



Executive Summary

United States Air Force F-35A Operational Basing Environmental Impact Statement



March 2012

How to Use This Document

This Executive Summary of the *F-35A Operational Basing Draft Environmental Impact Statement* is designed to provide overview information and direct the reader to the Draft Environmental Impact Statement (EIS). The Draft EIS is designed to be a reader-friendly document that provides an in-depth, accurate analysis of the proposed F-35A training basing action, the alternative beddown locations, the different aircraft scenarios at the alternative locations, the No Action Alternative, and the potential environmental consequences for each alternative location. The complete Draft EIS is contained in the compact disc located inside the back cover of this Executive Summary. The organization of the Draft EIS is presented below.

EXECUTIVE SUMMARY

Synopsis of Purpose and Need and Proposed Action and Alternatives Comparison of Impacts

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Detailed Guide for Reading the Draft EIS

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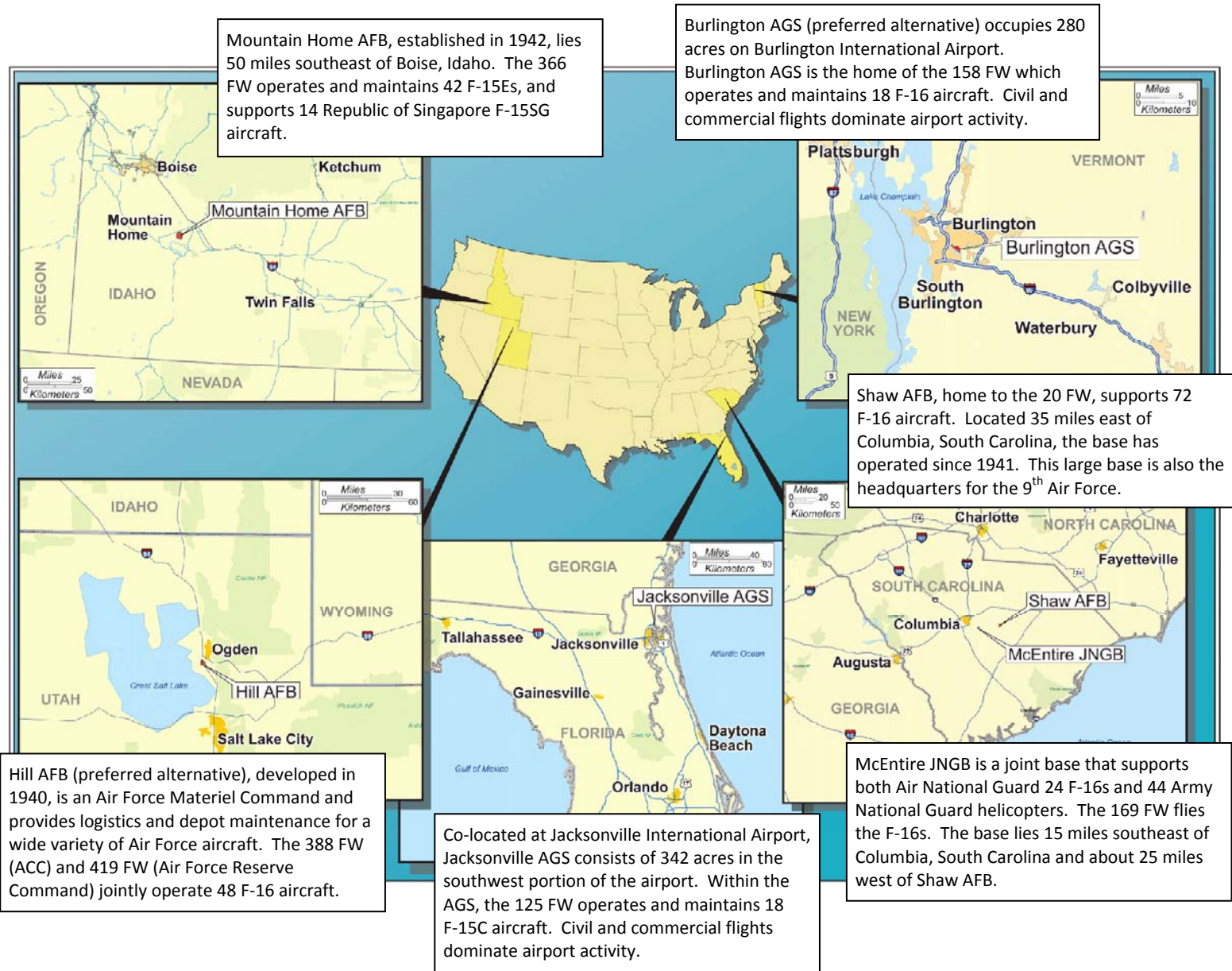


Figure ES-1. Alternative Locations for F-35A Operational Aircraft

INTRODUCTION

The Draft Environmental Impact Statement (EIS) for F-35A Operational Basing analyzes the potential environmental consequences of a United States (U.S.) Air Force proposal to beddown F-35A Lightning II aircraft at one or more Air Combat Command (ACC) or Air National Guard (ANG) bases starting in 2015. New F-35A aircraft would replace aging legacy aircraft at the bases that currently support them and would be the initial F-35As slated for combat roles. The proposed action considers the beddown of F-35A aircraft and replacing legacy fighter aircraft at: Burlington Air Guard Station (AGS), Vermont; Hill Air Force Base (AFB), Utah; Jacksonville AGS, Florida; McEntire Joint National Guard Base (JNGB), South Carolina; and Shaw AFB, South Carolina (Figure ES-1). The F-15 aircraft currently based at Mountain Home AFB would not be replaced.

F-35A Operational Basing Summary of Proposed Action and Alternatives					
<i>Burlington Air Guard Station, Vermont</i> (Preferred Alternative)	<i>Hill Air Force Base, Utah</i> (Preferred Alternative)	<i>Jacksonville Air Guard Station, Florida</i>	<i>McEntire Joint National Guard Base, South Carolina</i>	<i>Mountain Home Air Force Base, Idaho</i>	<i>Shaw Air Force Base, South Carolina</i>
F-35A Beddown					
ANG Scenario 1: 18 F-35As	ACC Scenario 1: 24 F-35As	ANG Scenario 1: 18 F-35As	ANG Scenario 1: 18 F-35As	ACC Scenario 1: 24 F-35As	ACC Scenario 1: 24 F-35As
ANG Scenario 2: 24 F-35As	ACC Scenario 2: 48 F-35As	ANG Scenario 2: 24 F-35As	ANG Scenario 2: 24 F-35As	ACC Scenario 2: 48 F-35As	ACC Scenario 2: 48 F-35As
	ACC Scenario 3: 72 F-35As			ACC Scenario 3: 72 F-35As	ACC Scenario 3: 72 F-35As
Total Based Aircraft Change/Post-Beddown Total					
ANG Scenario 1: 0/18	ACC Scenario 1: -24/24	ANG Scenario 1: 0/18	ANG Scenario 1: -6/18	ACC Scenario 1: 24/80	ACC Scenario 1: -48/24
ANG Scenario 2: 6/24	ACC Scenario 2: 0/48	ANG Scenario 2: 6/24	ANG Scenario 2: 0/24	ACC Scenario 2: 48/104	ACC Scenario 2: -24/48
	ACC Scenario 3: 24/72			ACC Scenario 3: 72/128	ACC Scenario 3: 0/72
Change in Airfield Operations (Number/Percent)					
ANG Scenario 1: 2,613/-2.3%	ACC Scenario 1: 23,365/-50.1%	ANG Scenario 1: 1,737/-1.4%	ANG Scenario 1: 6,521/-21.0%	ACC Scenario 1: 10,667/32.7%	ACC Scenario 1: 34,427/-70.9%
ANG Scenario 2: 803/-0.7%	ACC Scenario 2: 33,935/-27.2%	ANG Scenario 2: 73/0.06%	ANG Scenario 2: 4,711/-15.2%	ACC Scenario 2: 21,334/65.4%	ACC Scenario 2: 23,760/-48.9%
	ACC Scenario 3: 44,602/-4.4%			ACC Scenario 3: 32,001/98.1%	ACC Scenario 3: 13,093/-27.1%
Change in Personnel (Number/Percent)					
ANG Scenario 1: 0/0%	ACC Scenario 1: 1,157/-5%	ANG Scenario 1: 0/0%	ANG Scenario 1: -371/-24%	ACC Scenario 1: 585/13%	ACC Scenario 1: 1,320/-15%
ANG Scenario 2: 266/24%	ACC Scenario 2: 572/-3%	ANG Scenario 2: 249/24%	ANG Scenario 2: 0/0%	ACC Scenario 2: 1,170/36%	ACC Scenario 2: 735/-8%
	ACC Scenario 3: 13/<1%			ACC Scenario 3: 1,755/39%	ACC Scenario 3: 150/-1%
Area Affected by Construction and Cost (Acre/Cost)					
ANG Scenario 1: 0/\$2.4 M	ACC Scenario 1: 3.50/\$18.1 M	ANG Scenario 1: 0/\$0.4 M	ANG Scenario 1: 0.41/\$1.2 M	ACC Scenario 1: 3.17/\$16.9 M	ACC Scenario 1: 5.48/\$22.2 M
ANG Scenario 2: 0/\$2.4 M	ACC Scenario 2: 4.27/\$30.4 M	ANG Scenario 2: 0/\$0.4 M	ANG Scenario 2: 0.41/\$1.2 M	ACC Scenario 2: 8.98/\$36.3 M	ACC Scenario 2: 5.48/\$22.3 M
	ACC Scenario 3: 5.25/\$40.8 M			ACC Scenario 3: 11.39/\$51.9 M	ACC Scenario 3: 5.48/\$22.5 M
Change in Airspace Operations (Number/Percent)					
ANG Scenario 1: 190/-7%	ACC Scenario 1: 13,188/-61%	ANG Scenario 1: 623/4%	ANG Scenario 1: 1,606/-7%	ACC Scenario 1: 4,317/13%	ACC Scenario 1: 6,850/-30%
ANG Scenario 2: 543/19%	ACC Scenario 2: 7,940/-37%	ANG Scenario 2: 1,437/10%	ANG Scenario 2: 1,313/-6%	ACC Scenario 2: 8,643/26%	ACC Scenario 2: 4,783/-21%
	ACC Scenario 3: 12,693/-13%			ACC Scenario 3: 12,963/39%	ACC Scenario 3: 2,709/-12%

ANG Scenario	ACC Scenario
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1.0 PURPOSE AND NEED

1.1 PURPOSE OF THE F-35A OPERATIONAL BEDDOWN

The overall mission of the Air Force is the defense of the U.S. and fulfillment of directives of the President and the Secretary of Defense. The U.S. and international partners require fully operational, mission-ready F-35 aircraft. Pilots, personnel, and their F-35 fighters need to provide a high-threat, multi-role war fighting capability. To meet these requirements, the Air Force must develop and operate combat and support aircraft and train personnel needed for the job.

