

**Seymour Johnson AFB – AICUZ Update**  
**Air Installation Compatible Use Zone**



**Prepared For:**  
**United States Air Force**  
**Air Combat Command**

**December 2011**



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**ACRONYMS AND ABBREVIATIONS**

AFB	Air Force Base
AFH	Air Force Handbook
AFI	Air Force Instruction
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
APZ	accident potential zones
ARW	Air Refueling Wing
ATC	air traffic control
BX	Base Exchange
CFR	Code of Federal Regulation
CNS	communications, navigation, surveillance
CZ	clear zone
dB	decibel
DNL	day-night average A-weighted sound level
DoD	Department of Defense
EPA	Environmental Protection Agency
ETJ	Extra-Territorial Jurisdiction
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FAR	Floor Area Ratio
ft	feet
FW	Fighter Wing
FY	fiscal year
GS	General Schedule
GWOT	Global War on Terrorism
IFR	instrument flight rule
MOA	military operations area
MSL	mean sea level
NAS	National Airspace System
NLR	Noise Level Reduction
NM	nautical miles
OE/AAA	Obstruction Evaluation/Airfield Airspace Analysis
PUD	Planned Unit Development
SLUCM	Standard Land Use Coding Manual
UFC	Unified Facilities Criteria
USCB	U.S. Census Bureau
VFR	visual flight rules
WG	Wage Grade



SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

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**CHAPTER 1 • PURPOSE  
AND NEED**

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AIR INSTALLATION COMPATIBLE USE ZONE







*Seymour Johnson Air Force Base, whose host wing is the 4th Fighter Wing, is home to the dual-role, all-weather F-15E Strike Eagle. Seymour Johnson AFB provides worldwide deployable aircraft and personnel capable of executing combat missions in support of the Air and Space Expeditionary Force*

*The F-15E Strike Eagle is a dual-role fighter designed to perform air-to-air and air-to-ground missions. An array of avionics and electronics systems gives the F-15E the capability to fight at low altitude, day or night, and in all weather. "FOURTH BUT FIRST"*

## 1.0 PURPOSE AND NEED

### 1.1 Introduction

The purpose of the Department of Defense's (DoD) long-standing Air Installation Compatible Use Zone (AICUZ) program is to promote compatible land development in areas subject to increased aircraft noise exposure and accident potential due to aircraft operations. The goal of the AICUZ program is to promote public health, safety, and general welfare while also protecting military airfields from encroachment that would in turn jeopardize the military mission. Recommendations from this updated AICUZ study should be included in any planning process undertaken by Wayne County and the City of Goldsboro, North Carolina, with the goal of preventing incompatibilities that might compromise Seymour Johnson Air Force Base's (AFB) ability to fulfill its mission requirements. Accident potential and aircraft noise in the vicinity of military airfields should be major considerations in any planning process that the local municipal authorities may wish to undertake.

Land use guidelines for Air Force AICUZ outlined in DoD Instruction 4165.57, *Air Installations Compatible Use Zones (AICUZ)*, reflect preferred land use recommendations for areas underlying clear zones (CZs), accident potential zones (APZs) I and II, as well as for five noise exposure zones (descriptions of these areas can be found in Chapter 3):

- 65-69 decibel [dB] day-night average A-weighted sound level (DNL);
- 70-74 dB DNL;
- 75-79 dB DNL;
- 80-84 dB DNL; and
- 85+ dB DNL.

The zones are delineated by connecting points of equal noise exposure (contour). Land use recommendations for these noise exposure zones have been established on the basis of sociological studies prepared and sponsored by several federal agencies, including the U.S. Department of Housing and Urban Development, the U.S. Environmental Protection Agency (EPA), the U.S. Department of Transportation, the Air Force, as well as state and local agencies. The guidelines recommend land uses that are compatible with airfield operations while allowing maximum beneficial use of adjacent properties. Additionally, guidelines for

maximum height of man-made structures are provided to protect the navigable airspace around an airfield, particularly the approach/departure corridors extending along the axis of the runway. The Air Force has no desire to recommend land use regulations that would render property economically useless. The Air Force does, however, have an obligation to the inhabitants of the Seymour Johnson AFB environs (Figure 1-1) and to the citizens of the United States to point out ways to protect the people in adjacent areas, as well as the public investment in the installation itself.

The AICUZ program uses the latest technology to define noise levels in areas near Air Force installations. An analysis of Seymour Johnson AFB's anticipated flying operations was performed, including types of aircraft, flight patterns, variations in altitude, power settings, number of operations, and hours of operations. This information was used to develop the noise contours contained in this study. The DoD NOISEMAP modeling software and the previously mentioned DNL metrics were used to define the noise exposure zones for Seymour Johnson AFB.

## 1.2 Process and Procedure

This is an update of the 1993 Seymour Johnson AFB AICUZ study. The update presents and documents all changes to the AICUZ for the period of 1993 to 2011 that result from changes to the mix of aircraft using Seymour Johnson AFB (both transient and based) as well as changes to the operational tempo resulting from the advent of the Global War on Terrorism in 2001. This AICUZ study reaffirms Air Force policy of promoting public health, safety, and general welfare in areas surrounding Seymour Johnson AFB.

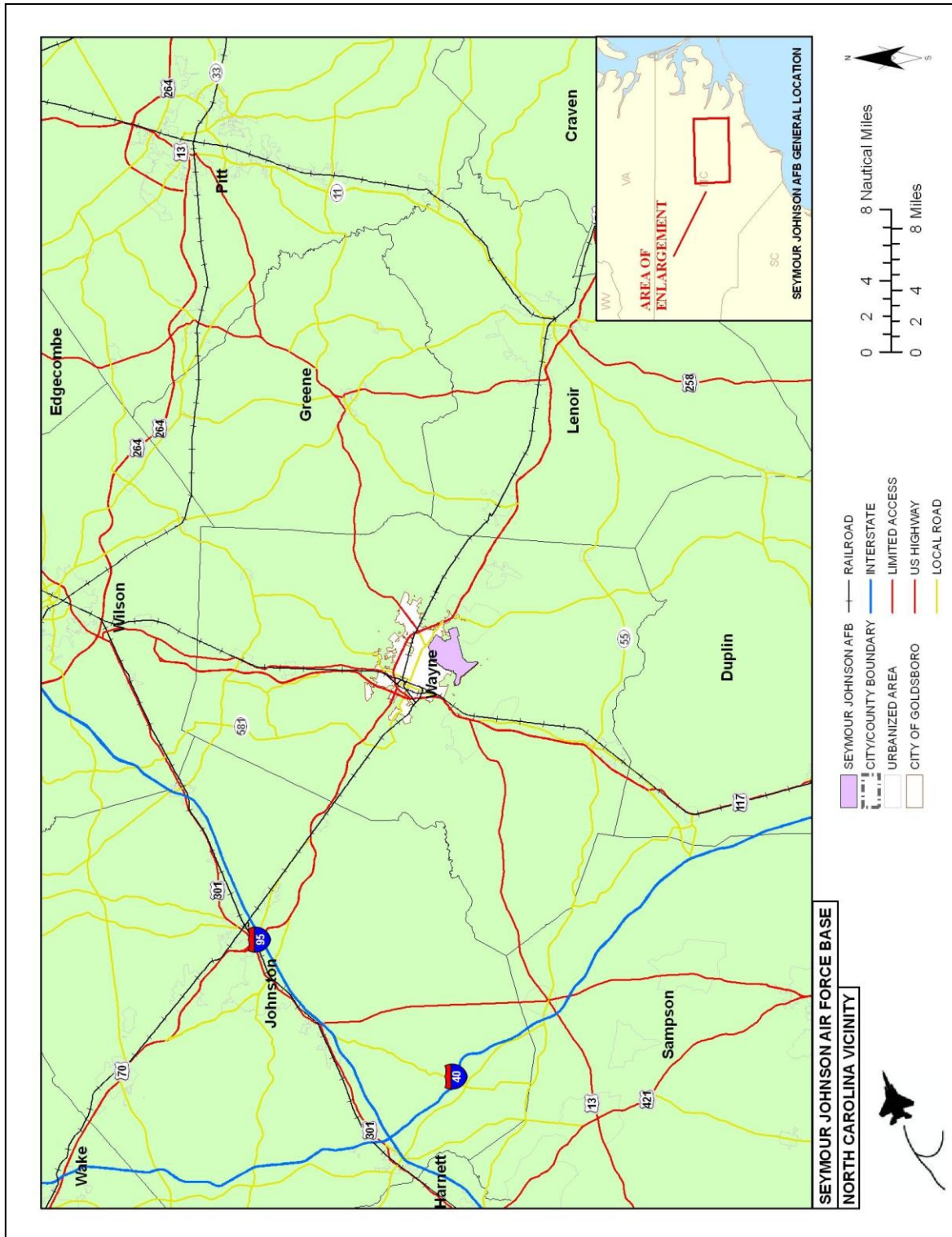
This update is part of the continuing Air Force participation in the local planning process. It is recognized that the Air Force has the responsibility of providing information on its activities that potentially affect the community. As local communities prepare land use plans and zoning ordinances, Seymour Johnson AFB presents this study in the spirit of mutual cooperation and respect with the intent of assisting in the local land use planning process.

Aircraft operations data were collected at Seymour Johnson AFB in May 2010. On-site interviews were performed to obtain aircraft operational and maintenance data. The information was compiled, reviewed, validated, and modeled between September 2010 and February 2011. Using these data, average daily operations by runway and type of aircraft were derived.

*In March of 1981, the USAF announced the Enhanced Tactical Fighter program to procure a replacement for the F-111 'Aardvark'. The concept envisioned an aircraft capable of launching deep interdiction missions without requiring additional support in the form of fighter escort or jamming support. General Dynamics submitted the F-16XL, while McDonnell Douglas submitted a variant of the F-15 Eagle. The F-15E's first flight was on December 11, 1986. The first production model of the F-15E was delivered to the 405th Tactical Training Wing, Luke Air Force Base, Ariz., in April 1988. The "Strike Eagle", as it was dubbed, received initial operational capability in October 1989 at Seymour Johnson AFB in North Carolina with the 4th Tactical Fighter Wing.*



Figure 1-1. Seymour Johnson AFB North Carolina Vicinity





These data are supplemented by flight track information (where we fly), flight profile information (how we fly), and maintenance engine runs occurring while the aircraft is stationary (static run-ups).

### **1.3 Computerized Noise Exposure Models**

The Air Force has adopted the NOISEMAP software program for use in predicting noise exposure that would result from aircraft operations in the vicinity of an airfield.

NOISEMAP is a computer program used to model noise exposure in the vicinity of a military air base due to aircraft flights and engine run-up activities. Noise contours generated by NOISEMAP are used in support of the AICUZ program and National Environmental Policy Act (NEPA) documentation. The Air Force Research Laboratory oversees the development and maintenance of NOISEMAP and its related programs.



SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

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**CHAPTER 2 • INSTALLATION  
DESCRIPTION**

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AIR INSTALLATION COMPATIBLE USE ZONE





## 2.0 INSTALLATION DESCRIPTION

### 2.1 Location, Geography, and Airspace

*The term “National Airspace System” (NAS) refers to a complex network of air navigation facilities, air traffic control facilities, airports, technology, and appropriate rules and regulations. Aircraft operate within the NAS (and become subject to Federal Aviation Regulations) once they begin taxiing from their parking space with the intent to takeoff.*

Seymour Johnson AFB is located in Wayne County, North Carolina, within the corporate limits of the City of Goldsboro.

The population for the state of North Carolina is expected to grow by 15.8 percent by 2020, while Wayne County’s projected growth is 7.0 percent (Table 2-1). Between 1990 and 2010, the county experienced moderate population growth, while the city’s population declined.

Seymour Johnson AFB is located in the southern portion of the City of Goldsboro, south of U.S. 70, east of US 13/117 and approximately 45 miles southeast of Raleigh (Figure 2-1). The topography in this region of North Carolina is generally characterized as a coastal plain region with very little variation of terrain.

**Table 2-1. Population and Projections**

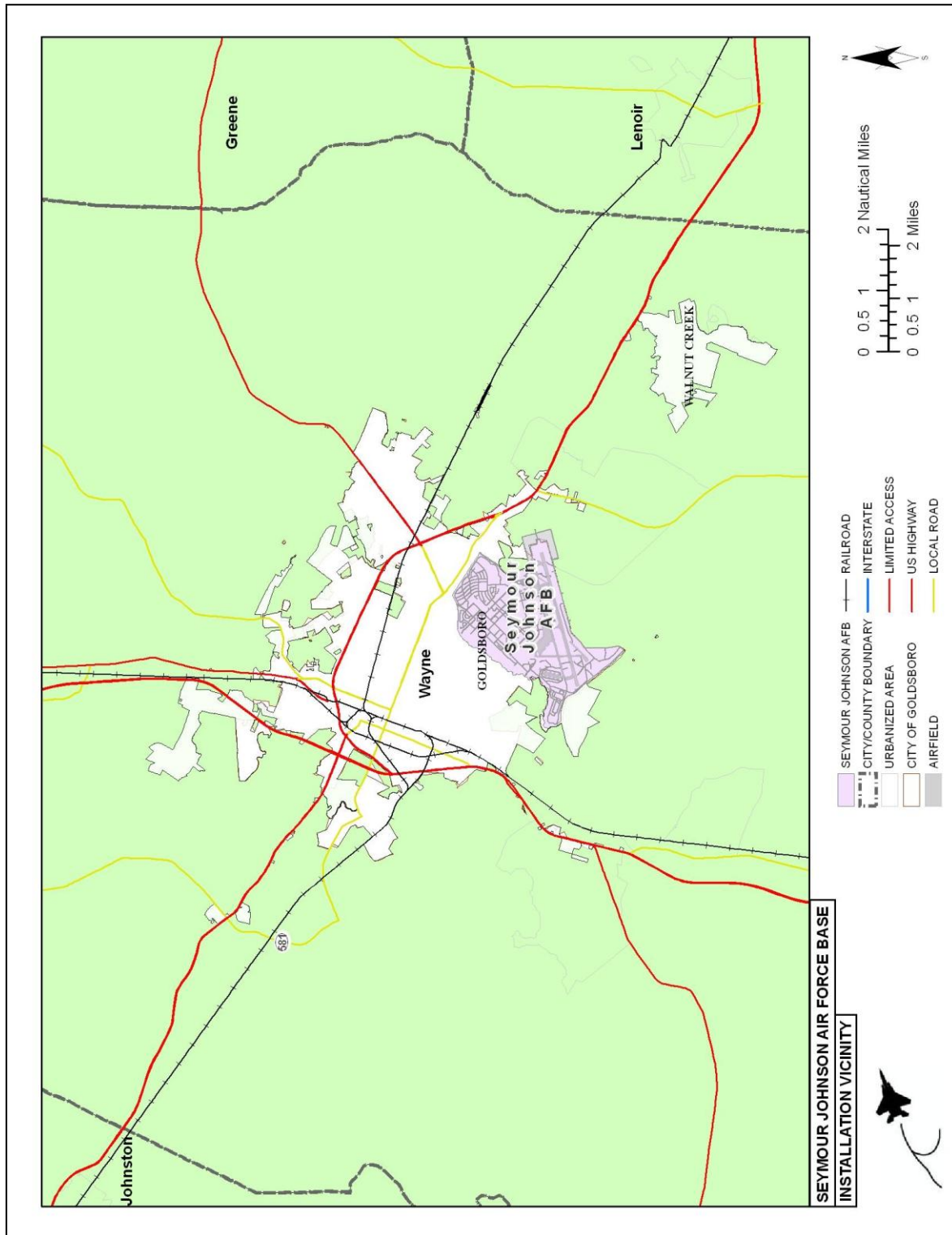
Jurisdiction	1990 Census	2010 Census	1990-2010 Change %	2020 Projection
State of North Carolina	6,628,637	9,535,483	43.85	11,039,342 (+15.8%)
Wayne County	104,666	122,623	17.16	131,211 (+7.0%)
City of Goldsboro	40,709	37,597	(7.65) <sup>1</sup>	N/A

<sup>1</sup>Lost population

Source: US Census Bureau (USCB) 1990, 2010; North Carolina State Data Center 2009



Figure 2-1. Installation Vicinity







The base occupies approximately 3,233 acres, with a runway complex consisting of a single runway (08/26). Runway 08/26 is 11,758 feet long by 300 feet wide oriented along an east-west axis, with intersecting taxiways and ramp space to the north for marshalling and parking of aircraft (Figure 2-2). The airfield elevation is 109 feet above mean sea level (MSL).

Aircraft maintenance and static engine runs occur either in the parking areas, at the ends of the runways, or in test cells or hush houses. The parking areas are located on the north side of the runway and the hush houses are on the west side of the base, also north of the runway (Figure 2-2).

*The FAA classifies airspace based on whether the FAA provides ATC. Separation services are provided to aircraft operating under Instrument Flight Rules. Controlled Airspace (further subdivided into Class A, B, C, D or E) is airspace within which ATC separation service is provided; Class G is uncontrolled airspace; no ATC separation service is provided. The airspace around Seymour Johnson AFB is a mix of Class D, E, and G airspace. Of these, Class D is the most restrictive, requiring all aircraft to establish communications with ATC prior to entry.*

The airfield at Seymour Johnson AFB is located within controlled airspace. The term controlled airspace refers to airspace within which aircraft separation is provided by the FAA or Air Force traffic controllers. Separation of aircraft is achieved through a combination of a radar approach control facility and a control tower at Seymour Johnson, both of which are operated by Air Force controllers. The area closest to Seymour Johnson AFB is a Class D surface airspace area. This airspace requires two-way communication between air traffic controllers (ATC) and the aircraft prior to entry. The communication requirement allows ATC to provide separation service to participating aircraft operating under visual flight rules (VFR) and instrument flight rules (IFR), permitting operations to occur during periods of less favorable weather. The Class D airspace extends outward from the airfield for approximately 5 miles and upward to 2,600 feet MSL.

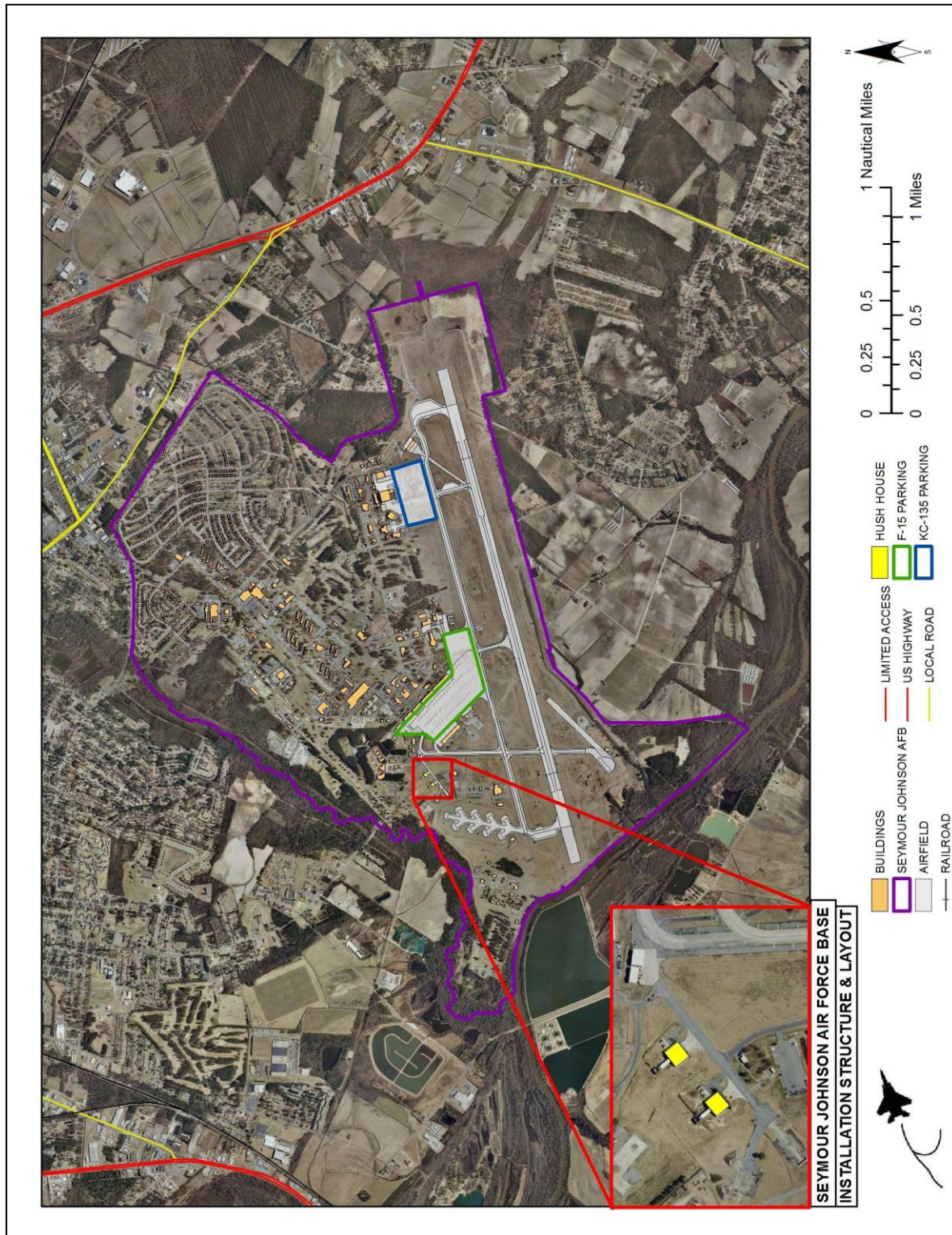
## **2.2 History of Seymour Johnson Air Force Base**

Seymour Johnson AFB is named in honor of U.S. Navy Lt. Seymour A. Johnson, a native of Goldsboro. Johnson, a test pilot, was killed in an aircraft crash near Norbeck, Maryland on March 5, 1941. The base was established five months after the United States entered World War II when the War Department approved the establishment of a technical school two miles southeast of Goldsboro. Seymour Johnson Field was activated on June 12, 1942, as Headquarters, Technical School, Army Air Forces Technical Training Command.

During World War II the base served as a basic training site for P-47 *Thunderbolt* pilots, as well as a staging and training site for officers and enlisted men preparing for service overseas.



Figure 2-2. Installation Structures and Layout





Upon the conclusion of the war, it was an Army-Air Force separation center. In May 1946 Seymour Johnson Field was deactivated. In the 1950s local civic boosters mounted a campaign to reopen the base, which culminated in the installation's reactivation on April 1, 1956 under the domain of Tactical Air Command, the forerunner of Air Combat Command. The current host unit, the 4th Fighter Wing (4 FW) was assigned to the base in December 1957. Since its reopening, a variety of aircraft have been stationed at the base including the B-52 *Stratofortress* bomber, the F-4 *Phantom* fighter-bomber, and the KC-10 and KC-135 refueling tankers. Upon the merger of the 4 FW with the 68th Air Refueling Wing in 1991, it became a composite wing, performing air refueling missions with the KC-10 *Extender* tanker aircraft and performing air-to-ground and air-to-air combat missions with the F-15E *Strike Eagle* fighter aircraft. Subsequently, it was redesignated as the 4 FW and the airlift assets were transferred to Air Mobility Command bases.

