Light Industrial	City of Jacksonville FLU High Density Residential	Community Growth Activity Center	Non Participating Jurisdiction
Swansboro FLU Low Density Residential	City of Jacksonville FLU Institutional/Public	Community Growth Area	Richlands
Swansboro FLU Medium Density Residential	City of Jacksonville FLU Office	Conservation	Rural Residential
Swansboro FLU High Density Residential	City of Jacksonville FLU Mixed Use	High-Density Residential	
Swansboro FLU Conservation	City of Jacksonville FLU Neighborhood Commercial	Holly Ridge	



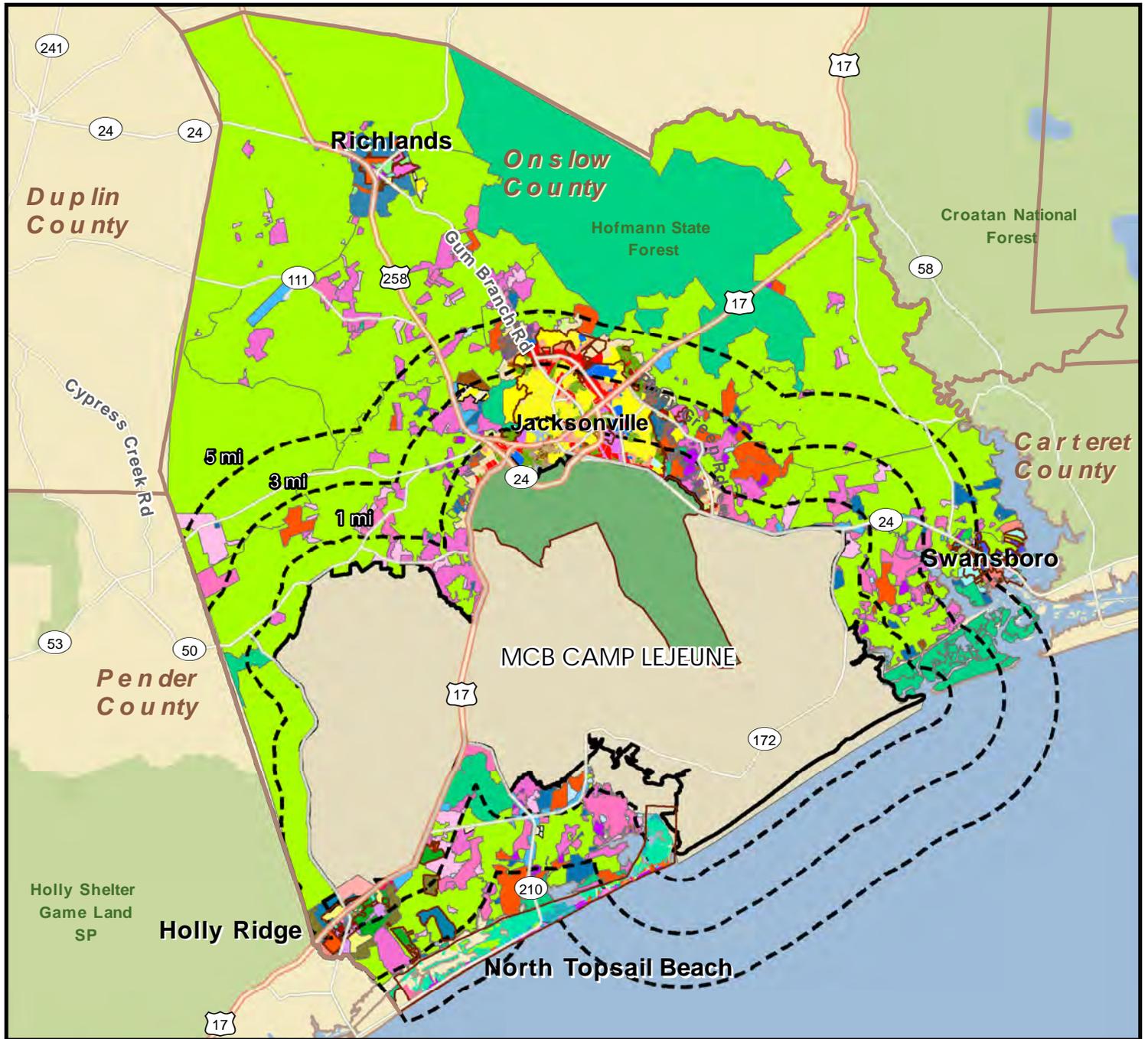
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Onslow County Future Land Use Map

December 2018

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LEGEND

North Topsail Beach Zoning

- B-1
- B-2
- CON-D
- CUR-15
- CUR-5
- CUR-8
- MHR
- R-10
- R-15
- R-20
- R-5
- R-8
- RA

Holly Ridge Zoning

- C
- LI
- MFR
- NB
- OAR
- R-10
- R-10A
- R-15
- R-15A
- R-20
- R-5A
- R-7.5
- R-7.5A
- RA

Swansboro Zoning

- B-1
- B-2
- B-2HDO
- B-3
- CON
- G/E
- M-1
- MHS
- MHS-15SF
- PUD
- R-10SF
- R-20SF
- R-40SF
- R-6

Richlands Zoning

- R-6SF
- R-8SF
- RA
- C-1
- C-2
- C-3
- R-10
- R-15
- R-20
- R-6
- R-8
- RM-6
- RM-8

County Zoning

- CB
- CBCZ
- CON
- CZCB
- CZHB
- CZR-10
- CZR-5
- HB
- HB(CZ)
- IND-H
- IND-L
- MIL
- O-I
- R-10

- R-15
- R-20
- R-30M
- R-5
- R-8M
- R-90
- RA
- RA(CZ)

City of Jacksonville Zoning

- CC
- DTB
- DTR
- IND
- MR

- NC
- OI
- PDR
- RMF-HD
- RMF-LD
- RSF-10
- RSF-20
- RSF-40
- RSF-5
- RSF-7



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Onslow County Zoning Map

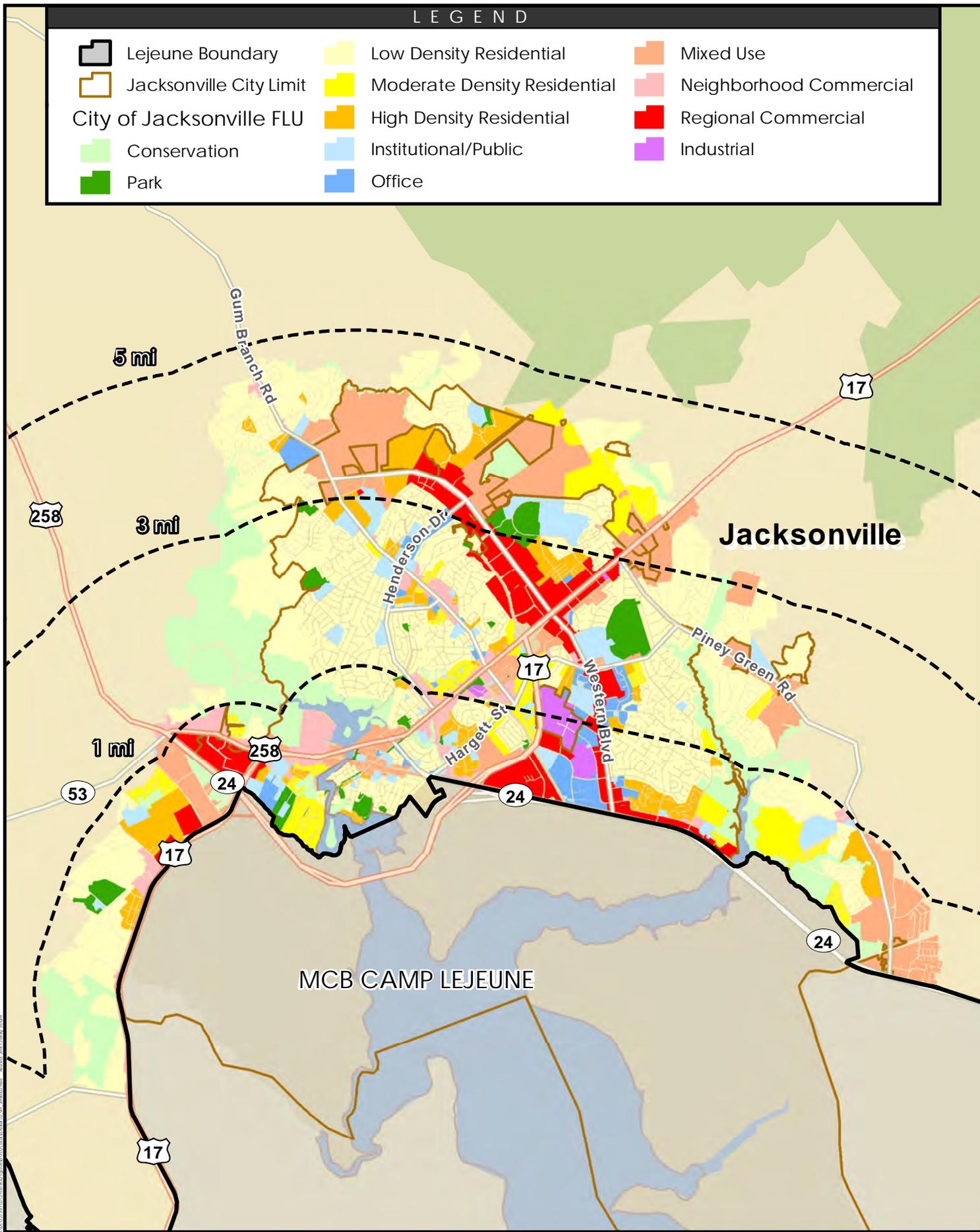
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LEGEND

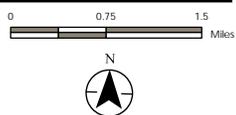
	Lejeune Boundary		Low Density Residential		Mixed Use
	Jacksonville City Limit		Moderate Density Residential		Neighborhood Commercial
	City of Jacksonville FLU		High Density Residential		Regional Commercial
	Conservation		Institutional/Public		Industrial
	Park		Office		



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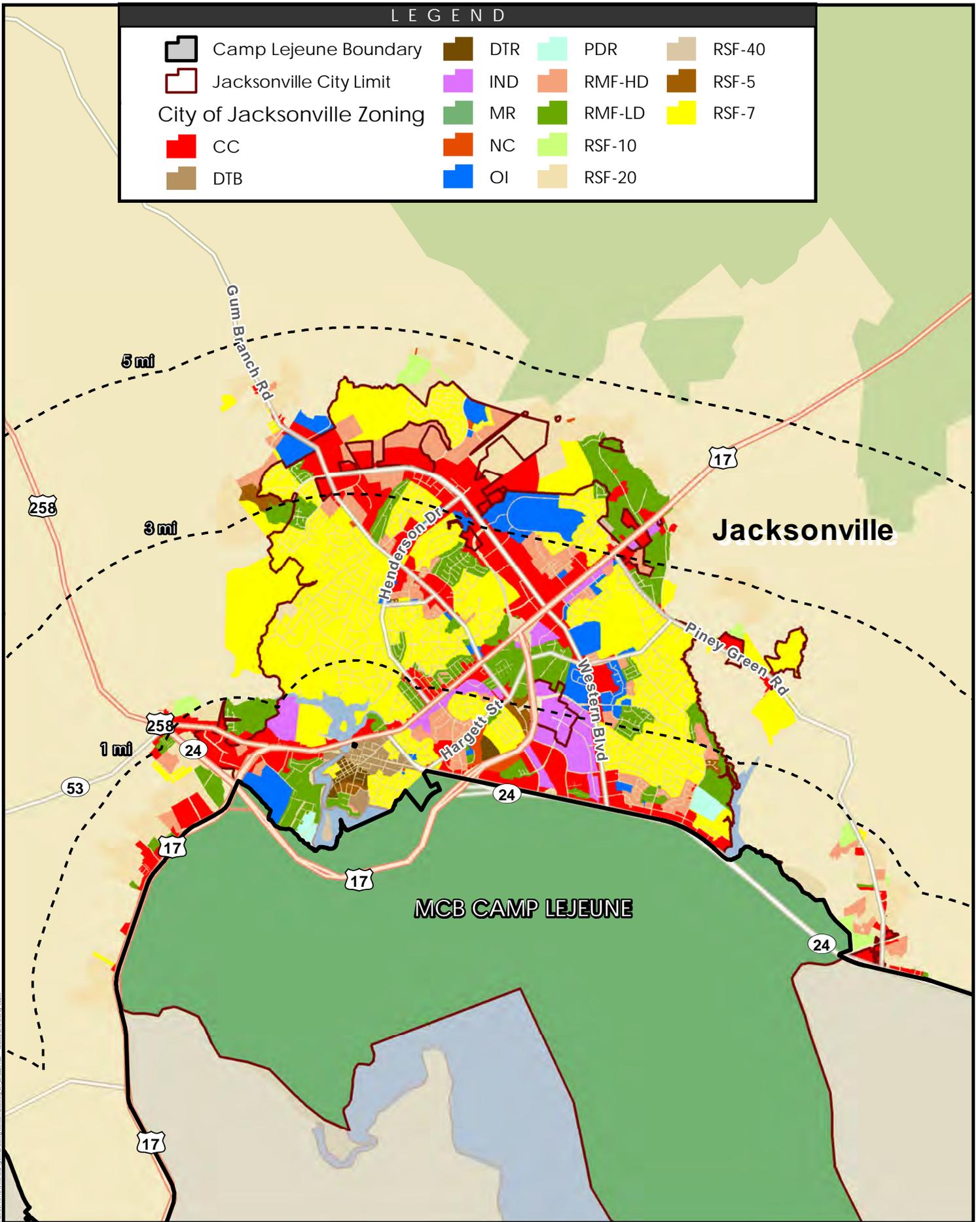
City of Jacksonville
 Future Land Use Map
 December 2018

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 fax 941.907.6911



LEGEND

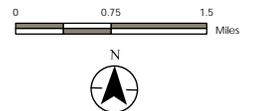
	Camp Lejeune Boundary		DTR		PDR		RSF-40
	Jacksonville City Limit		IND		RMF-HD		RSF-5
City of Jacksonville Zoning					MR		RMF-LD
	CC		NC		RSF-10		RSF-7
	DTB		OI		RSF-20		

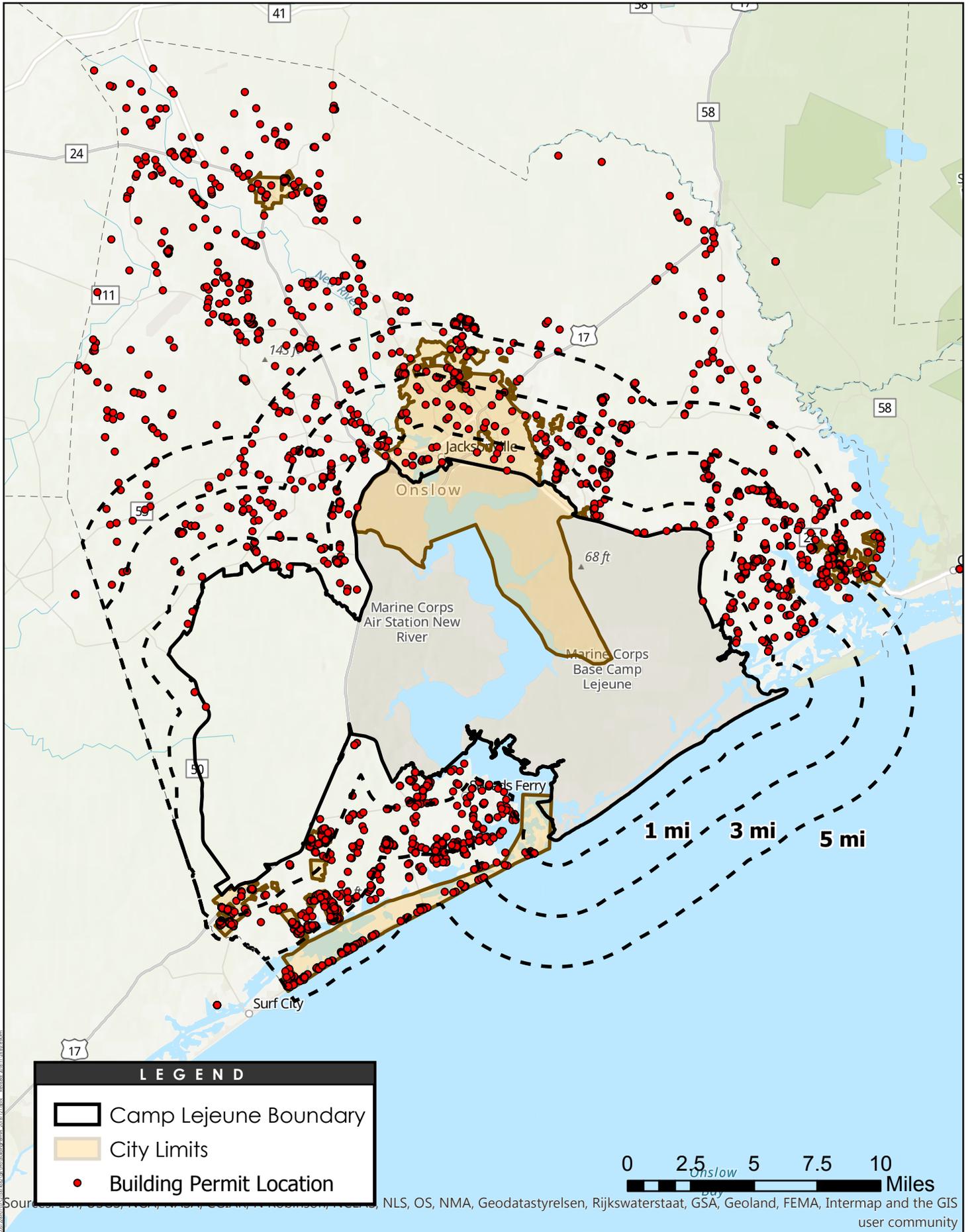


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City of Jacksonville
Zoning Map
December 2018

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fax 941.907.6911





Source: County, GSA, Geoland, FEMA, Intermap and the GIS user community

Onslow County Building Permit Density, 2014-2018

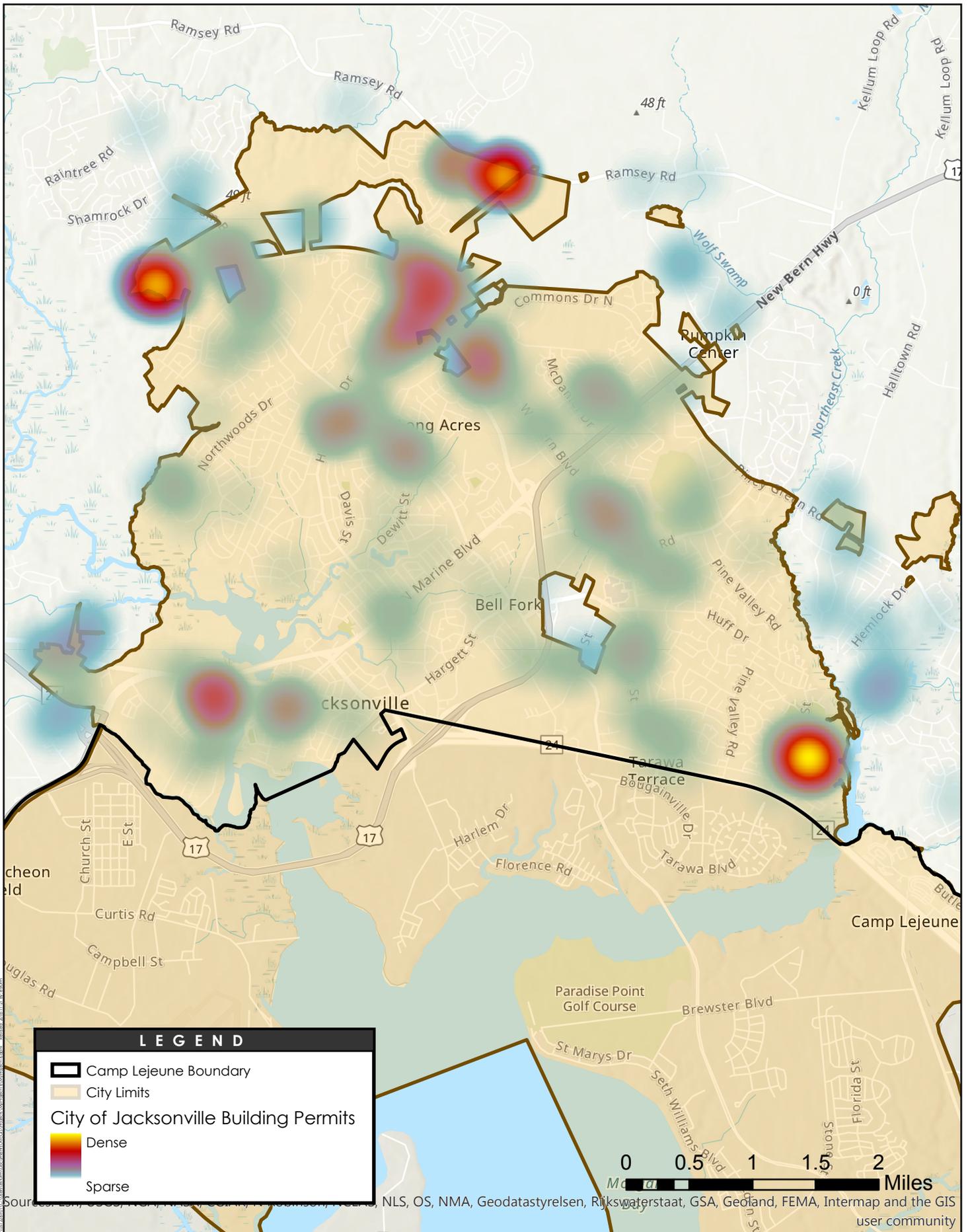
November 2018



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fax 813.223.0009





Source: City of Jacksonville, Florida Department of Planning and Economic Development, 2013-2018. Data provided by Stantec Consulting Services Inc. NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