The purpose of the proposed action is to efficiently and effectively maintain combat capability and mission readiness as the Air Force faces deployments across a spectrum of conflicts while also providing for homeland defense of the U.S. Beddown and operation of the F-35A at one or more of the locations would represent one of the major steps toward this goal. Slated to purchase and deploy F-35As over the next several decades, the Air Force must ensure this initial beddown provides a solid start to the program. Additionally, this beddown action and associated training will assure availability of combat-ready pilots in the most advanced fighter aircraft in the world.

Air Combat Command (ACC), Air National Guard (ANG), and Air Force Reserve Command (AFRC) are all part of the Combat Air Forces (CAF).

1.2 NEED FOR F-35A OPERATIONAL BEDDOWN

Three factors drive the need to beddown and operate the F-35A. *First*, existing and anticipated enemy air defense systems have reached levels of effectiveness sufficient to pose a significant threat to current legacy aircraft. In addition, the worldwide prevalence of sophisticated air-to-air and surface-to-air missiles continues to grow, increasing the number of threats to which existing Air Force legacy aircraft are vulnerable. Implementation of the proposed beddown would provide the CAF with an aircraft capable of defeating or avoiding such threats.

Second, the CAF needs to efficiently and effectively maintain combat capability and mission readiness. However, it faces increased difficulty in maintaining an aging legacy aircraft inventory. These legacy aircraft need to be replaced as a result of attrition, decreasing service life, and the lack of additional manufacturing of legacy fighter aircraft. For example, the last F-16 is scheduled to be withdrawn from service around 2025. Therefore, the CAF must replace the aging legacy aircraft and integrate the operational F-35A squadrons into the existing Air Force structure.

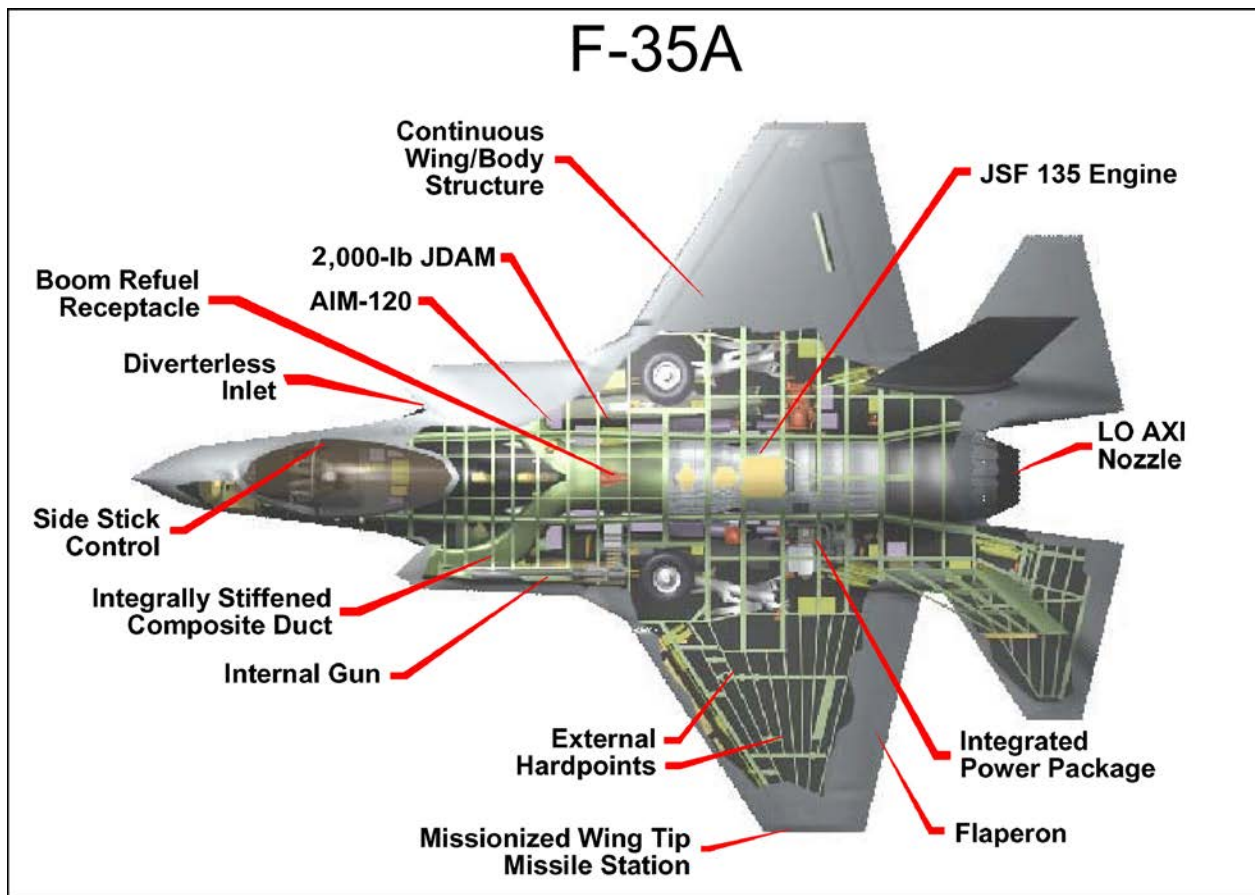
Third, the F-35A must support the CAF core competencies of air and space superiority, global attack, precision engagement, and agile combat support. In order for the CAF to organize, equip, train, and support F-35A aircraft to meet a full range of military operations, it needs to base the F-35A at existing locations offering compatible base infrastructure and providing ready access to existing airspace suitable for the F-35A. Beddown and operation of the F-35A at such locations form a critical priority for the Air Force.



2.0 DEVELOPMENT AND CHARACTERISTICS OF THE F-35A

In 1994, Congress and the Department of Defense (DoD) determined that the F-35 Lightning II would be developed to replace and supplement Air Force legacy fighter and attack aircraft. The F-35 is a supersonic, single-seat, single-engine all weather aircraft capable of performing and surviving lethal strike warfare missions. There are three variations of the F-35: F-35A, Conventional Take-Off and Landing (CTOL); F-35B, Short Take-Off and Vertical Landing (STOVL); and the F-35C, Carrier Variant (CV). The common F-35 airframe also addresses allied air forces aircraft needs. As the Air Force's premier multi-role fighter aircraft through the next several decades, the F-35A embodies critical combat capabilities to fulfill multiple missions:

- **Stealth or Low Observability** – Design features and radar-absorbent composite materials.
- **Range and Supersonic Speed** – Combat range and speed equivalent to or greater than the legacy fighter aircraft.
- **Sensor Integration to Support Precision Munitions** – Threat detection and precision munitions delivery at substantially greater distances than legacy aircraft.
- **Comprehensive Combat Information Systems** – Highly sophisticated avionics provide combat pilots with improved situational awareness.
- **Low Maintenance Costs** – Computerized self-tests of all systems enhance mission readiness.



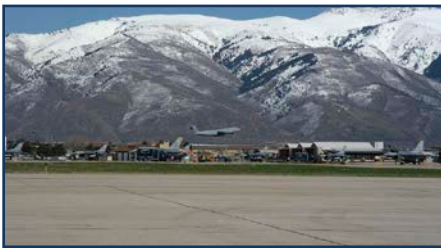
3.0 ALTERNATIVE IDENTIFICATION

On August 31, 2009, the Deputy Assistant Secretary of the Air Force for Installations tasked a group of senior representatives from the Air Force Secretariat, Air Staff, and selected major commands such as ACC and Air Force Materiel Command (AFMC) to identify potential candidate bases. The Air Force identified objective criteria to assess Air Force installations' capacity to successfully support basing of the F-35A aircraft: mission, capacity, environmental, and cost. The Air Force also developed qualitative operational considerations to determine which bases should be selected for basing of the F-35A aircraft. As part of this process, the Air Force considered two configurations for the operational basing of F-35As: (1) 24, 48, or 72 F-35A aircraft for active-duty bases and (2) 18 or 24 F-35As for ANG installations.

Planning conventions used to identify candidate bases represented the best estimates at that time in 2009. While this process determined the number of bases carried forward for detailed analysis to meet projected Air Force operational requirements, the actual number of aircraft assigned and bases used will be determined in light of national strategic considerations and F-35A aircraft availability as of the completion of this EIS. Based on the evaluation of bases for each configuration and the application of military judgment factors, the Air Force identified the following candidate installations.

<u>Three Squadron Configuration</u>	<u>One Squadron Configuration</u>
Hill AFB	Burlington AGS
Mountain Home AFB	Jacksonville AGS
Shaw AFB	McEntire JNGB

Hill AFB



Mountain Home AFB



McEntire JNGB



Burlington AGS



Jacksonville AGS



Shaw AFB

4.0 PROPOSED ACTION

OVERVIEW OF F-35A OPERATIONAL AIRCRAFT BEDDOWN PROPOSAL

The proposed F-35A beddown would involve implementing several related elements at one or more of the six alternative locations. The following elements would occur at a base and in its associated training airspace.

Elements Affecting the Base

- Beddown of F-35A aircraft and replacement of existing legacy fighter aircraft (except at Mountain Home AFB) at one or more ACC base or ANG installation
- Conduct airfield operations for training and deployment
- Construct or modify facilities and infrastructure necessary to support F-35A aircraft
- Implement personnel changes (increases or decreases) at the base to conform to F-35A requirements

Elements Affecting Airspace

- Conduct F-35A operations in existing Restricted Areas, Military Operations Areas (MOAs), Air Traffic Control Assigned Airspace (ATCAAs), and Warning Areas, emphasizing fighter aircraft requirements, to include supersonic flight where authorized
- Employ defensive countermeasures, such as flares, in airspace authorized for their use
- Accomplish limited employment of ordnance at ranges approved for such use

The Air Force proposes to beddown F-35A operational aircraft at one or more of the six alternative locations. For each ANG unit, two beddown scenarios would apply: a total of 18 (ANG Scenario 1) or 24 (ANG Scenario 2) F-35A operational aircraft would be beddown at Burlington AGS, Jacksonville AGS, and/or McEntire JNGB. For the ACC wings, three beddown scenarios would be considered. At Hill AFB, Mountain Home AFB, and/or Shaw AFB, the scenarios consider the beddown of F-35As in increments of 24 (ACC Scenario 1), 48 (ACC Scenario 2), and 72 (ACC Scenario 3) (Table ES-1). Delivery of the first F-35As to a base could be as early as 2015 and is scheduled to be completed by 2020. Beddown would occur in phases associated with manufacture and delivery of F-35A operational aircraft. Since the F-35A replaces legacy fighter aircraft, the Air Force proposes to drawdown (i.e., remove) all legacy fighter aircraft from the selected bases (except Mountain Home AFB) as the F-35As become available after manufacturing and testing. For example, if Hill AFB receives only 24 F-35As under ACC Scenario 1, all 48 F-16s would be removed for a net decrease of 24 aircraft by completion of the action. Legacy aircraft would be reassigned or retired, depending upon national security needs. Air Force plans do not include replacement of the F-15E aircraft based at Mountain Home AFB with F-35As, so beddown of F-35As under any Mountain Home AFB scenario would be additive in terms of aircraft.