The base has served as an economic anchor for this region of North Carolina and contributed to the growth of the surrounding community. The City of Goldsboro annexed the base in 1977.

### 2.3 Mission

The primary mission performed at Seymour Johnson is that of the base's host command, the 4 FW. Fourth Fighter Wing flying units include two operational fighter squadrons (335th and 336th Fighter Squadrons) along with two fighter training squadrons (333rd and 334th). The squadrons operate the F-15E, a modified two-seat version of the F-15 air superiority fighter. With its advanced avionics, conformal fuel tanks, expanded weapons capacity and employment of the Low Altitude Navigation and Targeting Infrared for Night system, it has significant air to ground targeting capabilities when operating at low altitude and during low visibility conditions.

In addition to the host unit, a second wing under the command of the Air Force Reserve is stationed at Seymour Johnson AFB. The 916th Air Refueling Wing (916 ARW) performs its mission with the KC-135R *Stratotanker* tanker aircraft. The 2005 Base Realignment and Closure Commission decision to assign an additional eight KC-135Rs to Seymour Johnson is reflected in Table 2-2. With a tanker capacity having the ability to transfer 200,000 pounds of fuel, the KC-135R enables the Air Force to extend its reach throughout the world. **NOTE: The operations modeled for this report are based upon the use of 16 KC-767s,**

**which is the anticipated replacement aircraft for the KC-135R.** For comparison purposes, the KC-135R measures 136 feet in length with a wingspan of 130 feet, while the KC-767 measures 159 feet in length with a wingspan of 156 feet.

**Table 2-2. Aircraft Assigned to Seymour Johnson AFB in FY10**

Unit Designation	Aircraft Type	Number of Aircraft
4 FW	F-15E	96
916 ARW	KC-135R	16

## 2.4 Economic Impact

Seymour Johnson AFB is located within Wayne County and the City of Goldsboro, North Carolina. The base's economic region of influence is thought to extend outward 50 miles. The general economic health of the region is good and is characterized by a reasonably well-diversified economy based on agriculture, manufacturing, and wholesaling, which account for 16 percent of its jobs. The local economy also relies heavily on construction, government, trade, and professional services employers. These sectors in aggregate comprise 84 percent of total employment (Table 2-3). The 2010 census data indicate that the median household income in Wayne County is \$40,291 compared to a national average of \$50,221 and statewide average of \$43,754.

Aside from physical proximity, numerous factors link Seymour Johnson AFB, the City of Goldsboro, and nearby residents of Wayne County as interdependent entities. The relationship between base personnel and the city and county has historically been one of cooperation, mutual respect, and support. Strong ties between the local governments, the business community, and the military have existed for decades.

Seymour Johnson AFB hosts an annual air show and open house. Base personnel are actively involved in city affairs, frequently attending city meetings to discuss any Seymour Johnson AFB issues that could potentially affect the city.



**Table 2-3. Wayne County Metropolitan Statistical Area,  
Employment Estimates by Sector**

Sector	2009 Estimate (# of Jobs)	
Farm employment (non-proprietor)	1,354	<u>1,354</u>
Government and government enterprises		
Federal, civilian	1,254	
Military	4,617	
State government	3,692	
Local government	4,854	
		<u>14,417</u>
Forestry, fishing, related activities, and other	(D)	
Mining	(D)	
Utilities	244	
Construction	2,679	
Manufacturing	5,581	
Wholesale trade	2,393	
Retail trade	6,405	
Transportation and warehousing	861	
Information	897	
Finance and insurance	1,680	
Real estate and rental and leasing	1,252	
Professional, scientific, and technical services	1,295	
Management of companies and enterprises	378	
Administrative and waste services	2,256	
Educational services	1,717	
Health care and social assistance	8,087	
Arts, entertainment, and recreation	573	
Accommodation and food services	3,669	
Other services, except public administration	3,006	
Private employment (includes proprietors but excludes farm wage and salary employees)		<u>43,386</u>
<b>Total Employment</b>		<b><u>59,157</u></b>
Wage and salary employment (Total Employment - Proprietors Employment)	51,157	
Proprietors employment		
Farm proprietors employment	571	
Nonfarm proprietors employment	7,429	
		<b>59,157</b>

Source: Bureau of Economic Analysis, Total Full-Time and Part-Time Employment by Industry, Table CA-25N, April 2011

The population associated directly with Seymour Johnson AFB in Fiscal Year 2010 totaled approximately 12,278 persons; including 6,256 military personnel, 5,035 dependents, and 987 civilians (Table 2-4).

**Table 2-4. Population Associated with Seymour Johnson AFB**

<b>Classification</b>	<b>Living on base</b>	<b>Living off base</b>	<b>Total</b>
Active Duty Permanent Party	516	4,697	5,213
Air Force Reserve / Air National Guard Permanent Party	0	1,043	1,043
<b>Total Military</b>	<b>516</b>	<b>5,740</b>	<b>6,256</b>
Active Duty Dependents <sup>1</sup>	1,177	3,858	5,035
Appropriated Funds Civilian, GS & WG			573
Non-Appropriated Fund, Contract Civilians, and Private Business			
Civilians Non-Appropriated			258
Civilians, Base Exchange and Commissary			146
Private Business			10
<b>Total Civilian Personnel</b>			<b>987</b>
<b>Grand Total</b>			<b>12,278</b>

<sup>1</sup>No civilian employees are assumed to live on base

Source: Seymour Johnson Economic Impact Statement Fiscal Year 2010

Seymour Johnson Housing Office, May 2011

The economic impact of Seymour Johnson AFB on this region of North Carolina is significant, especially within the 50-mile radius of economic impact generally associated with military installations. In 2010, Seymour Johnson AFB employees 7,243 personnel on base, including active duty military, appropriated fund civilians, non-appropriated fund contracts, and private business civilians. Roughly eight percent of the military personnel stationed at Seymour Johnson reside on base, with the remainder living in the local area. The annual total payroll was approximately \$356.6 million. Through commodity, service, and construction contracts, an additional \$83.8 million entered the local economy in 2010 (Table 2-5). The estimated annual value of the indirect jobs resulting from employment and procurement at Seymour Johnson is \$70.5 million (Table 2-6).

**Table 2-5. Annual Expenditures for Procurement and Contracts**

<b>Procurements</b>	<b>Expenditure (\$)</b>
<b>Construction</b>	
Military Construction Program	\$5,655,400
Military Family Housing	\$755,300
Operations and Maintenance (Peacetime & GWOT)	\$29,639,399
Non-Appropriated	\$1,976,600
<b>Total</b>	<b>\$38,026,699</b>
<b>Services (Services Contracts, Government Purchase Card, Utilities)</b>	
<b>Total</b>	<b>\$24,545,963</b>
<b>Other Procurement Types</b>	
Education: Tuition Assistance	\$2,723,744
Commissary (Inventory)	\$161,700
Base Exchange (BX) Inventory	\$23,100
Health Care (Government Share only)	\$16,360,702
Temporary Duty (to Seymour Johnson AFB) Travel Expense	\$1,985,220
<b>Total</b>	<b>\$21,254,466</b>
<b>Grand Total</b>	<b>\$83,827,128</b>

Source: Seymour Johnson AFB Economic Impact Statement Fiscal Year 2010

The FY10 total direct economic impact of Seymour Johnson AFB on the local economy was \$511 million.

**Table 2-6. Estimated Economic Impact**

<b>Category</b>	
<b>Annual Payroll</b>	
Military	\$302,717,345
DoD Civilian	\$53,859,408
<b>Total</b>	<b>\$356,576,753</b>
<b>Annual Expenditures (see Table 2-5)</b>	<b>Total \$83,827,128</b>
Estimated Number of Indirect Jobs Created	2,072
Average Annual Salary	\$34,010
<b>Estimated Annual Value of Indirect Jobs Created</b>	<b>\$70,468,720</b>
<b>Grand Total</b>	<b>\$510,872,601</b>

Source: Seymour Johnson AFB Economic Impact Statement Fiscal Year 2010

## 2.5 Flying Activity

Prior to the data collection that occurred in May 2010, the most recent AICUZ study was released in 1993. The aircraft types based at Seymour Johnson AFB have changed during this period, principally with the replacement of 20 KC-10s with 16 KC-135Rs. The mix of transient aircraft can and does change from year to year. Transient aircraft generally fall into one of two categories: VIP transport (light business turboprop aircraft, such as the C-12 *Huron*) or fighter aircraft based elsewhere using Seymour Johnson AFB as an emergency divert field (e.g., F-16 *Fighting Falcon*). The number of transient aircraft sorties also varies over time as operational requirements dictate; however, they represent a small fraction of airfield operations compared to activity from based aircraft.

### 2.5.1 Flight Operations by Aircraft Type

An operation is defined as one takeoff, one arrival, or half of a closed pattern. A closed pattern consists of both a departure portion and an approach portion (i.e., two operations). In addition to the based aircraft types (F-15E and KC-135R), transient aircraft from other military installations occasionally land or take-off at Seymour Johnson AFB.

*A sortie is a single military flight from initial takeoff to its terminating landing. A sortie consists of at least two operations (a takeoff and a landing) and often additional circuits in the traffic pattern, called closed pattern operations. Closed patterns are counted as two operations because they include a departure and an arrival.*





While the number of assigned, transient, and civil aircraft operations usually varies from day to day at an installation, the NOISEMAP computer program requires input of a specific number of daily operations and of aircraft maintenance engine run-up operations. For the purposes of an AICUZ study, the “average busy day” is modeled (Tables 2-7a and 2-7b). An “average busy day” is the level of flight activity one would normally observe at a base (i.e., excluding weekends and holidays).

The typical F-15E sortie consists of a departure from Seymour Johnson AFB on a heading toward the training airspace, followed by air work in a Military Operations Area (MOA), an arrival back at Seymour Johnson AFB, followed by radar and visual closed pattern work.

**Table 2-7a. Average Busy Day Aircraft Operations\* at Seymour Johnson AFB in FY10**

<b>Aircraft Type</b>	<b>Average Daily Operations</b>	<b>Average Annual Operations</b>
F-15E	204.616	51,154
KC-135R	28.444	7,509
Transient	3.758	1,372
<b>TOTAL</b>	<b>236.818</b>	<b>60,035</b>

\*Note: An operation is one departure (take-off) or one arrival (landing). A closed pattern consists of two operations (i.e., one departure and one arrival). Additionally, calculations are based on a 250-day per year flying schedule for F-15E and a 264-day per year flying schedule for KC-135R aircraft (Average Busy Day) and on a 365-day per year flying schedule for transient aircraft.

**Table 2-7b. Based Aircraft Operations**

	<b>Departures</b>		<b>Arrivals</b>		<b>Closed Patterns</b>		<b>Totals*</b>	
	<b>Day</b>	<b>Night</b>	<b>Day</b>	<b>Night</b>	<b>Day</b>	<b>Night</b>	<b>Day</b>	<b>Night</b>
<b>F-15</b>	72.14	0.00	67.82	4.32	53.016	7.32	192.976	11.64
Total	72.14		72.14		60.336		204.616	
<b>KC-135</b>	3.26	0.00	1.73	1.53	20.48	1.44	24.03	4.41
Total	3.26		3.26		21.92		28.44	

\*Note: An operation is one departure (take-off) or one arrival (landing). A closed pattern consists of two operations (i.e., one departure and one arrival). A night operation is one occurring between 10 PM and 7 AM.

The flight patterns (also referred to as flight tracks) are designed taking several factors into account, and the operations most commonly observed along these flight tracks are a function of several factors including:

- The mission or purpose for which the sortie is being flown and, closely related, the locations of the most commonly used training airspace units;
- The terrain;
- Noise abatement considerations;
- The prevailing weather conditions and winds; and
- Separation requirements from other aircraft in the vicinity.

Of these factors, the prevailing winds (which influence whether operations occur on Runway 08 or Runway 26) and the mission (i.e., what training or operational scenario is being flown) are the predominant factors that influence which of the many tracks possible are the ones most commonly observed.

#### 2.5.2 Runway and Flight Track Utilization

As noted, Seymour Johnson AFB has a main runway (08/26) oriented east/west. Traffic patterns for departures from and arrivals to the main runway generally correspond to the training airspace in use by the sortie. The closed pattern traffic is generally kept to the south side of the runway to avoid overflying base housing areas and the city.

Generally, Runway 26 is used due to the prevailing winds and other operational considerations. Over the course of a year, Runway 26 is used for approximately 80 percent of the departures and arrivals; its reciprocal, Runway 08 is used 20 percent of the time.

Other factors influencing the flight tracks observed at Seymour Johnson AFB include:

- Takeoff patterns routed to avoid densely populated areas as much as practicable;
- Air Force criteria governing the speed, rate of climb, and turning radius for each type of aircraft;
- Efforts to control and schedule missions to keep noise levels low, especially at night; and
- Coordination with the FAA to minimize conflict with civilian air carrier and general aviation aircraft operations.

*The Federal Aviation Regulations governing aircraft flight operations describe two basic sets of flight rules under which aircraft may be operated: VFR, which requires certain minimum in-flight visibility and cloud ceilings, and IFR, which do not.*

*For all operations, if sufficient visibility exists, the pilot in command remains responsible for collision avoidance and aircraft separation, this is usually referred to as “see and avoid.” There are times, however, when this technique is impractical and reliance upon it would be inadvisable. Examples would be flying through a cloud; flying at high speeds and high altitude; or flying in a very congested airspace.*

*Over the years, IFR has evolved to keep it effective as a separation method. Therefore, the FAA designates ‘controlled airspace’ within which it will provide ATC separation, specifies minimum equipment requirements to facilitate communications and radar surveillance of aircraft, and requires the filing of IFR flight plans and prior receipt of clearances before undertaking an IFR flight and the adherence to ATC instructions during such flight.*



*Military aircraft often use an overhead arrival pattern in which the aircraft flies over the arrival end of the runway at pattern altitude (normally 1,500 feet above ground level (AGL)), then banks sharply to the left or right, turning to a heading opposite that of the runway in use. This sharp turn is also called a “pitch” or a “break.” Using the turn to slow down while holding pattern altitude, the aircraft is then flown parallel to the runway (downwind), configures its flaps and landing gear, and when beyond the threshold of the runway begins a descending turn toward final approach such that the plane rolls out wings-level at the proper airspeed on about a 1 mile final and about 400 feet AGL. This technique minimizes vulnerability to enemy fire and provides additional altitude in the event of aircraft malfunctions.*

*Civil aircraft ordinarily approach the runway, descending on a more gradual glidepath and seldom overflying the threshold at pattern altitude. The tight turns at high rates of speed that are required in order to stay within the vicinity of the airfield generate G forces beyond the design capabilities of most civil aircraft and would also result in an unpleasant ride for passengers not expecting such a vigorous maneuver.*

*In order to enhance safety, aircraft flying in the traffic pattern fly at a specified pattern altitude. Usually for light aircraft, this altitude is 1,000 AGL; for heavy aircraft and fighters it is 1,500 AGL. The use of a common altitude makes it easier to spot aircraft along the horizon. Aircraft normally descend from pattern altitude when turning from downwind to a base or final approach segment.*

As a result, aircraft operating at Seymour Johnson AFB use the following basic flight patterns:

- Straight in approach;
- Overhead landing pattern; and
- Simulated Flame-out Emergency Practice Approaches.

Static engine run-ups are performed at Seymour Johnson, most often in conjunction with maintenance activities. To the maximum extent possible, engine run-up locations have been established in areas that minimize noise for people on-base as well as for those in the surrounding communities (Figure 2-2). Normal base operations do not include late night (after 10 PM and before 7 AM) engine run-ups but heavy workloads or unforeseen contingencies sometimes require a limited number of late night engine run-ups. Two “hush houses” (enclosed buildings with noise suppressors) are used by the F-15E for high power static engine runs.

The area of influence for airfield planning is concerned with three primary aircraft operational/land use determinants: (1) accident potential to occupants on the ground; (2) aircraft noise; and (3) hazards to operations from land uses (height obstructions, increased potential for bird-aircraft strike hazards, operations such as factories that emit smoke, dust, or light that adversely affect flight operations). Each of these concerns is addressed in conjunction with mission requirements and safe aircraft operation to determine the optimum flight for each aircraft type. The flight tracks (Figures 2-3, 2-4, and 2-5) are the result of such planning.

Arrivals to Seymour Johnson AFB include both visual straight-in and overhead approaches to Runways 08/26; the overhead arrival turn away from the runway to the downwind leg (known as a “break” or “pitch”) usually occurs near the runway threshold, but in formation flights, the second ship typically turns about 5 seconds after the first (approximately 3,000 feet after the first ship turns), resulting in a break closer to mid-field. Breaks typically occur on the south side of the runway.

The closed patterns on Runway 08/26 are normally flown at 1,800 feet MSL. Depending on the purpose of the maneuver, other altitudes are also used. Closed patterns are often used to maintain pilot proficiency because they offer the greatest number of take-offs and arrivals in the shortest period of time.

### Pre-Takeoff and Aircraft Maintenance Run-Up Operations

Pre-takeoff aircraft engine runs occur with every sortie. These runs usually occur in the parking space while the pre-flight checks are being performed and on taxiways at the ends of the runways while additional checks take place. Post-landing engine runs may also occur, again at the taxiways near the ends of the runway and in the parking space prior to shutdown at the end of a sortie. Additionally, engine maintenance run-ups occur in the parking area. If a run-up with a higher power setting is required for testing or diagnostics, a location that is suitably designed for such purpose, such as a test stand, test cell, or hush house is used.

While the pre-takeoff and post-landing engine runs occur generally during the same timeframe as the sorties (i.e., day versus night), the maintenance runs have a greater night-time count than do flight operations. The maintenance personnel often use the period after the aircraft are finished flying for the day to perform required checks and maintenance so that aircraft are operational for the next day's flying activities.

#### 2.5.3 Aircraft Flight Profiles and Noise Data

For the purposes of this AICUZ study, an aircraft flight profile denotes the engine power settings, altitudes above ground level, and aircraft airspeeds along a flight track. All aircraft flight profiles were obtained by interviewing pilots assigned to units based at Seymour Johnson AFB that operate the aircraft. The data is then put into the NOISEMAP computer program and day-night average sound level (DNL) contours are generated. NOISEMAP computes DNLs by either interpolating or extrapolating sound levels from a standard noise library to match the aircraft's configuration. The standard noise library is the result of controlled field measurements for each aircraft type.

Atmospheric temperature and relative humidity are important factors in the propagation of noise since they affect the ability of the atmosphere to absorb or attenuate noise. Seymour Johnson AFB's climate is temperate, characterized by long, hot summers and shorter, usually mild winters. As a coastal climate, it has fairly narrow daily temperature swings compared to other parts of the country due to a high relative humidity. The local climatological data are incorporated in the noise model.

*There are many occasions when an aircraft will have its engines running but not be moving; this is called an engine ground run. Aircraft with engines running while waiting to taxi or waiting to take the runway for takeoff are everyday occurrences, as are aircraft that are undergoing maintenance. A static run-up, a type of engine ground run, occurs when the engine is powered up to a setting other than idle.*

*Static run-ups to moderate power settings associated with maintenance are normally performed in the squadron ramp space; higher power runs to maximum power levels occur at a test stand or test cell. If the engine has been removed from the aircraft (dismounted), then it is run in a test cell; if the aircraft is tied down and the engine is still in the aircraft, that activity occurs at a test stand (if outdoors) or in a building specifically designed to attenuate the noise from the high power engine run called a hush house.*