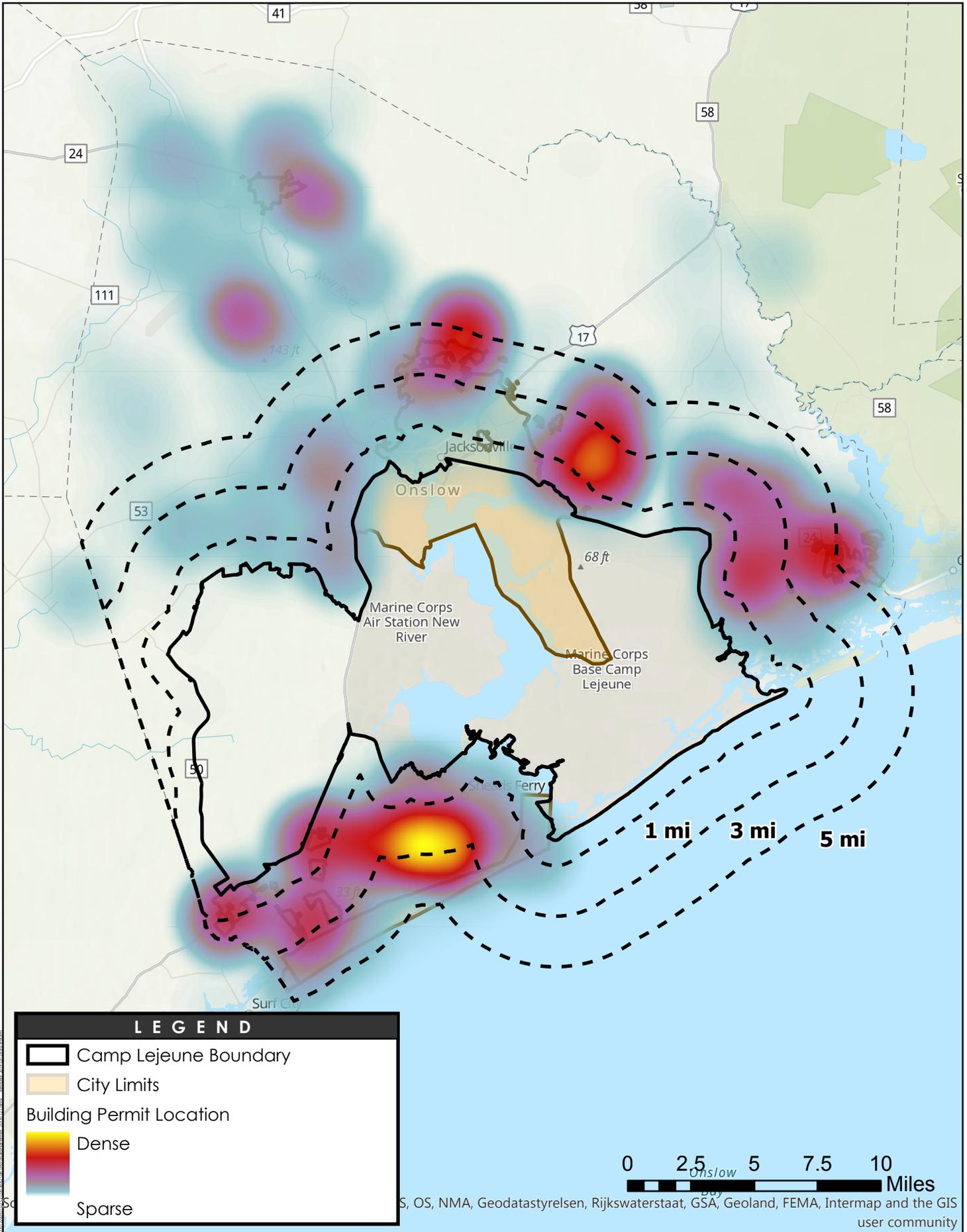
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City of Jacksonville Building Permit Density, 2013-2018

November 2018

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LEGEND

- Camp Lejeune Boundary
- City Limits
- Building Permit Location
 - Dense
 - Sparse



S, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community



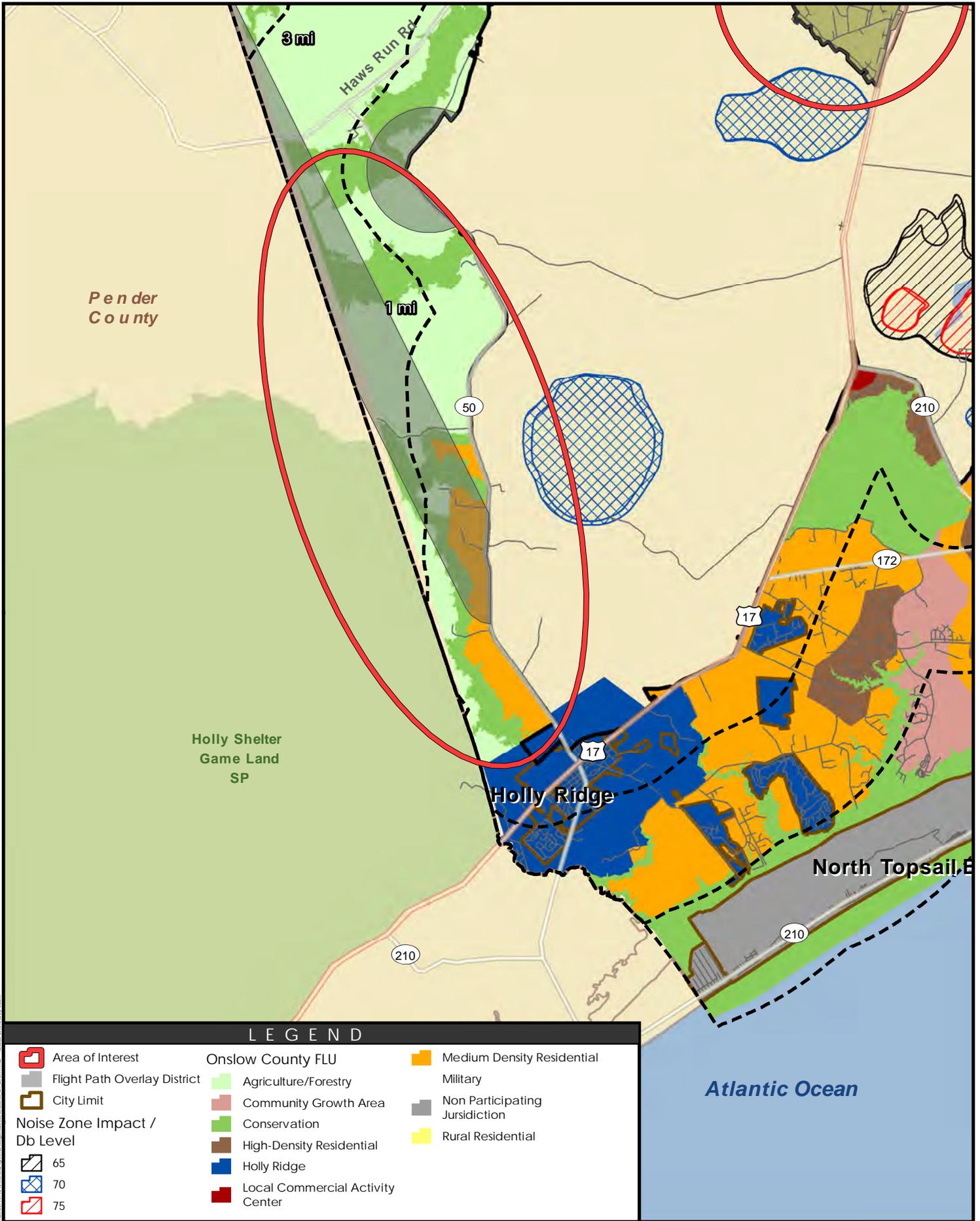
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Onslow County Building Permit Density, 2014-2018

March 2019

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LEGEND

- | | | |
|-------------------------------------|----------------------------------|--------------------------------|
| Area of Interest | Onslow County FLU | Medium Density Residential |
| Flight Path Overlay District | Agriculture/Forestry | Military |
| City Limit | Conservation | Non-Participating Jurisdiction |
| Noise Zone Impact / Db Level | High-Density Residential | Rural Residential |
| 65 | Holly Ridge | |
| 70 | Local Commercial Activity Center | |
| 75 | | |



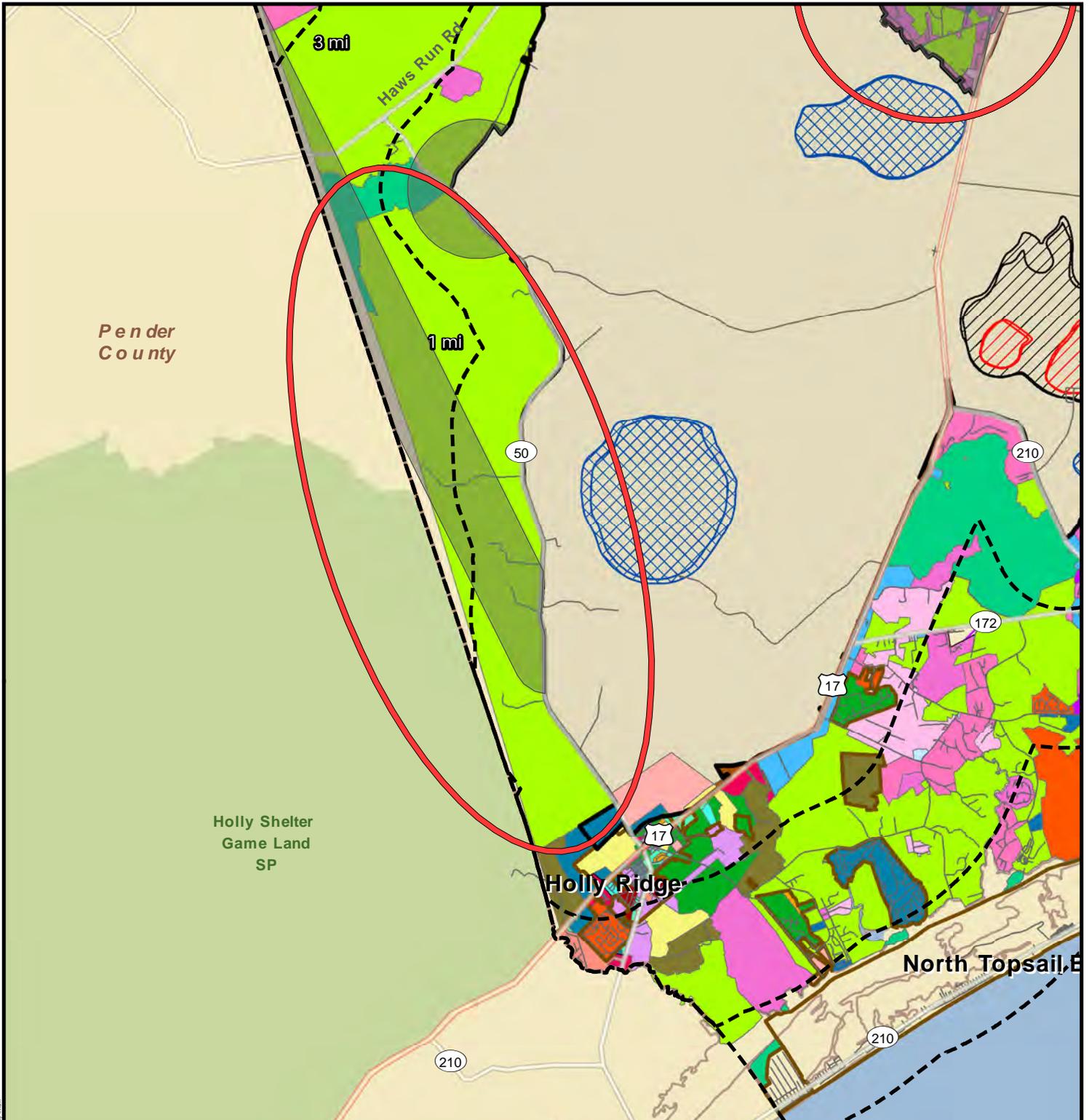
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GSRA West Area Map with FLU

December 2018

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LEGEND

Area of Interest	County Zoning CB	R-15	LI	R-20
Flight Path Overlay District	CON	R-20	MFR	R-5A
City Limit	CZR-5	R-30M	NB	R-7.5
Noise Zone Impact / Db Level	HB	R-5	OAR	R-7.5A
65	IND-H	R-8M	R-10	RA
70	MIL	RA	R-10A	
75	R-10	Holly Ridge Zoning	R-15	
		C	R-15A	

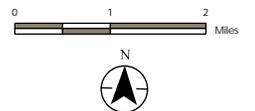


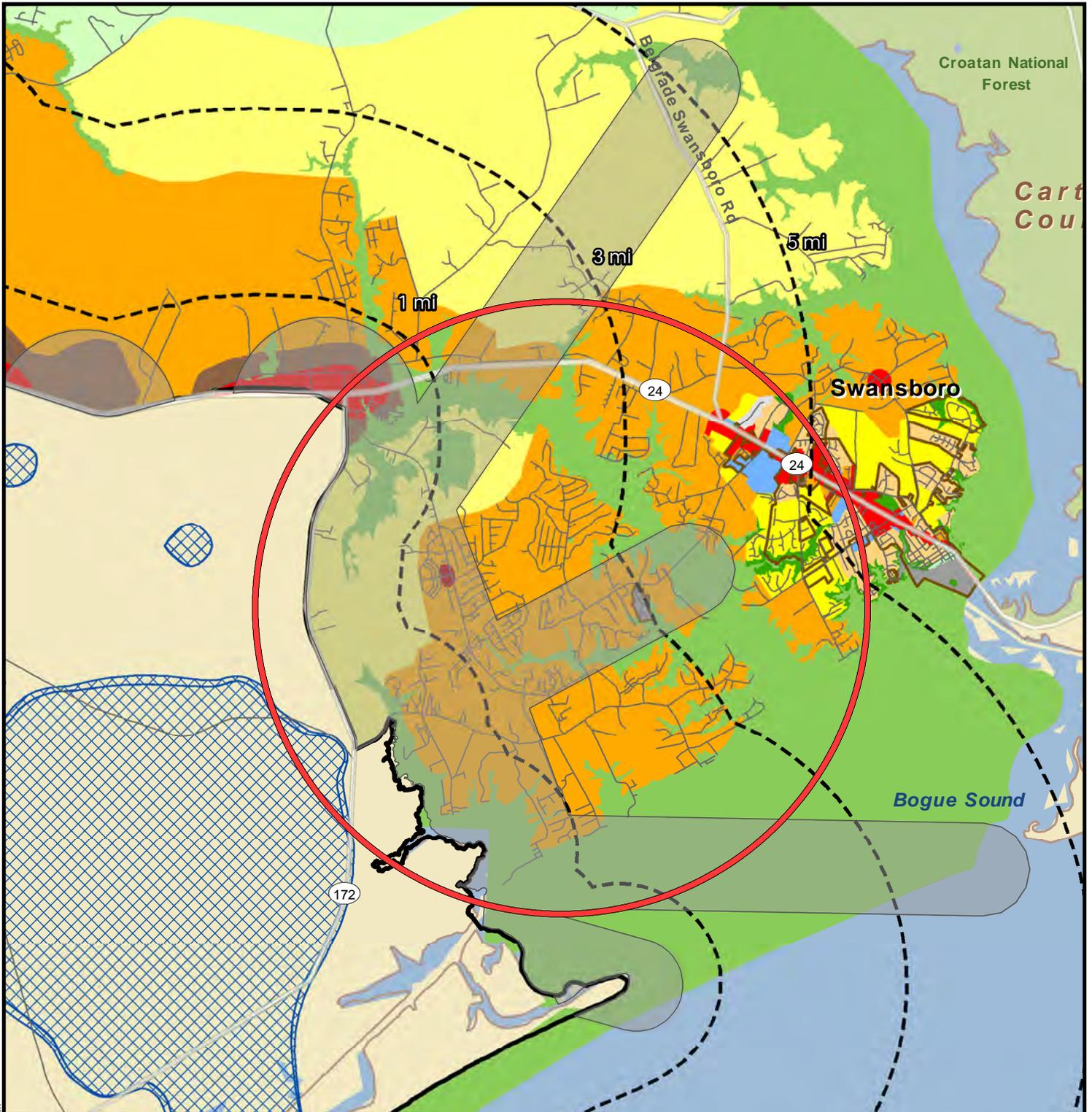
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GSRA West Area Map with Zoning

December 2018

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LEGEND

Area of Interest	Swansboro FLU CBD	OI	Medium Density Residential
Flight Path Overlay District	COMM	Onslow County FLU Agriculture/Forestry	Military
City Limit	CONSERV	Area Wide Commercial Activity Center	Non Participating Jurisdiction
Noise Zone Impact / Db Level	HDR	Conservation	Rural Residential
70	LDR	High-Density Residential	
	LI	Local Commercial Activity Center	
	MDR		

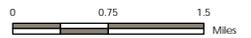


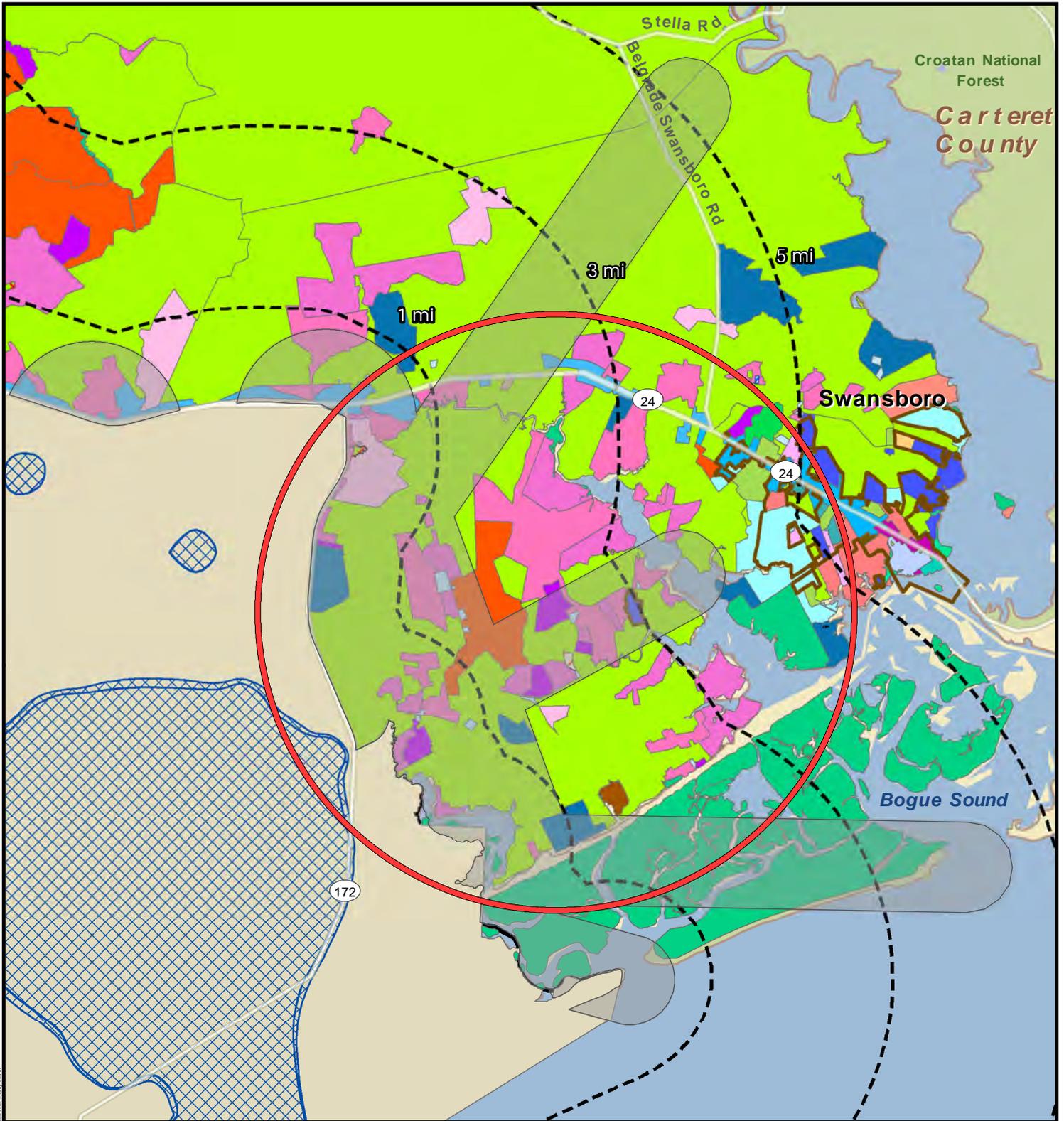
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Huebert Area Map with FLU