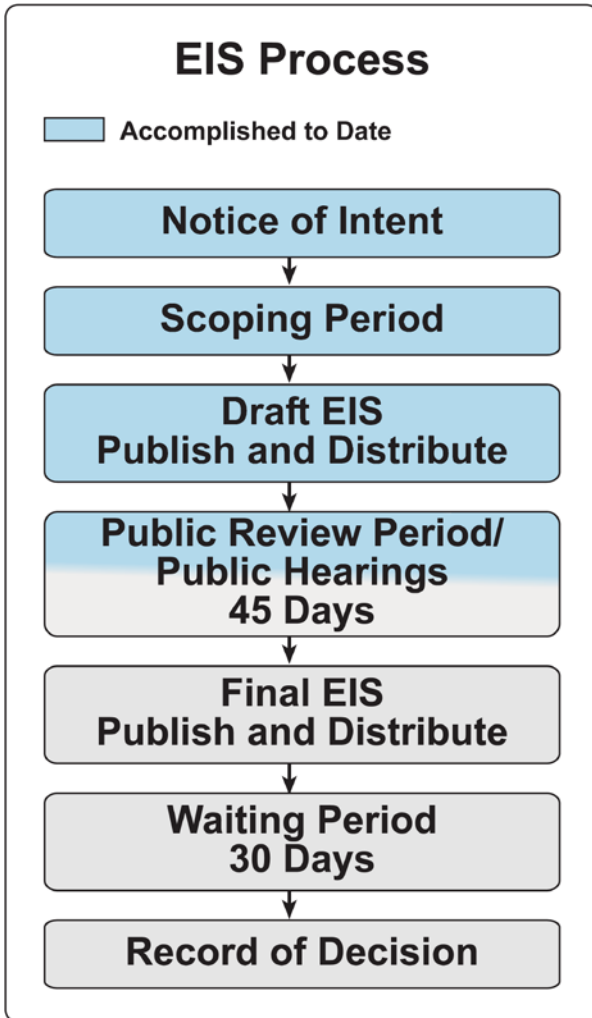
Table ES-1. Baseline and Proposed Aircraft Beddown

Base	Aircraft Drawdown		F-35A Beddown Scenarios					Total	Net Change in Aircraft
	Based F-16	Based F-15C	ANG 1	ANG 2	ACC 1	ACC 2	ACC 3		
Burlington AGS	18	N/A	18					18	0
				24					24
Hill AFB	48	N/A			24			24	-24
						48		48	0
							72		72
Jacksonville AGS	N/A	18	18					18	0
				24					24
McEntire JNGB	24	N/A	18					18	-6
				24					24
Mountain Home AFB ¹	N/A	N/A			24			80	+24
						48		104	+48
							72		128
Shaw AFB	72	N/A			24			24	-48
						48		48	-24
						72	72	0	

Note: ¹No drawdown of existing aircraft would occur. The 56 based F-15Es/F-15SGs would remain and operate after an F-35A beddown.

5.0 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This Draft F-35A Operational Basing EIS was prepared to comply with the National Environmental Policy Act (NEPA) and associated regulations. NEPA is the basic national charter for identifying environmental consequences from major federal actions. NEPA ensures that information on these actions and consequences is available to the public, agencies, and decision-makers before decisions are made and actions taken. NEPA (Public Law 91-190, 42 United States Code [USC] 4321-4347, as amended) was enacted to establish a national



policy for the protection of the environment. It also established the Council on Environmental Quality (CEQ) to implement the provisions of NEPA and review and appraise federal programs and activities in light of NEPA policy. CEQ developed regulations for implementing the procedural provisions of NEPA (40 Code of Federal Regulations [CFR] Parts 1500-1508), and outline the responsibilities of federal agencies under NEPA. Title 32 of the CFR Part 989 implements CEQ regulations with regard to Air Force actions, and defines the steps and milestones in the Environmental Impact Analysis Process (EIAP). The Air Force is the proponent for the F-35A beddown and is the lead agency for preparation of the EIS. Both the Department of the Navy (DoN) and the Federal Aviation Administration (FAA) are cooperating agencies.

After publishing a Notice of Intent (NOI) to prepare an EIS in the *Federal Register* on December 30, 2009, the Air Force actively solicited comments on the proposed action and important issues that needed to be addressed in the EIS. This effort, known as scoping, began December 30, 2009 and ended March 1, 2010. During that time, the Air Force conducted 20 total public scoping meetings in Florida, Georgia, Idaho, Nevada, New Hampshire, New York, South Carolina, Utah, and Vermont. Almost 600 people attended these scoping meetings, including local, state, and federal elected officials, agencies, environmental groups, and

members of the public. The Air Force received comments at these meetings and through the mail. In addition, the Air Force initiated consultation with potentially affected American Indian Tribes.

During the scoping period and at the scoping meetings, all interested parties were given the opportunity to review the proposed action and provide written comments and questions on the F-35A beddown. Table ES-2 presents representative questions and concerns applicable across the spectrum of all six alternative beddown locations. It also identifies the section(s) of the EIS where the questions and concerns are addressed.

After publishing the Draft EIS and a 45-day public review period (including public hearings), the Air Force will address substantive comments and publish the Final EIS. With publication of the Final EIS, a 30-day waiting period commences and precedes signing of the Record of Decision (ROD). The ROD identifies which location or locations, if any, were selected by the Air Force decision-makers to beddown the F-35As. It also includes mitigation measures or management actions the Air Force will implement to reduce environmental impacts.

Table ES-2. Questions and Concerns from Scoping	
Question/Concern	Section(s) of EIS Where Addressed
Will noise increase with the arrival of the F-35A?	Section 3.2.1.2 for all bases
Is the noise output of the F-35A greater than the F-4?	Section 3.2.1.2 for all bases
Is the noise output of the F-35A more than the F-16?	Section 3.2.1.2 for all bases
Is the noise output of the F-35A more than the F-15C?	Section 3.2.1.2 for all bases
Will noise from the F-35A cause hearing loss?	Section 3.2.1.2 for all bases
Will there be an increase in night operations?	Section 2.1.1, Sections 2.1.2 for all bases
Will production engine noise data be available?	Section 2.1.1, Sections 2.1.2 for all bases
Will changes to airfield flight patterns result from beddown of the F-35As?	Section 2.1.1, Sections 2.1.2 for all bases
Will noise abatement or zoning change?	Sections 3.2.1.2 and 3.10.1.2 for all bases
How would overflights of the F-35A affect land use?	Sections 3.10.1.2 and 3.10.2.2 for all bases
How will noise from the F-35A affect property values and the economy?	Section 3.11.1.2 for all bases
How will noise from the F-35A affect recreation areas?	Section 3.10.2.2 for all bases
How will noise from the F-35A affect wildlife?	Sections 3.6.1.2 and 3.6.2.2 for all bases
What effect would the F-35A aircraft have on wildlife species of concern?	Sections 3.8.1.2 and 3.8.2.2 for all bases
What type of F-35 operations would occur in the MOAs?	Section 2.1.2 and Section 2.2.1 for all bases
Where will the F-35A aircraft fly supersonic?	Section 2.1.2 and Section 2.2.1 for all bases
Is there enough airspace for the F-35A to fly?	Section 2.2
Will the F-35A aircraft crash more often than other aircraft?	Section 3.4.1.2 and 3.4.2.2 for all bases
Will safety zones change?	Section 3.4.1.2 and 3.4.2.2 for all bases
Will fuel be dumped in flight?	Section 3.4.1.2 and 3.4.2.2 for all bases
Will F-35A use different airspace than legacy fighter aircraft?	Section 2.1.2 and Section 2.2.1 for all bases
Will F-35A operations be coordinated with wildland fire fighting?	Section 3.4.2 for all bases
Where would the F-35A fly? Would it conflict with other aircraft?	Section 3.1 for all bases
How would the basing of the F-35A aircraft affect local aviation?	Sections 3.1.1.2 and 3.1.2.2 for all bases
What is the manpower requirement for the three F-35A squadrons?	Section 2.1.1
How much revenue will the F-35A beddown generate?	Sections 3.11.1.2 for all bases
What kind of effects would the F-35A have on wildlife?	Sections 3.6.1.2 and 3.6.2.2 for all bases
Would F-35A range training affect wetlands?	Sections 3.7.1.2 and 3.7.2.2 for all bases
Will air pollution increase with the F-35A aircraft?	Section 3.3 for all bases
How many beddown alternatives will be analyzed?	Section 2.2.3
How many F-35As will the Air Force eventually obtain?	Section 2.2.1
How were the preferred alternatives selected?	Section 2.2.5



The Air Force conducted extensive public scoping, including 20 meetings in 9 states.

6.0 BURLINGTON AGS ALTERNATIVE OVERVIEW

6.1 AIRCRAFT TRANSITION

Burlington AGS would accommodate 18 (ANG Scenario 1) or 24 (ANG Scenario 2) F-35A aircraft. The F-16 mission and 18 aircraft currently at the installation would be either reassigned or retired. Table 6-1 presents the two F-35A beddown scenarios. The Air Force identified Burlington AGS as a preferred alternative.

Base	Aircraft Drawdown	F-35A Beddown Scenarios		Total	Net Change in Aircraft
	Based F-16	ANG 1	ANG 2		
Burlington AGS	18	18		18	0
			24	24	+6



Figure 6-1. Burlington AGS Construction Projects – ANG Scenarios 1 and 2

6.2 CONSTRUCTION

A total of four facility modification and renovation projects would be required to support beddown of the F-35As at Burlington AGS under either scenario (Figure 6-1 and Table 6-2). None of these projects would disturb new ground; all modifications would occur within existing facilities.

<i>Year</i>	<i>Action</i>	<i>Total Affected Area (acres)</i>
2016	Internal Renovation to Building 120 for F-35A Simulator	0
2016	Provide 270DC, 28DC Power in Aircraft Shelter Parking Areas (Buildings 130, 131, 132, 150, 360)	0
2016	Provide Secure/Classified Upgrades in Rooms 004/004A, Building 140	0
2016	Provide a Secure Parts Storage Area, Building 70 Warehouse	0
Total	Cost: \$4,690,000	0

6.3 AIRFIELD OPERATIONS

The F-35As would employ similar take-off and landing procedures as currently used by the F-16s at Burlington AGS. However, the new aircraft would fly fewer closed patterns overall, thereby reducing total airfield operations (Table 6-3). Flight profiles would also vary somewhat from the F-16s, but the F-35As would adhere to existing restrictions and avoidance procedures. No flying between 10:00 p.m. and 7:00 a.m. would be planned for the F-35As, although civil and commercial aircraft at Burlington International Airport (IAP) would continue to fly during this period.