Figure 2-3. All Aircraft - Flight Departures

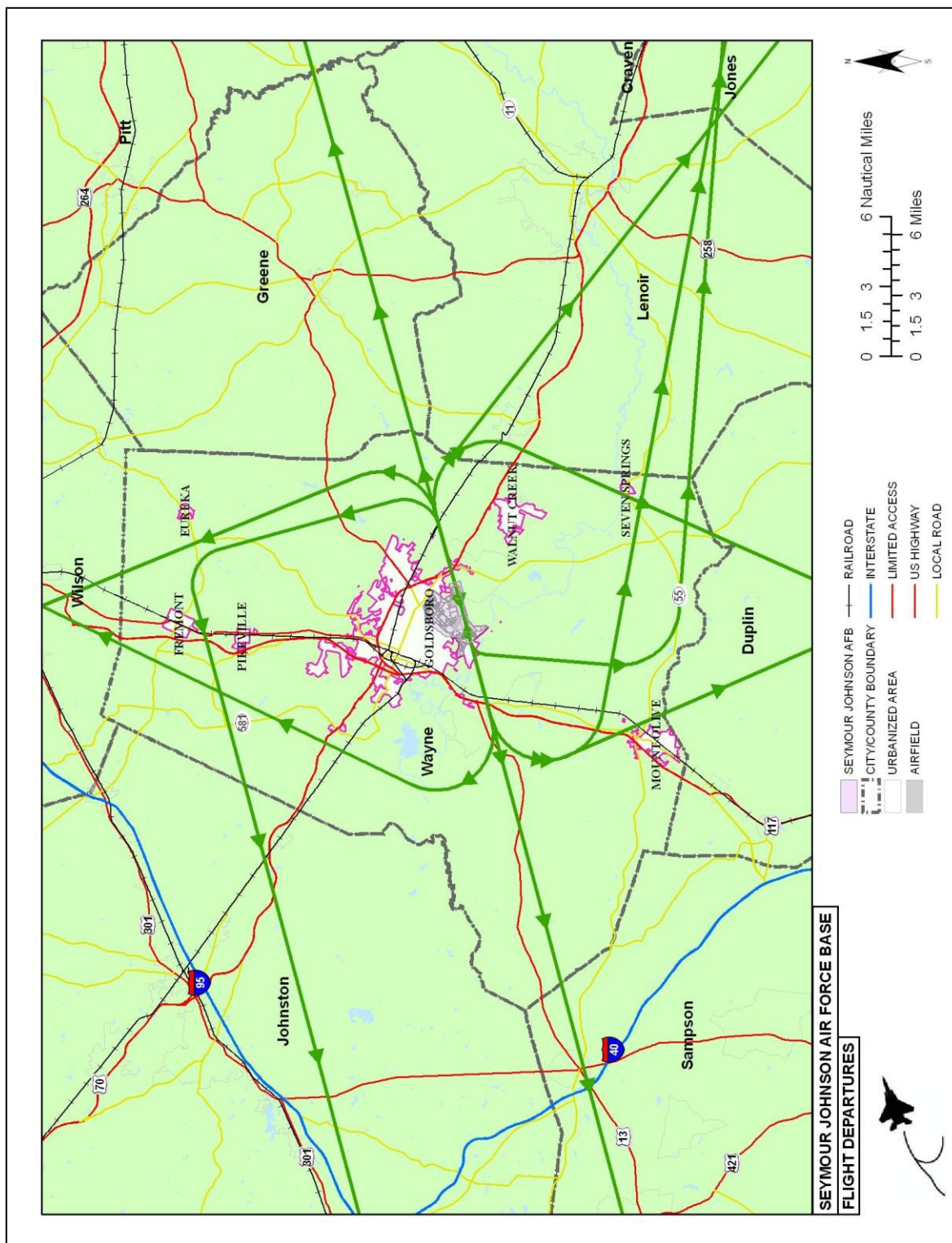




Figure 2-4. All Aircraft - Flight Arrivals

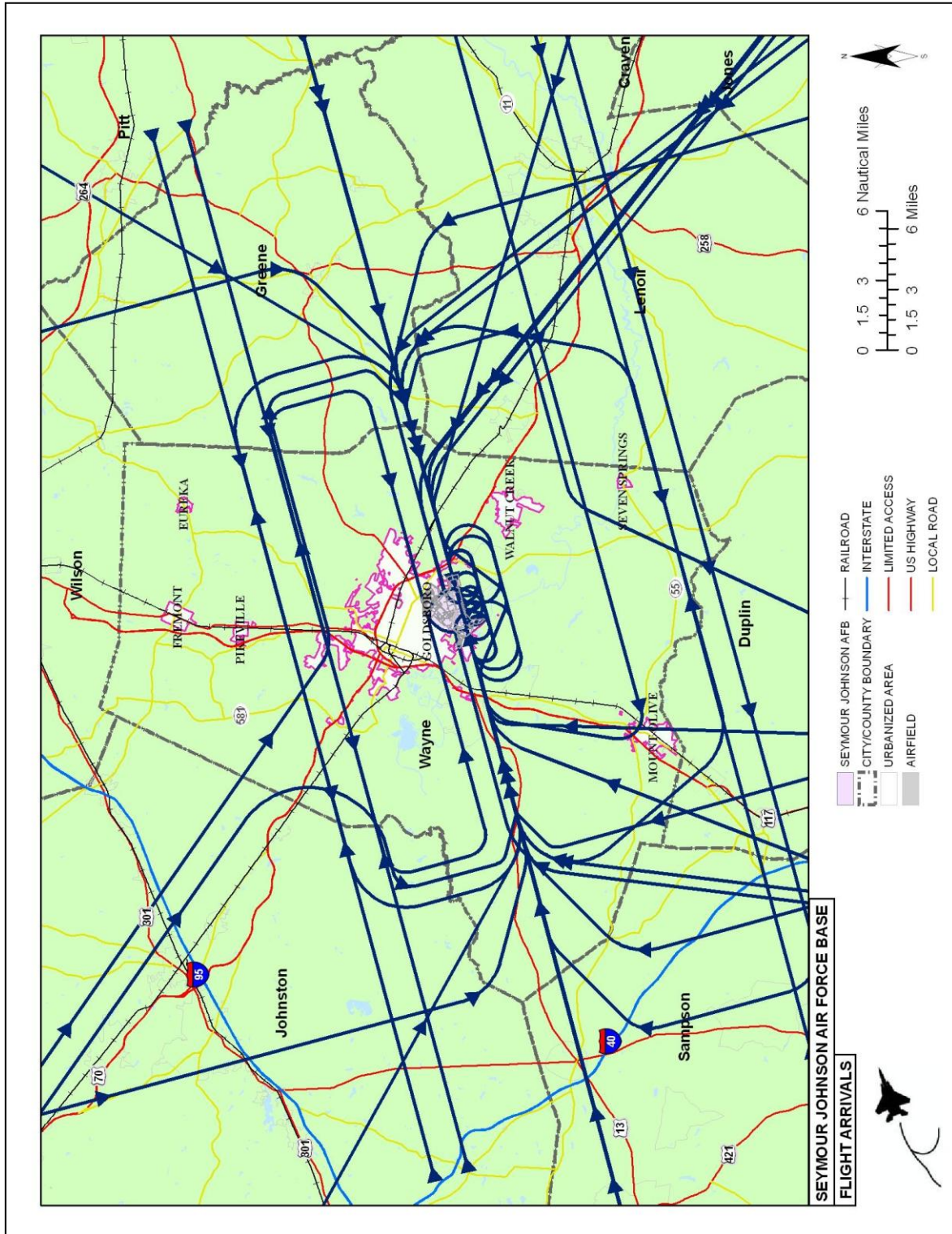
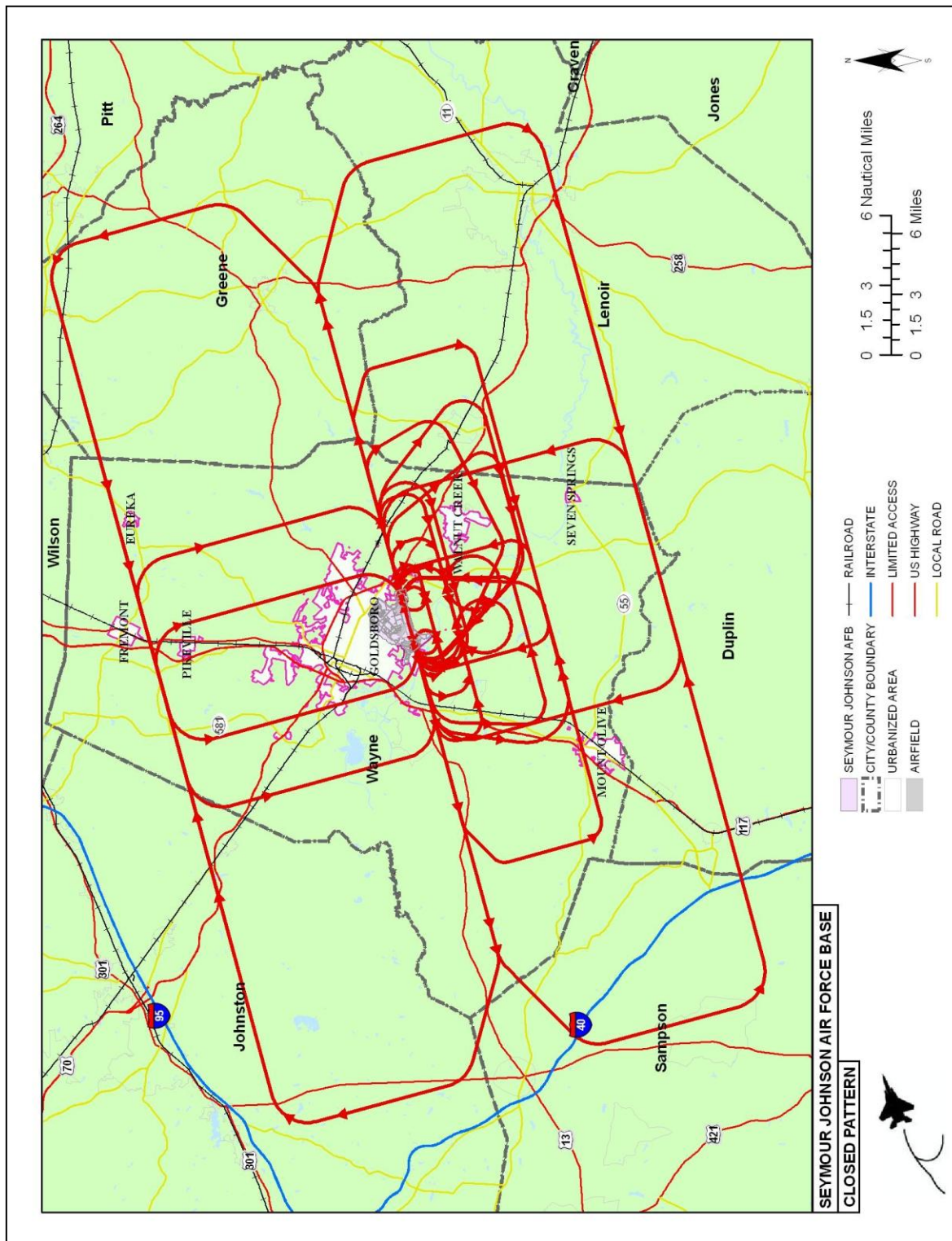




Figure 2-5. All Aircraft - Closed Patterns





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SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

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**CHAPTER 3 • LAND USE  
COMPATIBILITY GUIDELINES**

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AIR INSTALLATION COMPATIBLE USE ZONE





### 3.0 LAND USE COMPATIBILITY GUIDELINES

#### 3.1 Introduction

*The DoD has studied land-use compatibility in the vicinity of its airfields since the end of World War II. One of the first efforts was in 1952 when the President's Airport Commission published "The Airport and Its Neighbors", better known as the "Doolittle Report". The recommendations of this study were influential in the formulation of the APZ concept.*

*The AICUZ Program was developed in response to increased urban encroachment around military airfields. Most Air Force installations were built in the late 1940's and early 1950's in locations 10 to 15 miles away from urban population centers during an era of propeller aircraft. Since then, the nature of aircraft has changed, notably with the development of the jet engine. Urban growth has gradually moved closer towards the boundaries of many Air Force installations. Incompatible land use often results in public complaints about the effects of aircraft operations (e.g., noise and low overflights). Frequent complaints can cause operational changes, which in many cases adversely affect the flying mission. As an example, encroachment around Lowry, Chanute and Laredo AFBs contributed to the decision to cease aircraft operations at those installations.*

The DoD developed the AICUZ Program to protect aircraft operational capabilities at its military airfields and to assist local government officials in protecting and promoting the public health, safety, and quality of life. The goal of the program is to promote compatible land use development around military airfields by providing information on aircraft noise levels and accident potential.

AICUZ reports describe three basic types of constraints that affect or result from flight operations. The first constraint involves areas identified by the FAA and DoD where height limitations on structures exist to prevent obstructions to air navigation. Airspace Control Surface Plans, which are based on Federal Aviation Regulations (FAR), designate height standards that determine whether an object constitutes an obstruction to air navigation.

The second constraint regarding flight operations involves the potential effects arising from noise exposure resulting from aircraft overflight and ground engine runs. Detailed sociological studies conducted by federal agencies over the past few decades have shown a correlation between certain noise exposure levels and increased levels of community annoyance. One of the purposes of the DoD AICUZ Program is a comparison of the land uses in the vicinity of its airfields to noise zones. Using the NOISEMAP software program, which is similar to the FAA's Integrated Noise Model, the DoD produces noise contours showing the DNL that would be generated by current levels of aircraft operations. These contours (lines connecting points of equal noise exposure) are expressed in terms of the DNL. Essentially, the DNL metric is the average noise level over a 24-hour period with additional weighting of events that occur between 10 PM and 7 AM to account for their added intrusiveness. This AICUZ report contains noise contours plotted in increments of 5 dB, ranging from a DNL of 65 dB to 85+ dB. Additional information on the methodology used for analyses in this report is contained in Appendix C of Volume II.

The third constraint involves APZs based on statistical analyses of past DoD aircraft accidents. DoD analyses have determined that the areas immediately beyond the ends of runways and along the approach and departure flight paths have significant potential for aircraft accidents. Based on these analyses, DoD developed three



zones that have high relative potential for accidents. The Clear Zone (CZ), or area closest to the runway's end, is the most hazardous area. The overall risk is so high that DoD generally acquires the land through purchase or easement to prevent development. APZ I is an area beyond the CZ that possesses a significant potential for accidents. APZ II is an area beyond APZ I having lesser but still significant potential for accidents. While the aircraft accident potential in APZs I and II does not warrant land acquisition by the Air Force, land use planning and controls are strongly encouraged in these areas for the protection of the public. The CZ of the runway at Seymour Johnson AFB (08/26) is 3,000 feet wide by 3,000 feet long. APZ I for this runway is 3,000 feet wide by 5,000 feet long, and APZ II is 3,000 feet wide by 7,000 feet long. Additional information on the methodology associated with accident potential is contained in Appendix B of Volume II.

*CZs and APZs are normally rectangular in shape extending from the runway along the axis of its centerline.*

### 3.2 Airspace Control Surfaces

Airspace Control Surfaces or “Imaginary Surfaces” are graphic representations resulting from the application of criteria for height and obstruction clearance found in the Code of Federal Regulations (CFR), Title 14, Part 77 (FAR Part 77) and in Air Force design standards for its airfields. The design standards for Seymour Johnson AFB are found in the DoD's Unified Facilities Criteria (UFC) 3-260-01 *Airfield and Heliport Planning and Design* (Figures 3-1, 3-2, and 3-3). Under the standards of the UFC, Seymour Johnson AFB has a Class B runway. For a more complete description of obstruction evaluation/airport airspace analysis, see FAR Part 77 and the UFC. Additional information is also presented in Volume II, Appendix D.

The purpose of these Airspace Control Surfaces is to prevent construction of structures whose height would tend to compromise the ability of airplanes to land in adverse weather and, in the case of military airfields, to designate airspace required to safely conduct military training maneuvers. During periods of adverse weather conditions, course guidance is provided to pilots and minimum flight altitudes are observed to prevent collisions with terrain and man-made structures. If tall structures are built near airfields, the minimum in-flight altitude must also be increased.

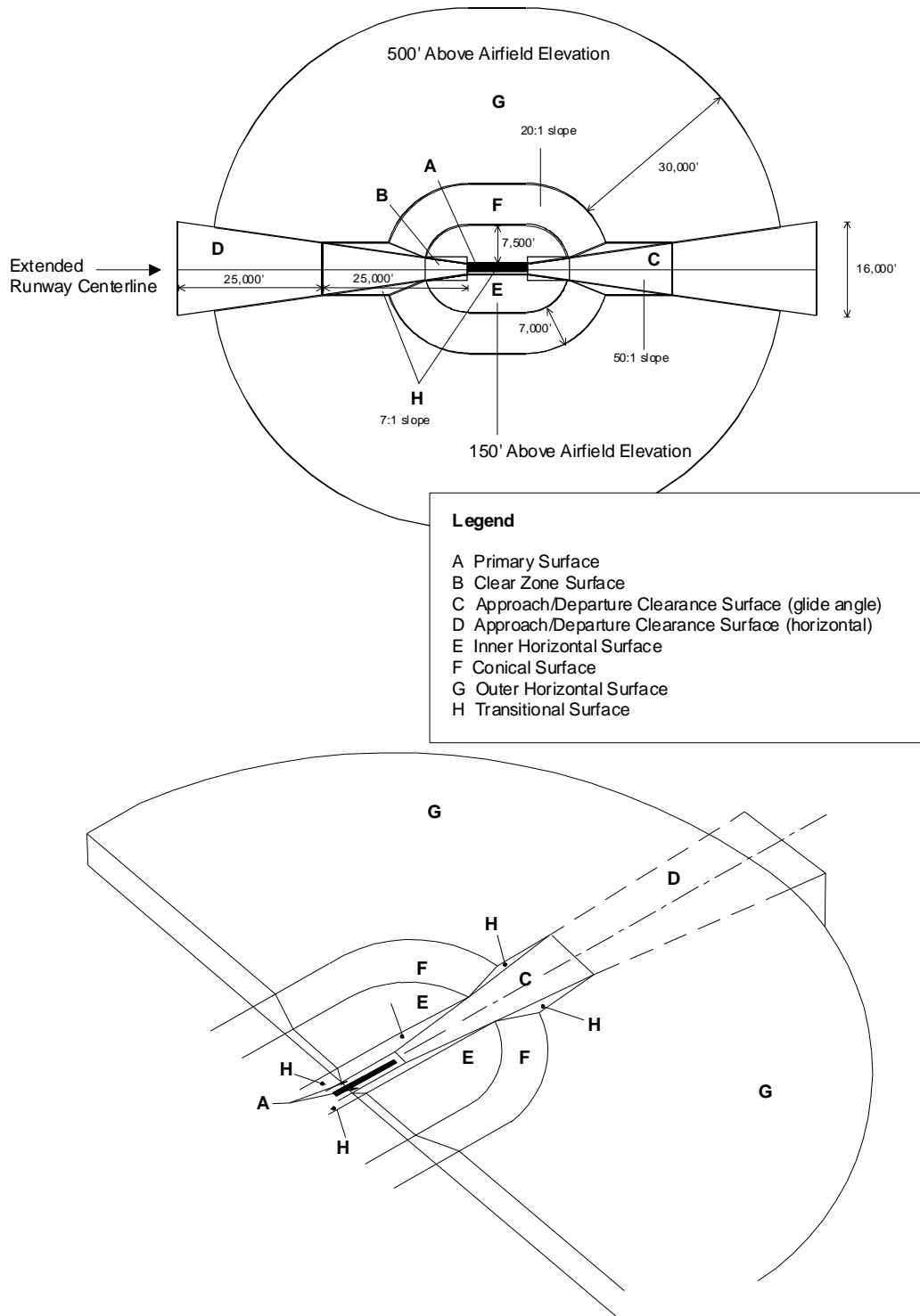
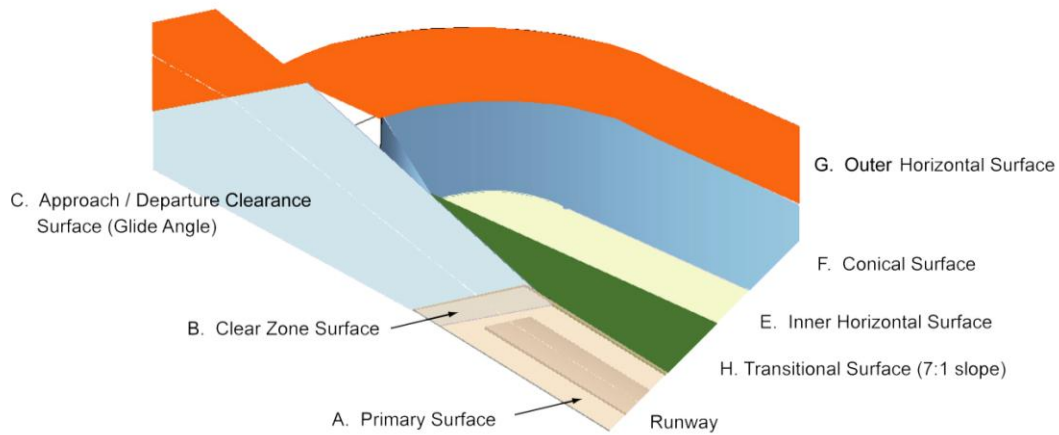
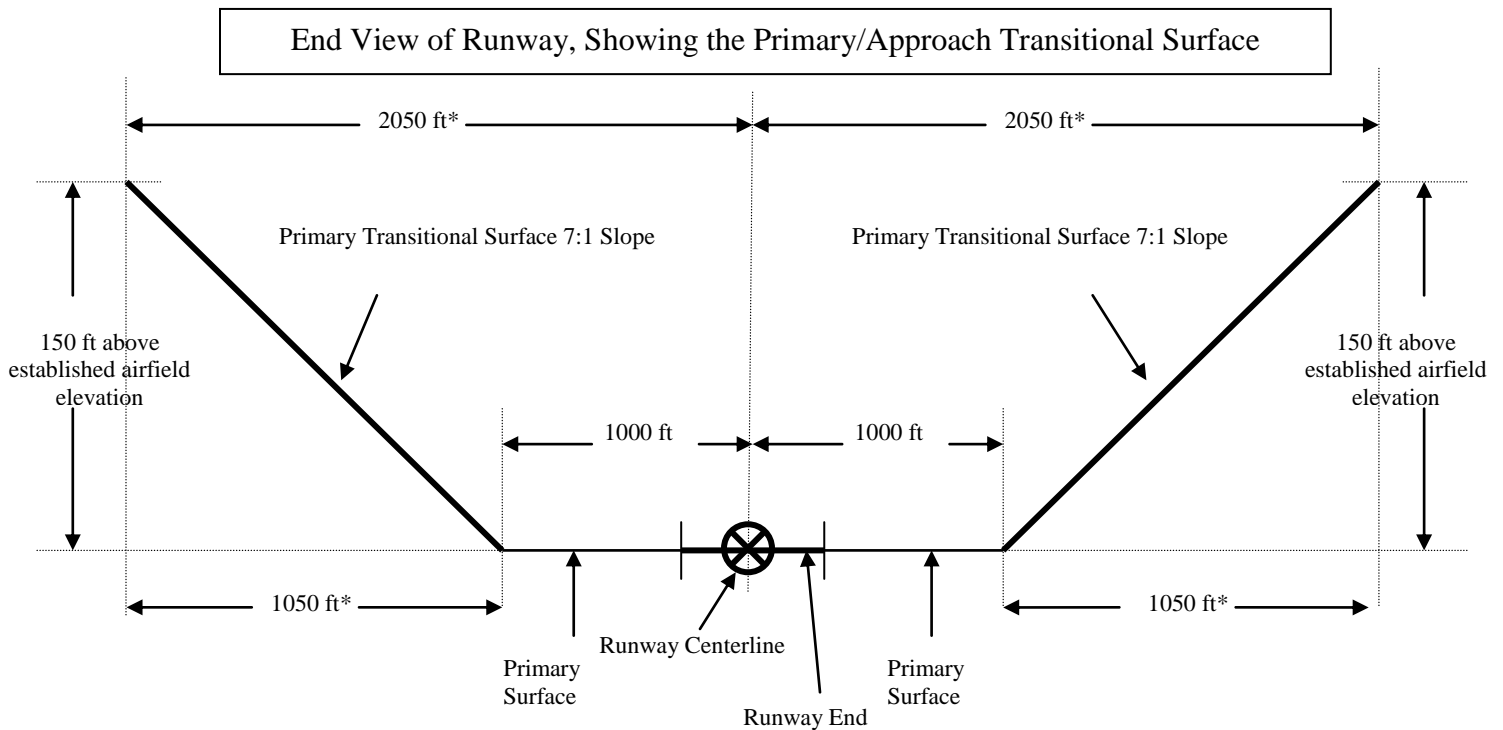


Figure 3-1. Plan View of FAR Part 77 and UFC Imaginary Surfaces



*Not to Scale*

**Figure 3-2. Three-Dimensional View of FAR Part 77 and UFC Imaginary Surfaces**



\* - Dimensions marked with an asterisk vary as necessary to allow the Transitional Surface to intersect with the Inner Horizontal Surface, the elevation of which is fixed at 150 feet above the established Airfield Elevation datum. The Primary Transitional Surface extends upward from its point of beginning at the edge of the Primary Surface. The illustration assumes a level runway which has an elevation equal to the established airfield elevation. A sloping runway having an elevation that differs from the established airfield elevation datum would have a lesser or greater lateral dimension from the runway centerline to beginning of the Inner Horizontal Surface at its intersection with the Transitional Surface as necessary.

**Figure 3-3. Cross-Section View of FAR Part 77 and UFC Imaginary Surfaces as Seen from Runway End**



*In a FAR Part 77 analysis, the heights of natural or man-made objects are examined to determine whether such objects would be hazardous to air navigation; this analysis is named after the section of the Federal Aviation Regulations (FAR Part 77) that set forth the applicable standards.*

*Another term often used in this line of inquiry is “imaginary surfaces.” Imaginary surfaces project outward from an airfield, either parallel to the runway or inclined at an angle.*

*While FAR Part 77 Obstruction Evaluation/Airfield Airspace Analysis (OE/AAA) and Accident Potential use similar terminology, their methods and purposes are distinct. Accident Potential Areas are two-dimensional rectangles (CZ, APZ I, and APZ II) within which land use is assessed and severely restricted (for Clear Zones). Within a Clear Zone, only items necessary for airfield operations (e.g., approach lights and navigation transmitters) are permitted but are designed to be frangible. With OE/AAA, the surfaces can be three-dimensional, and land use compatibility is not assessed. Instead, the height of the structure is examined to see if it interferes with arrivals and departures, particularly under instrument meteorological flight conditions.*

The utility of an airfield is diminished when its minimum obstacle avoidance altitudes are increased, due to the likelihood of having to divert to other airfields during adverse weather increases. A weather divert to another airfield consumes additional fuel and to allow for that possibility, training time is diminished. At Seymour Johnson AFB, increases to minimums in flight altitudes would severely limit the viability of fighter training conducted by the F-15E squadrons.