December 2018

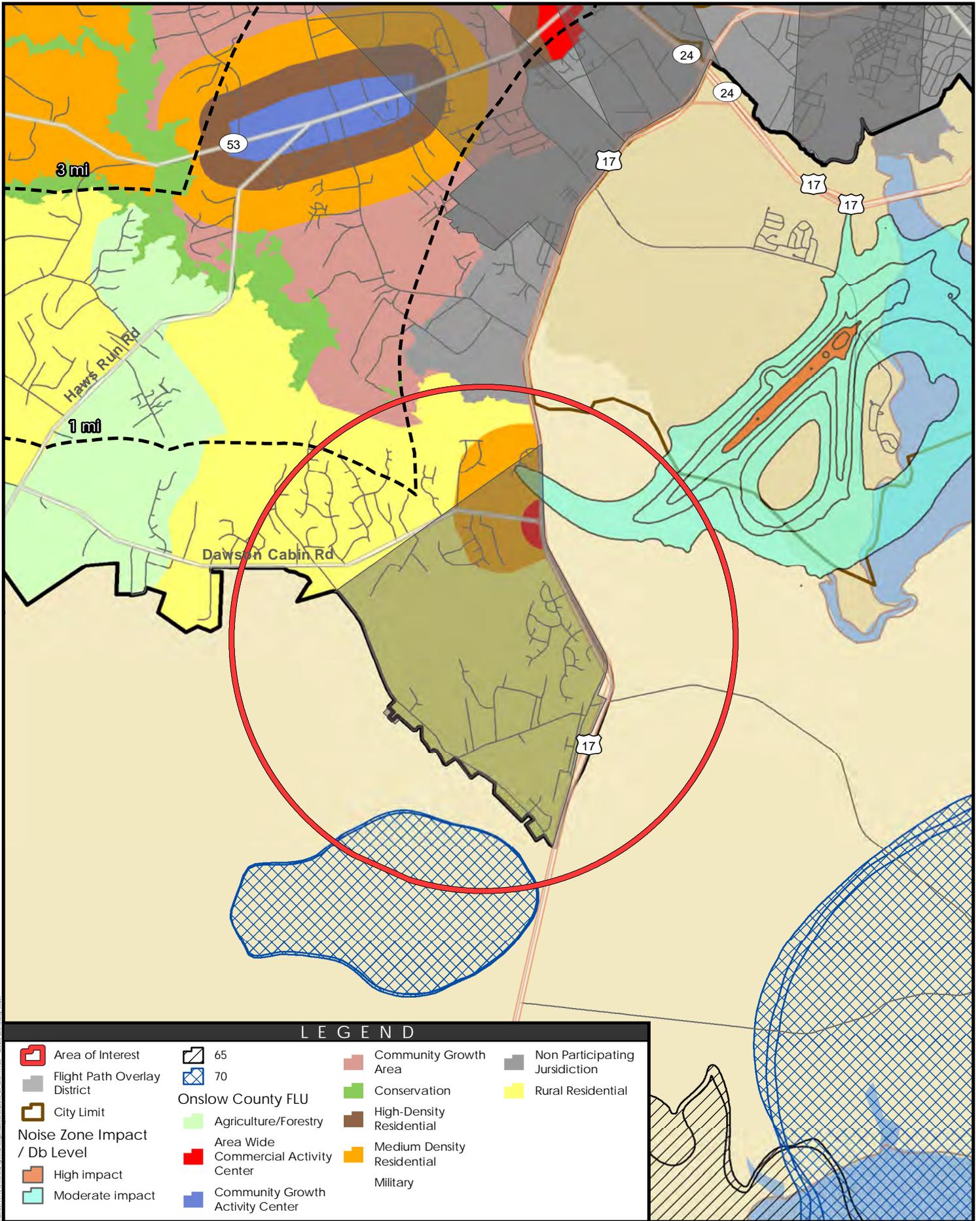
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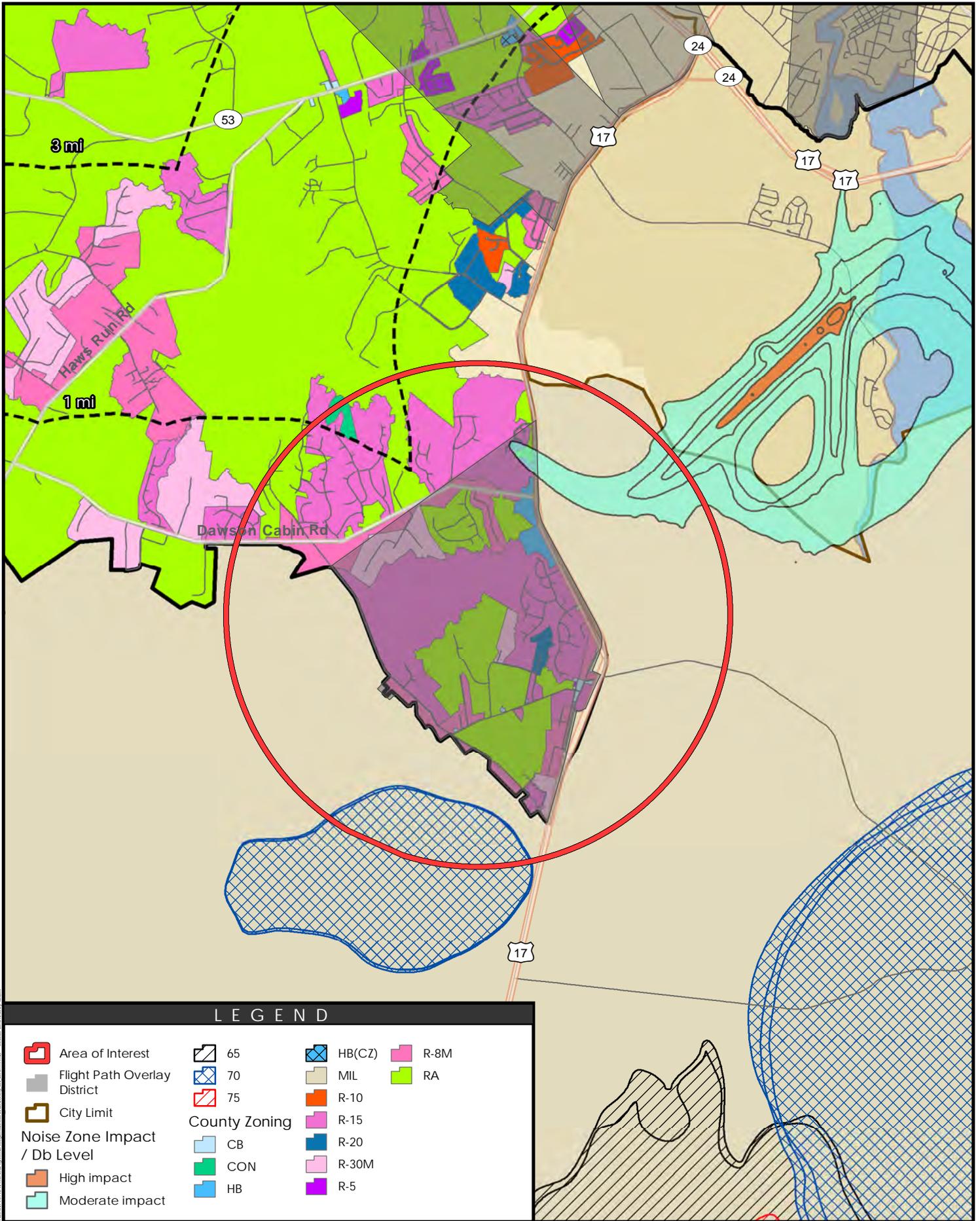


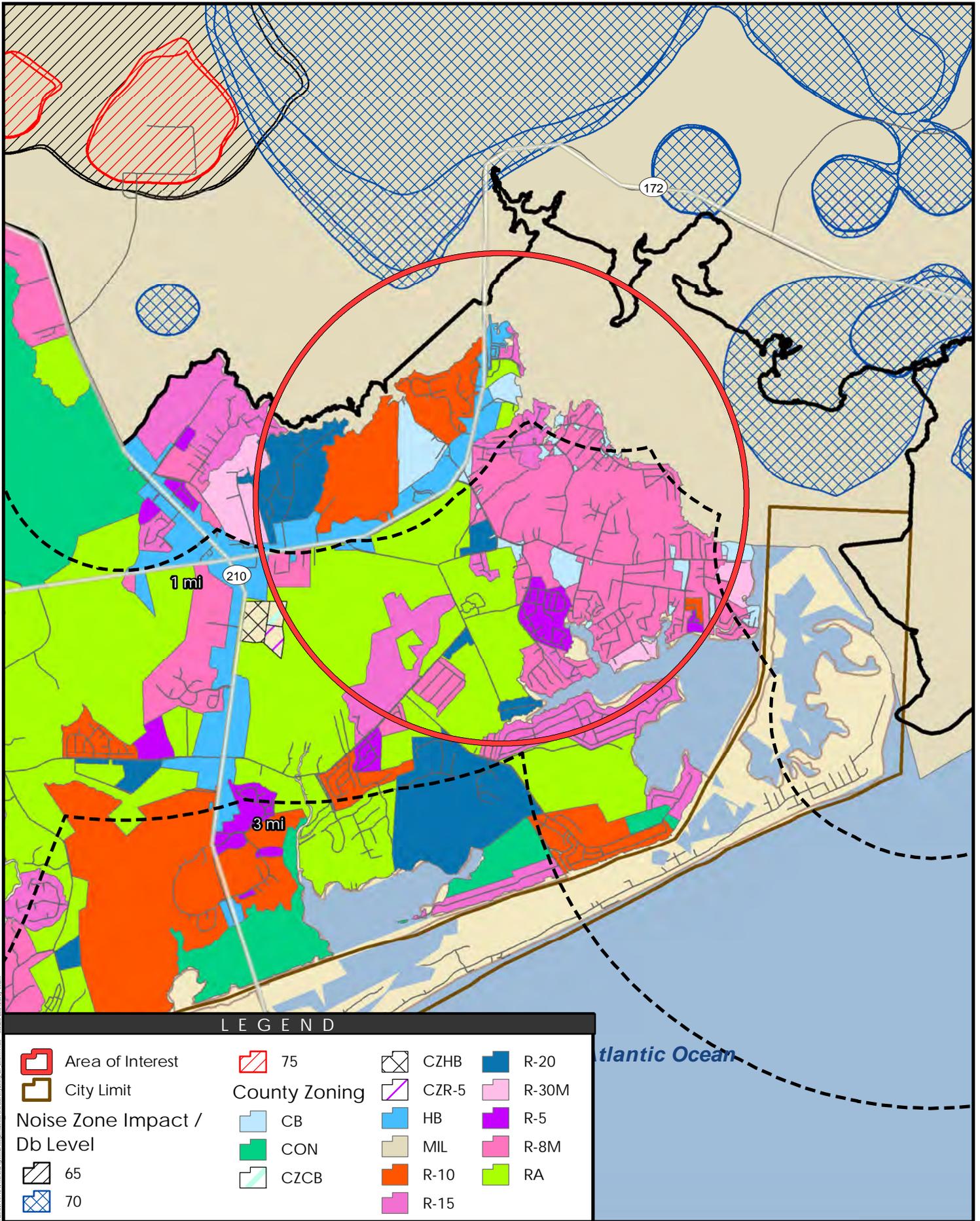


LEGEND

Area of Interest	Swansboro Zoning B-1	CON	PUD	R-6SF	County Zoning CB	HB	R-15	R-90
Flight Path Overlay District	Swansboro Zoning B-2	G/E	R-10SF	R-8SF	CBCZ	IND-H	R-20	RA
City Limit	Swansboro Zoning B-2HDO	M-1	R-20SF	RA	CON	IND-L	R-30M	RA(CZ)
Noise Zone Impact / Db Level	Swansboro Zoning B-3	MHS	R-40SF	CZR-10	MIL	R-5	R-8M	
70		MHS-15SF	R-6		R-10			

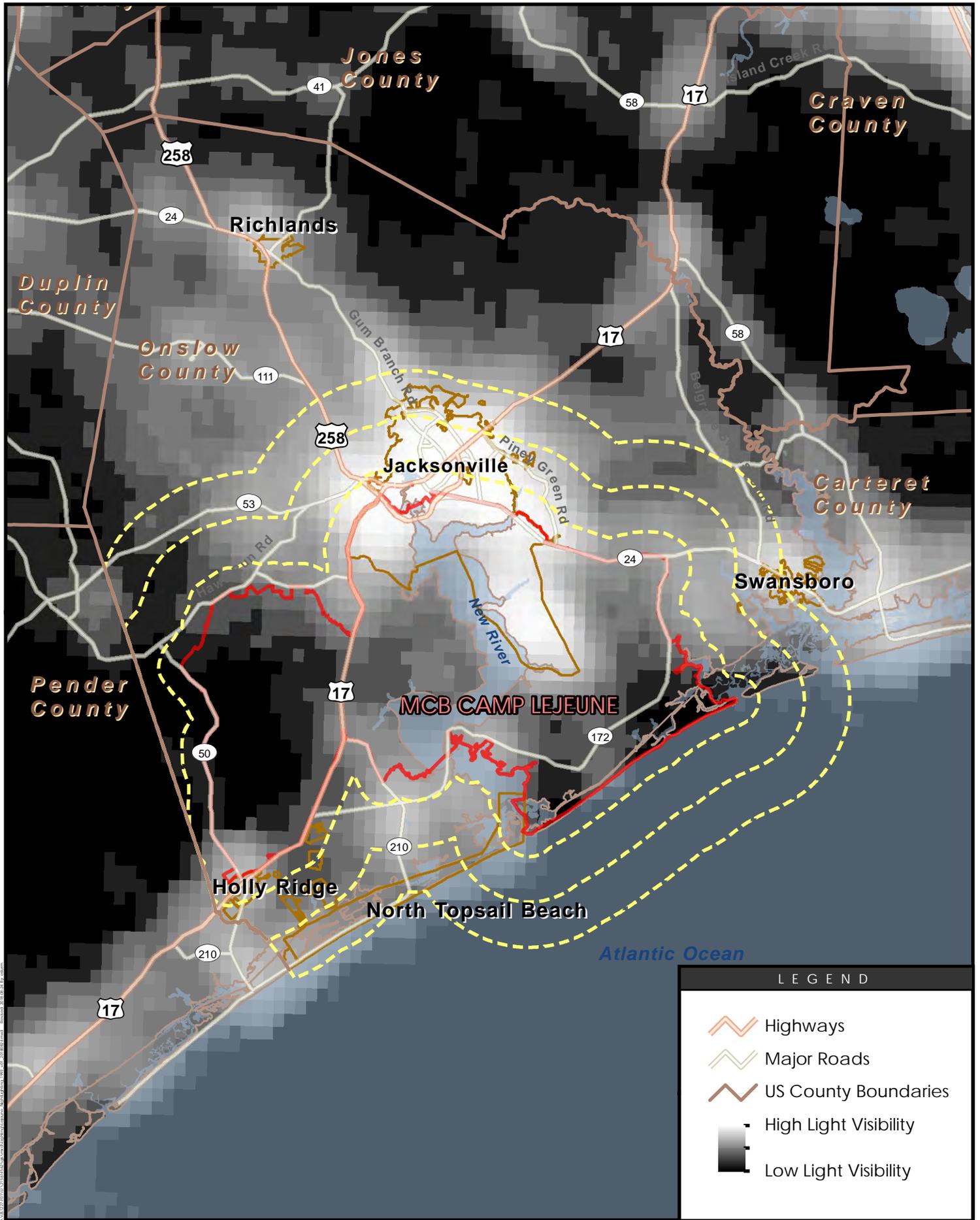






LEGEND

- | | | | |
|-------------------------------------|----------------------|-------|-------|
| Area of Interest | 75 | CZHB | R-20 |
| City Limit | County Zoning | CZR-5 | R-30M |
| Noise Zone Impact / Db Level | CB | HB | R-5 |
| 65 | CON | MIL | R-8M |
| 70 | CZCB | R-10 | RA |
| | | R-15 | |

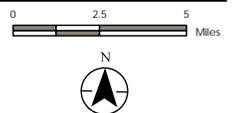


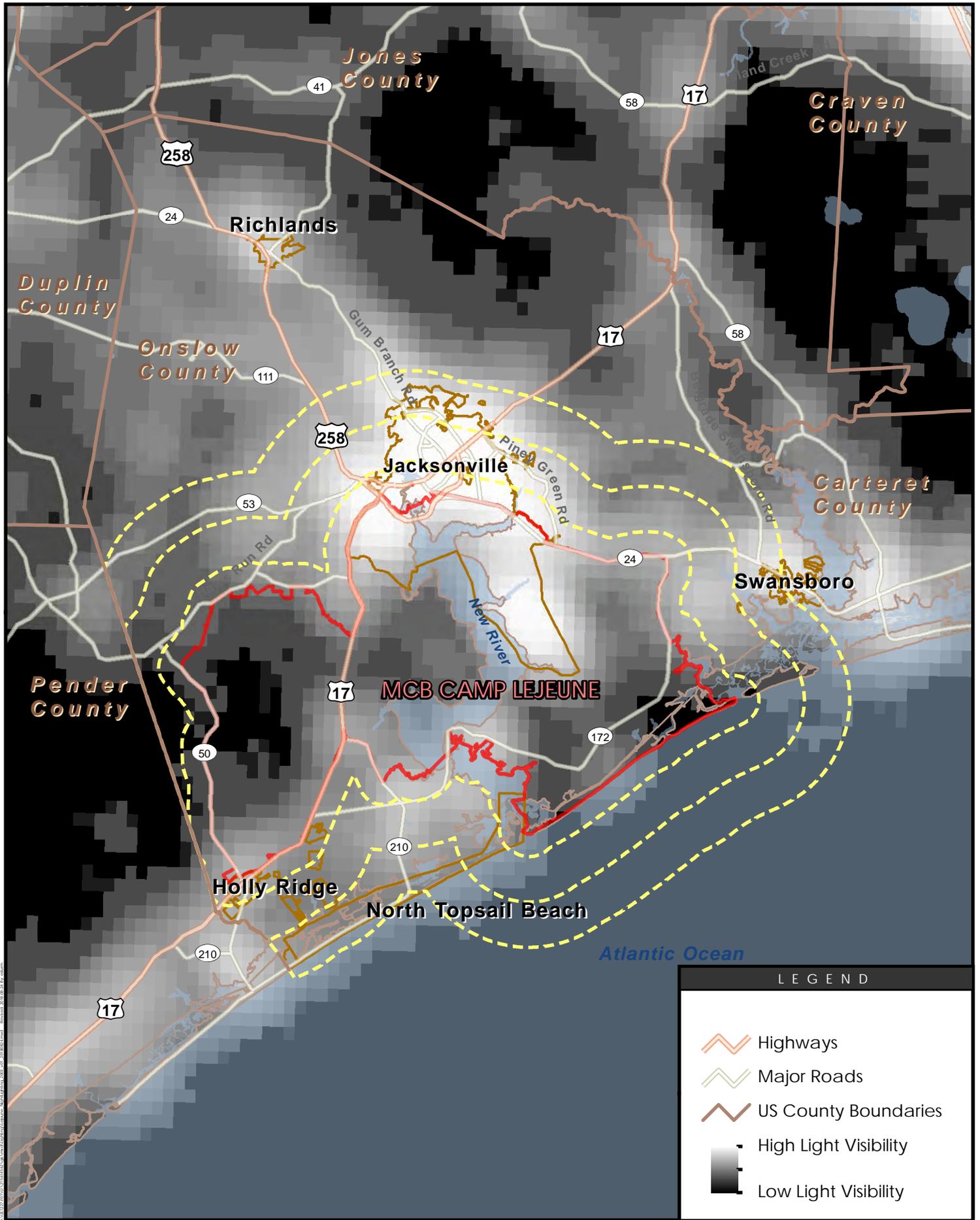
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Camp Lejeune