<i>Burlington ANG Scenario</i>	<i>ANG Scenario 1</i>	<i>ANG Scenario 2</i>
Based F-16	-8,099	-8,099
Other Military Aircraft	468	468
Transients ¹	6,264	6,264
F-35A	5,486	7,296
Burlington International Airport	97,393	97,393
Total	109,611	111,421
Percent Change from Baseline	-2.3%	-0.7%

Note: ¹Transients include visiting KC-135R, C-130, and C-9A; other based military includes helicopters.

6.4 PERSONNEL

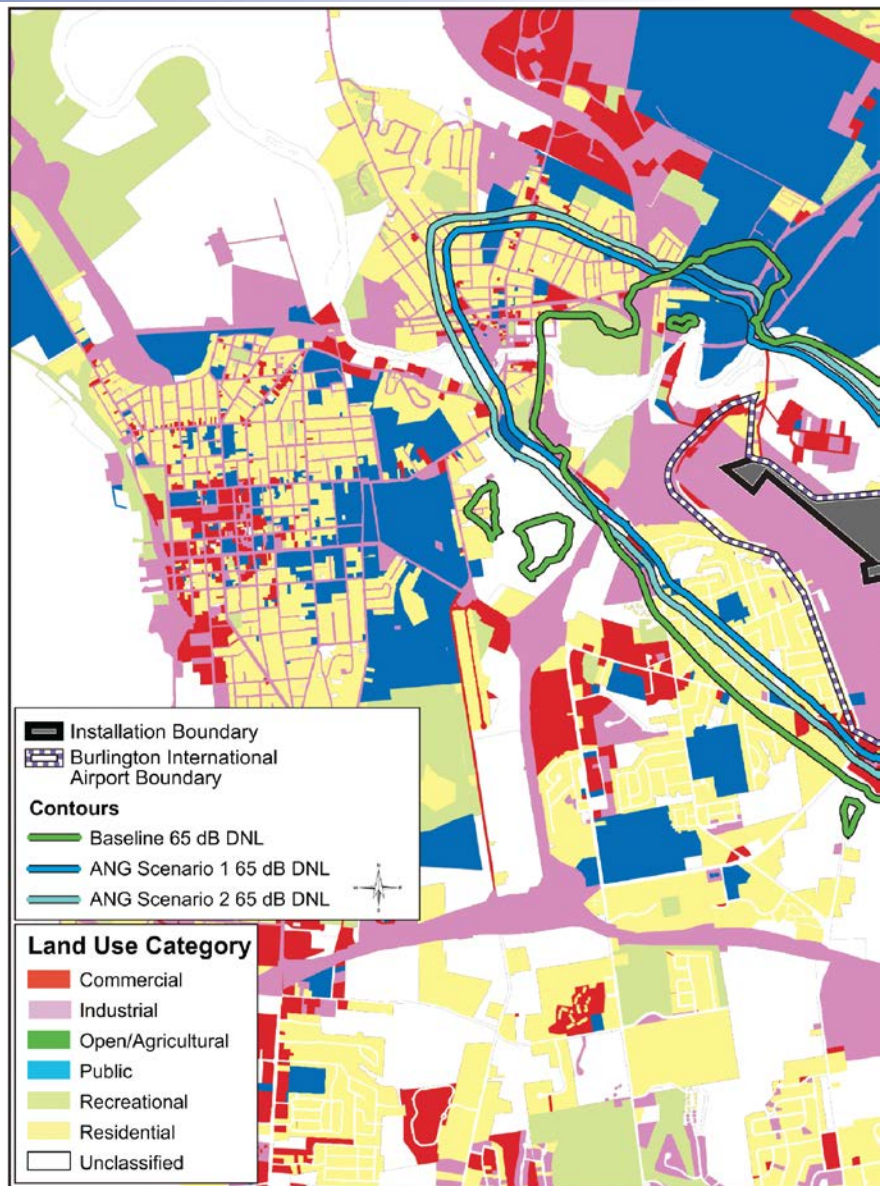
The Air Force expects that existing staffing levels would be sufficient to support operation and maintenance of 18 F-35As at Burlington AGS (ANG Scenario 1). Beddown of six more F-35As (24 total – ANG Scenario 2) would require 266 (24 percent increase) more military personnel (Table 6-4).

	<i>Baseline</i>	<i>Proposed Scenario</i>		<i>Per Scenario Net Change</i>	
	<i>F-16 Personnel</i>	<i>F-35A Personnel</i>		ANG 1	ANG 2
		ANG 1	ANG 2		
Total	1,130	1,130	1,396	0	+266

6.5 BURLINGTON AGS ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. Burlington IAP is a joint-use airfield that currently accommodates over 97,000 commercial and civilian aircraft operations each year. Combined with based F-16s, as well as other based and transient military aircraft, these operations produce noise as reflected by the baseline 65 decibel (dB) Day-Night Average Sound Level (DNL) contour depicted in Figure 6-2. This figure overlays the 65 dB DNL contours for both scenarios at Burlington IAP relative to the baseline contours. As these contours show, ANG Scenarios 1 and 2 noise affects slightly narrower, but longer areas relative to baseline conditions at Burlington IAP. For land use and zoning purposes, the City of Burlington employs a 2011 Part 150 forecast.

Figure 6-2. Burlington AGS Comparison of Joint Land Use 2011 Noise Contours and Projected 65 dB DNL Noise Contours under Both Scenarios



Under both scenarios, the overall area affected by noise levels of 65 dB DNL or greater would increase as would residential land use subject to noise levels 65 to 85 dB DNL (Table 6-5). Some residential areas would be newly subject to noise above 65 dB DNL.

Table 6-5. Change in Acres of Defined Residential Land Use Within the 65 to 85 dB DNL Contour Area at Burlington AGS			
	<i>Baseline (acres)</i>	<i>Projected (acres)</i>	<i>Change (acres)</i>
ANG Scenario 1	371	564	+193
ANG Scenario 2	371	667	+296

Table 6-6 compares baseline conditions to ANG Scenario 1 and ANG Scenario 2 acreage, population, and households affected by noise levels of 65 dB DNL or greater at and around the installation. As Table 6-6 shows, more acres, people, and households would be affected by noise levels of 65 dB DNL or greater under the ANG Scenarios when compared to baseline.

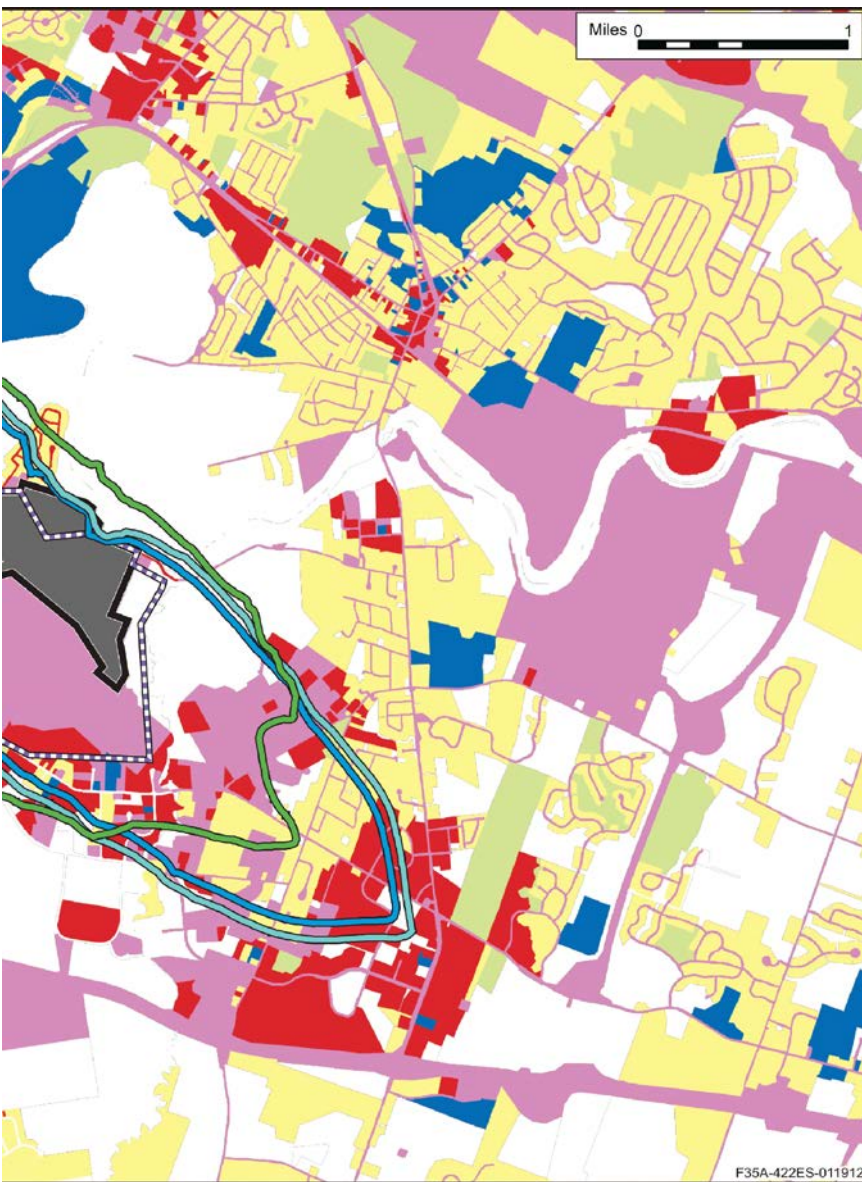


Table 6-6. Acreage, Population, and Households under 65-85 dB DNL Contours for Baseline and ANG Scenarios 1 and 2 (Proposed/Baseline)

Contour Band (dB DNL)	Acreage	Population	Households
ANG Scenario 1			
65 – 70	1,280/1,248	3,879/2,684	1,734/1,128
70 – 75	671/483	1,353/842	616/335
75 – 80	250/187	346/263	144/106
80 – 85	51/45	54/23	22/9
85+	0/0	0/0	0/0
Total	2,252/1,963	5,632/3,812	2,516/1,578
ANG Scenario 2			
65 – 70	1,438/1,248	4,170/2,684	1,801/1,128
70 – 75	790/483	1,918/842	894/335
75 – 80	318/187	492/263	211/106
80 – 85	89/45	95/23	38/9
85+	0/0	0/0	0/0
Total	2,635/1,963	6,675/3,812	2,944/1,578

Noise effects also include impacts of individual overflights. As presented in Table 6-7, the F-35A would be louder than the F-16s as measured by single overflight metrics: Sound Exposure Level [SEL] and Maximum Sound Level (L_{max}).