An airfield’s Airspace Control Surface is measured from and referenced to a certain fixed point, known as a datum. The following data govern the Class B surfaces for Runway 08/26 at Seymour Johnson AFB.

- *Runway length*—Seymour Johnson AFB Class B runway is 08/26, with 11,758 feet of pavement designed and built for sustained aircraft takeoffs and arrivals. Additionally, there are 1,000 feet of paved overruns at each end of the runway.
- *Established Airfield Elevation*—the established airfield elevation at Seymour Johnson AFB is 109 MSL.
- *Dimensions*—all dimensions are measured horizontally unless otherwise noted.

### 3.2.1 Inclined Planes and Surfaces

Definitions for a Class B runway are as follows:

- *Primary Surface*—this surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. The primary surface comprises surfaces of the runway, runway shoulders, and lateral safety zones that extend 200 feet beyond the runway end. The width of the primary surface for a single Class B runway is 2,000 feet or 1,000 feet on each side of the runway centerline.
- *CZ Surface*—this surface defines the limits of the obstruction clearance requirements in the area contiguous to the end of the primary surface. The standard length and width (for a single runway) of a CZ surface is 3,000 feet by 3,000 feet.
- *Approach-Departure Clearance Surface*—this surface, which is symmetrical about the extended runway centerline, begins as an inclined plane (glide angle) at each end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet beyond the runway. The slope of the approach-departure clearance surface is 50:1 along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. The approach-departure clearance surface continues

horizontally at 500 feet to a point 50,000 feet from the start of the glide angle. The width of the surface at the runway's end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet.

- *Inner Horizontal Surface*—this surface is an oval plane that lies 150 feet above the established airfield elevation. This plane is constructed by scribing an arc with a radius of 7,500 feet above the centerline of the runway's end and interconnecting these arcs with tangents.
- *Conical Surface*—this is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet and to a height of 500 feet above the established airfield elevation. The gradient of the conical surface is 20:1.
- *Outer Horizontal Surface*—this surface is a plane located 500 feet above the established airfield elevation that extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface. The Outer Horizontal Surface is unique to military airfields. The primary missions of military airfields are training and maintaining air crew proficiency. The Outer Horizontal Surface designates airspace required to safely conduct this training.
- *Transitional Surfaces*—these surfaces connect the primary surfaces, CZ surfaces, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the gradient for the transitional surface slope at any point along the lateral boundary of the primary surface including the CZ, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope.
- *Controlling Elevation*—whenever surfaces or planes of the obstructions criteria overlap, the controlling (or governing) elevation is that of the lowest surface or plane.

Under the provisions of FAR Part 77, obstructions to air navigation are considered to be natural objects or man-made structures that penetrate the surfaces originating at the airfield or any man-made objects that extend more than 500 feet above the ground at the site of the object.

*Sound—a series of vibrations (energy) transmitted through a medium (such as air or water) that are perceived by a receiver (e.g., humans). Sound is measured by accounting for the energy level represented by the amplitude (volume) and frequency (pitch) of vibrations and comparing that level to a baseline standard. Specifically, airborne sound pressure levels are described in terms of a comparison to the pressure the atmosphere exerts under standard conditions (i.e., at sea level and 59° F/15° C). Under standard conditions the atmosphere exerts a pressure of 100,000 Pascals (14.7 pounds per square inch). As a sound wave moves through the atmosphere, a temporary increase in pressure occurs; it is this pressure change that is detected as sound. The magnitude of the pressure change is the loudness and the frequency of the temporary change is the pitch.*

*Noise is typically defined as unwanted sound. A human's reaction to noise varies according to the duration, type, and characteristics of the noise source; distance between the source and receiver; receiver's sensitivity; background noise level; and time of day.*

*Decibel (dB)—a logarithmic unit of measure that describes the ratio of power (or energy or pressure) measured to a fixed reference.*





### 3.2.2 Land Uses Hazardous to Air Navigation

Controls discouraging land uses that are inherently hazardous to aircraft or flight crews should be developed. The following uses should be restricted or prohibited in the vicinity of an airfield:

- Uses that release into the air any substance that would impair visibility or otherwise interfere with the operation of aircraft (i.e., steam, dust, or smoke from industrial operations);
- Uses that produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision;
- Uses that produce electrical emissions that would interfere with aircraft communications systems or navigational equipment;
- Uses that would attract birds or waterfowl, including but not limited to, operation of sanitary landfills, maintenance of feeding stations, sand and gravel dredging operations, storm water retention ponds, created wetland areas, or the growing of certain vegetation; and
- Uses that provide for structures within ten feet of aircraft approach-departure and/or transitional surfaces outlined above.

*DNL (Ldn)–Day-Night Average Noise Level A-weighted that accounts for the total sound energy occurring over a 24-hour period but attributes a 10 dB penalty to those events occurring between the hours of 10 PM and 7 AM (night), a time during which people are more sensitive to noise. Since a decibel is logarithmic, a single nighttime event creates the same DNL as 10 identical events that take place during the day. DNL has been correlated to the human response and annoyance, which is why the Federal government has chosen to use it as its preferred metric for assessing noise and use compatibility.*

### 3.3 **Noise Due to Aircraft Operations**

Using the NOISEMAP computer program, which is similar to FAA's Integrated Noise Model, the Air Force produces DNL noise contours showing the areas with significant exposure to aircraft noise. The DNL noise metric averages aircraft sound levels over a complete 24-hour period with a 10 dB adjustment added to those noise events taking place between 10 PM and 7 AM. This adjustment is made to account for the increased annoyance during this period.

This AICUZ study contains noise contours plotted in increments of 5 dB, ranging from 65 DNL to 85+ DNL.

Based on the aircraft operations data presented in Section 2.5, NOISEMAP (Version 7.353) was used to calculate and plot the average busy day contours for DNL 65 dB through DNL 85+ dB. At the current operational tempo of 236.818 daily operations (60,035 annual operations) along the mix of flight tracks depicted in Chapter 2, the DNL 65 dB contour extends west from the center of the runway approximately 5.2 miles; to the east the contour extends 6.2 miles from the center of the runway, which reflects the usage pattern favoring Runway 26. To the sides of the runway, the 65 dB contour extends southward approximately 3.0 miles; to the

north, the 65 dB contour extends somewhat less, around 1.6 miles (Figure 3-4).

Using year 2010 population data from the U.S. Census Bureau (USCB) combined with aerial photography, it is possible to estimate the number of persons occupying land that falls within a noise contour (Figure 3-5). The total area in each contour outside the base boundary and the number of residents within each contour were calculated for comparison purposes.

The estimated total number of persons exposed to a DNL of 65 dB or greater is 10,559. The total land area exposed to a DNL of 65 dB or greater is 18,777 acres, with 15,955 of those acres located off-base (Tables 3-1 and 3-2).

**Table 3-1. Total Acreage and Estimated Populations within Noise Contours**

DNL Noise Zone	Acres	Population
65–69	8,681	6,994
70–74	5,109	2,699
75–79	2,811	780
80-84	1,116	73
85+	1,060	13
<b>Total</b>	<b>18,777</b>	<b>10,559</b>

Source: USCB and North Carolina State Data Center and Office of the State Demographer



Figure 3-4. Day-Night Average Sound Levels

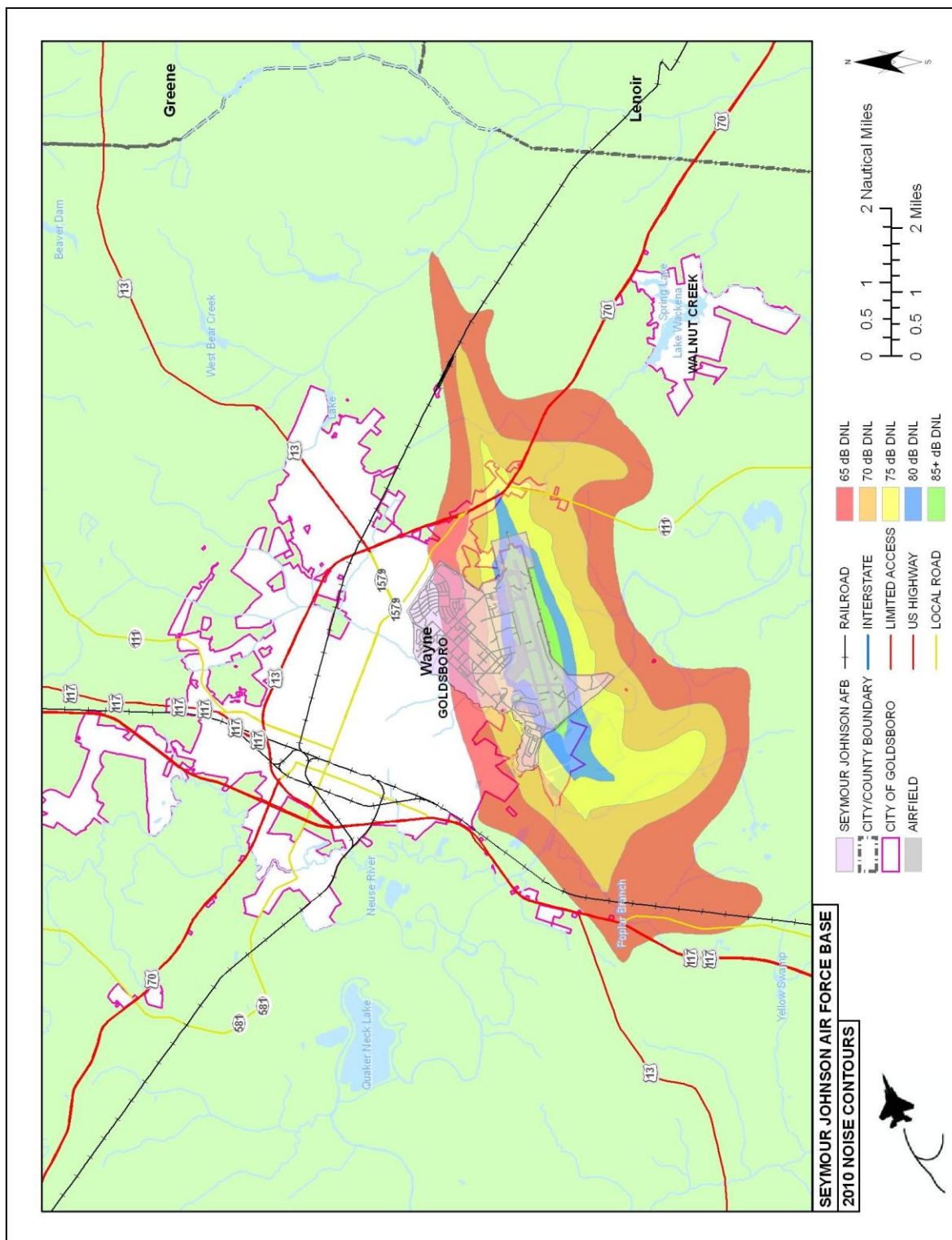
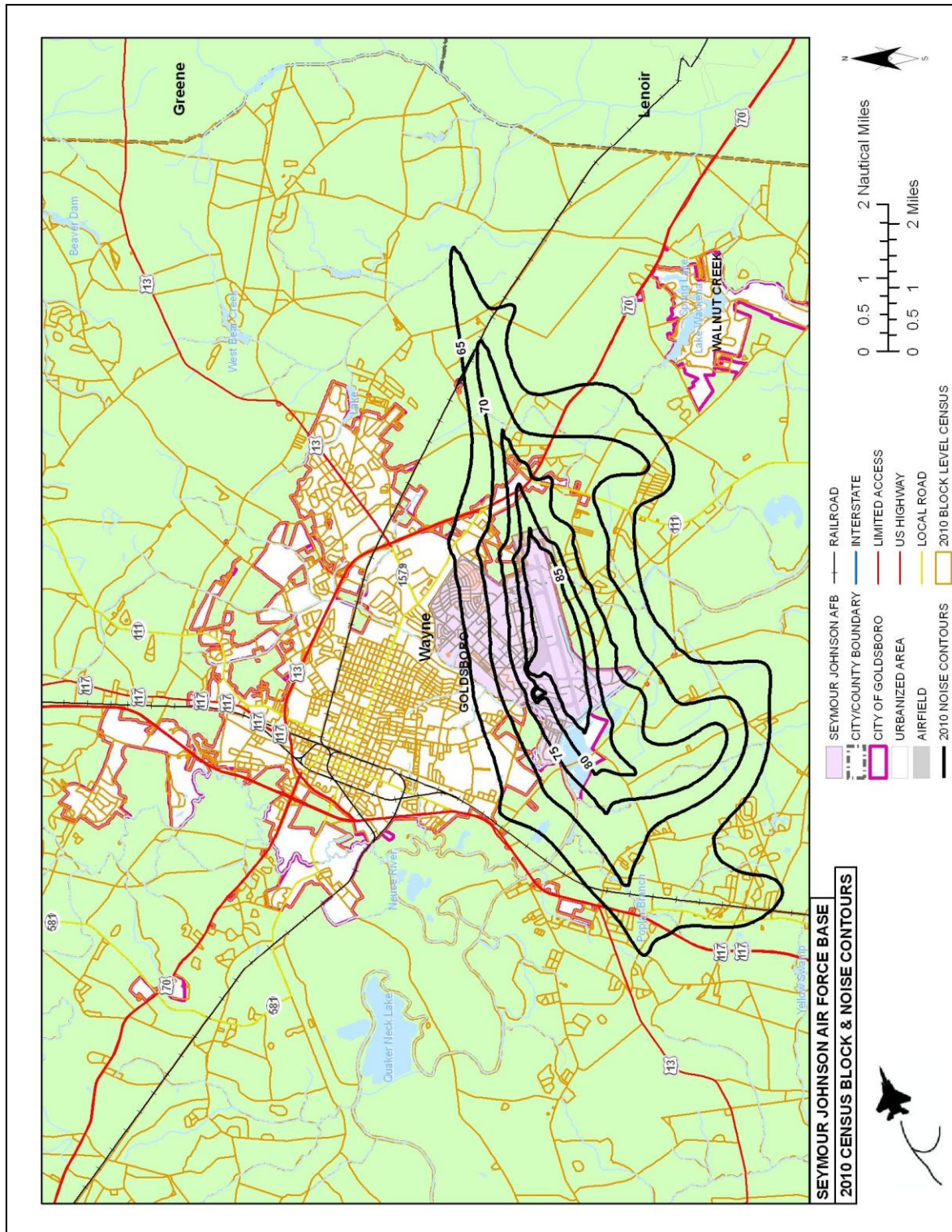


Figure 3-5. 2010 Census Block and Noise Contours





**Table 3-2. Off-Base Acreage and Estimated Populations within Noise Contours**

DNL Noise Zone	Acres	Population
65–69	8,175	6,266
70–74	4,622	2,699
75–79	2,316	780
80-84	680	73
85+	162	13
<b>Total</b>	<b>15,955</b>	<b>9,831</b>

Source: USCB and North Carolina State Data Center and Office of the State Demographer

A comparison of the contours from the 2010 data and the 1993 AICUZ study indicates that during this time, the land area exposed to noise greater than 65 dB DNL has decreased (Figure 3-6). This is largely due to the replacement of the KC-10 *Extender* aircraft present in 1993 with the current KC-135R *Stratotanker*. Other contributing factors include removal of six T-38A aircraft from the inventory, changes to approach patterns and other operational adjustments, and improvements to the modeling software.

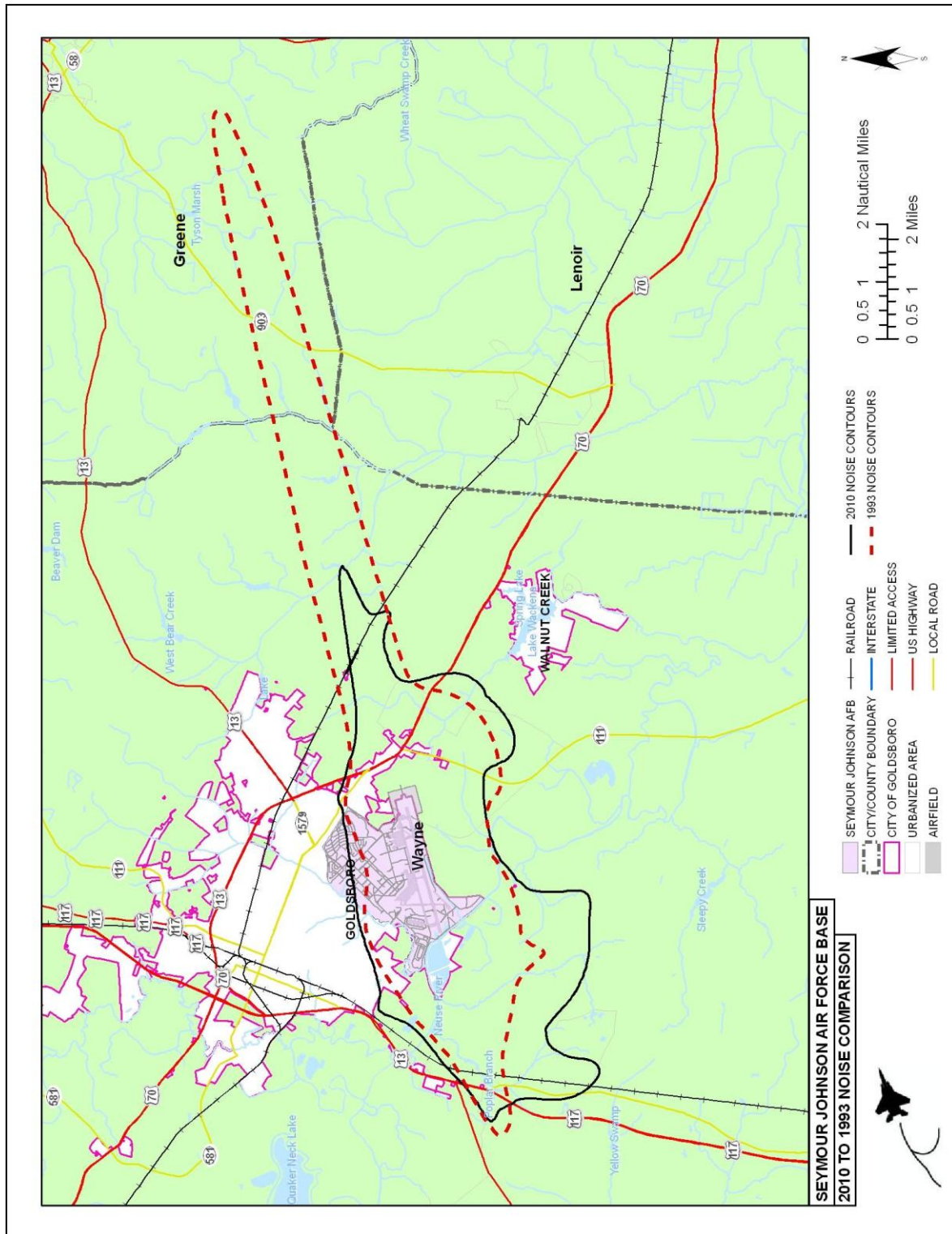
### 3.4 Clear Zones and Accident Potential Zones

This section describes the accident potential criteria that are used to define the CZs and APZs and apply them to Seymour Johnson. Section 3.4.1 presents the standards for defining CZs and APZs and Section 3.4.2 indicates how those standards apply to Seymour Johnson.

#### 3.4.1 Standards for CZs and APZs

Areas around military airfields are exposed to the possibility of aircraft accidents. While the maintenance of aircraft and the training of aircrews are rigorous, it should be understood that military flights at Seymour Johnson are primarily for the purpose of training. Seymour Johnson has both an operational and training mission for the F-15E *Strike Eagle*. Despite stringent maintenance requirements and countless hours of training, history shows that

Figure 3-6. Day-Night Average Sound Level in 1993 and 2010





accidents occur. Accidents of military aircraft differ from accidents of commercial air carriers and general aviation due to the variety of aircraft flown, the type of missions, and the number of training flights.

Although the risk to people on the ground of being killed or injured by aircraft accidents is small, an aircraft accident is a high-consequence event. When a crash occurs, the result is often catastrophic. As a result, the Air Force does not attempt to base its safety standards on accident probabilities but instead approaches this safety issue from a land-use planning perspective. Designation of safety zones around airfields and restrictions of incompatible land uses can reduce the public's exposure to aircraft safety hazards.

Based on analysis of 834 Air Force accidents at Air Force bases from 1968 through 1995 that occurred within 10 miles of the associated base, three planning zones were established; the CZ, APZ I, and APZ II. Each end of a runway has a CZ that starts at the runway threshold and extends outward 3,000 feet with a width of 3,000 feet. Of the three safety zones, the CZ has the highest potential for accidents, with 27 percent of the total accidents studied having occurred in this zone. The Air Force has generally acquired property rights through purchase or easement to areas designated as CZs when necessary to prevent development.

APZ I extends outward from the CZ an additional 5,000 feet. This area has a significant though reduced accident potential. Ten percent of the accidents studied occurred in this area. APZ I is 3,000 feet wide and 5,000 feet long beginning 3,000 feet from the runway endpoint along and centered on the extended runway centerline.

APZ II extends from the outer end of APZ I an additional 7,000 feet. This is an area having lesser, but still significant, potential for accidents. Five percent of the accidents studied occurred in this area. APZ II is 3,000 feet wide and 7,000 feet long beginning 8,000 feet from the runway endpoint along and centered on the extended runway centerline.

While the aircraft accident potential in APZs I and II does not warrant land acquisition by the Air Force, land use planning and controls are strongly encouraged in these areas for the protection of the public. Of the Air Force accidents studied, 15 percent occurred in APZs I and II. The area extending 1,000 feet out from each side of the runway centerline for the length of the runway accounted for 25 percent of the accidents analyzed. The remaining 33 percent

occurred outside APZ II but were dispersed within 10 miles of the associated airfield.

### 3.4.2 CZs and APZs at Seymour Johnson AFB

The Seymour Johnson AFB CZs and APZs are based on the configuration of the runway (Figures 3-7, 3-8, and 3-9). Just as population estimates and areas were derived within noise contours, population (based on 2010 census data) and areas associated with CZs and APZs can be estimated (Figure 3-10). No individuals reside within the CZs for Runway 08/26; it is estimated that 645 persons reside within the APZs associated with this runway (Table 3-3).

## 3.5 Land Use Compatibility

Each AICUZ report contains land use guidelines. Combinations of noise exposure and accident potential at Seymour Johnson AFB have been considered in relation to land uses, with an ultimate determination of their compatibility (Tables 3-4 and 3-5). Noise guidelines are essentially the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, *Guidelines for Considering Noise in Land Use Planning and Control*. The U.S. Department of Transportation publication, *Standard Land Use Coding Manual (SLUCM)*, has been used for identifying and coding land use activities.

## 3.6 Participation in the Planning Process

As local communities prepare their land use plans, the Air Force must be ready to provide data and information. The Base Community Planner has been designated as the official liaison with the local community on all planning matters. The Community Planner is prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by, Seymour Johnson AFB. The installation's Public Affairs Office assists the Community Planner in preparing for public meetings and acts as an information conduit between the base and the community for releasing information.