Night Lighting Average Visibility - 1993
August 2018

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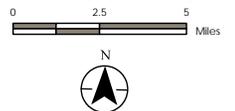


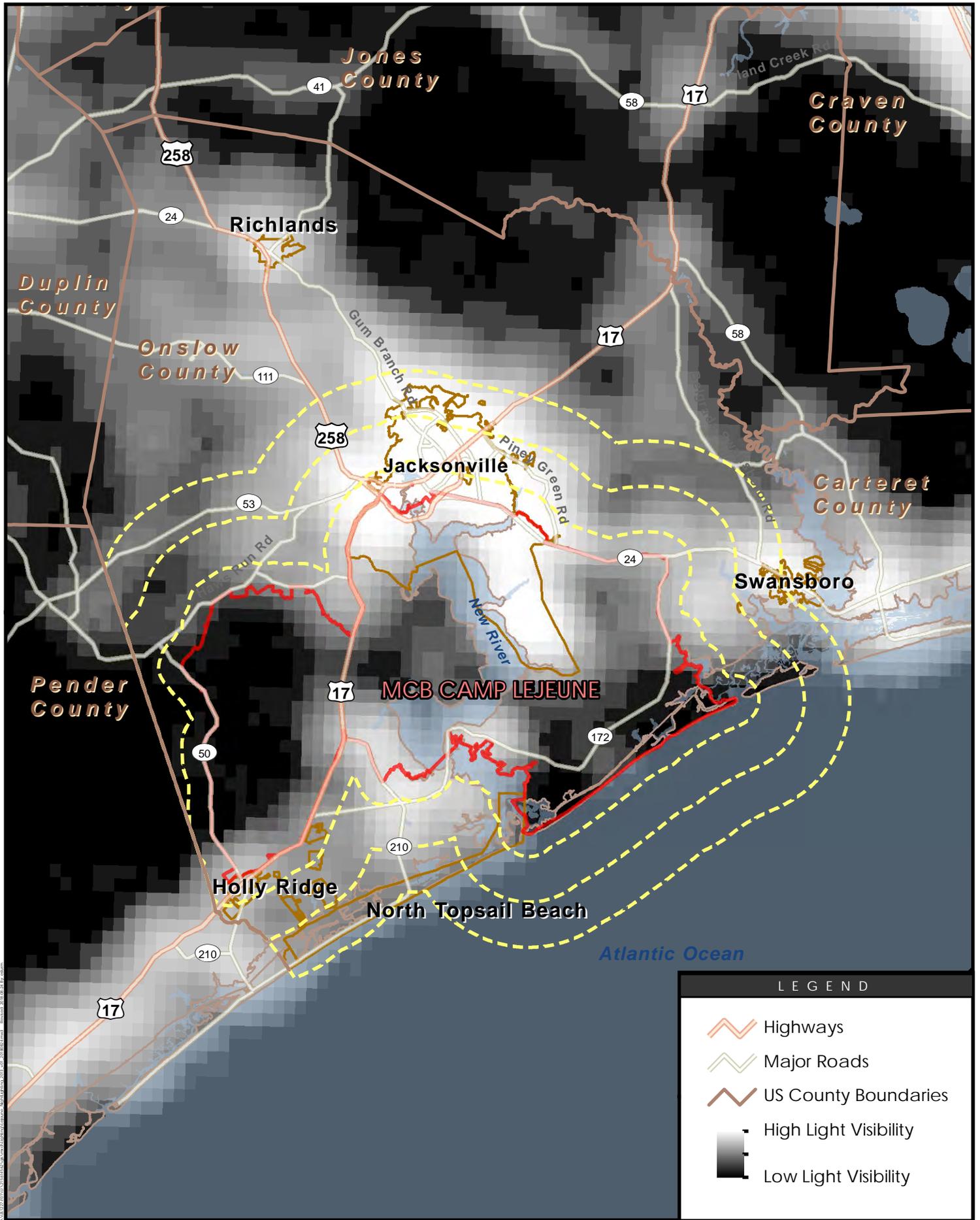
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Camp Lejeune

Night Lighting Average Visibility - 2003
August 2018

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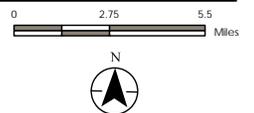
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Camp Lejeune

Night Lighting Average Visibility - 2013

August 2018

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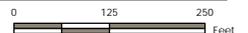


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Piney Green Gate Line of Sight Map

December 2018

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 fax 941.907.6911





LEGEND

-  Access Control Point
-  Gate Line of Sight - Area of Interest
-  Camp Lejeune Boundary

Ellis Co

New River

New



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Sneads Ferry Gate Line of Sight Map

December 2018

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LEGEND

-  Access Control Point
-  Gate Line of Sight - Area of Interest
-  Camp Lejeune Boundary

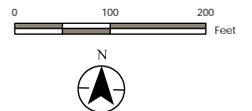


Stones Bay / Rifle Range Gate
Line of Sight Map
December 2018



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LEGEND

-  Access Control Point
-  Gate Line of Sight - Area of Interest
-  Camp Lejeune Boundary



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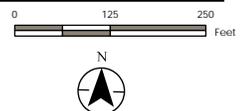


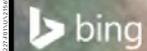
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TOP Gate HWY 172 Line of Sight Map

December 2018

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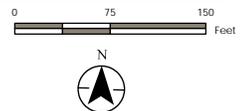


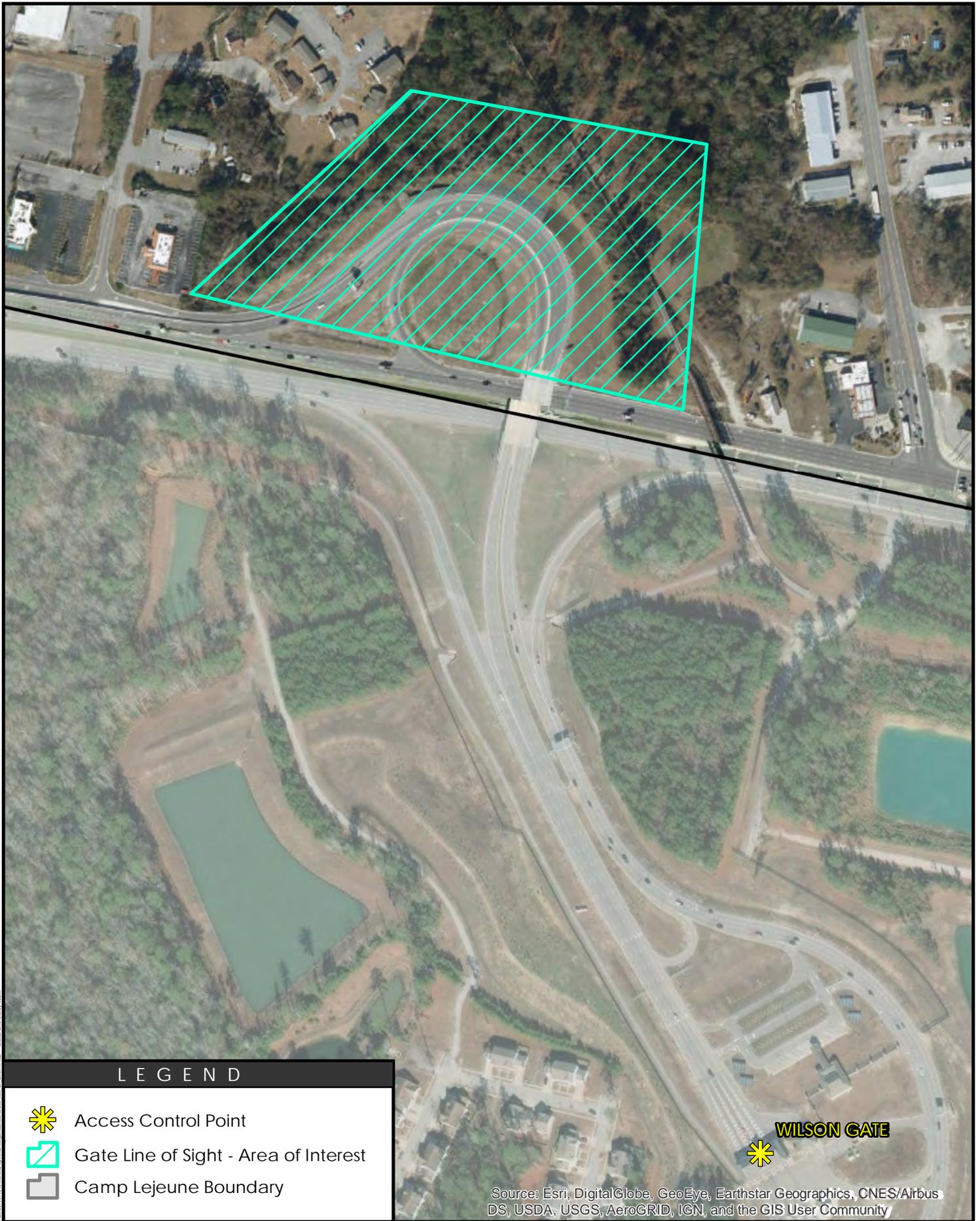
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TT1 Gate Line of Sight Map

December 2018

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tel 941.907.6900
fax 941.907.6911





LEGEND

-  Access Control Point
-  Gate Line of Sight - Area of Interest
-  Camp Lejeune Boundary

WILSON GATE



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

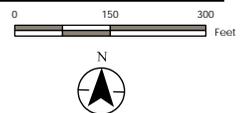


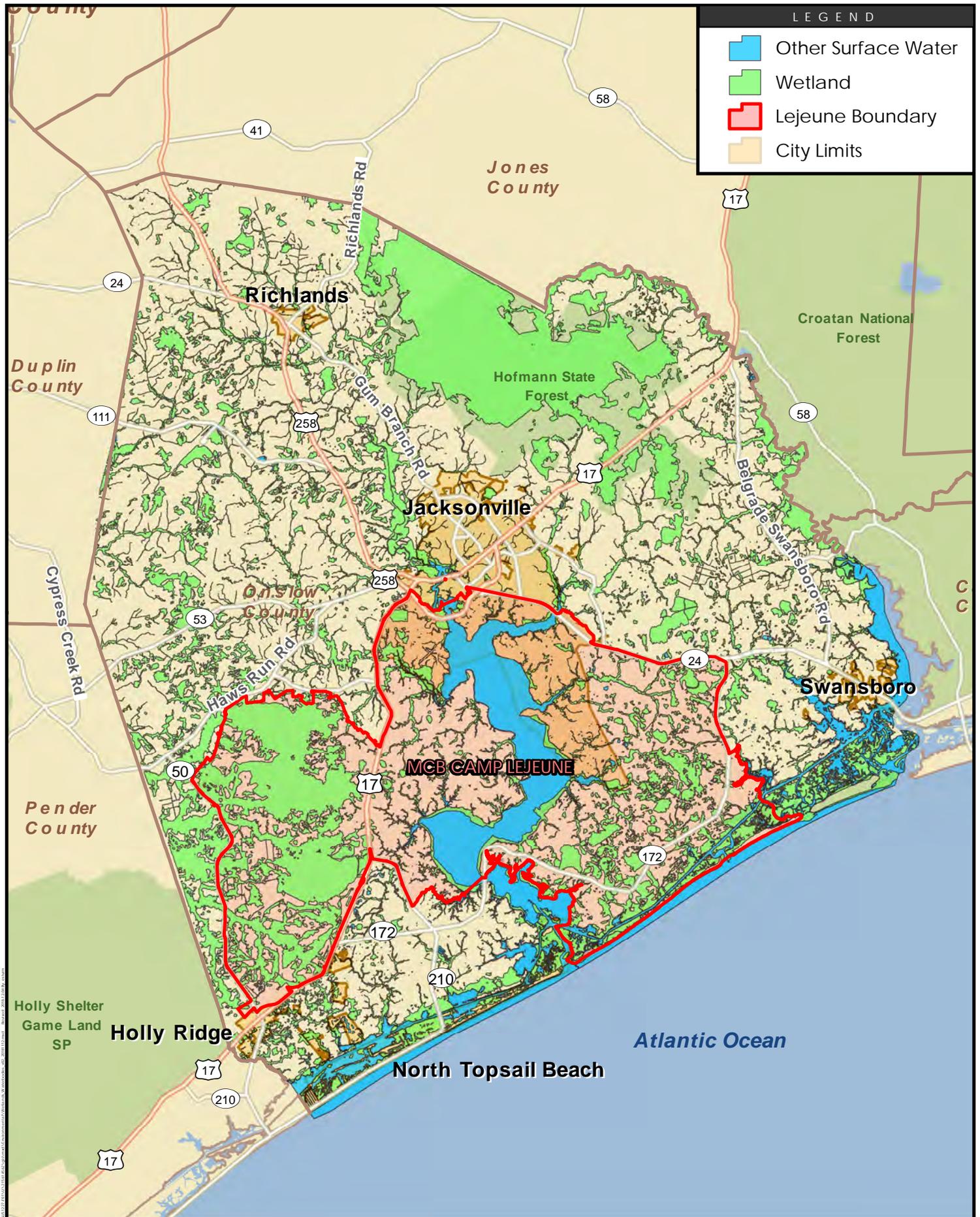
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Wilson Gate Line of Sight Map