SEL is a composite metric that represents both the intensity of sound and its duration. SEL does not directly represent the sound level heard at any given time. Rather, it provides a measure of the net impact of an entire acoustic event. Mathematically, it represents the sound level of a **constant sound that would, in one second,**

generate the same acoustic energy in the actual time varying noise events. L_{max} is used to define peak noise levels. L_{max} is the highest sound level measured during a single noise event in which the sound level changes with time.

Table 6-7. SEL and L_{max} Comparison for Burlington AGS

Condition	Based F-16C ¹				F-35A ²			
	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off (1,000 feet above ground level [AGL]) ³	101	94	95%	300	118	115	100%	300
Military Power Take-off (1,000 feet AGL) ³	101	94	95%	255	118	115	100%	300
Holddown on Departure (2,000 feet AGL)	N/A	N/A	N/A	N/A	88	83	40%	300
Arrival (non-break, through 1,000 feet AGL, gear down) ⁴	82	73	84%	140	99	95	40%	180
Overhead Break (downwind leg, 2,000 feet AGL, gear down)	N/A	N/A	N/A	N/A	93	87	40%	200
Low Approach and Go (downwind leg, 1,500 feet AGL, gear down)	75	66	84%	200	95	91	40%	210

Burlington AGS nominal elevation = 335 feet MSL; Weather: 66°F, 67% Relative Humidity; and SEL = Sound Exposure Level; L_{max} = Maximum (instantaneous) Sound Level; dBA = A-weighted decibel; NC = Engine core revolutions per minute; kts = knots.

Notes: ¹Modeled F-16C with F110-GE-100 engine; ²Modeled with reference acoustic data for an F-35A; ³Power reduced from afterburner to military power prior to reaching 1,000 feet AGL;

⁴F-16C values reflect gear up conditions.

EXECUTIVE SUMMARY

Air Quality. Under ANG Scenario 1, emissions would decrease for six of the seven pollutant categories; ANG Scenario 2 would involve decreases in four of the seven pollutants. For the other categories, minor increases would result. Neither ANG Scenario 1 nor 2 would introduce emissions that would deteriorate regional air quality; the area would remain in attainment for all federal and state air quality standards. As an example, Table 6-8 presents the emissions from operations under ANG Scenario 2, which involves the most aircraft and operations, and generates the greatest emission quantities.

Table 6-8. Proposed Annual Operational Emissions under ANG Scenarios 1 and 2 at Burlington AGS

Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x	PM ₁₀	PM _{2.5}	CO ₂ e ¹
ANG Scenario 1							
Aircraft	13.11	33.52	0.43	17.93	1.18	1.18	12,354
Engine Runups	0.40	0.09	0.01	0.11	0.01	0.01	76.25
Aerospace Ground Equipment (AGE) ²	3.86	3.44	0.21	0.97	0.31	0.30	897
Privately-Owned Vehicles (POVs)	52.62	1.91	2.35	0.04	0.10	0.10	1,880
Total Annual ANG Scenario 1 Emissions	69.98	38.96	3.00	19.04	1.60	1.59	15,207
Baseline Annual Emissions	153.80	48.42	19.11	8.37	8.55	7.80	18,225
Net Change	-83.82	-9.47	-16.11	10.67	-6.95	-6.21	-3,018
Major Source Threshold	250	250	250	250	250	250	-
Greenhouse Gas (GHG) Standard	-	-	-	-	-	-	25,000
ANG Scenario 2							
Aircraft	17.49	45.13	0.57	24.02	1.58	1.58	16,556
Engine Runups	0.53	0.13	0.01	0.15	0.01	0.01	104
AGE ²	5.13	4.57	0.28	1.29	0.42	0.40	1,194
POVs	65.97	2.40	2.95	0.05	0.13	0.13	2,357
Total Annual ANG Scenario 2 Emissions	89.12	52.23	3.82	25.51	2.13	2.12	20,211
Baseline Annual Emissions	153.80	48.42	19.11	8.37	8.55	7.80	18,225
Net Change	-64.68	3.80	-15.29	17.14	-6.42	-5.68	1,986
Major Source Threshold	250	250	250	250	250	250	-
GHG Standard	-	-	-	-	-	-	25,000

Notes: CO=carbon monoxide; NO_x=nitrogen oxide; VOCs=volatile organic compounds; SO_x=sulfur oxide; PM=particulate matter; and CO₂e=equivalent carbon dioxide.

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single-engine aircraft, and an extensive, rigorous testing program. Overall, the risks of a mishap are not expected to increase substantially

Biological Resources. Under ANG Scenarios 1 and 2, facility projects would produce no surface disturbance. Noise from aircraft operations would increase, but the wildlife in the area of Burlington IAP have become habituated to it. As such, no impacts to wildlife, threatened and endangered species, wetlands, or plants would occur. Decreased airfield operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. Similarly, use of higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no adverse impacts to National Register-eligible archaeological, architectural, or traditional cultural properties. Letters sent to federally recognized American Indian Tribes initiated government-to-government consultation in January 2010, and consultation is on-going. Steps to complete Section 106 consultation for this alternative include agreements on the effect determination. Interested parties may contact the Air Force for further questions or comments. All government-to-government and Section 106 consultation will be completed before publication of the Final EIS.

Socioeconomics. ANG Scenario 1 would not change military personnel authorizations associated with Burlington AGS, nor change military payrolls. With no additional personnel, the scenario would not impact regional employment, income, or regional housing market. ANG Scenario 2 would generate an increase of 266 military personnel, and an annual increase in salaries of approximately \$3.4 million. Either scenario would expend an estimated \$2.34 million in 2016 for proposed modification projects. The Burlington area would likely provide the skilled workers for the temporary construction jobs.

Environmental Justice. Table 6-9 displays the total population, total minority population, percentage minority, total low-income population, and percent low-income for the areas in the vicinity of Burlington AGS affected by noise greater than or equal to 65 dB DNL. As the data demonstrate, the percentage of minority populations affected under baseline conditions already exceeds the state average of 3.9. This existing issue would be slightly exacerbated under ANG Scenarios 1 and 2. Baseline low-income populations account for 7 percent of the affected population, or 2.1 percent below the state average. Implementation of ANG Scenario 1 or 2 would increase the percentage of low-income people above the state average.

	<i>Total Population</i>	<i>Minority Population</i>	<i>Percent Minority</i>	<i>Low-Income Population</i>	<i>Percent Low-Income</i>
Baseline	3,812	270	7%	333	7%
ANG Scenario 1	5,633	452	8%	631	11%
ANG Scenario 2	6,675	536	8%	757	11%

Ground Traffic and Transportation. Despite a negligible, short-term increase in construction traffic, ANG Scenario 1 would not change travel demand for the base or affect the Level of Service (LOS) for any portion of the roadway network. A 24 percent increase in personnel would add to traffic volume for ANG Scenario 2, especially on “Guard weekends.” This level would exceed the primary LOS threshold, but not the secondary and more critical threshold.

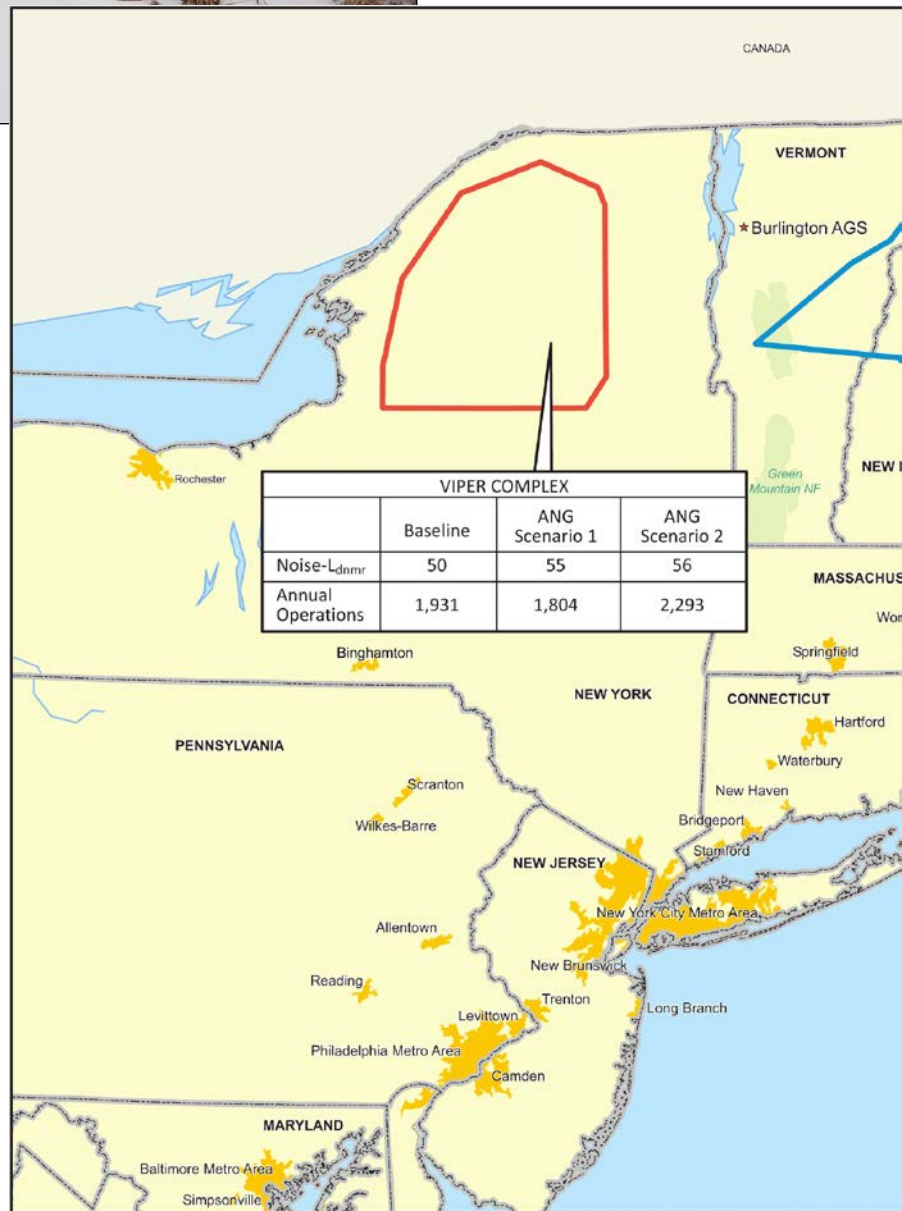
Other Resources. The EIS analyzed the potential environmental consequences of implementing ANG Scenarios 1 and 2 on three other resources: geology, soils, and water (BR3.5 in the EIS); community facilities and public services (BR3.13); and hazardous materials and waste (BR3.15). No aspect of the beddown scenarios would result in impacts to these resources.