The Goldsboro Planning Department is responsible for planning the orderly growth and development of the City and its one-mile extraterritorial jurisdiction. The Goldsboro Planning Commission meets on the third and last Monday of each month at 7:00 PM.

The Wayne County Planning Department serves as staff for the Planning Board and the Board of Commissioners on land use regulation enforcement. These regulations include zoning





ordinances, subdivisions, mobile home parks, billboards, junkyards, flooding, stormwater, water supply, and watersheds. The Wayne County Planning Board meets on the second Tuesday of each month at 7:00 PM.

Historically, the city and county have incorporated AICUZ recommendations into their respective zoning ordinances. Additionally, both agencies send requests for zoning changes and other relevant planning matters to the base for review and comment. At the request of the city and/or county, representatives from Seymour Johnson AFB attend public meetings to provide input or present information pertinent to local planning issues.

Figure 3-7. CZs and APZs

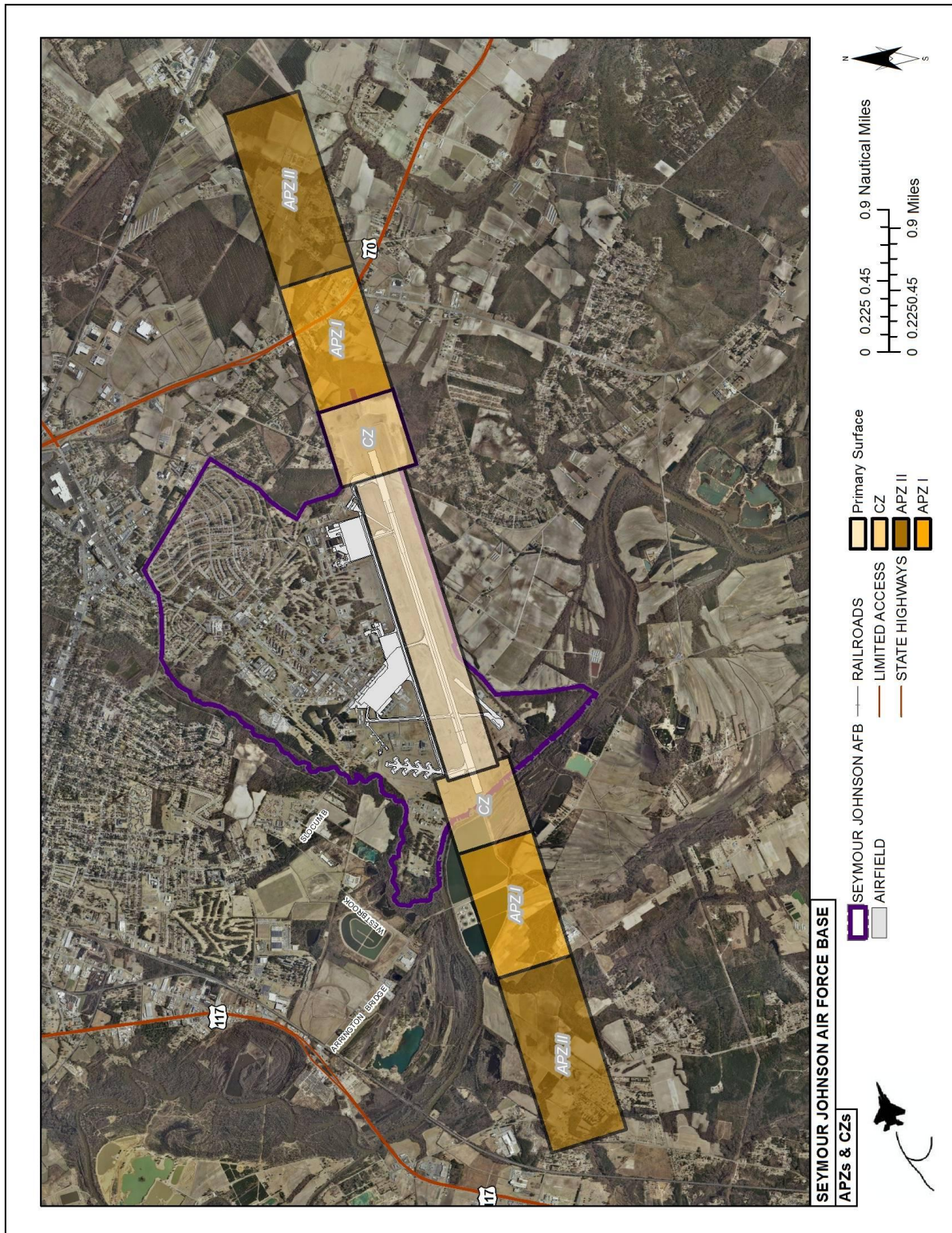




Figure 3-8. CZ and APZs West

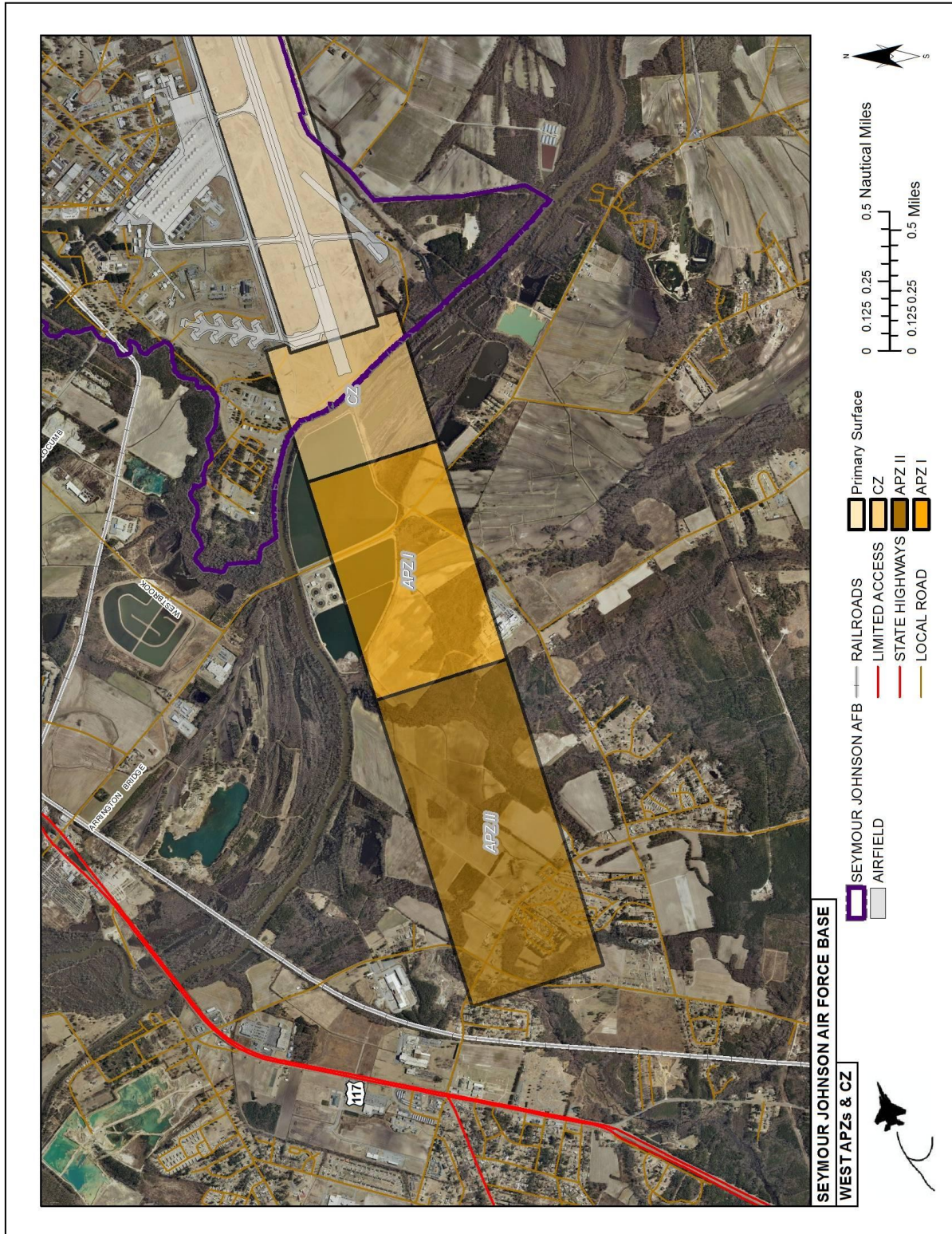


Figure 3-9. CZ and APZs East

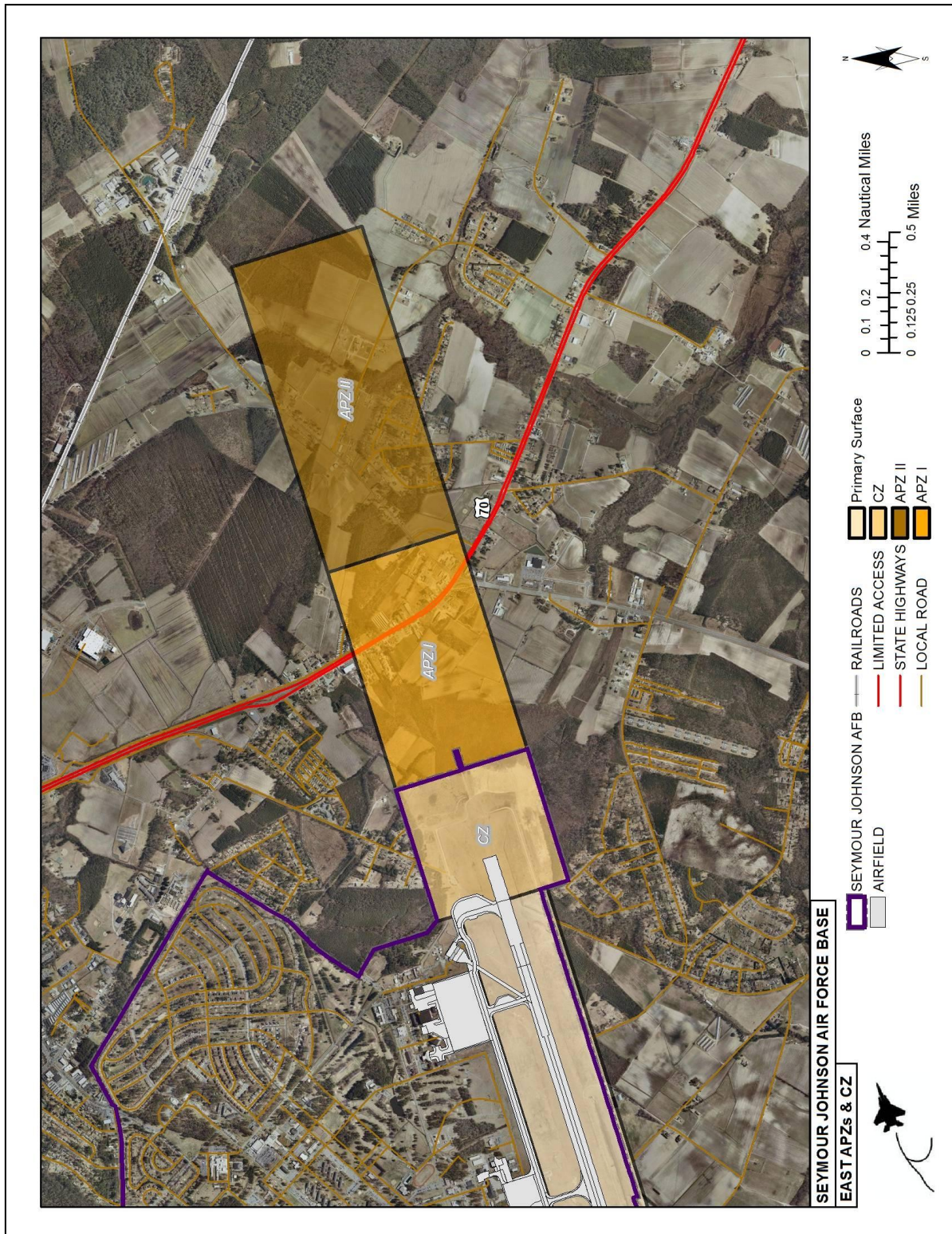
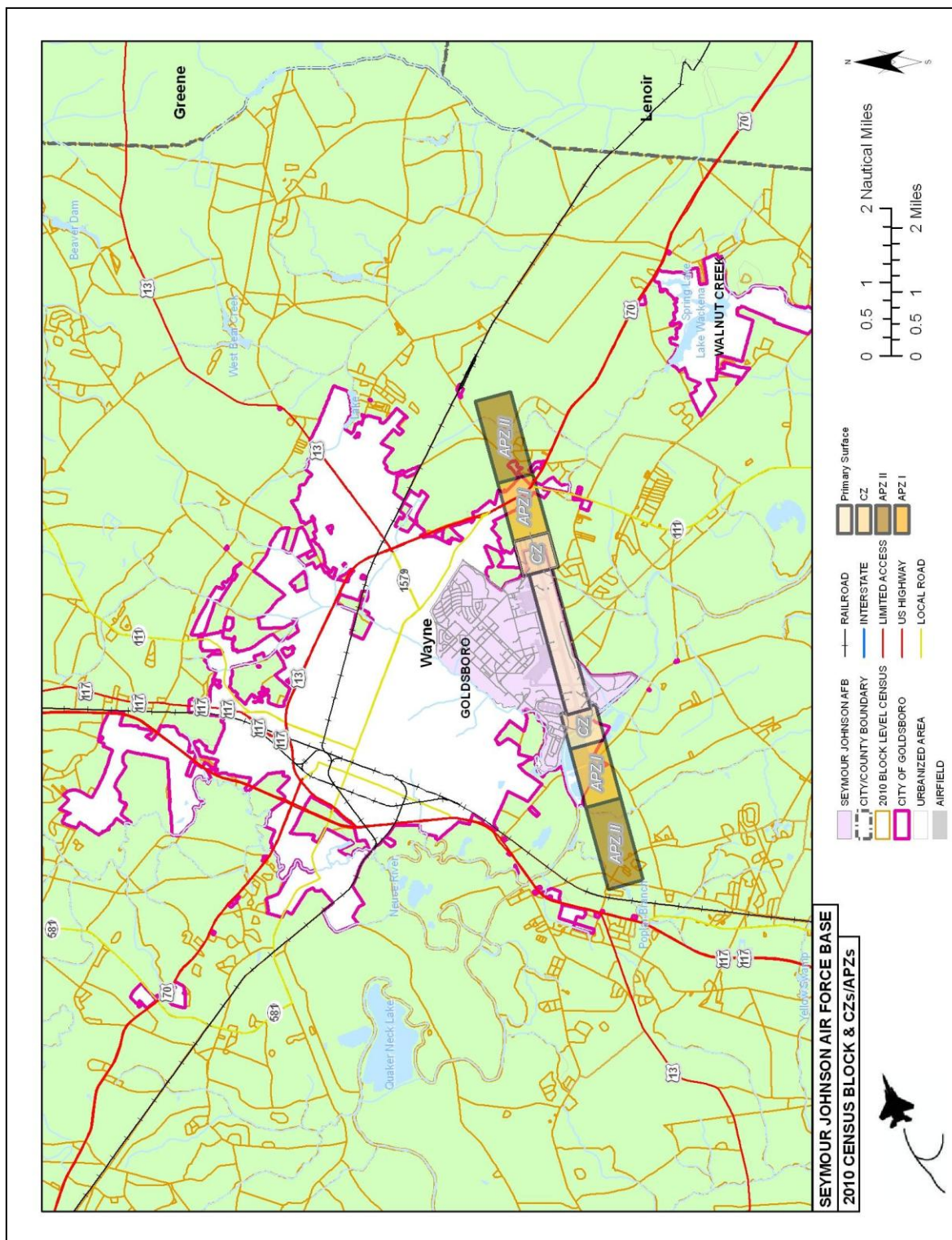




Figure 3-10. 2010 Census Block and CZs/APZs





**Table 3-3. Total Acreage and Estimated Populations within CZs/APZs**

APZ	Acres	Off-Base Acres	Population
CZ	413	115*	0
APZ I	689	689	34
APZ II	964	964	611
Total	2,066	1,768	645

\*Note: In addition, the US government or the city owns the balance of the real estate.

Source: USCB and North Carolina State Data Center and Office of the State Demographer

**Table 3-4. Land Use Compatibility and Accident Potential**

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation <sup>1</sup>	APZ I Recommendation <sup>1</sup>	APZ II Recommendation <sup>1</sup>	DENSITY Recommendation <sup>1</sup>
<b>10 Residential</b>					
11	Household Units				
11.11	Single units: detached	N	N	Y <sup>2</sup>	Maximum density of 2 Du/Ac
11.12	Single units: semi-detached	N	N	N	
11.13	Single units: attached row	N	N	N	
11.21	Two units: side-by-side	N	N	N	
11.22	Two units: one above the other	N	N	N	
11.31	Apartments: walk-up	N	N	N	
11.32	Apartments: elevator	N	N	N	
12	Group quarters	N	N	N	
13	Residential hotels	N	N	N	
14	Mobile home parks or courts	N	N	N	
15	Transient lodgings	N	N	N	
16	Other residential	N	N	N	
<b>20 Manufacturing<sup>3</sup></b>					
21	Food and kindred products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
22	Textile mill products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	N	N	N	
24	Lumber and wood products (except furniture); manufacturing	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
26	Paper and allied products; manufacturing	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
27	Printing, publishing, and allied industries	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	
<b>30 Manufacturing<sup>3</sup> (cont.)</b>					
31	Rubber and miscellaneous plastic products; manufacturing	N	N	N	
32	Stone, clay, and glass products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
33	Primary metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II

**Table 3-4. Land Use Compatibility and Accident Potential (cont.)**

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation <sup>1</sup>	APZ I Recommendation <sup>1</sup>	APZ II Recommendation <sup>1</sup>	DENSITY Recommendation <sup>1</sup>
<b>40 Transportation, communication, and utilities<sup>3,4</sup></b>					
41	Railroad, rapid rail transit, and street railway transportation	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
42	Motor vehicle transportation	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
43	Aircraft transportation	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
44	Marine craft transportation	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
45	Highway and street right-of-way	Y <sup>5</sup>	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
46	Automobile parking	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
47	Communication	N	Y <sup>6</sup>	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
48	Utilities <sup>7</sup>	N	Y <sup>6</sup>	Y <sup>6</sup>	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
48.5	Solid waste disposal (landfills, incinerators, etc.)	N	N	N	
49	Other transportation, communication, and utilities	N	Y <sup>6</sup>	Y	See Note 6 below
<b>50 Trade</b>					
51	Wholesale trade	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II
52	Retail trade - building materials, hardware and farm equipment	N	Y	Y	See Note 8 below
53	Retail trade - including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	N	N	Y	Maximum FAR 0.16 in APZ II
54	Retail trade - food	N	N	Y	Maximum FAR 0.24 in APZ II
55	Retail trade - automotive, marine craft, aircraft, and accessories	N	Y	Y	Maximum FAR 0.14 in APZ I & 0.28 in APZ II
56	Retail trade - apparel and accessories	N	N	Y	Maximum FAR 0.28 in APZ II
57	Retail trade - furniture, home furnishings and equipment	N	N	Y	Maximum FAR 0.28 in APZ II
58	Retail trade - eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR 0.16 in APZ II
<b>60 Services<sup>10</sup></b>					
61	Finance, insurance, and real estate services	N	N	Y	Maximum FAR 0.22 in APZ II
62	Personal services	N	N	Y	Office uses only. Maximum FAR 0.22 in APZ II
62.4	Cemeteries	N	Y <sup>11</sup>	Y <sup>11</sup>	
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Maximum FAR 0.22 in APZ II
63.7	Warehousing and storage services <sup>12</sup>	N	Y	Y	Maximum FAR 1.0 in APZ I & 2.0 in APZ II
64	Repair services	N	Y	Y	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
65	Professional services	N	N	Y	Maximum FAR 0.22 in APZ II
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	
66	Contract construction services	N	Y	Y	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
67	Government services	N	N	Y	Maximum FAR 0.24 in APZ II



**Table 3-4. Land Use Compatibility and Accident Potential (cont.)**

SLUCM NO.	LAND USE NAME	CLEAR ZONE Recommendation <sup>1</sup>	APZ I Recommendation <sup>1</sup>	APZ II Recommendation <sup>1</sup>	DENSITY Recommendation <sup>1</sup>
68	Educational services	N	N	N	
68.1	Child care services, child development centers, and nurseries	N	N	N	
69	Miscellaneous	N	N	Y	Maximum FAR 0.22 in APZ II
69.1	Religious activities	N	N	N	
<b>70</b>	<b>Cultural, entertainment, and recreational</b>				
71	Cultural activities	N	N	N	
71.2	Nature exhibits	N	Y <sup>13</sup>	Y <sup>13</sup>	
72	Public assembly	N	N	N	
72.1	Auditoriums, concert halls	N	N	N	
72.11	Outdoor music shells, amphitheaters	N	N	N	
72.2	Outdoor sports arenas, spectator sports	N	N	N	
73	Amusements - fairgrounds, miniature golf, driving ranges; amusement parks, etc.	N	N	Y	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y <sup>13</sup>	Y <sup>13</sup>	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
75	Resorts and group camps	N	N	N	
76	Parks	N	Y <sup>13</sup>	Y <sup>13</sup>	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
79	Other cultural, entertainment, and recreation	N	Y <sup>11</sup>	Y <sup>11</sup>	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
<b>80</b>	<b>Resource production and extraction</b>				
81	Agriculture (except livestock)	Y <sup>4</sup>	Y <sup>14</sup>	Y <sup>14</sup>	
81.5, 81.7	Livestock farming and breeding	N	Y <sup>14</sup>	Y <sup>15</sup>	
82	Agriculture related activities	N	Y <sup>14</sup>	Y <sup>15</sup>	Maximum FAR 0.28 in APZ I & 0.56 in APZ II; no activity that produces smoke, glare, or involves explosives
83	Forestry activities <sup>16</sup>	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II; no activity that produces smoke, glare, or involves explosives
84	Fishing activities <sup>17</sup>	N <sup>17</sup>	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II; no activity that produces smoke, glare, or involves explosives
85	Mining activities <sup>18</sup>	N	Y <sup>18</sup>	Y <sup>18</sup>	Maximum FAR 0.28 in APZ I & 0.56 in APZ II; no activity that produces smoke, glare, or involves explosives
89	Other resources production or extraction	N	Y	Y	Maximum FAR 0.28 in APZ I & 0.56 in APZ II; no activity that produces smoke, glare, or involves explosives
<b>90</b>	<b>Other</b>				
91	Undeveloped land	Y	Y	Y	
93	Water areas <sup>19</sup>	N <sup>19</sup>	N <sup>19</sup>	N <sup>19</sup>	

**Table 3-4. Land Use Compatibility and Accident Potential (cont.)****KEY TO TABLE 3-4. LAND USE COMPATIBILITY AND ACCIDENT POTENTIAL**

**SLUCM** - Standard Land Use Coding Manual, U.S. Department of Transportation

**Y (Yes)** - Land uses and related structures are normally compatible without restriction.

**N (No)** - Land uses and related structures are not normally compatible and should be prohibited.

**Y<sup>x</sup>** - Yes with restrictions. The land uses and related structures are generally compatible; however, see notes indicated by the superscript.