December 2018

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fax 941.907.6911

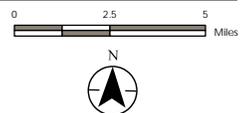


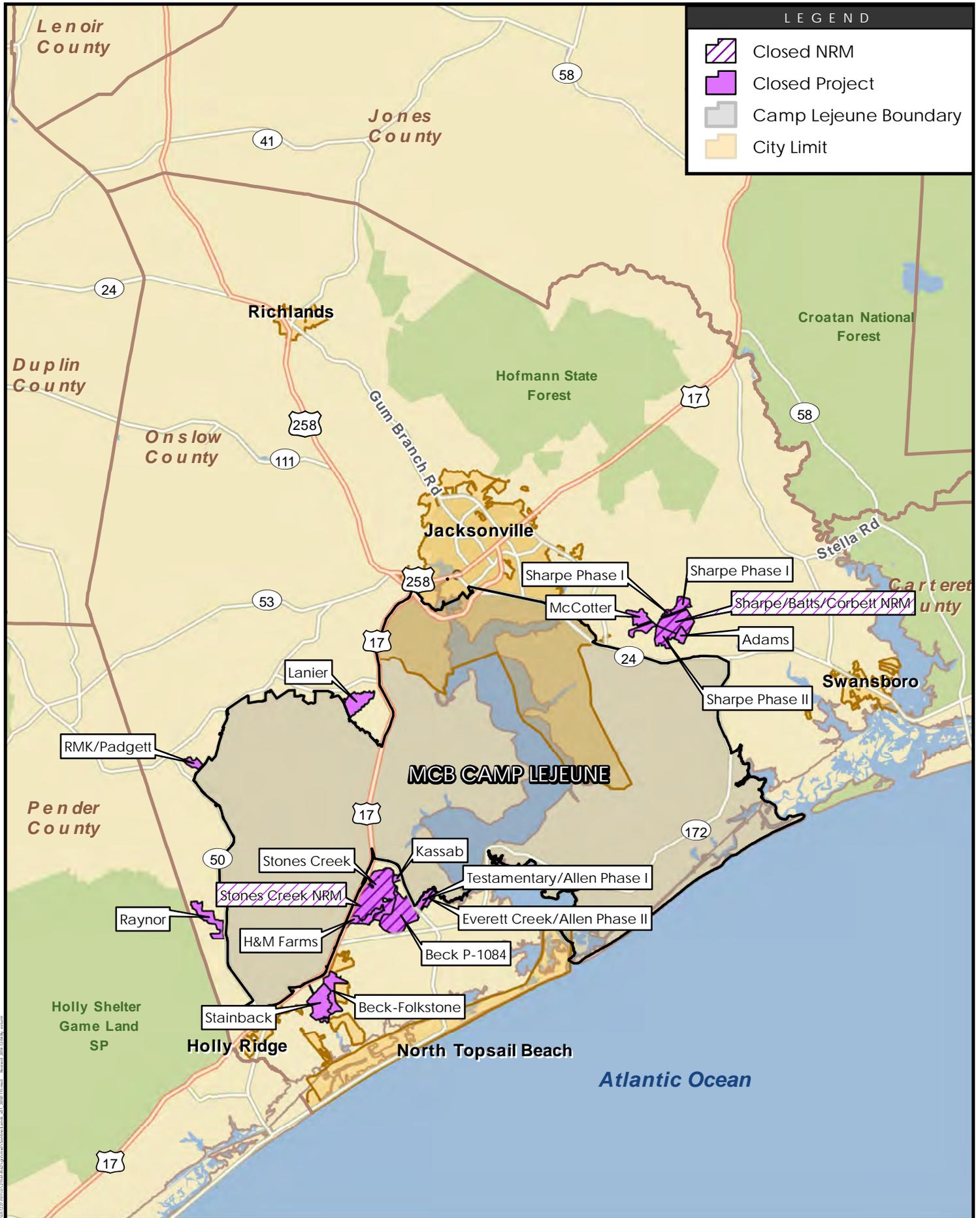


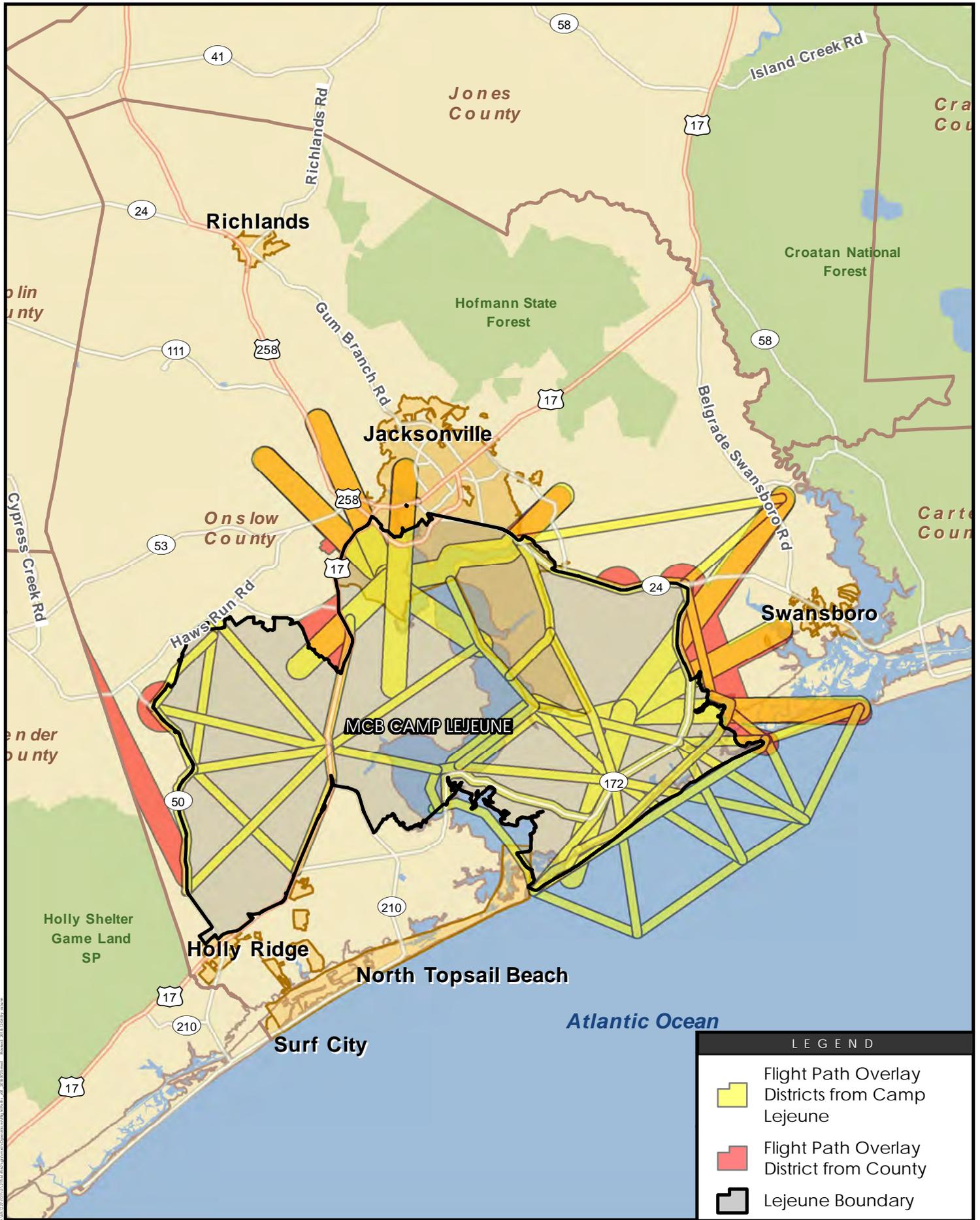
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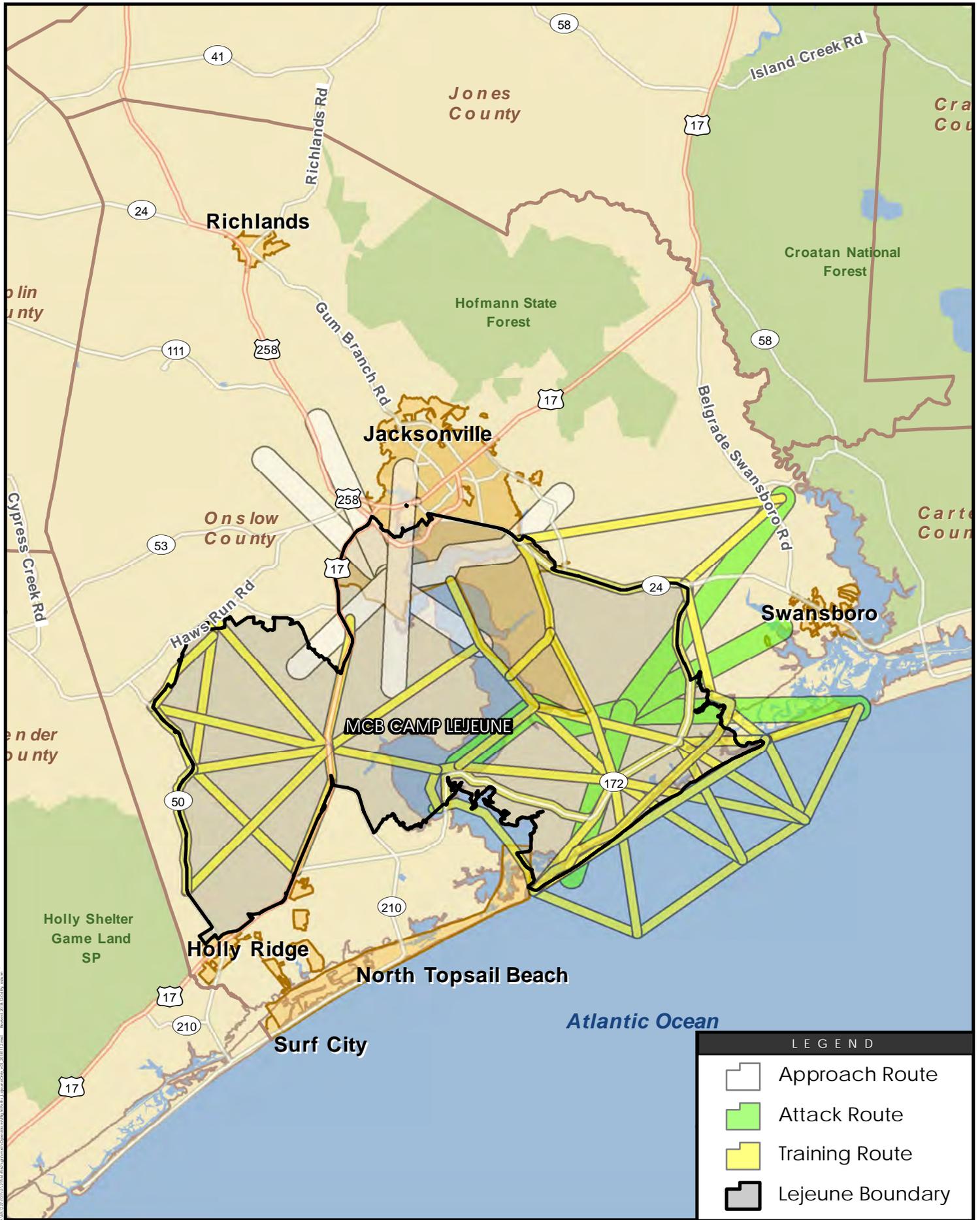
Onslow County Wetland Map
December 2018

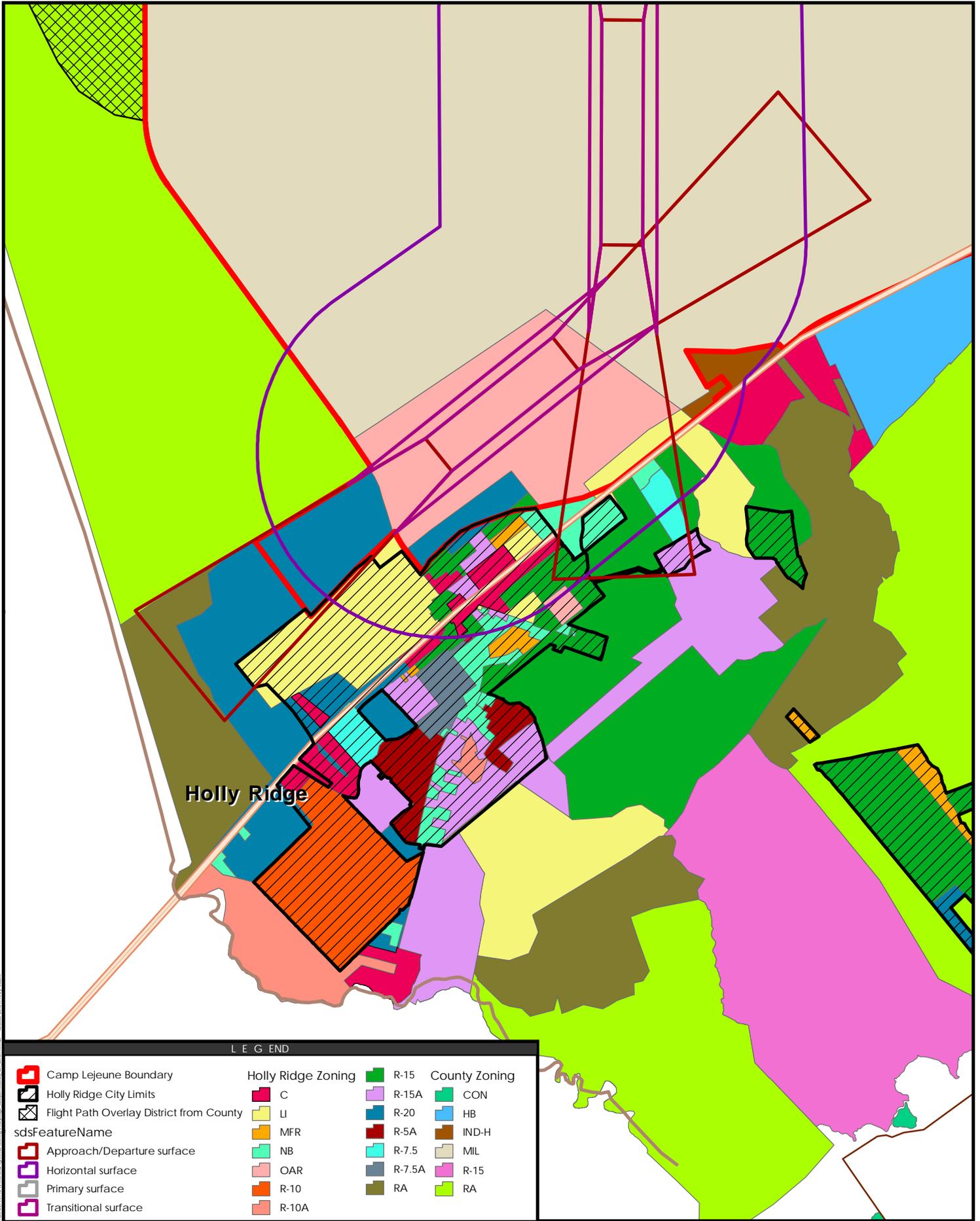
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Holly Ridge

L E G E N D

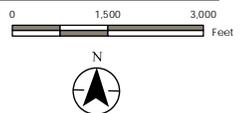
- | | | | | | |
|--|--|--|-------|--|--------|
| | Camp Lejeune Boundary | | C | | R-15 |
| | Holly Ridge City Limits | | LI | | R-15A |
| | Flight Path Overlay District from County | | MFR | | R-20 |
| | Approach/Departure surface | | NB | | R-5A |
| | Horizontal surface | | OAR | | R-7.5 |
| | Primary surface | | R-10 | | R-7.5A |
| | Transitional surface | | R-10A | | RA |
| | | | | | CON |
| | | | | | HB |
| | | | | | IND-H |
| | | | | | MIL |
| | | | | | R-15 |
| | | | | | RA |

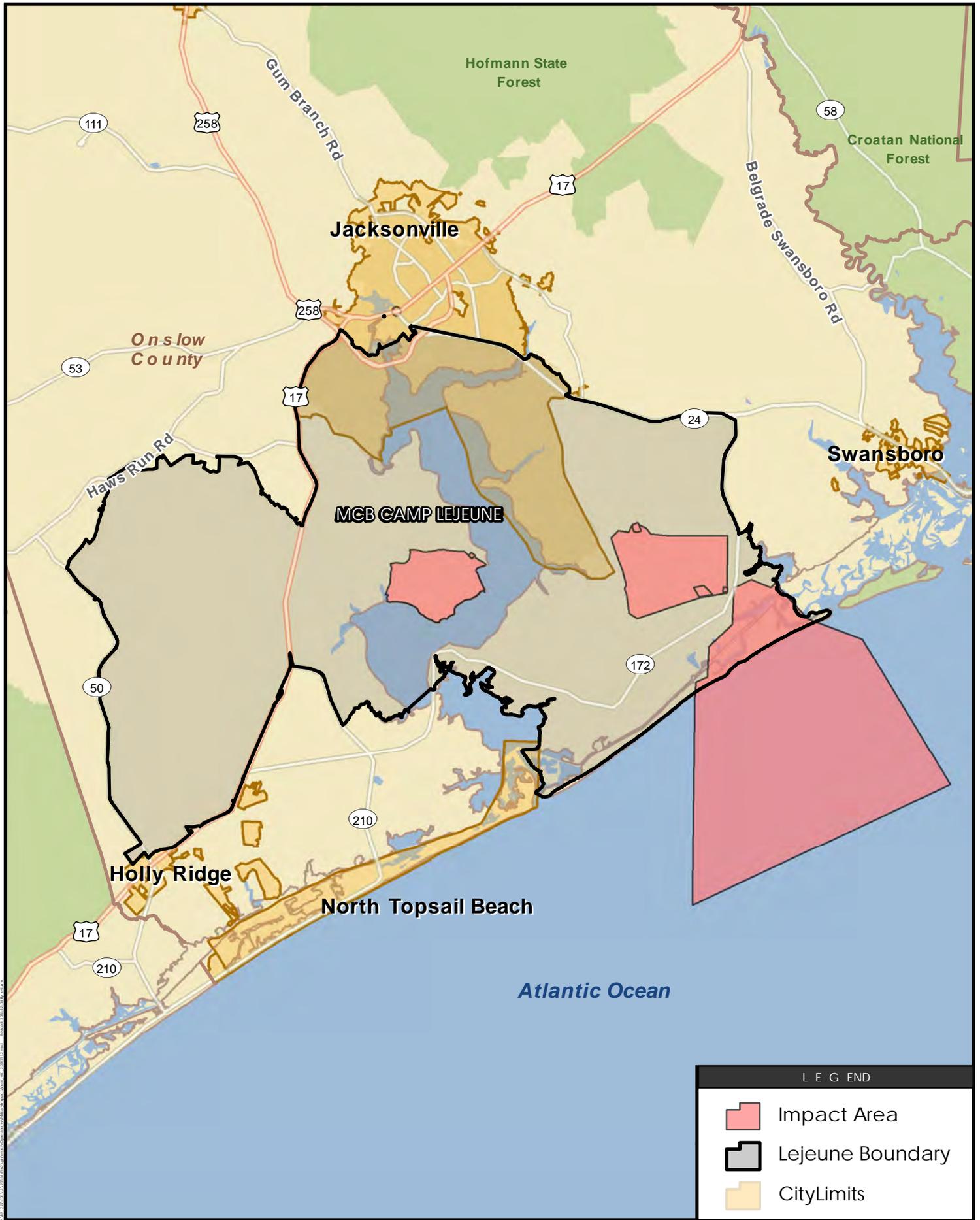


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Holly Ridge Zoning Map
w/ Camp Davis - Part 77 Surfaces
November 2018

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L E G E N D

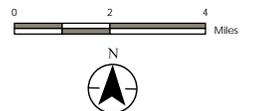
- Impact Area
- Lejeune Boundary
- City Limits

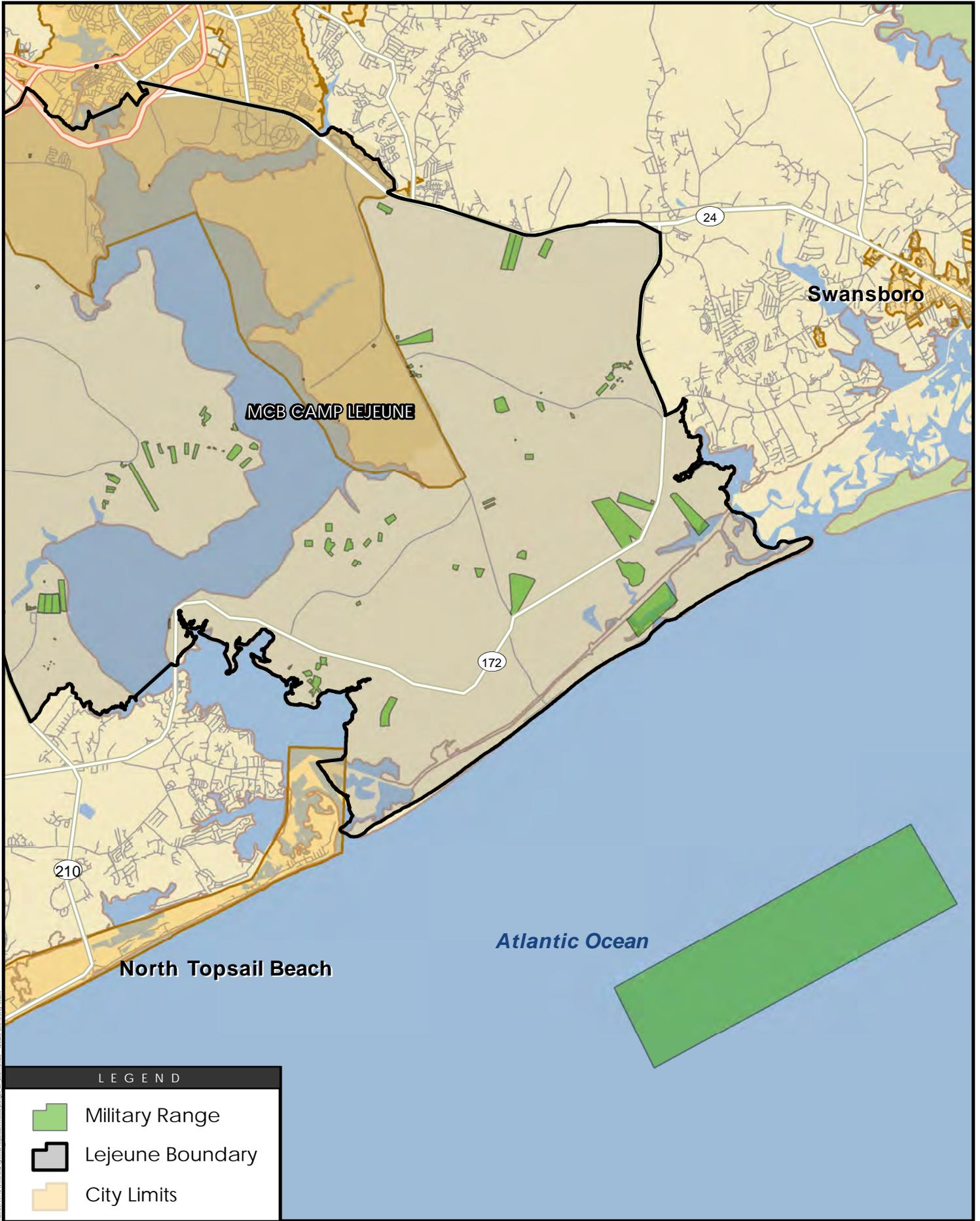


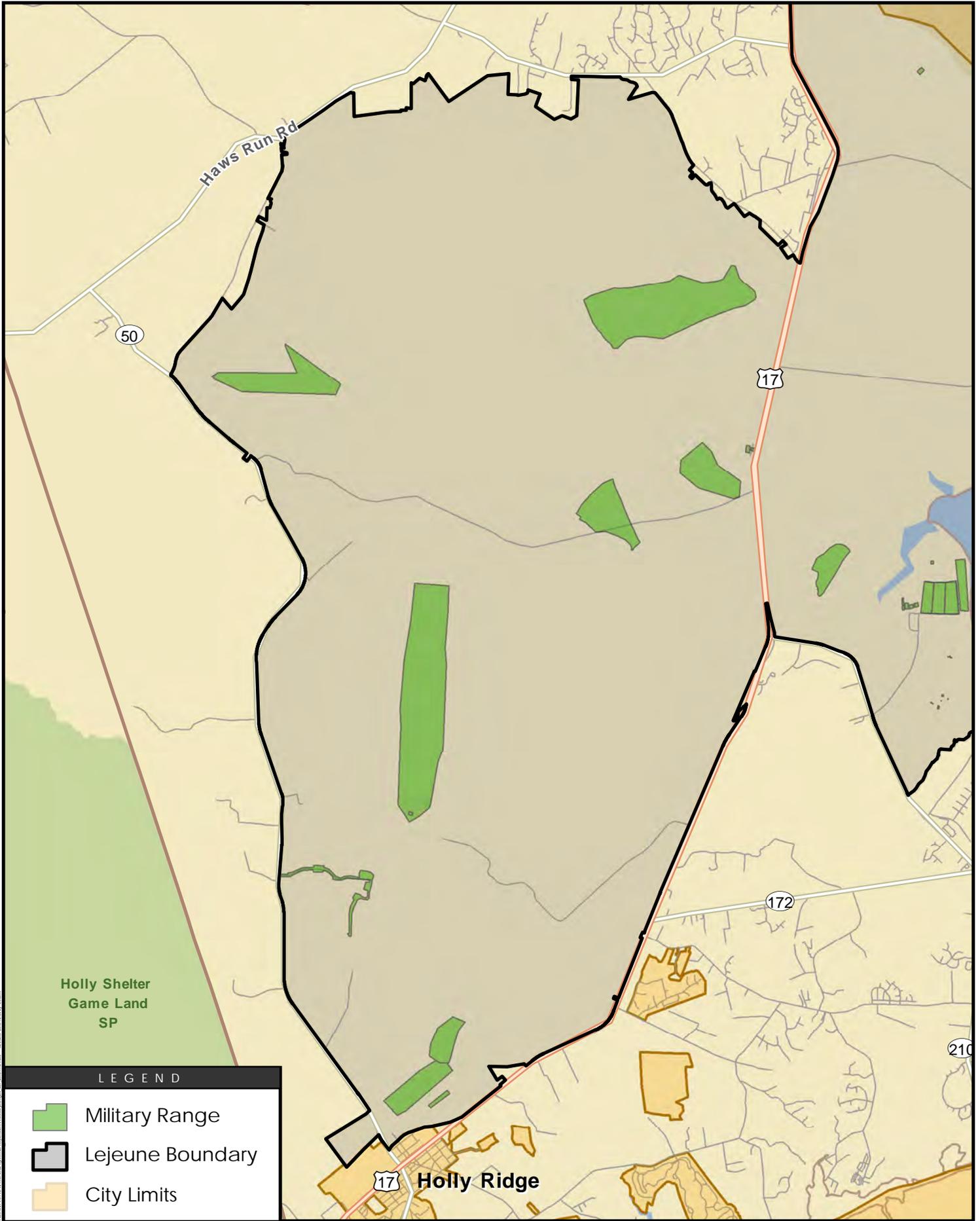
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Camp Lejeune Military Impact Areas
December 2018