Airspace and Range Use. Figure 6-3 depicts the main overland airspace and range units proposed for use by the F-35As. Data presented in the figure include total annual operations by all aircraft under baseline, ANG Scenario 1, and ANG Scenario 2. With replacement of the F-16s with the F-35As, such operations would fall below baseline levels in ANG Scenario 1, but exceed those levels slightly under ANG Scenario 2. The F-35As, however, would fly more time at higher altitudes than the legacy F-16s, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 10 to 30 percent by the F-16s.

F-35As from Burlington AGS would also fly in overwater Warning Areas, although to a lesser degree than current use. Required supersonic operations would be conducted only in these Warning Areas, at least 15 nautical miles offshore and above 10,000 feet MSL.

Figure 6-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by Burlington AGS



Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. For Viper Complex and Yankee Laser, subsonic noise levels would increase perceptibly (i.e., 3 dB or greater) in both scenarios. Neither, however, would exceed 65 dB. Noise levels in Condor Scotty would remain low and generally consistent with ambient conditions.

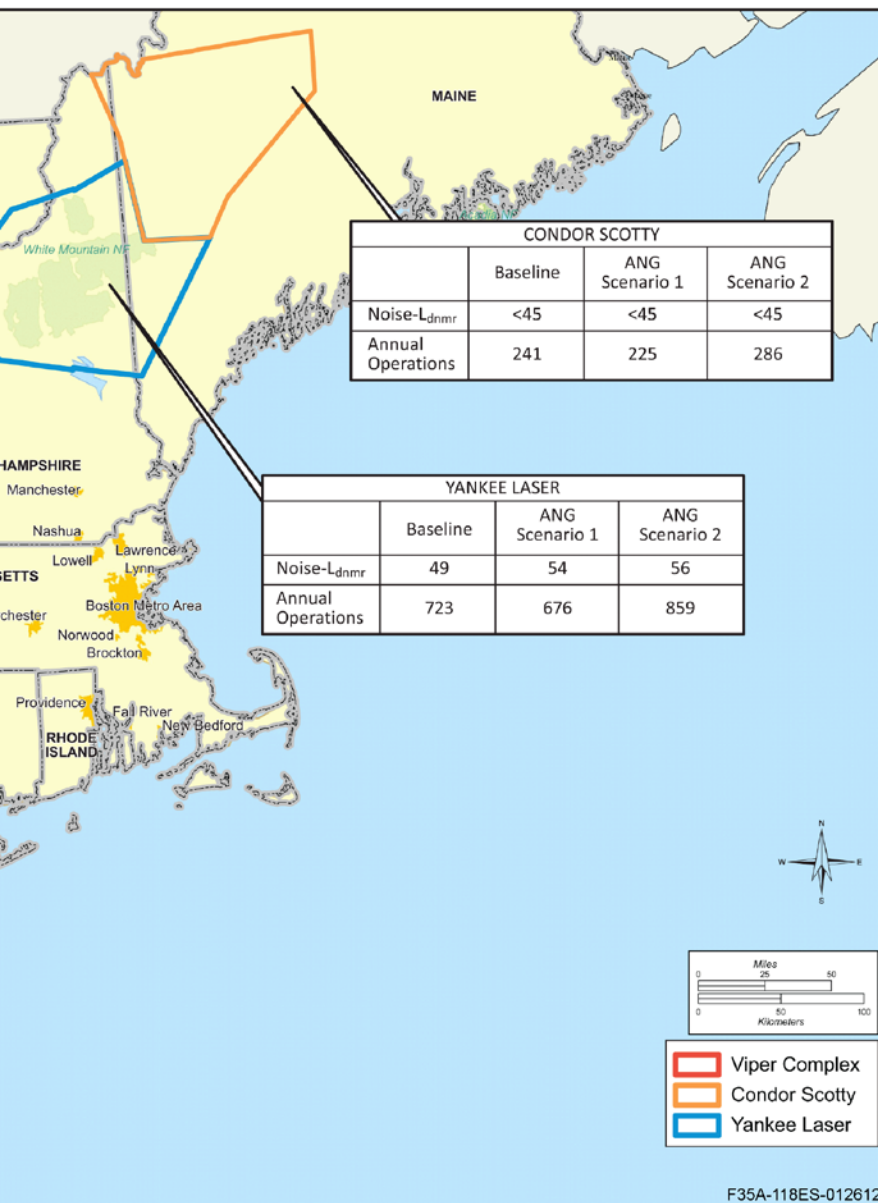
Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

In areas under the Viper Complex and Yankee Laser, persons on the ground could perceive an increase in noise. Such increases would likely add to the percentage of the population annoyed by aircraft noise. Persons recreating in special land use areas, such as White Mountain National Park, may consider additional noise especially intrusive. However, under both scenarios per flying day overflights, especially low-altitude overflights, would either decrease or remain about the same. The potential for repeated low-altitude overflights of any

specific location would be minimal.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.



F35A-118ES-012612

7.0 HILL AFB ALTERNATIVE OVERVIEW

7.1 AIRCRAFT TRANSITION

Hill AFB would accommodate 24 (ACC Scenario 1), 48 (ACC Scenario 2), or 72 (ACC Scenario 3) F-35A aircraft. The F-16 mission and 48 aircraft currently at the installation would either be reassigned or retired. Table 7-1 presents the three F-35A beddown scenarios. The Air Force identified Hill AFB as a preferred alternative.

Base	Aircraft Drawdown	F-35A Beddown Scenarios			Total	Net Change in Aircraft
	Based F-16	ACC 1	ACC 2	ACC 3		
Hill AFB	48	24			24	-24
			48		48	0
				72	72	+24

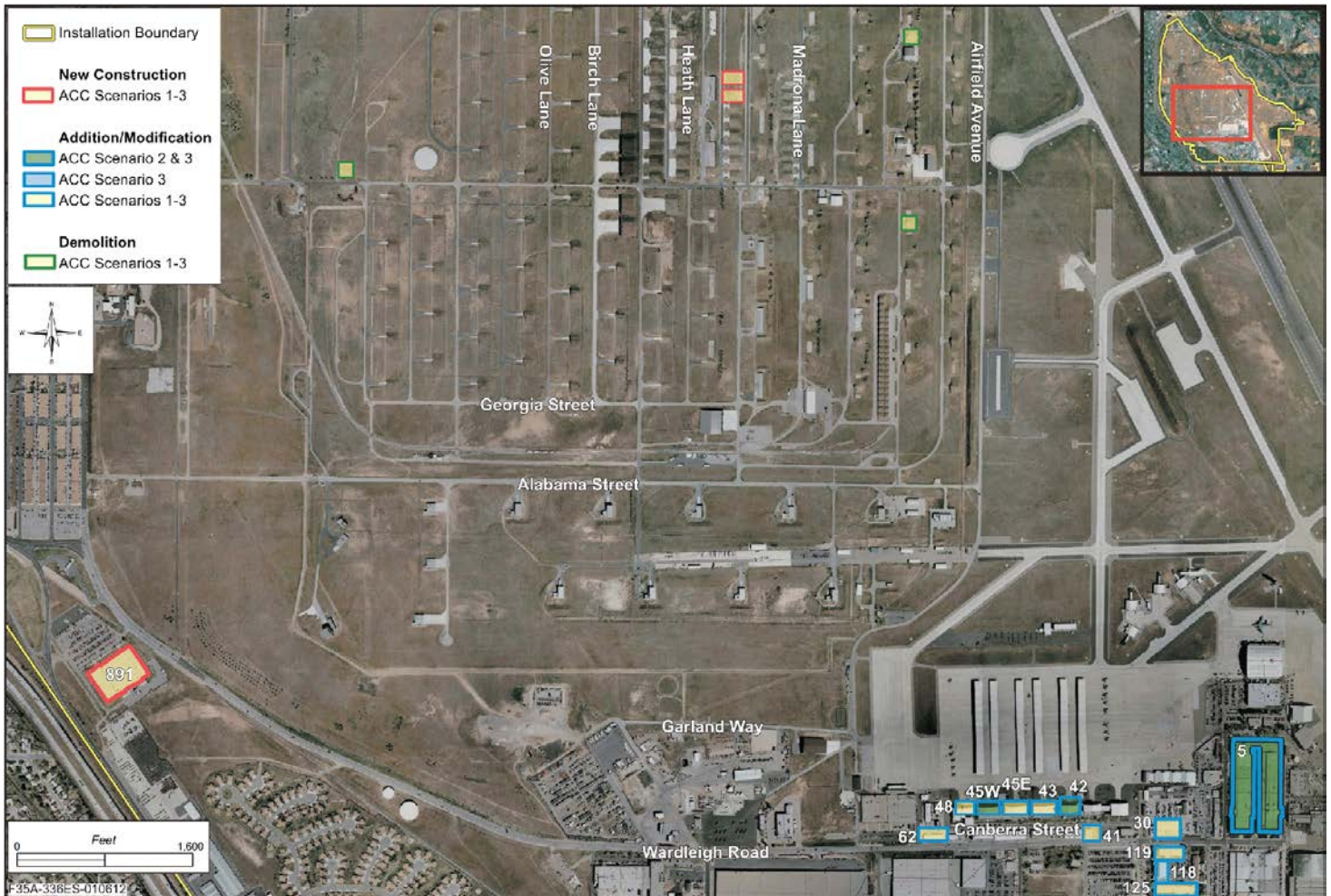


Figure 7-1. Hill AFB Construction Projects – ACC Scenarios 1, 2, and 3 construction

A number of facility construction, modification, and renovation projects would be required to support beddown of the F-35As at Hill AFB under ACC Scenario 3 (Figure 7-1 and Table 7-2). Approximately 5 acres of previously disturbed ground would be affected. Proposed to occur from 2013 to 2017, the construction would cost an estimated \$41 million under ACC Scenario 3, with lesser amounts proposed for ACC Scenarios 1 and 2.