**N<sup>x</sup>** - No with exceptions. The land uses and related structures are generally incompatible; however, see notes indicated by the superscript.

**FAR** - Floor Area Ratio. A floor area ratio is the ratio between the square feet of floor area of the building and the gross site area. It is customarily used to measure non-residential intensities.

**Du/Ac** - Dwelling Units per Acre. This is customarily used to measure residential densities.

**NOTES FOR TABLE 3-4. LAND USE COMPATIBILITY AND ACCIDENT POTENTIAL**

1. A "Yes" or a "No" designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 per acre in APZ I and 50 per acre in APZ II are considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people per acre in APZ I, and maximum assemblies of 50 people per acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and APZ II. For APZ I, the formula is  $FAR = 25 \text{ people per acre} / (\text{Average Vehicle Occupancy} \times \text{Average Parking Rate} \times (43560/1000))$ . The formula for APZ II is  $FAR = 50 / (\text{Average Vehicle Occupancy} \times \text{Average Parking Rate} \times (43560/1000))$ .
2. The suggested maximum density for detached single family housing is two Du/Ac. In a planned unit development (PUD) of single family detached units where clustered housing development results in large open areas, this density could possibly be increased slightly provided the amount of surface area covered by structures does not exceed 20 percent of the PUD total area. PUD encourages clustered development that leaves large open areas.
3. Other factors to be considered: Labor intensity, structural coverage, explosive characteristics, air pollution, electronic interference with aircraft, height of structures, and potential glare to pilots.
4. No structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.
5. Rights-of-way for fenced highways, without sidewalks or bicycle trails, are allowed.
6. No above-ground passenger terminals and no above-ground power transmission or distribution lines. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.
7. Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially-affected mission.
8. Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 521) are 0.20 in APZ I and 0.40 in APZ II. For hardware, paint, and farm equipment stores, SLUCM Code 525, the maximum FARs are 0.12 in APZ I and 0.24 in APZ II.
9. A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively. Included in this category are such uses as big box discount clubs, home improvement superstores, office supply superstores, and electronics superstores. The maximum recommended FAR for SLUCM 53 should be applied to the gross leasable area of the shopping center rather than attempting to use other recommended FARs listed in Table 1 under Retail or Trade.
10. Ancillary uses such as meeting places, auditoriums, etc., are not recommended.
11. No chapels or houses of worship are allowed within APZ I or APZ II.
12. Big box home improvement stores are not included as part of this category.
13. Facilities must be low intensity, and provide no playgrounds, etc. Facilities such as clubs houses, meeting places, auditoriums, large classes, etc., are not recommended.

**Table 3-4. Land Use Compatibility and Accident Potential (cont.)**

14. Livestock grazing is a compatible land use, but feedlots and intensive animal husbandry are excluded. Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.
15. Feedlots and intensive animal husbandry are included as compatible land uses.
16. Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.
17. Controlled hunting and fishing may be permitted for the purpose of wildlife management.
18. Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.
19. Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Naturally occurring water features that attract waterfowl present a potential BASH. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, such features should be designed so that they do not attract waterfowl.



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**Table 3-5. Land Use Compatibility and Noise Exposure**

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
<b>10 Residential</b>						
11	Household Units	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.11	Single units: detached	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.12	Single units: semi-detached	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.13	Single units: attached row	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.21	Two units: side-by-side	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.22	Two units: one above the other	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.31	Apartments: walk-up	N <sup>1</sup>	N <sup>1</sup>	N	N	N
11.32	Apartments: elevator	N <sup>1</sup>	N <sup>1</sup>	N	N	N
12	Group quarters	N <sup>1</sup>	N <sup>1</sup>	N	N	N
13	Residential hotels	N <sup>1</sup>	N <sup>1</sup>	N	N	N
14	Mobile home parks or courts	N	N	N	N	N
15	Transient lodgings	N <sup>1</sup>	N <sup>1</sup>	N <sup>1</sup>	N	N
16	Other residential	N <sup>1</sup>	N <sup>1</sup>	N	N	N
<b>20 Manufacturing</b>						
21	Food and kindred products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
22	Textile mill products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
24	Lumber and wood products (except furniture); manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
25	Furniture and fixtures; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
26	Paper and allied products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
27	Printing, publishing, and allied industries	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
28	Chemicals and allied products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
29	Petroleum refining and related industries	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
<b>30 Manufacturing (cont.)</b>						
31	Rubber and miscellaneous plastic products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
32	Stone, clay, and glass products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
33	Primary metal products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
34	Fabricated metal products; manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	25	30	N	N
39	Miscellaneous manufacturing	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N

Table 3-5. Land Use Compatibility and Noise Exposure (cont.)

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
<b>40 Transportation, communication, and utilities</b>						
41	Railroad, rapid rail transit, and street railway transportation	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
42	Motor vehicle transportation	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
43	Aircraft transportation	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
44	Marine craft transportation	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
45	Highway and street right-of-way	Y	Y	Y	Y	N
46	Automobile parking	Y	Y	Y	Y	N
47	Communication	Y	25 <sup>5</sup>	30 <sup>5</sup>	N	N
48	Utilities	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
49	Other transportation, communication, and utilities	Y	25 <sup>5</sup>	30 <sup>5</sup>	N	N
<b>50 Trade</b>						
51	Wholesale trade	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
52	Retail trade - building materials, hardware and farm equipment	Y	25	30	Y <sup>4</sup>	N
53	Retail trade - including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	Y	25	30	N	N
54	Retail trade - food	Y	25	30	N	N
55	Retail trade - automotive, marine craft, aircraft, and accessories	Y	25	30	N	N
56	Retail trade - apparel and accessories	Y	25	30	N	N
57	Retail trade - furniture, home furnishings and equipment	Y	25	30	N	N
58	Retail trade - eating and drinking establishments	Y	25	30	N	N
59	Other retail trade	Y	25	30	N	N
<b>60 Services</b>						
61	Finance, insurance, and real estate services	Y	25	30	N	N
62	Personal services	Y	25	30	N	N
62.4	Cemeteries	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4, 11</sup>	Y <sup>6, 11</sup>
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	Y	25	30	N	N
63.7	Warehousing and storage services	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
64	Repair services	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
65	Professional services	Y	25	30	N	N
65.1	Hospitals, Other medical facilities	25	30	N	N	N
65.16	Nursing homes	N <sup>1</sup>	N <sup>1</sup>	N	N	N
66	Contract construction services	Y	25	30	N	N

**Table 3-5. Land Use Compatibility and Noise Exposure (cont.)**

LAND USE		SUGGESTED LAND USE COMPATIBILITY				
SLUCM NO.	LAND USE NAME	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
67	Government services	Y <sup>1</sup>	25	30	N	N
68	Educational services	25	30	N	N	N
68.1	Child care services, child development centers, and nurseries	25	30	N	N	N
69	Miscellaneous	Y	25	30	N	N
69.1	Religious activities	Y	25	30	N	N
<b>70 Cultural, entertainment, and recreational</b>						
71	Cultural activities	25	30	N	N	N
71.2	Nature exhibits	Y <sup>1</sup>	N	N	N	N
72	Public assembly	Y	N	N	N	N
72.1	Auditoriums, concert halls	25	30	N	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y <sup>7</sup>	Y <sup>7</sup>	N	N	N
73	Amusements - fairgrounds, miniature golf, driving ranges; amusement parks, etc.	Y	Y	N	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y	25	30	N	N
75	Resorts and group camps	Y	25	N	N	N
76	Parks	Y	25	N	N	N
79	Other cultural, entertainment, and recreation	Y	25	N	N	N
<b>80 Resource production and extraction</b>						
81	Agriculture (except live stock)	Y <sup>8</sup>	Y <sup>9</sup>	Y <sup>10</sup>	Y <sup>10, 11</sup>	Y <sup>10, 11</sup>
81.5	Livestock farming and breeding	Y <sup>8</sup>	Y <sup>9</sup>	N	N	N
81.7	Animal Breeding	Y <sup>8</sup>	Y <sup>9</sup>	N	N	N
82	Agriculture related activities	Y <sup>8</sup>	Y <sup>9</sup>	Y <sup>10</sup>	Y <sup>10, 11</sup>	Y <sup>10, 11</sup>
83	Forestry activities	Y <sup>8</sup>	Y <sup>9</sup>	Y <sup>10</sup>	Y <sup>10, 11</sup>	Y <sup>10, 11</sup>
84	Fishing activities	Y	Y	Y	Y	Y
85	Mining activities	Y	Y	Y	Y	Y
89	Other resources production or extraction	Y	Y	Y	Y	Y

**Table 3-5. Land Use Compatibility and Noise Exposure (cont.)****KEY TO TABLE 3-5. LAND USE COMPATIBILITY NOISE EXPOSURE**

**SLUCM** - Standard Land Use Coding Manual, U.S. Department of Transportation

**Y (Yes)** - Land uses and related structures are normally compatible without restriction.

**N (No)** - Land uses and related structures are not normally compatible and should be prohibited.

**Y<sup>x</sup>** - Yes with restrictions. The land uses and related structures are generally compatible; however, see notes indicated by the superscript.

**N<sup>x</sup>** - No with exceptions. The land uses and related structures are generally incompatible; however, see notes indicated by the superscript.

**25, 30, or 35** - The numbers refer to noise level reduction (NLR) levels. NLR (outdoor to indoor) is achieved through the incorporation of noise attenuation into the design and construction of a structure. Land use and related structures are generally compatible; however, measures to achieve NLR of 25, 30, or 35 must be incorporated into design and construction of structures. However, measures to achieve an overall noise reduction do not necessarily solve noise difficulties outside the structure and additional evaluation is warranted. Also, see notes indicated by superscripts where they appear with one of these numbers.

**DNL** - Day-Night Average Sound Level

**NOTES FOR TABLE 3-5. LAND USE COMPATIBILITY AND NOISE EXPOSURE****1. General**

**a.** Although local conditions regarding the need for housing may require residential use in these zones, residential use is discouraged in DNL 65-69 and strongly discouraged in DNL 70-74. The absence of viable alternative development options should be determined and an evaluation should be conducted locally prior to local approvals indicating that a demonstrated community need for the residential use would not be met if development were prohibited in these zones. Existing residential development is considered as pre-existing, nonconforming land uses.

**b.** Where the community determines that these uses must be allowed, measures to achieve outdoor to indoor NLR of at least 25 decibels (dB) in DNL 65-69 and 30 dB in DNL 70-74 should be incorporated into building codes and be considered in individual approvals; for transient housing, an NLR of at least 35 dB should be incorporated in DNL 75-79.

**c.** Normal permanent construction can be expected to provide an NLR of 20 dB, thus the reduction requirements are often stated as 5, 10, or 15 dB over standard construction and normally assume mechanical ventilation, upgraded sound transmission class ratings in windows and doors, and closed windows year round. Additional consideration should be given to modifying NLR levels based on peak noise levels or vibrations.

**d.** NLR criteria will not eliminate outdoor noise problems. However, building location, site planning, design, and use of berms and barriers can help mitigate outdoor noise exposure particularly from ground level sources. Measures that reduce noise at a site should be used wherever practical in preference to measures that only protect interior spaces.

**2.** Measures to achieve a NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

**3.** Measures to achieve a NLR of 30 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

**4.** Measures to achieve a NLR of 35 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

**5.** If a projector proposed development is noise sensitive, use indicated NLR; if not, land use compatible without NLR.

**6.** Buildings are not permitted.

**7.** Land use is compatible provided special sound reinforcement systems are installed.

**8.** Residential buildings require a NLR of 25.

**9.** Residential buildings require a NLR of 30.

**10.** Residential buildings are not permitted.

**11.** Land use that involves outdoor activities is not recommended, but if the community allows such activities, hearing protection devices should be worn when noise sources are present. Long-term exposure (multiple hours per day over many years) to high noise levels can cause hearing loss in some unprotected individuals.





SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

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**CHAPTER 4 • LAND USE  
AND ANALYSIS**

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AIR INSTALLATION COMPATIBLE USE ZONE





## **4.0 LAND USE AND ANALYSIS**

### **4.1 Introduction**

Land use planning and control is a dynamic rather than a static process. The specific characteristics of land use determinants will always reflect, to some degree, the changing conditions of the economic, social, and physical environment of a community, as well as changing public concerns. The planning process accommodates this fluidity in that decisions are normally not based on boundary lines but rather on more generalized area designations. Computer technology has enabled Seymour Johnson AFB to more precisely display its flight tracks, airspace control surfaces, noise contours, and accident potential areas for land use planning purposes.

For the purposes of this study, existing land uses have been classified into one of the following six general categories:

- (1) Residential—includes all types of residential activity, such as single and multi-family residences and mobile homes, at a density of greater than one dwelling unit per acre.
- (2) Commercial—encompasses offices, retail, restaurants, and other types of commercial establishments.
- (3) Industrial—includes manufacturing, warehousing, and other similar uses.
- (4) Public—comprised of publicly owned lands and/or lands to which the public has access, including public buildings, schools, churches, cemeteries, and hospitals.
- (5) Open/Agriculture—includes undeveloped land, agricultural areas, grazing lands, and areas with residential activity at densities less than or equal to one dwelling unit per acre.
- (6) Other—includes roads, water, and other unclassified features.

### **4.2 Existing Land Use and Zoning**

This section presents the municipalities that have tax or land-use jurisdiction in the vicinity of Seymour Johnson AFB, including descriptions of existing and future land uses. In North Carolina, land use planning and zoning is exercised by cities, incorporated municipalities, as well as counties. Seymour Johnson AFB lies

completely within the City of Goldsboro; the base lies along the southern city limits. Portions of the base boundary and southern city limits are coincident. The city itself lies in the central portion of Wayne County.

As noted in Chapter 2, the population of North Carolina has been growing rapidly. Wayne County is experiencing a moderate growth rate; however, the City of Goldsboro lost population between the 1990 and 2010 decennial censuses (Table 4-1). Since the 1993 AICUZ study, some land use change has occurred in Wayne County, principally conversion of open space and agricultural land uses to residential uses to accommodate population growth.

**Table 4-1. U.S. Census Population Data**

Jurisdiction	1990	2010	Population Change
State of North Carolina	6,628,637	9,535,483	2,906,846 (43.85%)
Wayne County	104,666	122,623	17,957 (17.16%)
City of Goldsboro	40,709	37,597	-3,112 (-7.65%)

Source: USCB

A geo-spatial analysis of land use attributes was conducted to derive the land use classifications. This was augmented and spot-checked with use of aerial photography. The following sections examine existing land use, zoning, and future land use plans.

#### 4.2.1 City of Goldsboro

As noted above, Seymour Johnson AFB is located within the city limits of the City of Goldsboro, North Carolina. As a mid-sized city in the North Carolina coastal plain, it has a variety of land uses.

Since the base is along the southern boundary of the city, the majority of the development around the base lies north of the base. Immediately to the northwest of the base is a buffer strip of open space along Stoney Creek. Northwest of that are residential uses. Northeast of the base are residential and commercial uses in the vicinity of US 70 (Business) and Berkeley Boulevard.

The City of Goldsboro has enacted zoning ordinances since the 1930s. The city exercises extra-territorial zoning to one mile beyond its city limits. Most of the area south of the base is zoned for open space or agricultural uses, low density residential or



industrial uses. Additionally, the city zoning regulations incorporate the height restrictions contained within FAR Part 77. This has the effect of protecting most of the inner horizontal surface (150-foot obstruction clearance).

#### *4.2.1.1 Noise Zones*

In general terms, the noise contours extend along the axis of the runway (Figure 4-1). The noise exposure area from aircraft operations is generally focused to the south of the runway away from the City of Goldsboro's population center.

The 85+ DNL contour extends slightly beyond the base boundary, totaling approximately 162 acres of non-Air Force land comprised mostly of rural density, single-family residential uses with a minimum lot size of 20,000 square feet. A small amount of commercial land use is also present in this contour.

The 80-84 DNL contour affects relatively little real estate within the city limits, encompassing approximately 650 acres of residential, commercial, and agricultural land uses.

The 75-79 DNL contour encompasses approximately 1,635 acres within the city limits with residential, commercial, industrial and agricultural land uses represented. A fairly heavy concentration of commercial uses is present along the US 70 frontage to the east of the base. South, southeast and east of the base but within this contour, the uses are primarily agricultural and residential; an area of considerable residential activity, including mobile homes and single-family residential dwellings south of the runway, is exposed to DNLs greater than 75 dB.

The 70-74 DNL contour overlies approximately 2,085 acres within the city limits and is comprised of residential, commercial, industrial, and agricultural land uses.

The 65-69 DNL contour encompasses approximately 1,925 acres within the city limits. Residential, commercial, and industrial land uses are present. Northeast of the base but still within the city limits, the primary land uses are commercial, reflecting the role that US 70 and US 70 (Business) serve as a transportation artery. Between these two routes, the land uses are primarily residential.

#### 4.2.1.2 *Clear Zone/Accident Potential Zones I and II*

Approximately 115 acres (56 percent) of the western CZ falls within the city's planning jurisdiction (Figure 4-2). This property contains a portion of the city's wastewater treatment plant. Roughly 620 acres of APZ I (east and west) fall within the city's planning jurisdiction. Zoning in these areas consists of agricultural and commercial land uses. Only about 56 acres of APZ II (east and west) are located within the city's planning jurisdiction. Zoning in these areas is mostly agricultural, with small amounts of residential and commercial also present.

#### 4.2.2 Wayne County

Wayne County has limited zoning. Much of the county is not zoned; however, much of the area around the base and outside of Goldsboro's extra-territorial jurisdiction is zoned. Additionally, the county adopted a noise overlay zoning district in 2005 and has published a design manual for structures erected after 2005 for the purpose of incorporating noise attenuation into the construction of buildings located within the overlay district. One of the requirements of the noise overlay district is disclosure during real estate transactions of the property's location within a noise or accident potential zone, as the case may be.

##### 4.2.2.1 *Noise Zones*

Much of the Wayne County lands in the study area are rural, including agricultural or open space uses, with scattered rural residential uses intermixed (Figure 4-4).

The 85+ DNL contour does not extend over any land within the county's planning jurisdiction.

The 80-84 DNL contour encompasses approximately 21 acres of land in Wayne County. Most of this property falls within the Airport District, with only a little over two acres designated as Heavy Industrial.

The 75-79 DNL contour primarily covers agricultural land uses, with a few pockets of industrial, commercial, and Airport District also present.

The land uses underlying the 70-74 DNL contour consist largely of open space (agricultural), residential, and industrial uses. Commercial uses are also present along the US 70 frontage.

The 65-69 noise zone includes land uses of all six major types. West of the base, along the north/south main line railroad track are commercial, industrial, open space and residential uses.



Southwest, south, and southeast of the base, residential and open space land uses predominate, with isolated commercial nodes occurring at certain road junctions.

#### *4.2.2.2 Clear Zone/Accident Potential Zones I and II*

To the west of the runway, approximately 44 percent of the CZ is owned by the Air Force; the balance lies within the City of Goldsboro's planning jurisdiction (Figure 4-5). Within APZ I, only about 44 acres fall within Wayne County, all of which is currently designated as industrial. The majority of APZ II, roughly 871 acres, falls within the county's planning jurisdiction, where the primary land use designation is also industrial.

### **4.3 Future Land Use**

In 2000, Goldsboro published its comprehensive plan. Among the goals and policies articulated therein was a finding that the base establish a compatible "edge" for the urban area southeast of the city. Accordingly, the plan recommends that the base and its flight zones form a barrier to urban and suburban growth to the southeast of the city center. Instead, growth should be focused to the north and northeast where contiguous, available land exists. The land use component of that plan calls for industrial uses in the APZs that lie to the east of the base, and for low-density residential uses or agricultural/open space uses within the areas of predicted noise exposure (Figures 4-6 and 4-7). To the extent that these recommendations are implemented through zoning, capital improvements and subdivision controls, this should generally yield compatible land uses. For comparison purposes, maps depicting Wayne County's Growth Strategy are presented in Figures 4-8 and 4-9.