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LEGEND

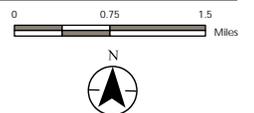
-  Military Range
-  Lejeune Boundary
-  City Limits

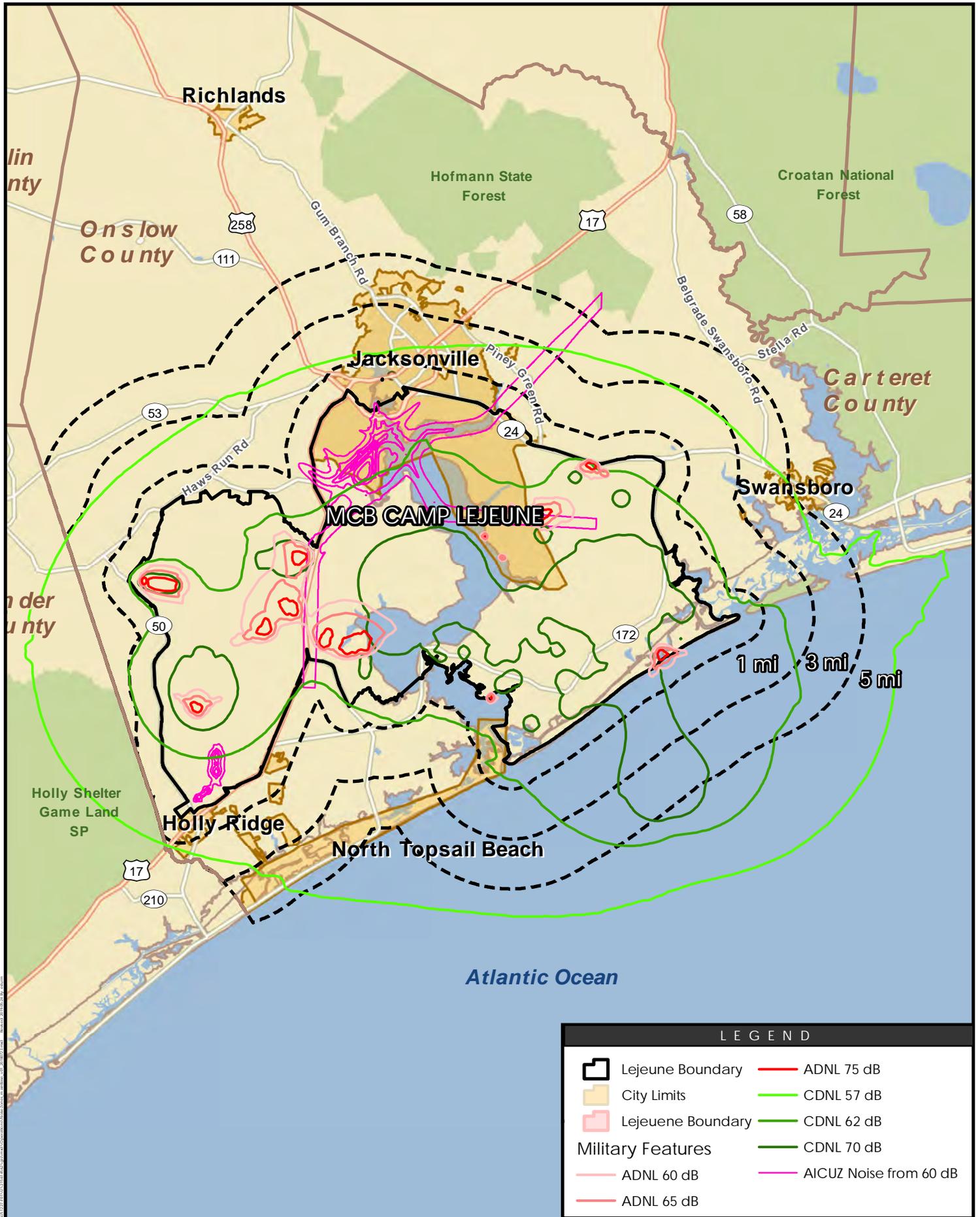


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Camp Lejeune Military Ranges - West
December 2018

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LEGEND

Lejeune Boundary	ADNL 75 dB
City Limits	CDNL 57 dB
Lejeune Boundary	CDNL 62 dB
Military Features	CDNL 70 dB
ADNL 60 dB	AICUZ Noise from 60 dB
ADNL 65 dB	

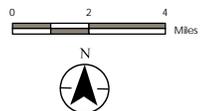


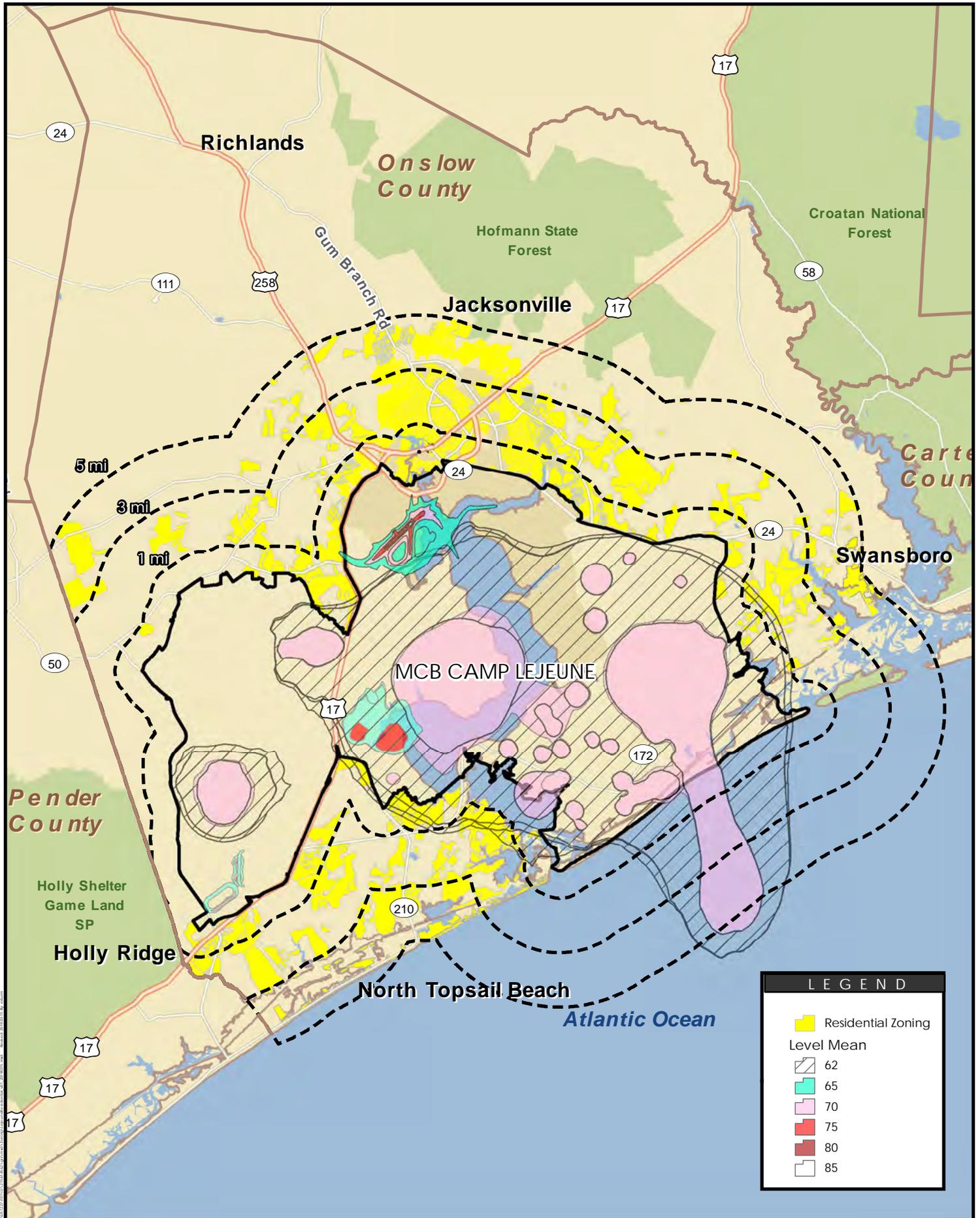
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Camp Lejeune Noise Zones

May 2019

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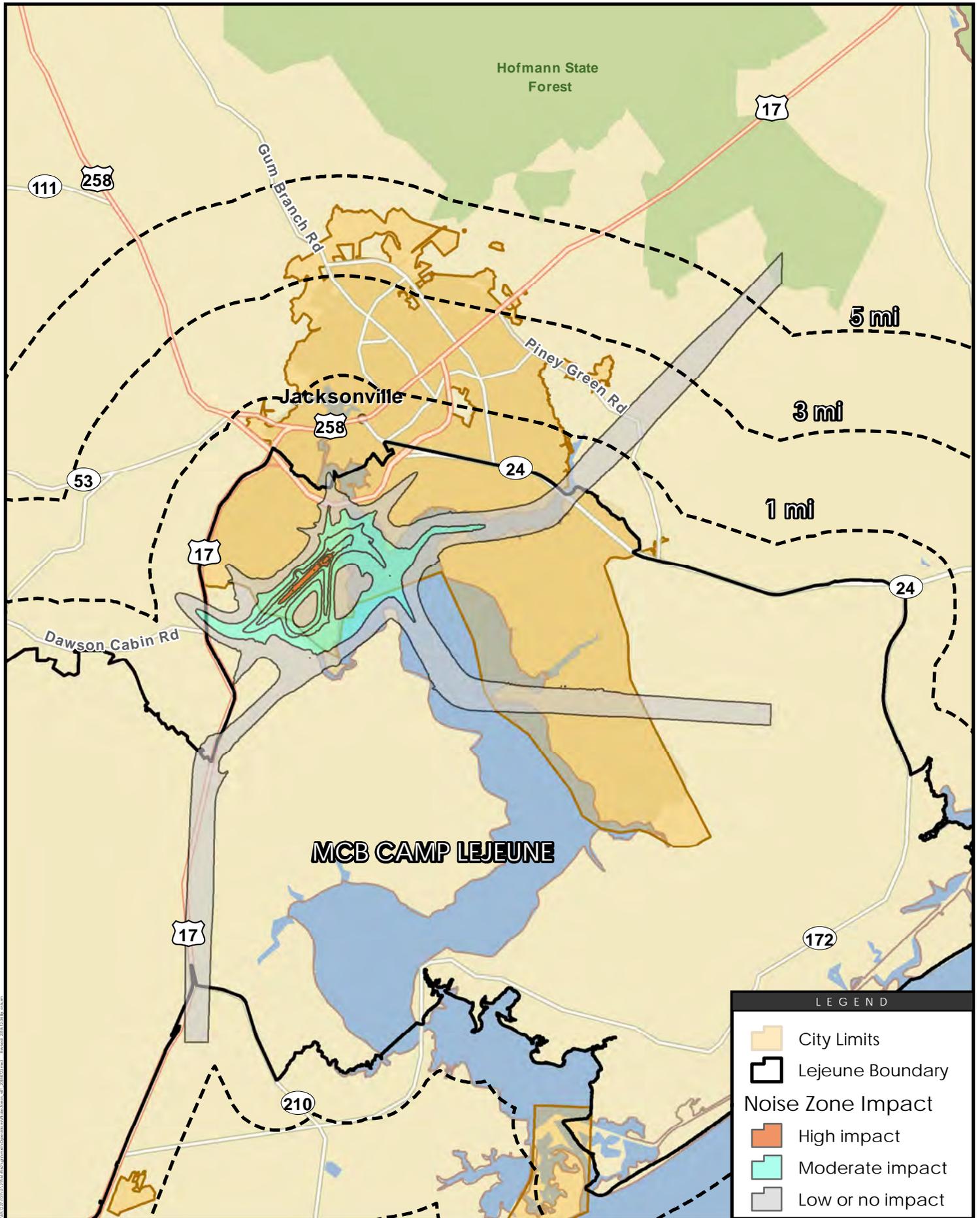
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Onslow County Residential Zoning Map

March 2019

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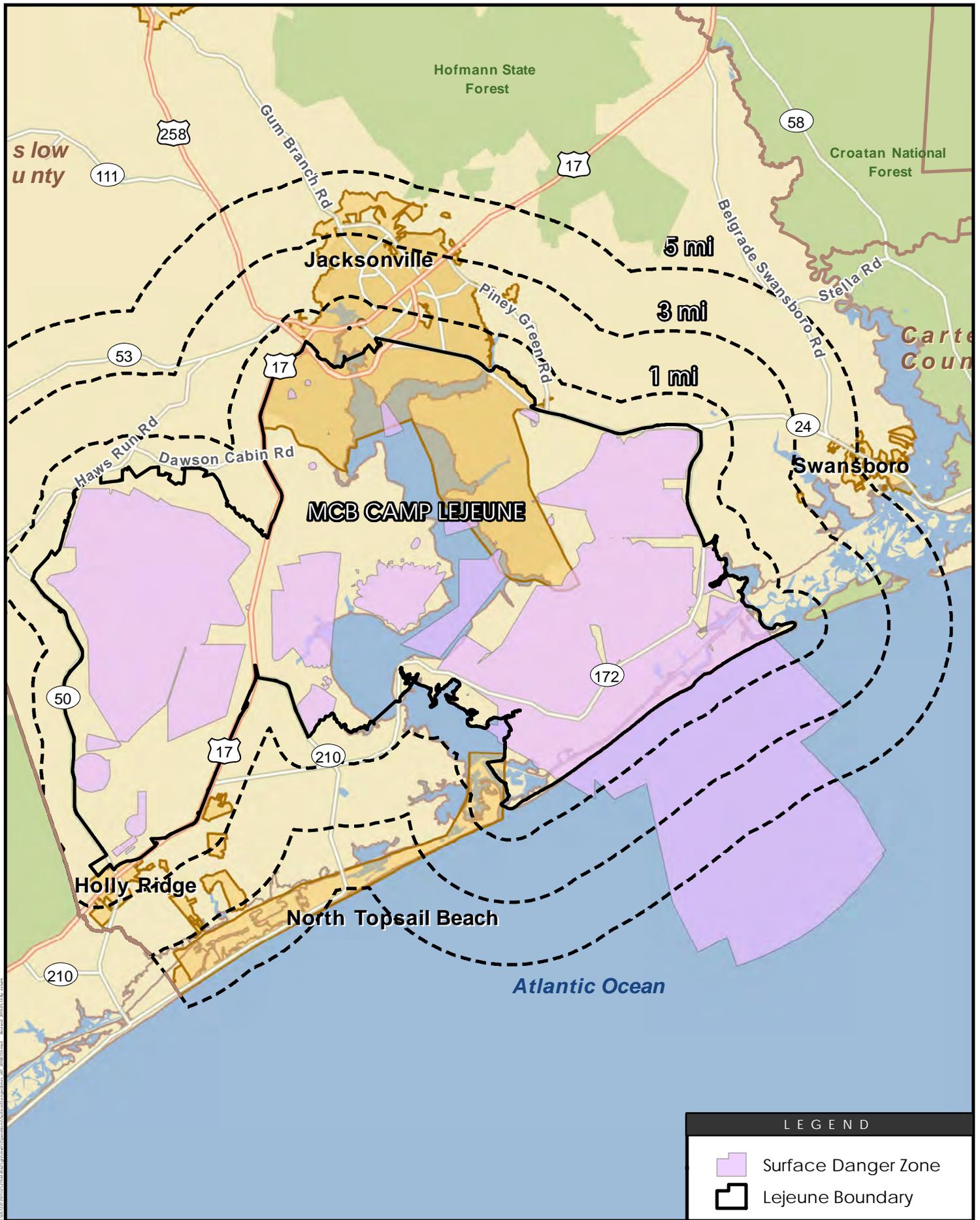
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Camp Lejeune Noise Zones - New River

December 2018

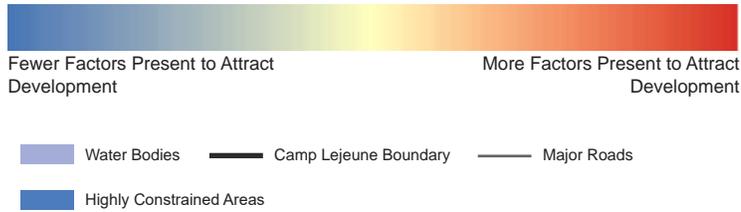
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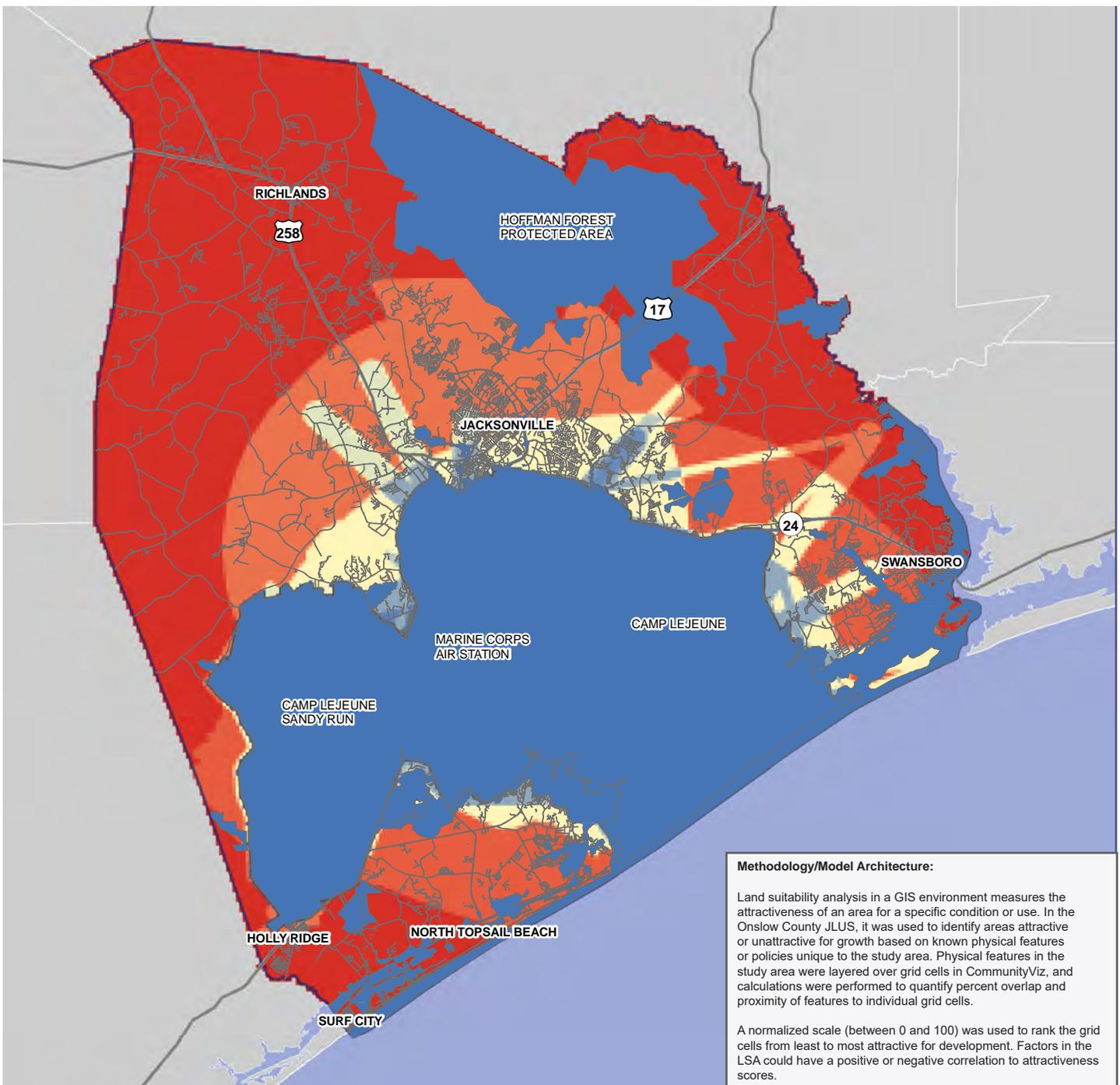
Onslow County Joint Land Use Study

Areas Attractive for Development—Military Mission Footprint Data (Showing Highly Constrained areas)



Military Mission Footprint Factors Included in the Analysis:

- Noise Zones
- Airfield Imaginary Surfaces
- Flight Path Overlay District Areas
- Military Drop Zone
- Military Range
- Military Surface Danger Zone Area
- Military Training Locations
- Military Administrative Boundary



Methodology/Model Architecture:

Land suitability analysis in a GIS environment measures the attractiveness of an area for a specific condition or use. In the Onslow County JLUS, it was used to identify areas attractive or unattractive for growth based on known physical features or policies unique to the study area. Physical features in the study area were layered over grid cells in CommunityViz, and calculations were performed to quantify percent overlap and proximity of features to individual grid cells.