Table 7-2. Proposed Construction and Modifications for Hill AFB

<i>Year</i>	<i>Action</i>	<i>Total Affected Area (acres)</i>	<i>New Impervious Surface (acres)</i>
ACC Scenario 1 (24 F-35As)			
2013	Addition and Alteration to Hangar 45W for Squadron Operations/Aircraft Maintenance Unit (AMU)	0.46	0.13
2013	Construct 1 Modular Storage Magazine; demolish 3 existing igloos 1391, 1411, and 1494	2.60	0.05
2013	Alteration to Building 119 for Squadron Operations	0	0
2013	Renovate Building 48 for wash rack	0	0
2013	Construct COMSEC Vault inside Building 891	0	0
2013	Alteration to Building 62 for aerospace ground equipment (AGE)	0	0
2013	Renovate Buildings 30 and 125 for Field Training Detachment	0	0
2013	Alteration to Parts Store, Building 39	0	0
2013	Addition and Alteration to Building 118 for Flight Simulators (Phase I)	0.31	0.08
2015-2017	Various Minor Internal Renovations/Alterations	0	0
Total	Cost: \$18,075,000	3.37	0.26
ACC Scenario 2 (48 F-35As)			
2013	Addition and Alteration to Hangar 45W for Squadron Operations/AMU	0.46	0.13
2013	Construct 1 Modular Storage Magazine; demolish 3 existing igloos 1391, 1411, and 1494	2.60	0.05
2013	Addition and Alteration to Building 118 for Flight Simulators (Phase I)	0.31	0.08
2013	Alteration to Building 119 for Squadron Operations	0	0
2013	Renovate Building 48 for wash rack	0	0
2013	Construct COMSEC Vault inside Building 891	0	0
2013	Alteration to Building 62 for AGE	0	0
2013	Renovate Buildings 30 and 125 for Field Training Detachment	0	0
2013	Alteration to Parts Store, Building 39	0	0
2014	Alteration to Building 5 for Squadron Operations (second squadron)	0	0
2014	Addition and Alteration to Hangar 45E for Squadron Operations/AMU	0.46	0.12
2015	Addition to Building 118 for flight simulators (Phase II)	0.44	0.12
2015-2017	Various Minor Internal Renovations/Alterations	0	0
Total	Cost: \$30,419,000	4.27	0.50
ACC Scenario 3 (72 F-35As)			
2013	Addition and Alteration to Hangar 45W for Squadron Operations/AMU	0.46	0.13
2013	Construct 2 Modular Storage Magazines; demolish 3 existing igloos 1391, 1411, and 1494	3.12	0.10
2013	Addition and Alteration to Building 118 for Flight Simulators (Phase I)	0.31	0.08
2013	Alteration to Building 119 for Squadron Operations	0	0
2013	Addition and Alteration to Hangar 45E for Squadron Operations/AMU	0.46	0.12
2013	Renovate Building 48 for wash rack	0	0
2013	Construct COMSEC Vault, Building 891	0	0
2013	Alteration to Building 62 for AGE	0	0
2013	Renovate Buildings 30 and 125 for Field Training Detachment	0	0
2013	Alteration to Parts Store, Building 39	0	0
2014	Alteration to Building 5 Squadron Operations (second squadron)	0	0
2015	Addition to Building 118 for flight simulators (Phase II)	0.44	0.12
2016	Alteration to Building 5 Squadron Operations (third squadron)	0	0
2017	Addition and Alteration to Hangar 42 for Squadron Operations/AMU	0.46	0.13
2015-2017	Various Minor Internal Renovations/Alterations	0	0
Total	Cost: \$40,800,000	5.25	0.68

7.2 AIRFIELD OPERATIONS

The F-35As would employ similar take-off and landing procedures as currently used by the F-16s at Hill AFB. However, the new aircraft would fly fewer closed patterns overall, thereby reducing total airfield operations (Table 7-3). Flight profiles would also vary somewhat from the F-16s, but the F-35As would adhere to existing restrictions and avoidance procedures. About 0.6 percent of the time, the F-35A would fly between 10:00 p.m. and 7:00 a.m. Transient aircraft would also fly during this period of night.

7.3 PERSONNEL

Staffing levels to support operation and maintenance of 24 F-35As at Hill AFB (ACC Scenario 1) and the replacement of 48 legacy aircraft would reduce personnel by 1,157 (Table 7-4). With the addition of 72 F-35As and replacement of the F-16s, personnel authorizations would increase by 13.

Table 7-3. Comparison of ACC Scenarios – Airfield Operations

<i>Aircraft</i>	<i>ACC Scenario 1</i>	<i>ACC Scenario 2</i>	<i>ACC Scenario 3</i>
Based F-16	-34,032	-34,032	-34,032
Transients ¹	12,601	12,601	12,601
F-35A	10,667	21,334	32,001
Total	23,268	33,935	44,602
Percent Change from Baseline	-50.1%	-27.2%	-4.4%

Note: ¹Transients include visiting F-15C, KC-135, C-21, A-10, other.

Table 7-4. Proposed Personnel Changes: Hill AFB

<i>Aircraft</i>	<i>Baseline</i>	<i>Proposed Scenarios</i>		
	<i>F-16 Personnel</i>	<i>F-35A Personnel</i>		
		ACC 1	ACC 2	ACC 3
F-16	1,742	0	0	0
F-35A		532	1,064	1,596
BOS Personnel		53	106	159
Total Personnel	1,742	585	1,170	1,755
Net Change	N/A	-1,157	-572	+13

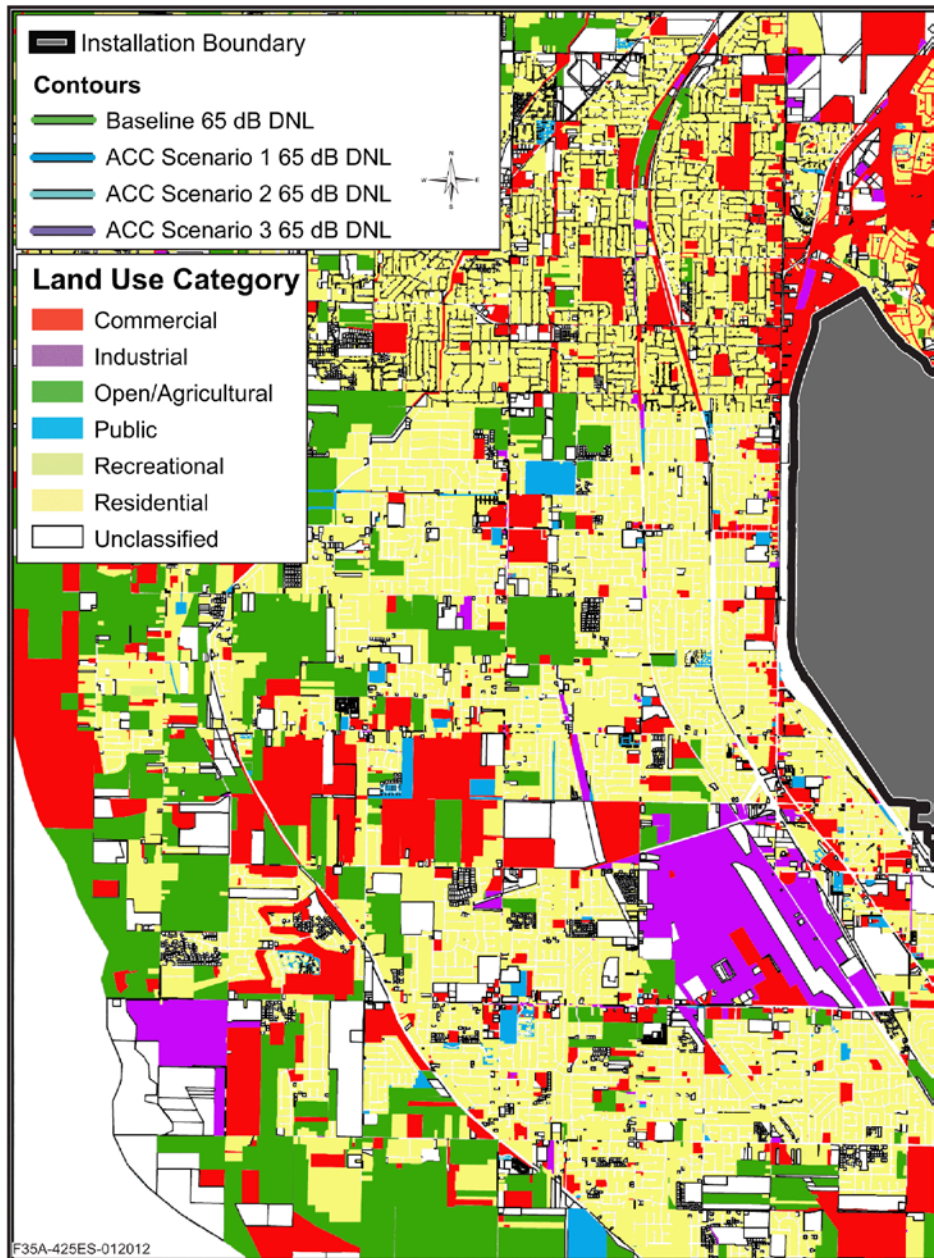


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7.4 HILL AFB ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. Hill AFB is an Air Force Materiel Command base that currently accommodates over 47,000 operations each year. Combined with other based and transient military aircraft, the operations by based F-16s produce noise as reflected by the baseline 65 dB DNL contour depicted in Figure 7-2. The figure overlays the 65 dB DNL contour for all scenarios at Hill AFB relative to baseline conditions. As this comparison reveals, noise contours from the three ACC Scenarios tend to cover a similar area relative to the baseline contour. None of the contours extend off the western side of Hill AFB where more contiguous residential land use occurs. For land use planning, the city and county employ the results of the most current Air Installation Compatibility Use Zone (AICUZ) study.

Figure 7-2. Hill AFB Comparison of Baseline and Projected 65 dB DNL Noise Contours for All Scenarios



Under ACC Scenarios 1 and 2, the overall area and residential land use subject to noise levels 65 to 80 dB DNL would decrease. Under ACC Scenario 3, the overall area affected by noise levels of 65 dB DNL or greater would increase as would residential land use subject to noise levels 65 to 80 dB DNL (Table 7-5). Some residential areas would be newly subject to noise above 65 dB DNL.