Figure 4-1. Goldsboro Existing Land Use and Noise Contours

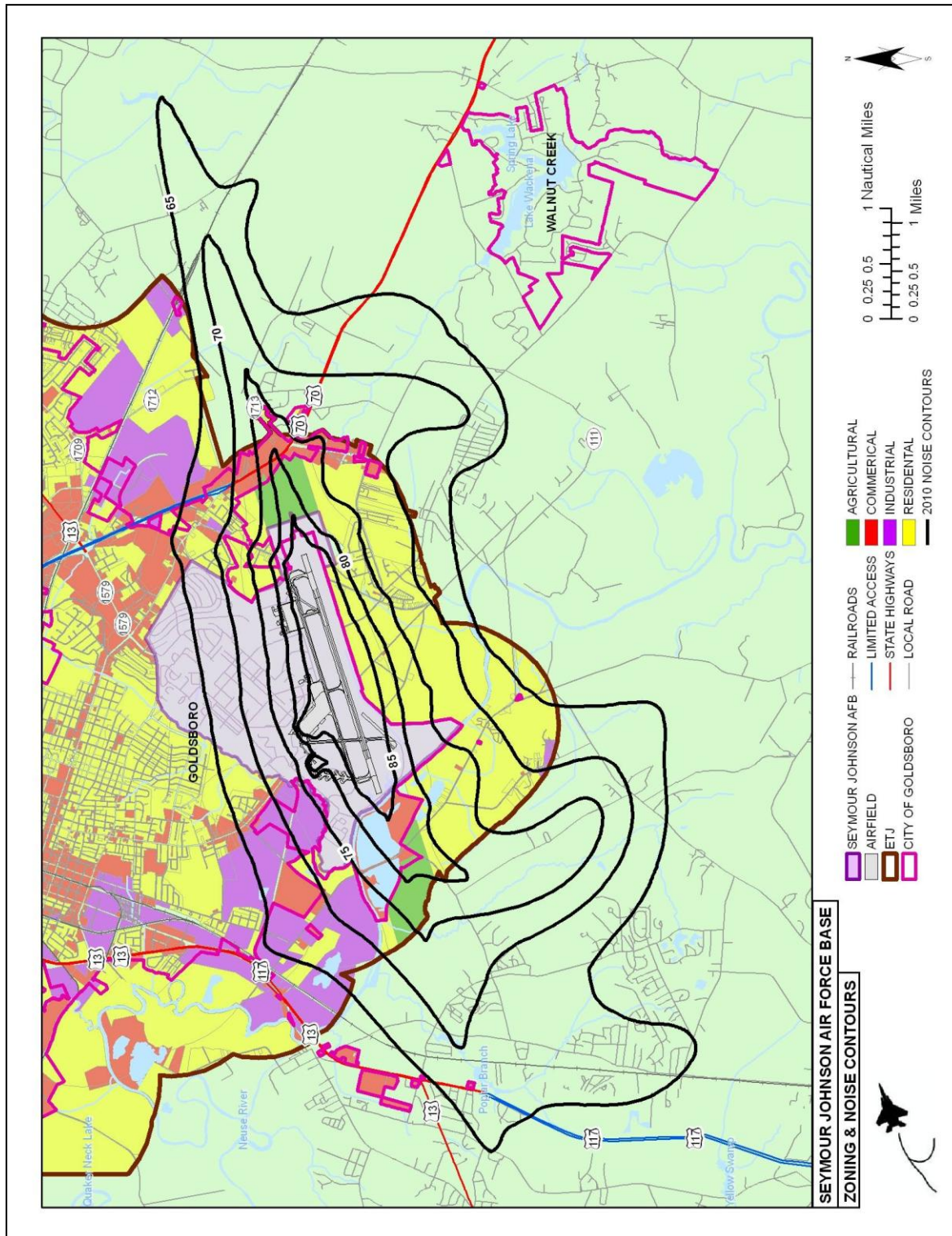






Figure 4-2. Goldsboro Existing Land Use and CZs/APZs

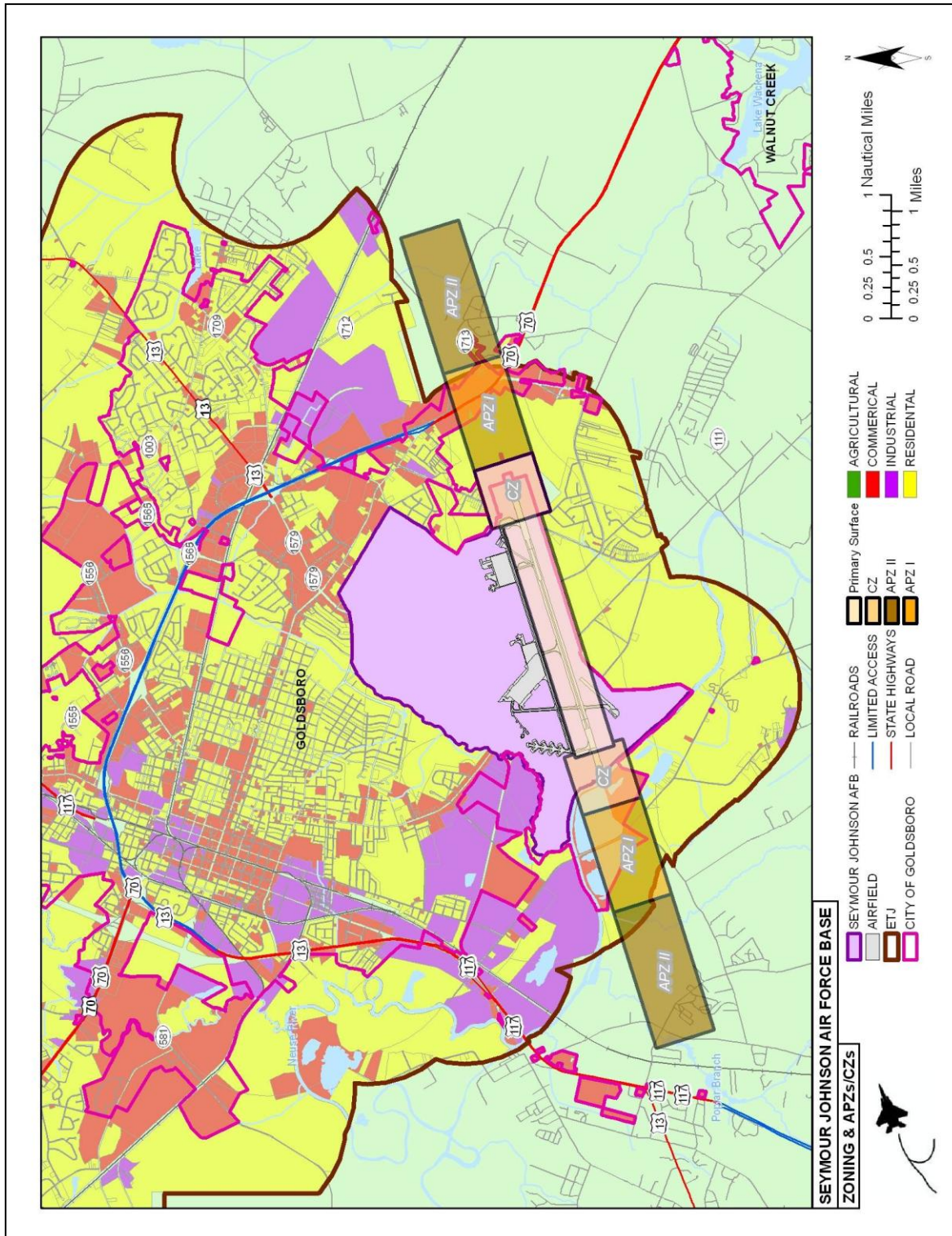
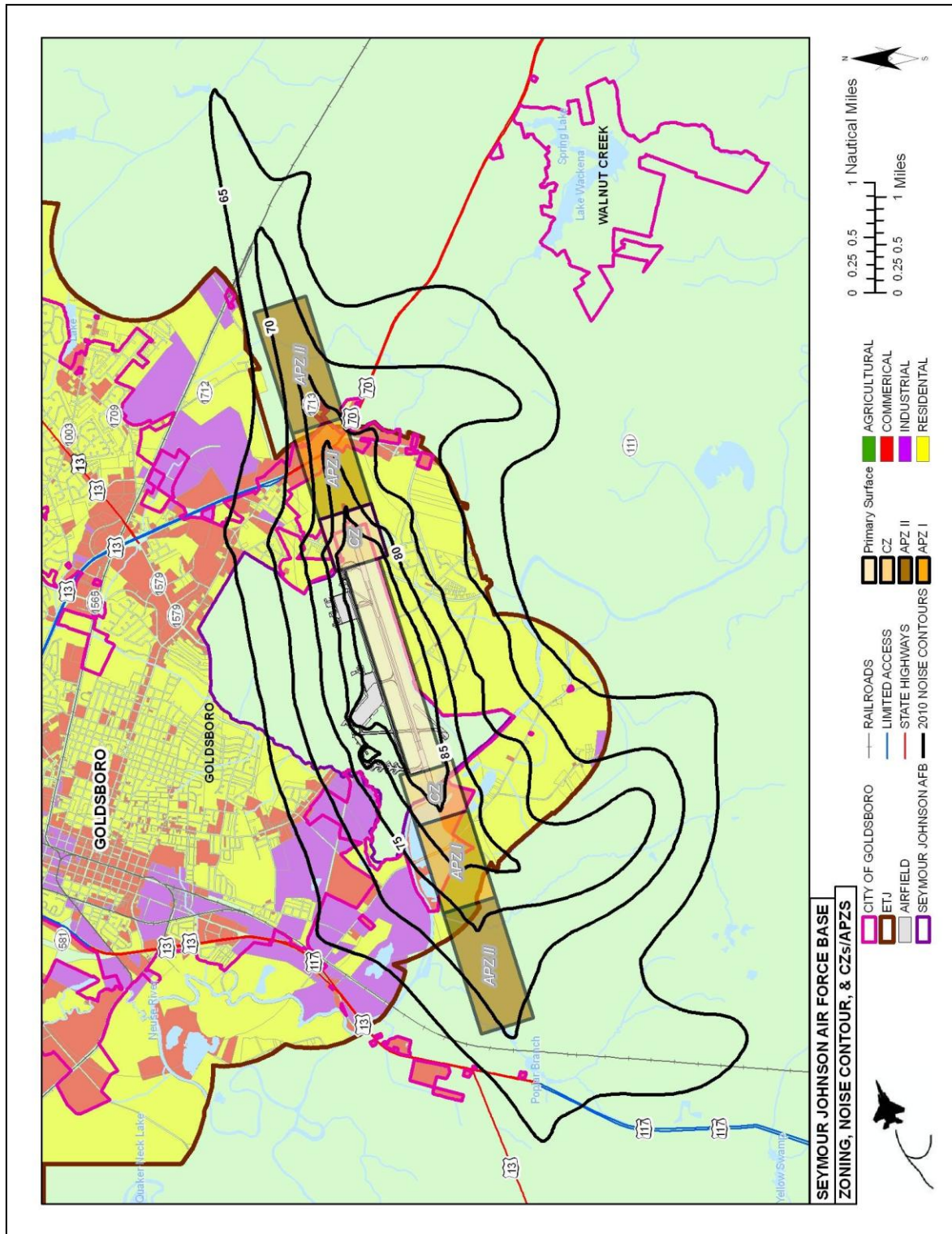


Figure 4-3. Goldsboro Existing Land Use, Noise Contours, and CZs/APZs





**Table 4-2a. Total Acreage and Estimated Populations within Noise Contours**

Total Acreage		
DNL noise zone	Acreage	Population
65-69	8,681	6,994
70-74	5,109	2,699
75-79	2,811	780
80-84	1,116	73
85+	1,060	13
<b>Total</b>	<b>18,777</b>	<b>10,559</b>

Off-Base Acreage		
65-69	8,175	6,266
70-74	4,622	2,699
75-79	2,316	780
80-84	680	73
85+	162	13
<b>Total</b>	<b>15,955</b>	<b>9,831</b>

Source: U.S. Census Bureau 2010 SF1 (Block Level)

**Table 4-2b. Total Acreage and Estimated Populations within CZs/APZs**

Zone	Total Acres	Off-Base Acres	Total Population
Clear Zones	413	115	0
APZ I	689	689	34
APZ II	964	964	611
<b>Total</b>	<b>2,066</b>	<b>1,768</b>	<b>645</b>

Note: There is no on-base population within the CZs and no part of APZs lie within base boundaries  
 Source: U.S. Census Bureau 2010 SF1 (Block Level)

**Table 4-3a. Off-Base Acreage by Land Use within Noise Contours**

Category	Acreage
Residential	1,309
Commercial	72
Industrial	40
Public	21
Open/Agriculture	13,566
Other	947
<b>Total</b>	<b>15,955</b>

Source: City of Goldsboro and Wayne County North Carolina

**Table 4-3b. Off-Base Acreage Compatibility within Noise Contours**

Category	65-69	70-74	75-79	80-84	85+	Total
Residential	873	302	119	12	3	<b>1,309</b>
Compatible	698	229	0	0	0	927
Incompatible	175	73	119	12	3	382
Commercial	16	12	43	1	0	<b>72</b>
Compatible	16	12	38	0	0	66
Incompatible	0	0	5	1	0	6
Industrial	21	11	8	0	0	<b>40</b>
Compatible	21	11	8	0	0	40
Incompatible	0	0	0	0	0	0
Public	16	4	1	0	0	<b>21</b>
Compatible	16	4	0	0	0	20
Incompatible	0	0	1	0	0	1
Open/Agriculture	6,704	4,075	2,025	615	147	<b>13,566</b>
Compatible	6,704	4,075	2,025	615	146	13,565
Incompatible	0	0	0	0	1	1
Other	545	218	120	52	12	<b>947</b>
Compatible	545	218	120	52	12	947
Incompatible	0	0	0	0	0	0

Source: City of Goldsboro and Wayne County North Carolina

**Table 4-3c. Off-Base Acreage Compatibility within CZs/APZs**

<b>Category</b>	<b>Clear Zone</b>	<b>APZ I</b>	<b>APZ II</b>	<b>Total</b>
Residential	0	6	273	<b>279</b>
Compatible	0	0	247	247
Incompatible	0	6	26	32
Commercial	31	80	0	<b>111</b>
Compatible	31	77	0	108
Incompatible	0	3	0	3
Industrial	0	7	28	<b>35</b>
Compatible	0	7	28	35
Incompatible	0	0	0	0
Public	1	0	1	<b>2</b>
Compatible	0	0	0	0
Incompatible	1	0	1	2
Open/Agriculture	70	513	625	<b>1,208</b>
Compatible	70	513	625	1,208
Incompatible	0	0	0	0
Other	13	83	37	<b>133</b>
Compatible	0	83	37	120
Incompatible	13	0	0	13
<b>TOTAL</b>	<b>115</b>	<b>689</b>	<b>964</b>	<b>1,768</b>