A normalized scale (between 0 and 100) was used to rank the grid cells from least to most attractive for development. Factors in the LSA could have a positive or negative correlation to attractiveness scores.

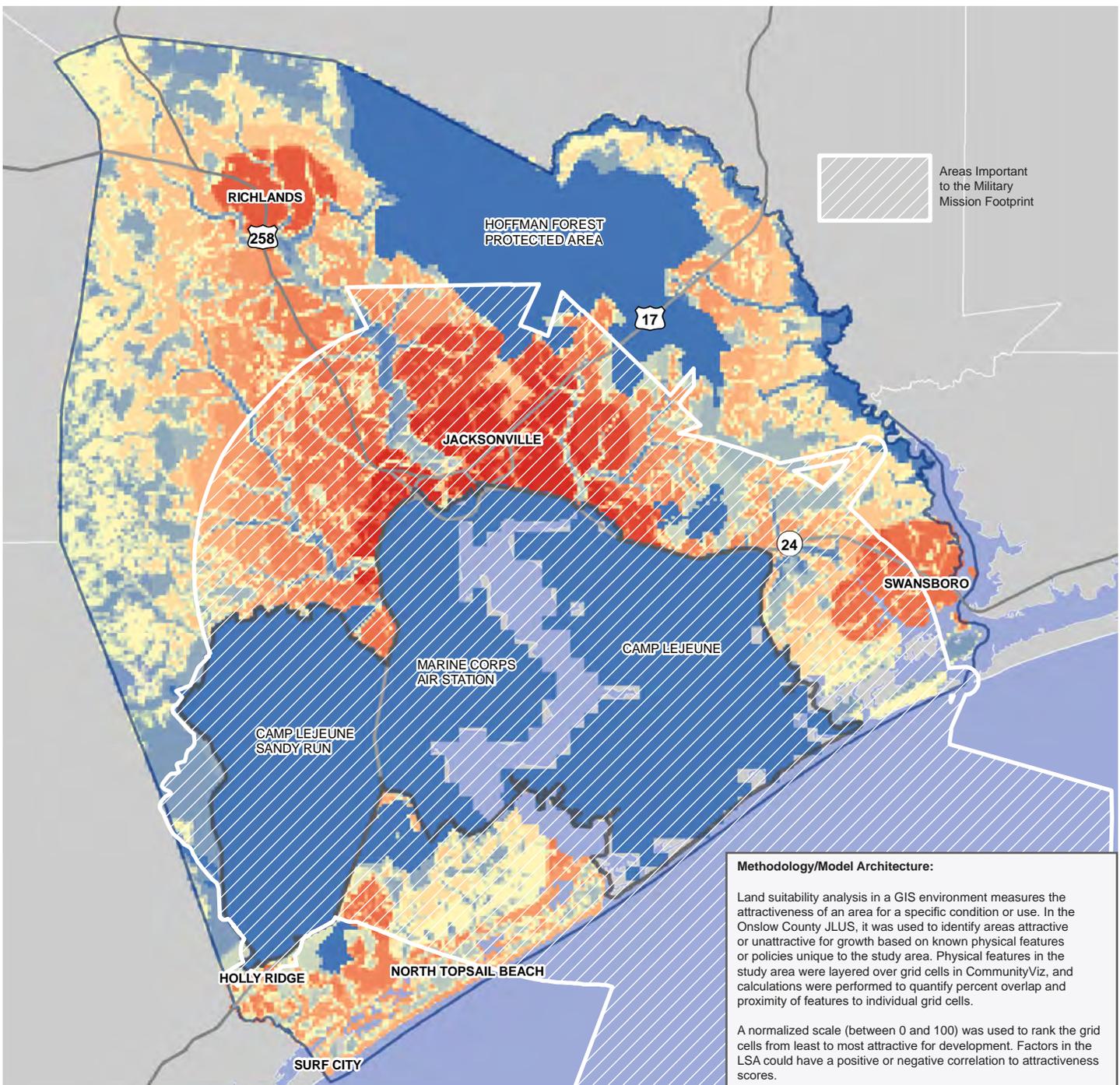
Onslow County Joint Land Use Study

Areas Attractive for Development—Traditional Growth Factors Data (Also showing Military Mission Footprint)



Traditional Growth Factors Included in the Analysis:

- Emerging Growth Areas
- Strategic Corridors
- Interchanges
- Wetland Areas
- Flood Hazard Zone Areas
- Military Administrative Boundary
- Conservation Parcel Areas (Lejeune/New River Acquisition Areas)



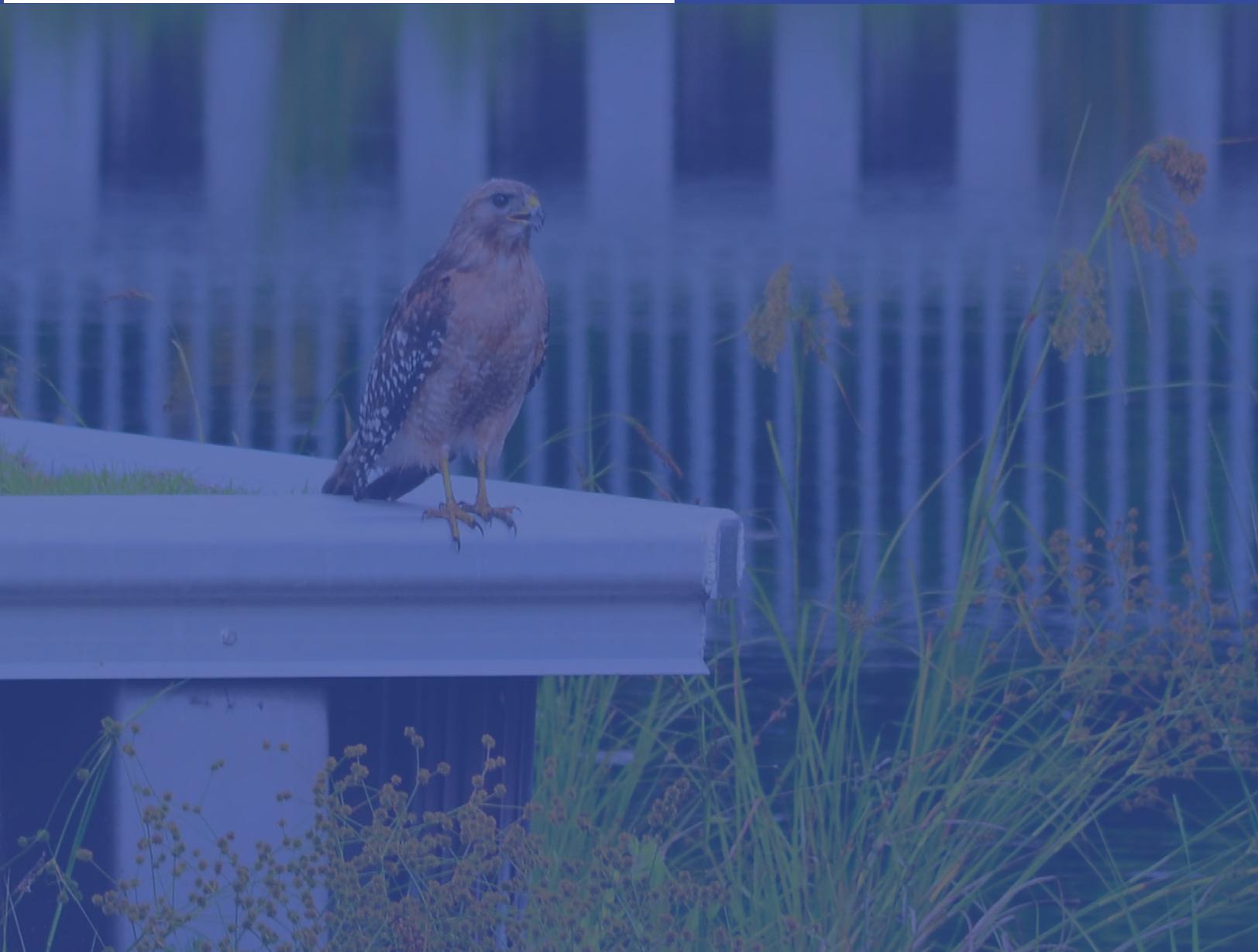
Methodology/Model Architecture:

Land suitability analysis in a GIS environment measures the attractiveness of an area for a specific condition or use. In the Onslow County JLUS, it was used to identify areas attractive or unattractive for growth based on known physical features or policies unique to the study area. Physical features in the study area were layered over grid cells in CommunityViz, and calculations were performed to quantify percent overlap and proximity of features to individual grid cells.

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Appendix B

Survey Results



ONslow COUNTY/CAMP LEJEUNE JOINT LAND USE STUDY

Camp Lejeune JLUS Survey Results

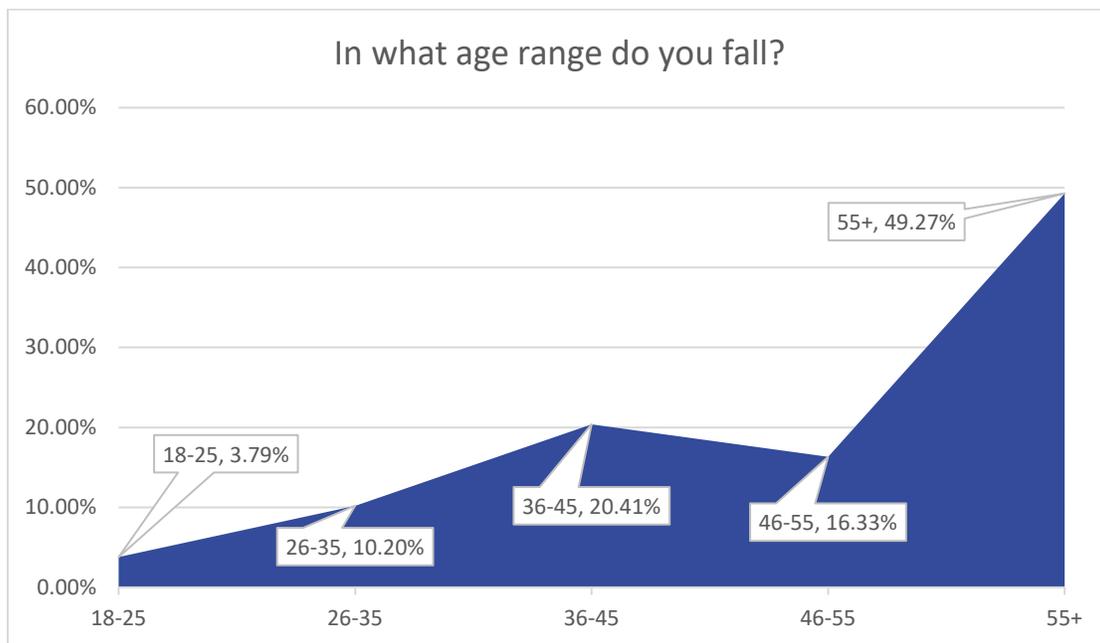
As part of the public outreach effort for the Camp Lejeune JLUS, a sixteen-question survey was distributed to the community. The intent of the survey was to provide information to the Policy Committee, Technical Working Group, and project team regarding general demographics and a sense of the public's perceptions and interactions with Camp Lejeune.

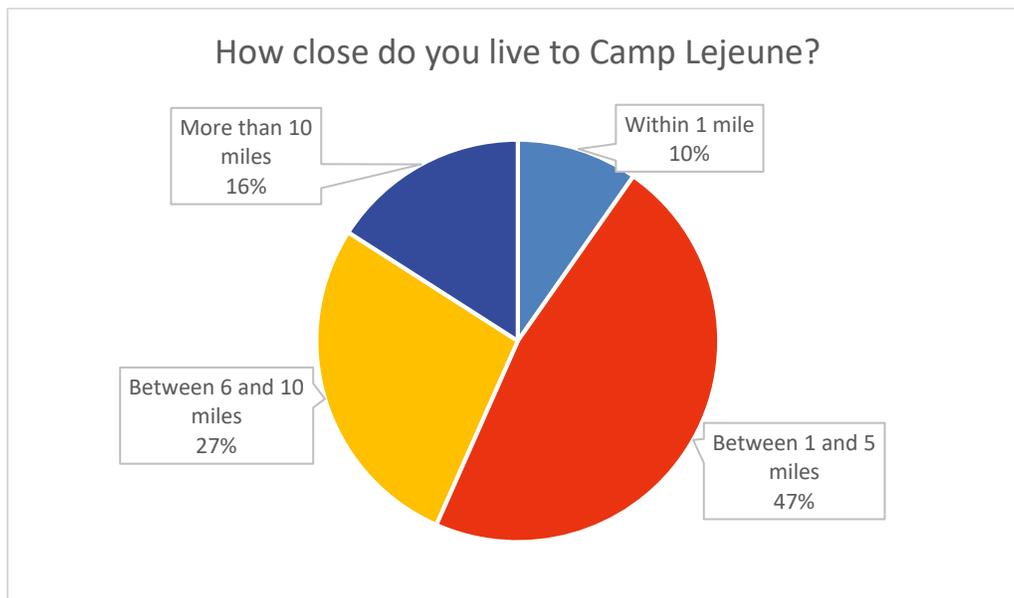
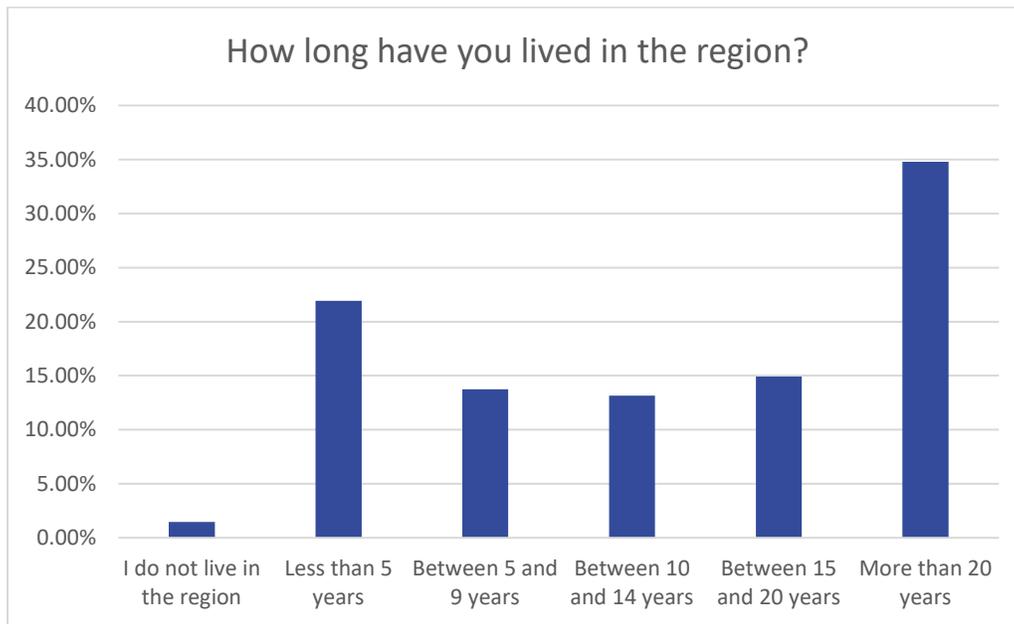
The survey was made available for a five-month period (June 2018 – October 2018) using the project website and through attendance at community events. A total of 322 surveys were completed. The survey questions are divided into the following categories:

- General Demographics
- Connection and Familiarity with Camp Lejeune
- Communication with Camp Lejeune
- Perception of Camp Lejeune in the Community
- Impacts of Camp Lejeune in the Community

General Demographics

The respondents varied in age from 18 to 55+. The majority of the respondents were over 55 (49.27%), followed by residents aged 36-45 (20.41%). The majority of survey respondents live within one to five miles of the Installation, and most of the respondents have lived in the area for more than 20 years.





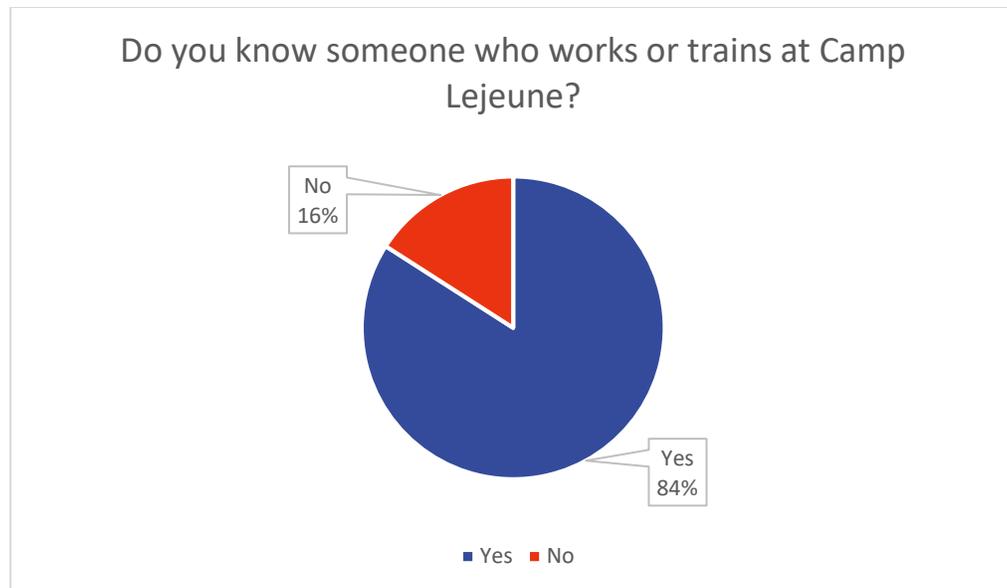
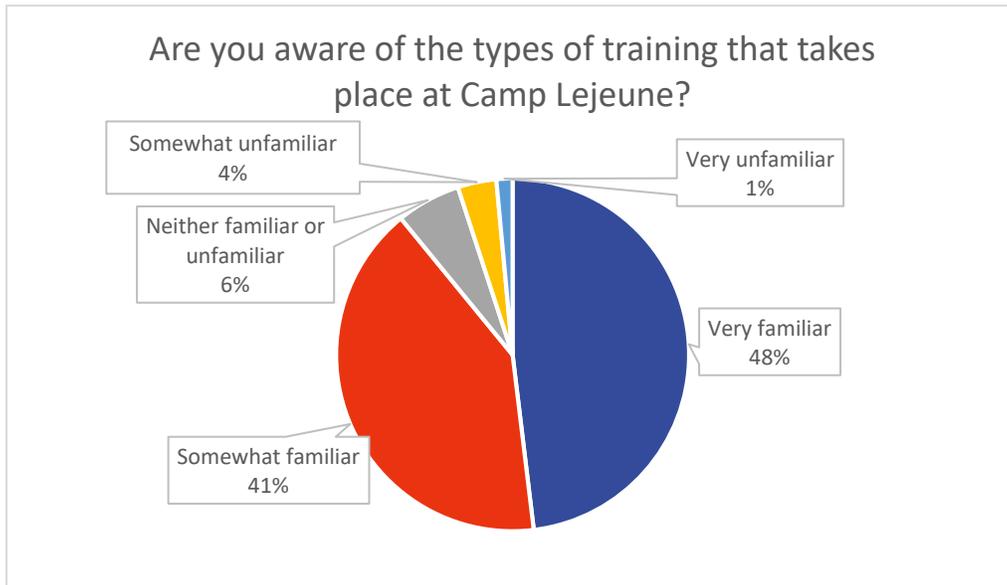
Connection and Familiarity with Camp Lejeune