Source: City of Goldsboro and Wayne County North Carolina

Figure 4-4. Generalized Regional Land Use and Noise Contours

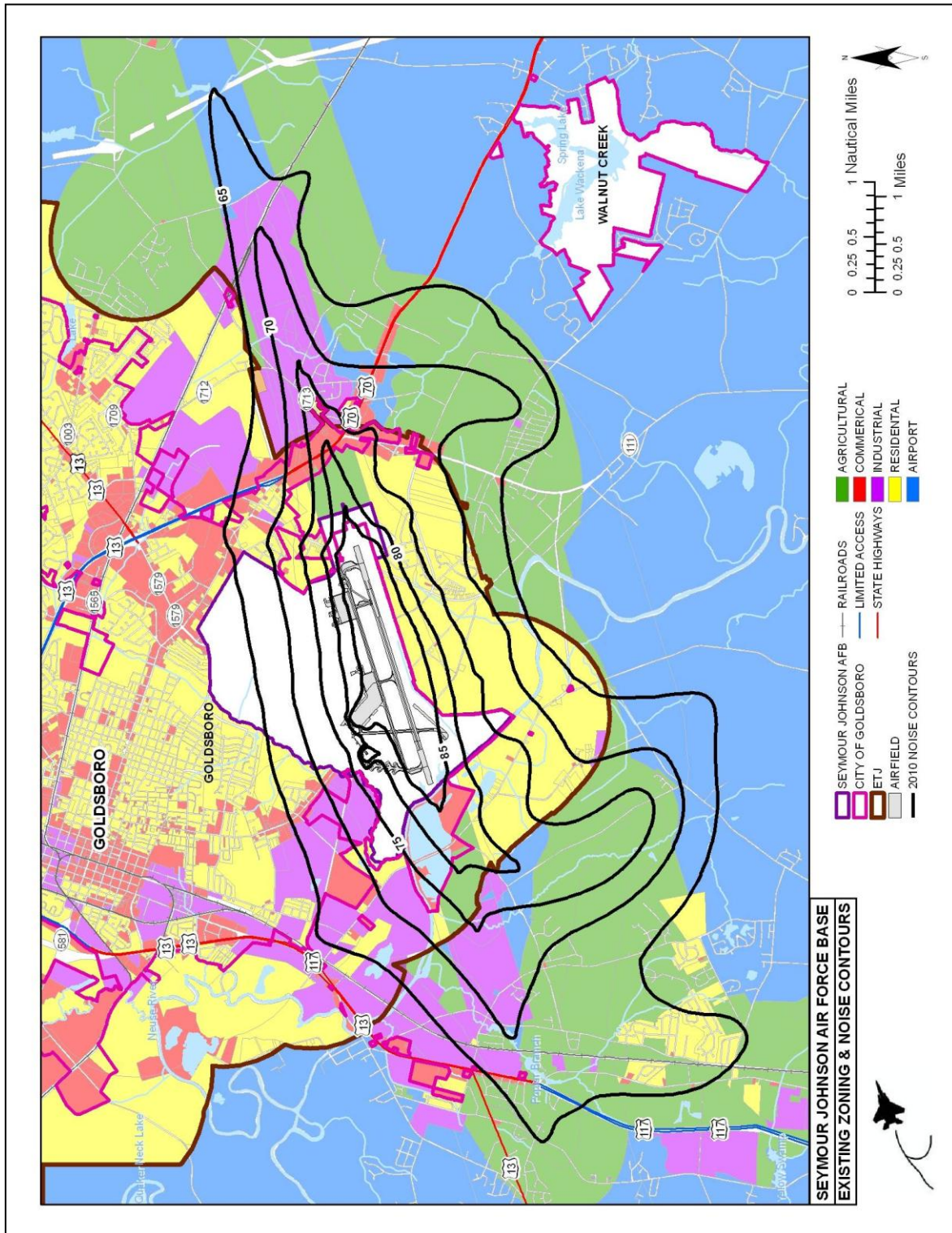




Figure 4-6. Goldsboro Proposed Land Use and Noise Contours

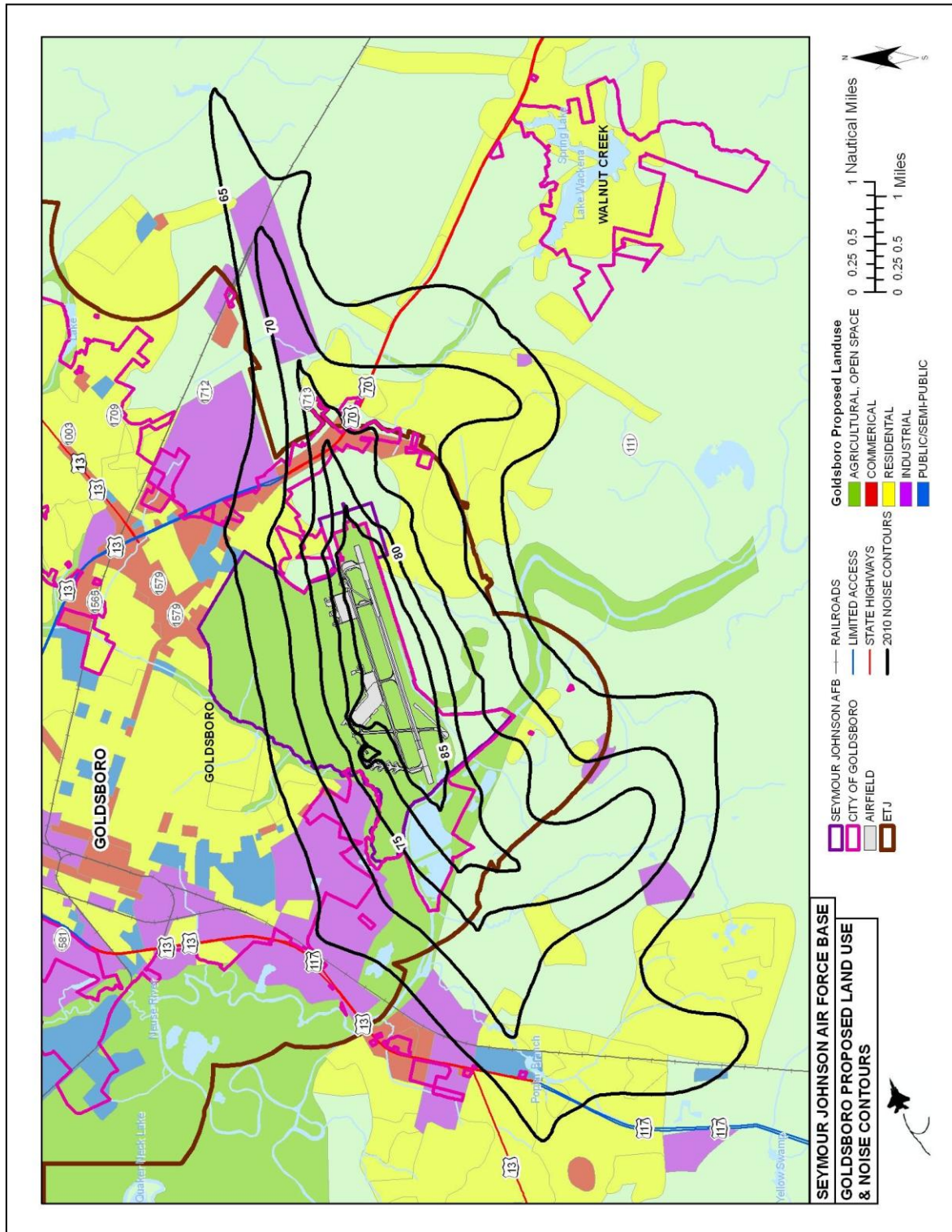






Figure 4-7. Goldsboro Proposed Land Use and CZs/APZs

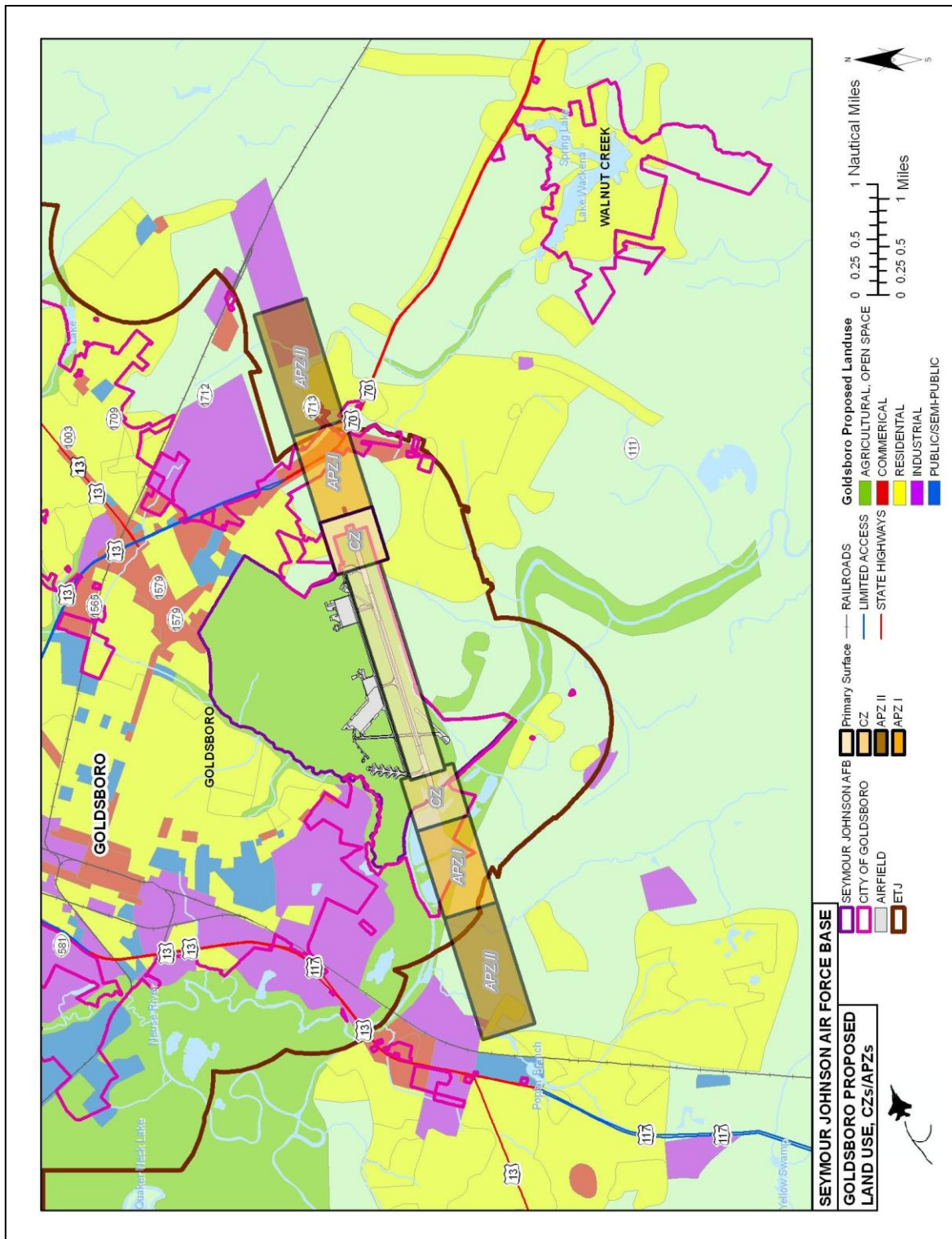


Figure 4-8. Wayne County Growth Strategy and Noise Contours

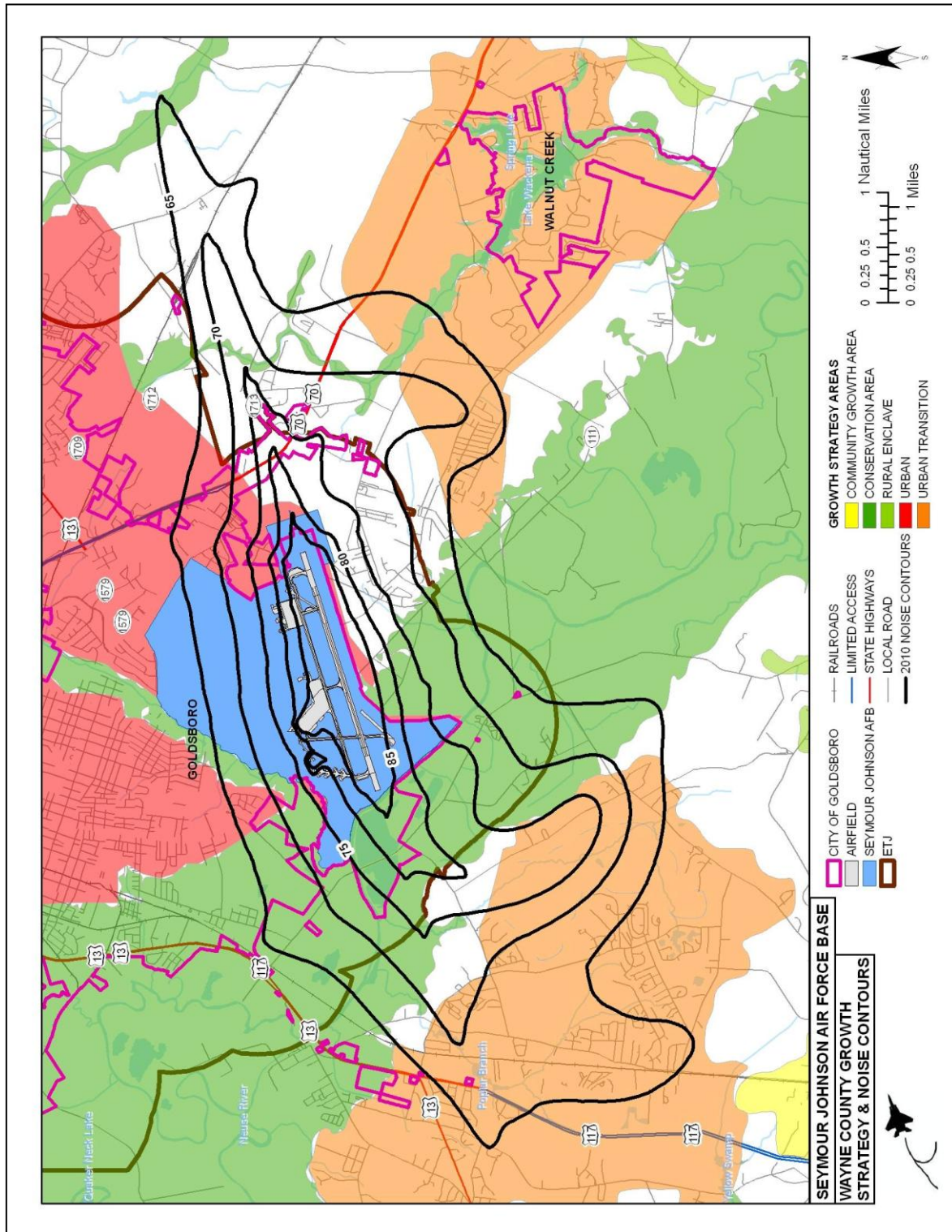




Figure 4-9. Wayne County Growth Strategy and CZs/APZs

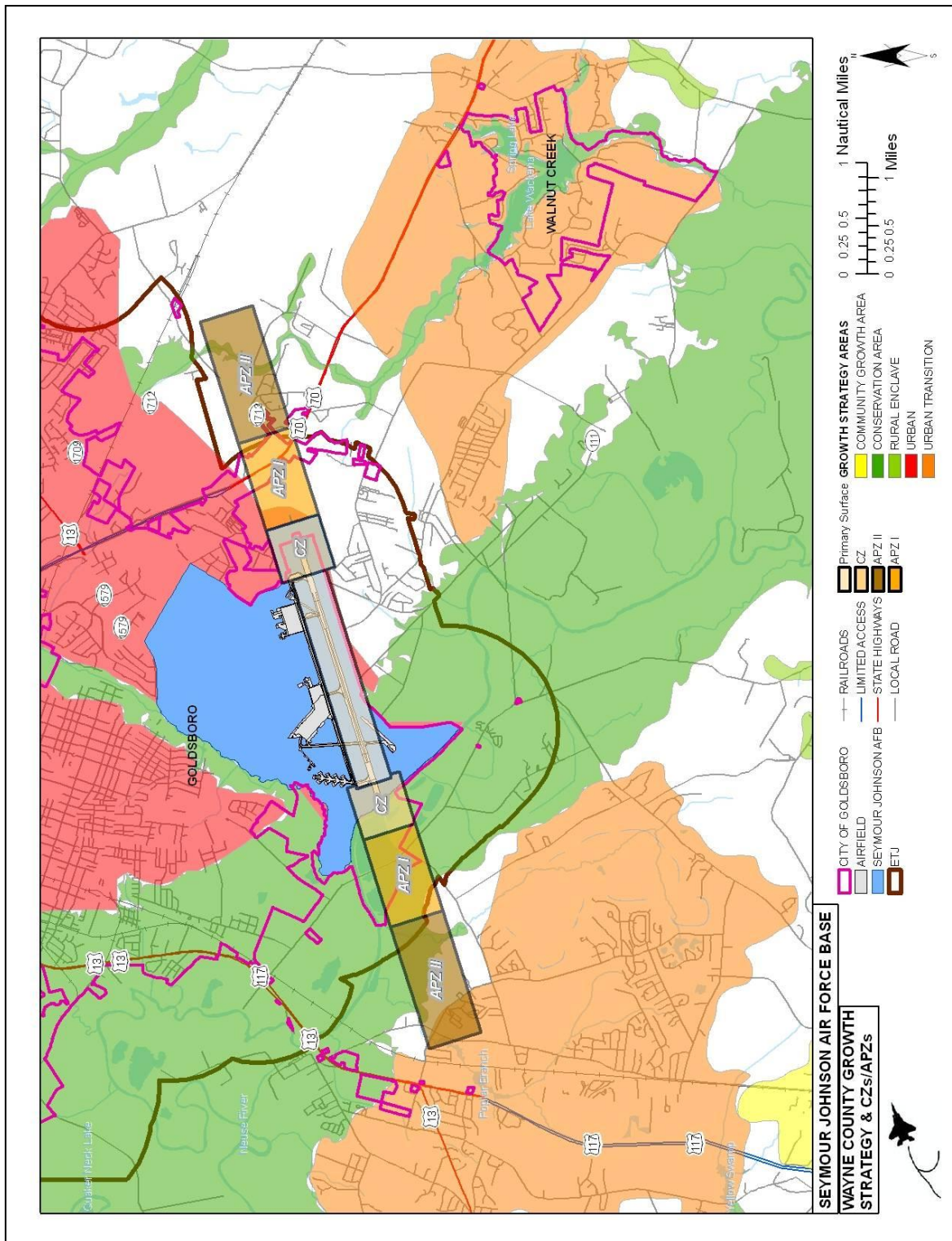
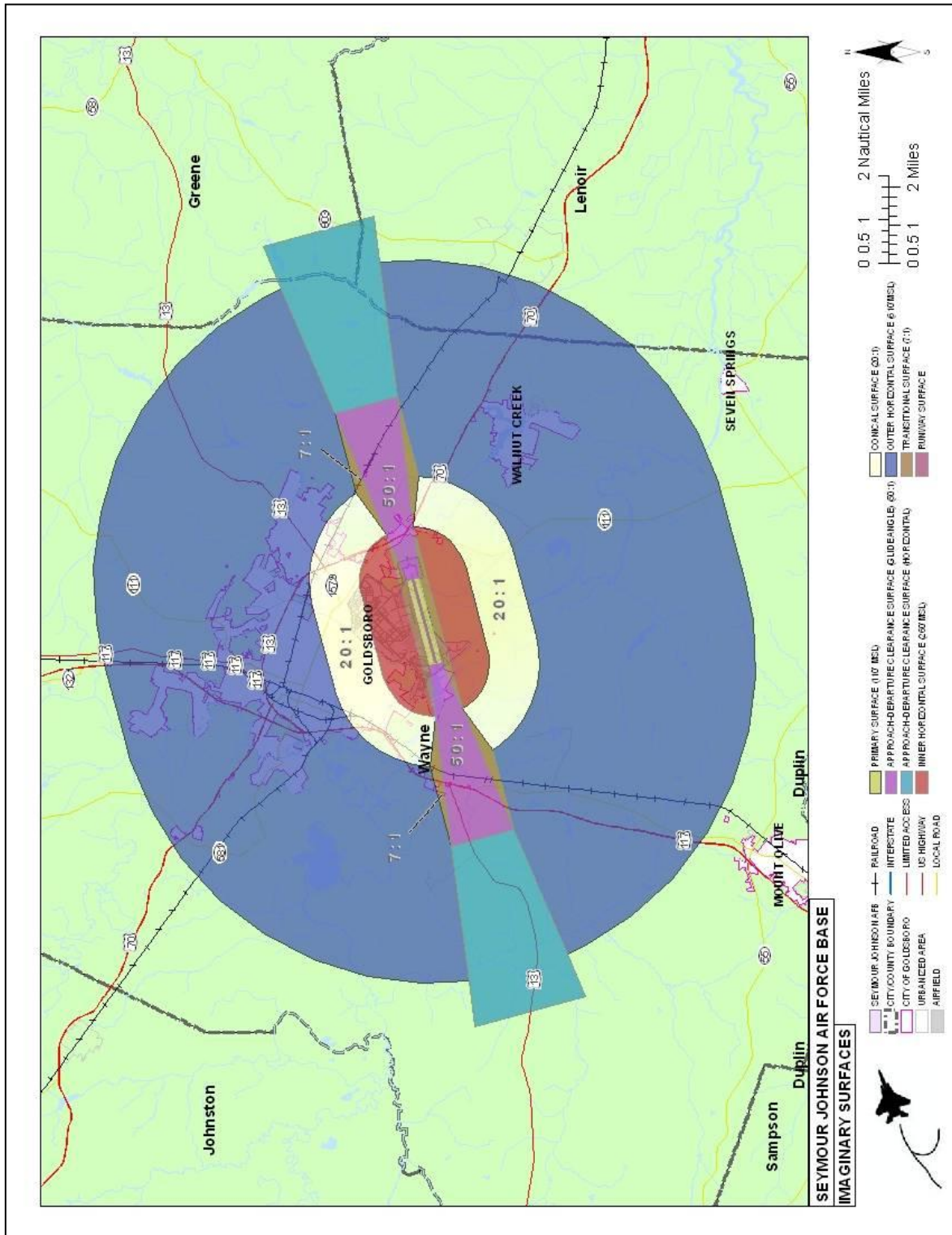


Figure 4-10. Imaginary Surfaces





#### 4.4 Obstructions to Air Navigation (FAR Part 77 Analysis)

The Air Force seeks to protect its airfields from encroachment from construction of uses that are incompatible. In addition to the recommendations, the Air Force is also concerned about development that has the potential to compromise the utility of the airfield if their height or other characteristics (e.g., light emissions, smoke, dust, or steam) are not regulated (see Section 3.2.2, Land Uses Hazardous to Air Navigation, page 3-7).

Unlike bases in mountainous areas, terrain elevations around the base are similar to the airfield elevation (Figure 4-10). The elevation above sea level of the outer horizontal surface is 610 feet, based on the established airfield elevation of 109 MSL. Obstructions erected in this area have the potential to adversely affect the current and future mission capability of Seymour Johnson by impeding the use of precision instrument approach corridors. These obstacles could cause the aircraft to maintain an altitude that is too high to permit a descent below adverse weather causing a divert to another airfield. As noted in Chapter 3, a weather/fuel divert increases risk to aviators and those on the ground, incurs additional expense in ferrying the aircraft and aircrew when weather improves, and consumes additional fuel. It should be noted, however, that the Federal government cannot and does not exercise land use control over real estate it does not own. Wayne County, the City of Goldsboro, and the state of North Carolina should continue to implement land use controls to minimize encroachment from construction of structures whose height and location compromise the utility of the airfield.

To protect aviators and persons on the ground, the FAA evaluates proposals for construction of objects greater than 199 feet above ground level (AGL) or within 20,000 feet of an airport and the object to be constructed would exceed a slope of 100:1 horizontally, (i.e., 100 feet horizontally for each foot vertically) from the nearest point of the nearest runway. Where proposed structures are found to penetrate the Airspace Control Surface Plan (Section 3.2), the FAA and Seymour Johnson AFB would strongly recommend disapproval of the project to protect Seymour Johnson AFB's pilots during times of adverse weather (low ceilings, poor visibility). Such obstructions can lead to raised minimum altitude for an instrument procedure, and can mean the difference between a successful instrument approach to the airfield and a diversion to another base. See Volume II, Appendix D for additional details on how these maximum height recommendations are calculated.



The review of FAA obstruction data indicates a single obstruction (radio transmitter tower that is 281 feet MSL) east of the base that extends above the 260-foot MSL elevation for the inner horizontal surface.

The Air Force recognizes that maximum recommended height for proposed structures in the vicinity of an airfield varies depending upon the distance the proposed site would be from the airfield. Base personnel can assist during the planning phases of proposed projects to help proponents of such uses ensure that they do not penetrate recommended height limits.

Apart from incompatibilities due to height, the Air Force is concerned that structures not interfere with Air Force communications, navigation, surveillance (CNS), or weather radar facilities. Tall structures, especially when aggregated, may interfere with terrestrial based CNS and weather equipment due to frequency interference, scattering of radar beams, or attenuation of radar returns. In addition to the traditional obstruction height analysis performed by the FAA, local communities may wish to require proponents to demonstrate that proposed structures would not compromise the utility of an airfield and the taxpayer's long-standing investment in Seymour Johnson AFB. In particular, the sewage treatment facility to the west the base is an incompatible use because of its high Bird Aircraft Strike Hazard potential (Volume II, Appendix D).

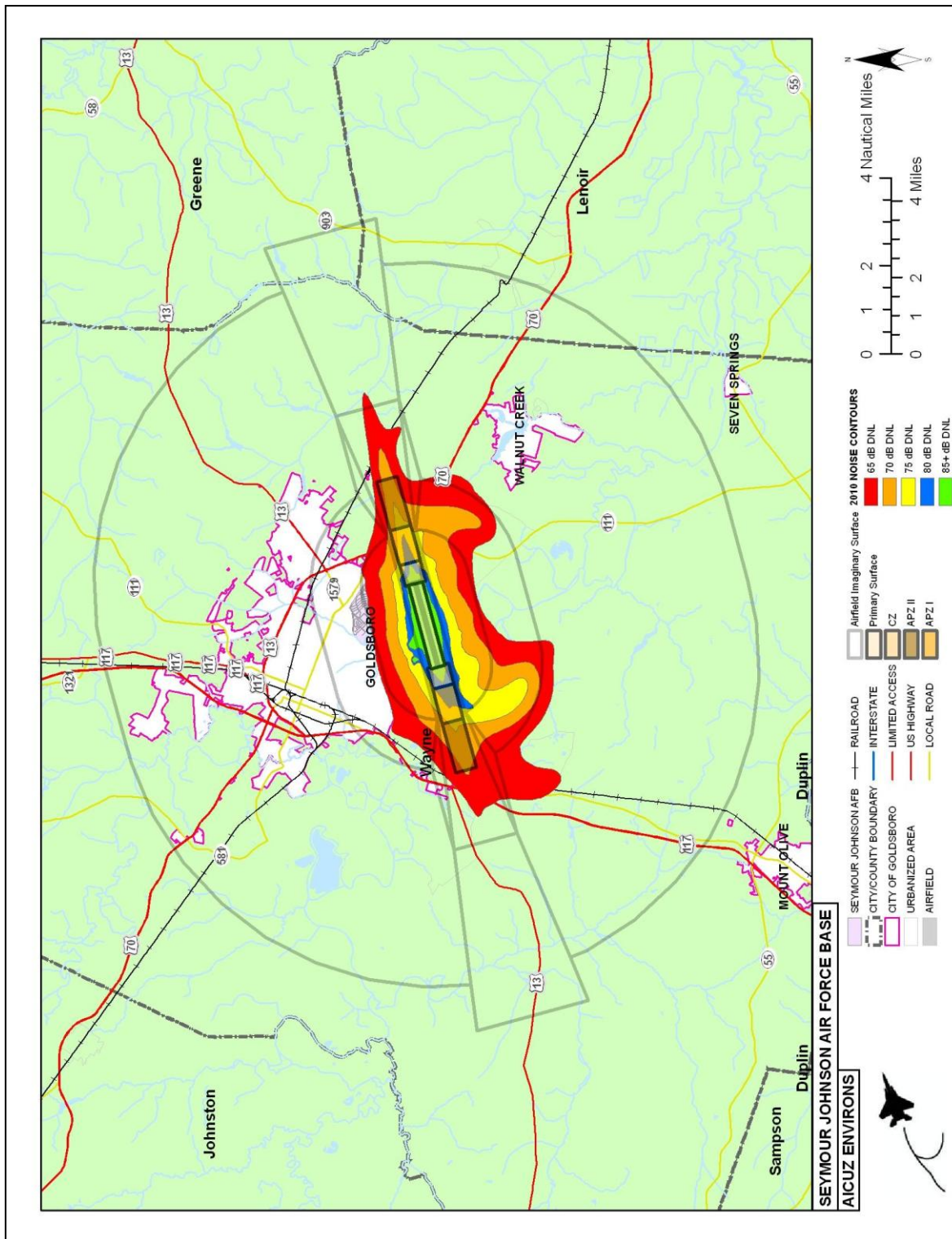
#### **4.5 AICUZ Environs**

The area of influence for an AICUZ study for which specific land use planning should be undertaken extends beyond the base's immediate neighbors (Figure 4-11).

AICUZ boundaries and noise contours describe the noise exposure of the current operational environment and as such will change over time as operational changes are made. If the local communities that make up the Seymour Johnson AFB environs attempt to use noise contours alone as boundary lines for zoning districts, it is conceivable that problems will result. Should a new mission be established at Seymour Johnson AFB adding a larger number of airplanes, or additional model types, the noise contours would change. **NOTE:** As mentioned previously, the noise contours in this report incorporate the anticipated change from the KC-135R to the KC-767, which is a slightly larger tanker aircraft.



Figure 4-11. AICUZ Environs Map





Additionally, the Air Force is recommending that AICUZ data be utilized with all other planning data. Therefore, specific land use control decisions should not be based solely on AICUZ boundaries. With these thoughts in mind, Seymour Johnson AFB has revised the 1993 study and provides flight track and noise contour maps in this report that reflect the most current and accurate picture of aircraft activities.

The local communities engage in a continuous process of maintaining their comprehensive land use plans, the accompanying implementing ordinances (zoning, subdivision control), and their capital improvement plans for infrastructure and public facility investments. During this process, the communities should continue to use sound planning principles. In particular, the Air Force would continue to recommend that planning documents, zoning changes, and similar activities be evaluated against the recommendations contained in Tables 3-4 and 3-5 of this document for land use compatibility recommendations.





SEYMOUR JOHNSON AIR FORCE BASE  
NORTH CAROLINA

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**CHAPTER 5 •  
IMPLEMENTATION**

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AIR INSTALLATION COMPATIBLE USE ZONE





## **5.0 IMPLEMENTATION**

The implementation of the AICUZ study must be a joint effort between the Air Force, the City of Goldsboro, and Wayne County, North Carolina. The Air Force's role is to minimize the impact on the local communities caused by Seymour Johnson AFB operations. The role of the communities is to ensure that development in the base environs is compatible with accepted planning and development principles and practices.

### **5.1 AICUZ Environs**

To better assist the community in identifying whether real estate is potentially affected by, or has the potential to affect Air Force flight operations, it is important that all elements of AICUZ, accident potential, noise exposure, and obstruction evaluation and airfield airspace analysis be considered by local authorities when considering potential development. It is hoped that the base leadership working in concert with local community leaders and municipal planners would use the information contained within this report as a starting point for inquiry and analysis.

### **5.2 Air Force Responsibilities**

In general, the Air Force perceives its AICUZ responsibilities as encompassing the areas of flying safety, noise abatement, and participation in the land use planning process.

Well-maintained aircraft and well-trained aircrews do much to assure that aircraft accidents are avoided. While rare, history does show that accidents occur. Despite the best training of aircrews and maintenance of aircraft, however, history makes it clear that accidents do occur. It is imperative that flights be routed over sparsely populated areas as much as possible to reduce the exposure of lives and property to a potential accident.

According to Air Force regulations, commanders are required to periodically review existing traffic patterns, instrument approaches, weather minimums, as well as operating practices and evaluate these factors in relationship to populated areas and other local situations. This requirement is a direct result and expression of Air Force policy that all AICUZ plans must include an analysis of flying and flying-related activities that are designed to reduce and control the effects of such operations on surrounding land areas.



The preparation and presentation of this Seymour Johnson AFB AICUZ study is one phase of the continuing Air Force participation in the planning process of local municipalities. As local communities update land use plans, the Air Force must be ready to provide additional inputs.

The AICUZ program represents an ongoing, dynamic process that occurs even after compatible community development plans are adopted and implemented. Base personnel are prepared to participate in the continuing discussion of zoning and other land use matters as they may affect, or may be affected by, Seymour Johnson AFB. Base personnel will also be available to provide information, criteria, and guidelines to state, county and local planning bodies, civic associations, and similar groups.

The Air Force should participate in working groups with other federal agencies to proactively prevent encroachment.

### **5.3 Local Community Responsibilities**

The City of Goldsboro and the County of Wayne have a long history of working together with the personnel at the base for mutual benefit. The proactive implementation of these recommendations by the City and County in both the letter and spirit of their policies and ordinances have accomplished many of the long-standing goals of strengthening this relationship, protecting the health and safety of the public, and reinforcing the stability and strength of Seymour Johnson's flying mission. The Air Force would suggest the following actions to build upon the progress already made:

- Continue to incorporate AICUZ policies and guidelines into the comprehensive plans of Wayne County and the City of Goldsboro as they come up for review. Update planning overlay maps of the AICUZ noise contours and Air Force Land Use Compatibility Guidelines to evaluate existing and future land use proposals.
- Review of zoning ordinances and subdivision regulations to ensure that they support compatible land uses as outlined in this AICUZ study.
- Verification that proposals comply with height and obstruction ordinances, Air Force Instruction (AFI) 32-7063, AFH 32-7084, and FAR Part 77 requirements, and that project proponents demonstrate that their actions will not compromise the utility of the Seymour Johnson airfield.
- Employ restrictive easements and covenants into proposals near the base perimeter or affected by noise or APZs.



- Review new construction within the AICUZ area to ensure that proposals comply with building codes and that the design and construction incorporate the recommended noise level reductions.
- Continue to inform Seymour Johnson AFB of planning and zoning actions that have the potential to affect base operations.
- Continue to support and enforce laws governing property transfers that require disclosure of “land-use restrictions affecting the real property” such as a noise zone or accident potential zone where the affected property lies within one or both.
- Develop a program to control and minimize the presence of large birds over and near municipal lands within the CZs and APZs.



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