Overall, respondents appeared to be familiar with the types of training that takes place at Camp Lejeune and have had a reason to visit the installation. In total, 89% of the respondents were “very familiar” or “somewhat familiar” with the types of training that takes place at Camp Lejeune, and 84% knew someone who works or trains at the installation. Approximately 5% of the respondents were “somewhat unfamiliar”

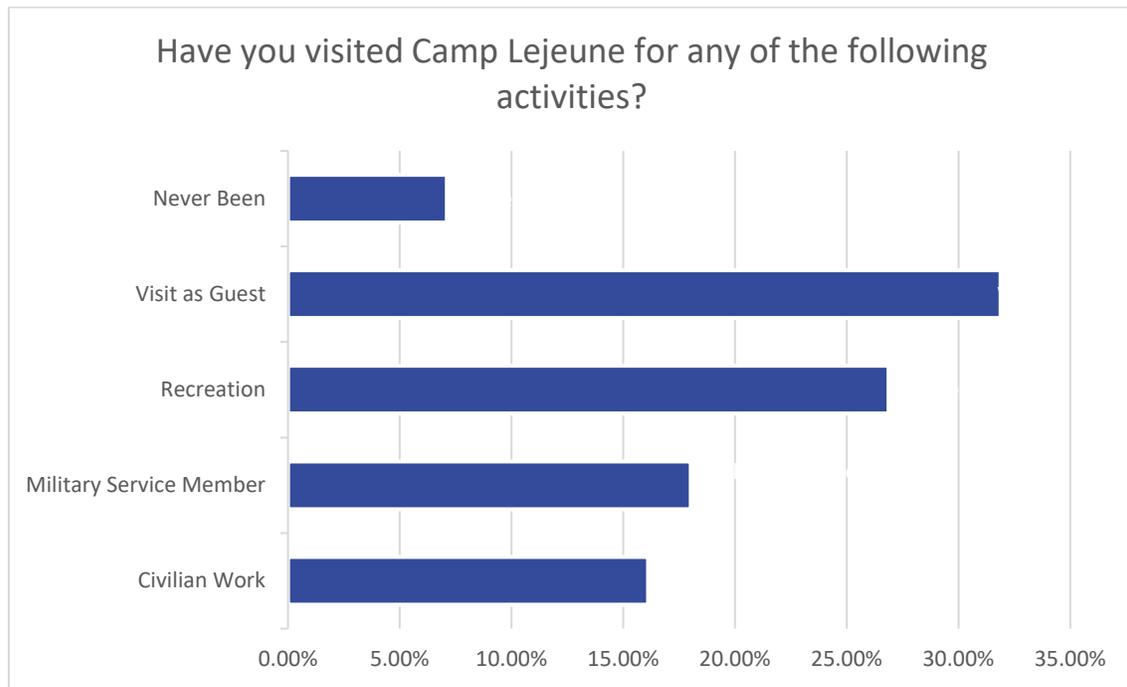


ONslow COUNTY/CAMP LEJEUNE JOINT LAND USE STUDY

or “very unfamiliar” with the training operations. Respondents have visited Camp Lejeune for a variety of reasons, but primarily for recreation (32%) or as a guest (27%). Approximately 7% have never been on the installation. This leaves the impression that the community is knowledgeable of the role that Camp Lejeune plays in the military community.

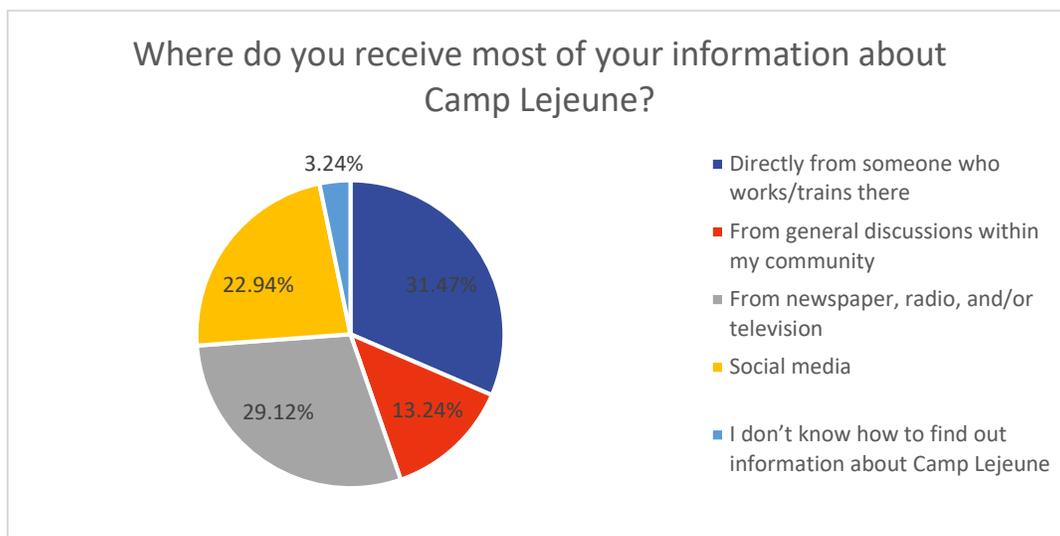


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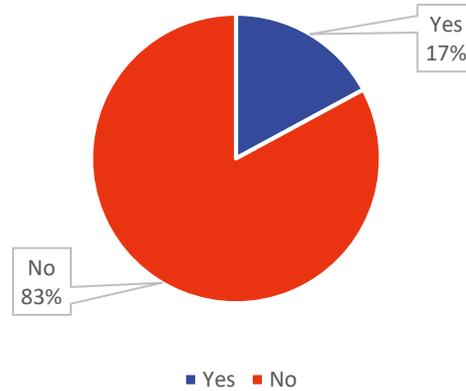
Communication with Camp Lejeune

Respondents were asked how they received information regarding Camp Lejeune. The results found that information was distributed to civilians primarily through people who work or train there, approximately 31.47%. Other sources include newspaper, radio, and or television (29.12%). Approximately 22.94% of the respondents get information about the installation from social media. The majority of respondents have not had to contact the base regarding a problem; however, 62% did not know how to contact the base regarding a problem should they need to.

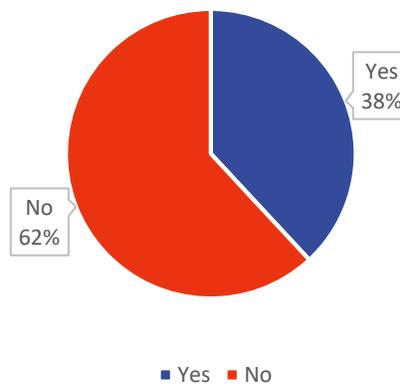


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Have you needed to contact Camp Lejeune regarding a problem or concern?



If you have a question or concern relating to Camp Lejeune, do you know who to contact?

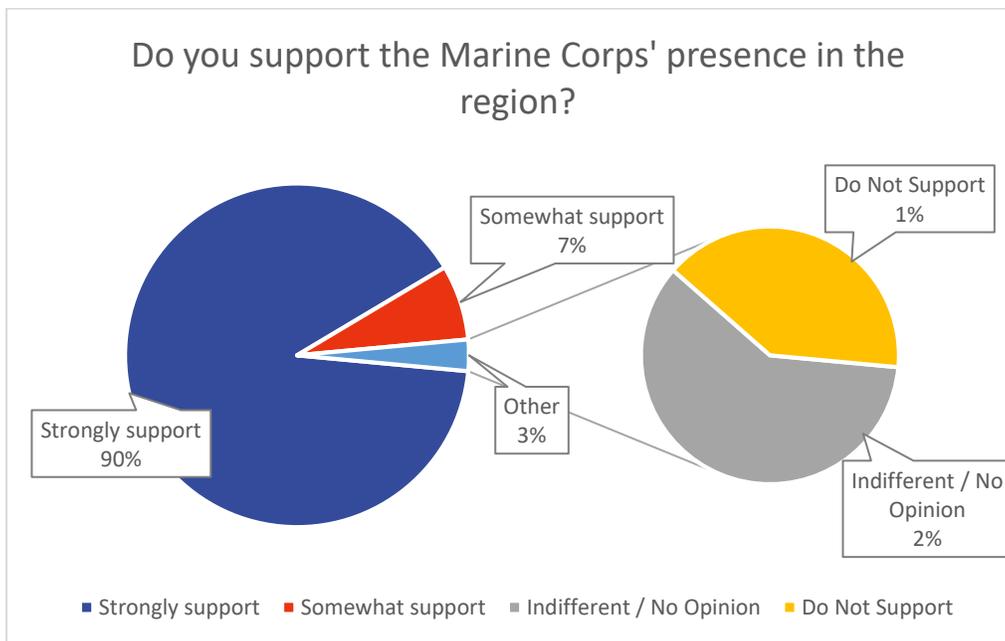
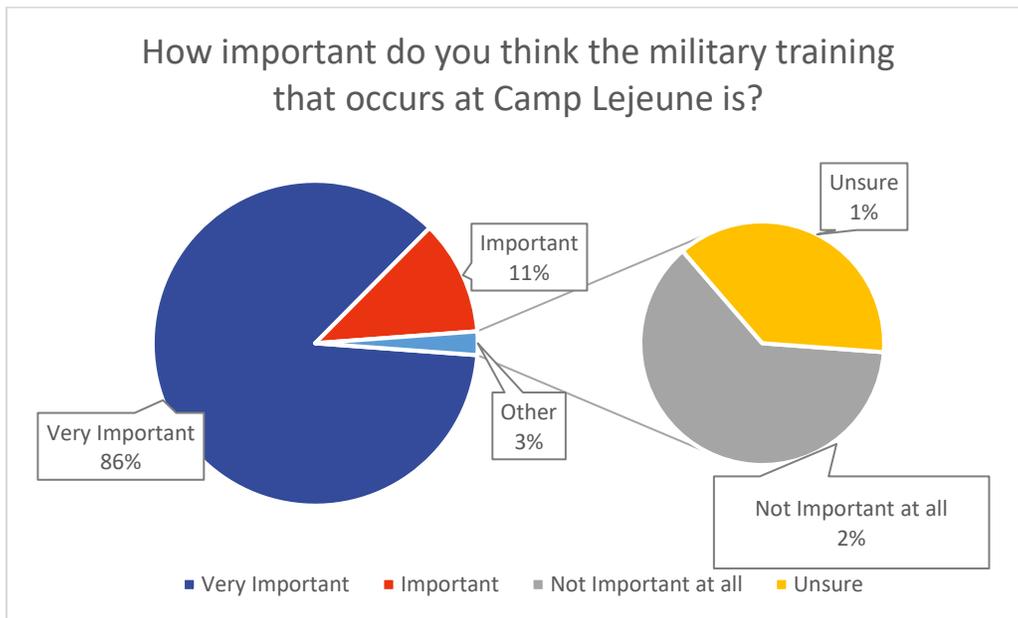


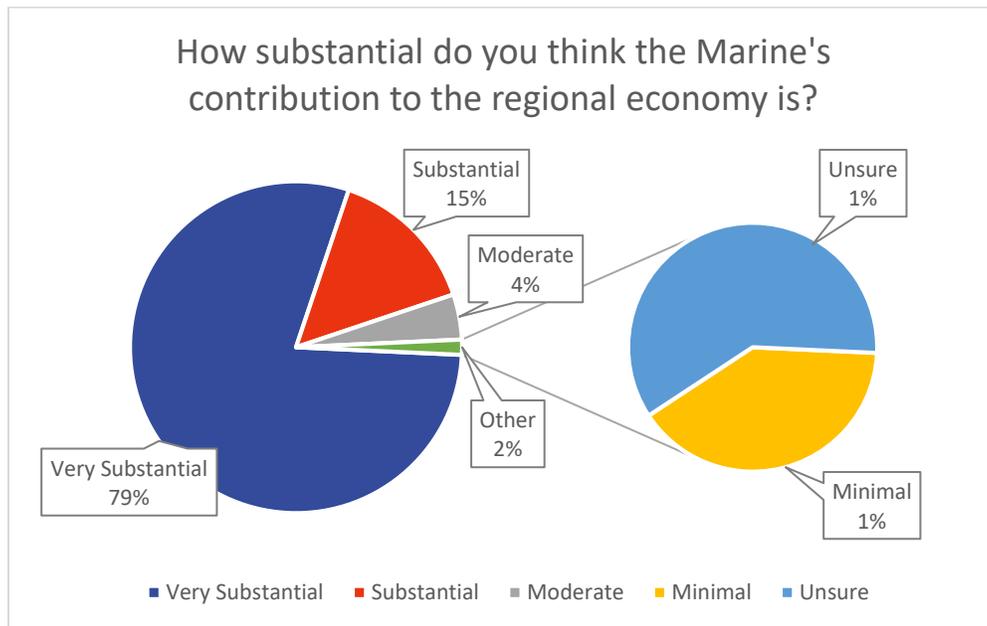
Perception of Camp Lejeune in the Community

The community recognizes the importance of Camp Lejeune – evident by the more than 97% of respondents that found military training at Camp Lejeune to be “very important” or “important” and 97% of respondents supported the Marine Corps’ presence in the region. Additionally, 94% found the Marine Corps’ contribution to the regional economy to be “very substantial” or “substantial.” Only 3% of respondents didn’t believe military training at Camp Lejeune was important or that the Army didn’t make a substantial contribution to the regional economy.



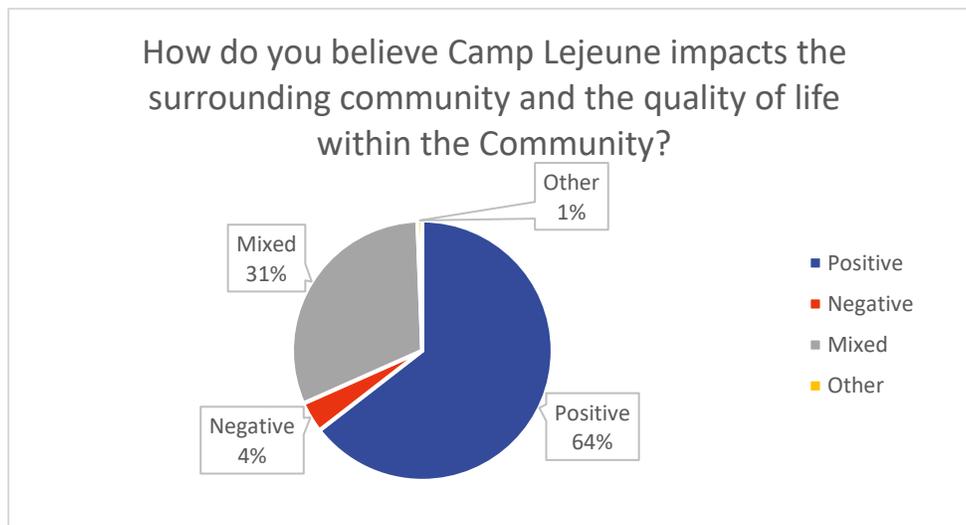
ONslow COUNTY/CAMP LEJEUNE JOINT LAND USE STUDY



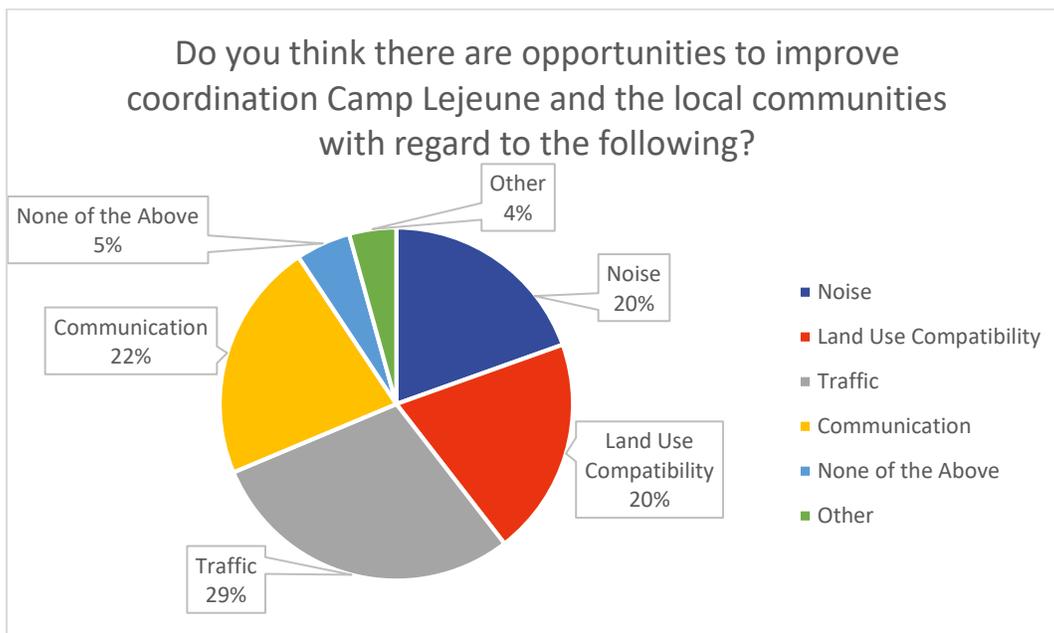
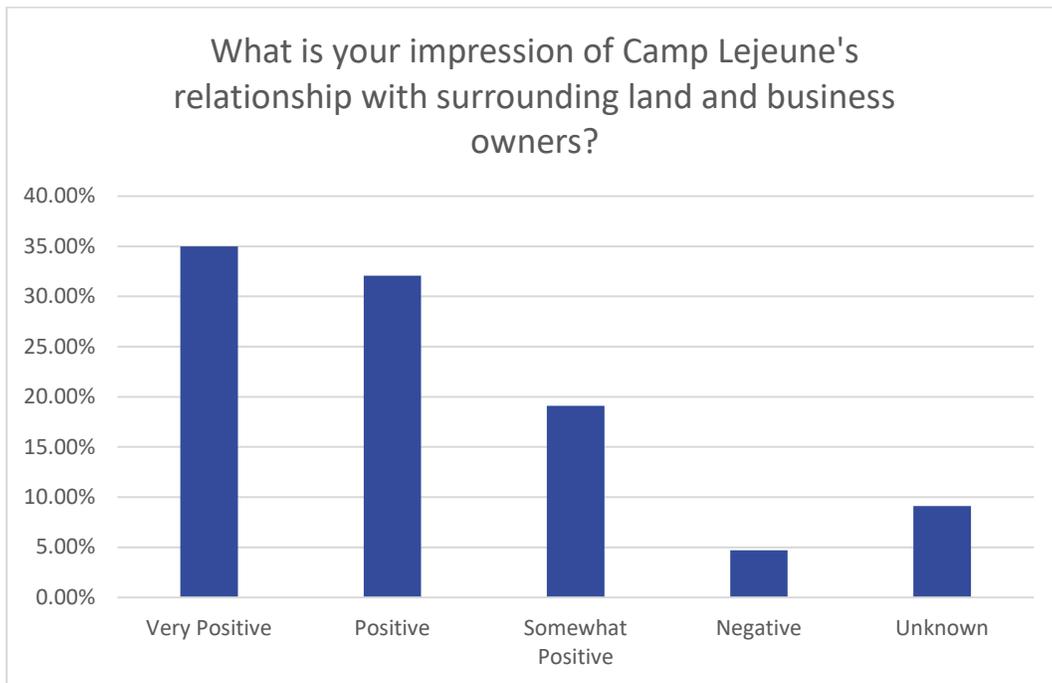


Impacts of Camp Lejeune in the Community

The last subject area of the survey was the impacts of Camp Lejeune on the community. The majority of respondents had a positive view of the installation's impact on the surrounding communities (64%) and of the installation's relationship with surrounding land and business owners (67%). Respondents were also asked to identify if any of the following were a concern to them. The options included noise, traffic, land use compatibility, lack of communication, none of the above, or other. The most significant concerns were traffic (29%), lack of communication (22%), noise (20%), and land use compatibility (20%).



ONSLOW COUNTY/CAMP LEJEUNE JOINT LAND USE STUDY



At the end of the survey, respondents were given the opportunity to provide information regarding the critical issues or concerns that should be reviewed for the study. Of the 322 respondents, 26 provided a response to this question. The most common concerns identified were opening Highway 172 to through traffic and access to recreation land. Other concerns identified included:

★ Emergency Services

★ Recreation



ONslow COUNTY/CAMP LEJEUNE JOINT LAND USE STUDY

- ★ Ease of access to base for business leaders
- ★ School crowding and funding
- ★ Access to Highway 172
- ★ Road work and repair
- ★ Water Quality
- ★ Expansion of Impact Area to 10 miles
- ★ Population growth
- ★ Beach access
- ★ Resource Sharing
- ★ Social Programs for low-income families