Table 7-5. Change in Acres of Defined Residential Land Use Within the 65 to 80 dB DNL Contour Area at Hill AFB			
	<i>Baseline (acres)</i>	<i>Projected (acres)</i>	<i>Change (acres)</i>
ACC Scenario 1	689	303	-386
ACC Scenario 2	689	527	-162
ACC Scenario 3	689	736	+47

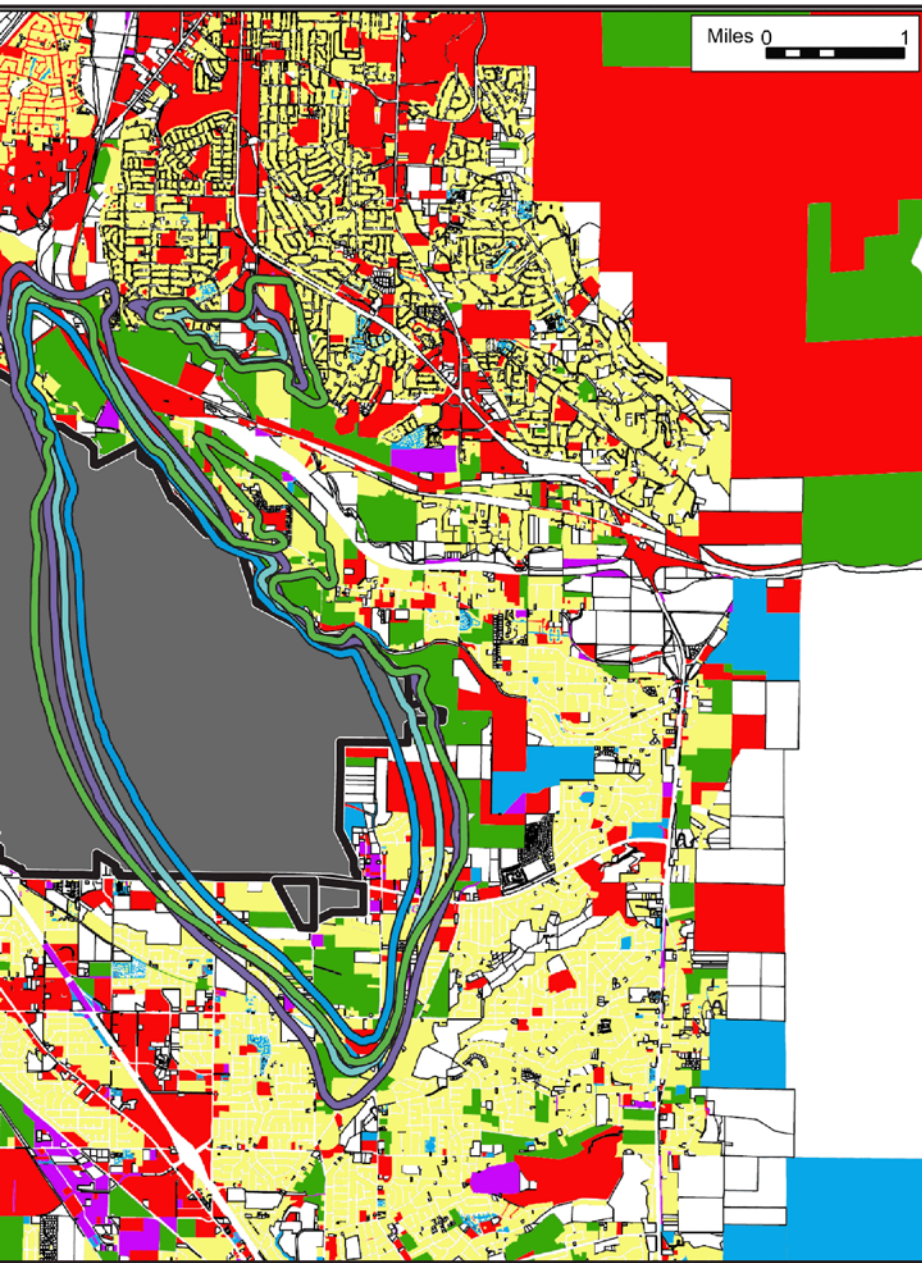


Table 7-6 compares baseline ACC Scenarios 1, 2, and 3 acreage, population, and households affected by noise levels of 65 dB DNL or greater at and around the installation.

Table 7-6. Off-Base Noise Exposure under ACC Scenarios 1, 2, and 3 for Hill AFB (Proposed/Baseline)

Contour Band (dB DNL) ¹	Acreage	Population	Households
ACC Scenario 1			
65 – 70	1,004/1,962	2,553/4,701	844/1,587
70 – 75	148/343	271/658	86/212
75 – 80	1/14	9/26	3/8
80 – 85	0/0	0/0	0/0
85+	0/0	0/0	0/0
Total	1,153/2,319	2,833/5,385	933/1,807
ACC Scenario 2			
65 – 70	1,504/1,962	3,889/4,701	1,300/1,587
70 – 75	314/343	679/658	223/212
75 – 80	10/14	27/26	9/8
80 – 85	0/0	0/0	0/0
85+	0/0	0/0	0/0
Total	1,828/2,319	4,595/5,385	1,532/1,807
ACC Scenario 3			
65 – 70	1,994/1,962	5,279/4,701	1,764/1,587
70 – 75	476/343	1,151/658	384/212
75 – 80	32/14	58/26	19/8
80 – 85	0/0	0/0	0/0
85+	0/0	0/0	0/0
Total	2,502/2,319	6,488/5,385	2,167/1,807

Note: ¹Exclusive of upper bound for all bands.

As Table 7-6 shows, more acres, people, and households would be affected by noise levels of 65 dB or greater from ACC Scenario 3 compared to baseline. ACC Scenarios 1 and 2 would affect fewer acres, people, and households.

Noise effects also consider individual overflights. As presented in Table 7-7, the F-35A would be

louder than the F-16s under all modes of flight as measured by single overflight metrics (SEL and L_{max}).

Table 7-7. SEL and L_{max} Comparison for Hill AFB

Condition	Based F-16C ¹				F-35A ²			
	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off (1,000 feet AGL) ³	95	89	92%	300	116	114	100%	300
Military Power Take-off (1,000 feet AGL) ³	95	89	92%	300	116	114	100%	300
Departure Holddown (6,500 MSL; 1,710 AGL)	87	80	90%	350	93	89	40%	350
Arrival (non-break, through 1,000 feet AGL, gear down) ⁴	97	89	92%	200	99	95	40%	180
Overhead Break (downwind leg, 2,000 feet AGL, gear down)	91	81	92%	200	93	87	40%	200
Touch and Go (downwind leg, 2,000 feet AGL, gear down)	90	81	92%	250	93	87	40%	210
Re-entry Pattern (downwind leg, 2,000 feet AGL, gear up)	80	74	87%	300	84	78	30%	300
Radar Pattern (downwind leg, 2,000 feet AGL, gear up)	81	74	87%	250	84	78	30%	250

Hill AFB nominal elevation = 4,789 feet MSL; Weather: 40°F, 70% Relative Humidity; and SEL = Sound Exposure Level; L_{max} = Maximum (instantaneous) Sound Level; dBA = A-weighted decibel; NC=Engine Core revolutions per minute; kts = knots.

Notes: ¹Modeled F-16C with F110-GE-100 engine; ²Modeled with reference acoustic data for an F-35A (Air Force 2009c); ³Power reduced from Afterburner to military power prior to reaching 1,000 feet AGL; ⁴F-16C values reflect gear up condition.

EXECUTIVE SUMMARY

Air Quality. Net changes under ACC Scenario 1 would involve decreases for all criteria pollutants, and for ACC Scenario 2, all emissions would decrease except for SO_x. Under the maximum beddown (ACC Scenario 3), SO_x would increase, while all remaining emissions would decrease (Table 7-8). For all scenarios, emissions would not reach or exceed established *de minimis* thresholds. No conformity determination would be required. Emissions associated with construction and operations activities from all scenarios would incrementally decrease regional emissions of CO₂e.

Table 7-8. Proposed Annual Operational Emissions under ACC Scenario 3 at Hill AFB

Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x	PM ₁₀	PM _{2.5}	CO ₂ e ¹
F-35A Aircraft	47.89	258.89	1.86	18.21	1.25	1.25	78,926.19
Engine Run-ups	1.41	0.28	0.04	0.06	0.00	0.00	264.56
AGE ²	19.83	17.68	1.07	4.98	1.61	1.56	4,615.93
POVs	91.31	4.13	5.31	0.09	0.24	0.24	4,388.48
Total Annual ACC Scenario 3 Emissions	160.44	280.98	8.28	23.35	3.10	3.10	83,580.79
Baseline Annual Emissions	551.16	411.13	94.13	12.38	59.28	53.78	93,256
Net Change	-390.73	-130.16	-85.85	10.97	-56.18	-50.68	-9,675.04
de Minimis Thresholds	-	100	100	100	-	100	-
Major Source Threshold	250	-	-	-	250	-	-
GHG Standard	-	-	-	-	-	-	25,000

Notes:

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single engine aircraft, and an extensive, rigorous testing program. Overall, the risks of an aircraft mishap are not expected to increase substantially.

Biological Resources. Under ACC Scenarios 1, 2, and 3, facility projects would produce a maximum of 5.25 acres of surface disturbance. This construction would not impact plants, wildlife, wetlands, or special status species. Noise from aircraft operations would increase, but the wildlife in the area of Hill AFB have become habituated to it. As such, no impacts to wildlife, threatened and endangered species, wetlands, or plants would occur. Decreased airfield operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. Similarly, use of higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no adverse impacts to National Register-eligible archaeological, architectural, or traditional cultural properties; however, Section 106 consultation is on-going. Letters sent to federally-recognized American Indian Tribes initiated project-specific government-to-government consultation in January 2010. Steps to complete Section 106 consultation for this alternative include agreements on the effect determination. Interested parties may contact the Air Force for further questions or comments. All government-to-government and Section 106 consultation will be completed before publication of the Final EIS.

Socioeconomics. ACC Scenario 1 would result in a loss of 1,157 personnel authorizations, and a loss of 572 personnel authorizations under ACC Scenario 2. However, the scenarios would not substantially impact regional employment, income, or regional housing market. ACC Scenario 3 would generate an increase of 13 military personnel authorizations, and an annual increase in salaries of approximately \$0.3 million. This scenario would expend an estimated \$41 million in 2013 to 2017 for proposed construction projects. The Hill AFB area would likely provide the skilled workers for the temporary construction jobs.

Environmental Justice. Table 7-9 displays the total population, total minority population, percentage minority, total low-income population, and low-income percentages for the affected areas in the vicinity of Hill AFB with noise greater than 65 dB DNL under each ACC Scenario. The percentage of minorities and low-income populations would not exceed the state averages and there would be no disproportionate effects on minority or low-income individuals under any of the scenarios.

	<i>Total Population</i>	<i>Minority Population</i>	<i>Percent Minority</i>	<i>Low-Income Population</i>	<i>Percent Low-Income</i>
Baseline	5,385	727	14	320	6
ACC Scenario 1	2,833	421	15	180	6
ACC Scenario 2	4,595	662	14	291	6
ACC Scenario 3	6,488	917	14	397	6

Ground Traffic and Transportation. Despite a negligible, short-term increase in construction traffic, ACC Scenarios 1, 2, and 3 would not increase traffic for the base or affect the Level of Service (LOS) for any portion of the roadway network. Indeed, traffic is expected to decrease under ACC Scenarios 1 and 2.

Other Resources. The EIS analyzed the potential environmental consequences of implementing ACC Scenarios 1, 2, and 3 on three other resources: geology, soils, and water (HL3.5 in the EIS); community facilities and public services (HL3.13); and hazardous materials and waste (HL3.15). No aspect of the beddown scenarios would result in impacts to these resources.

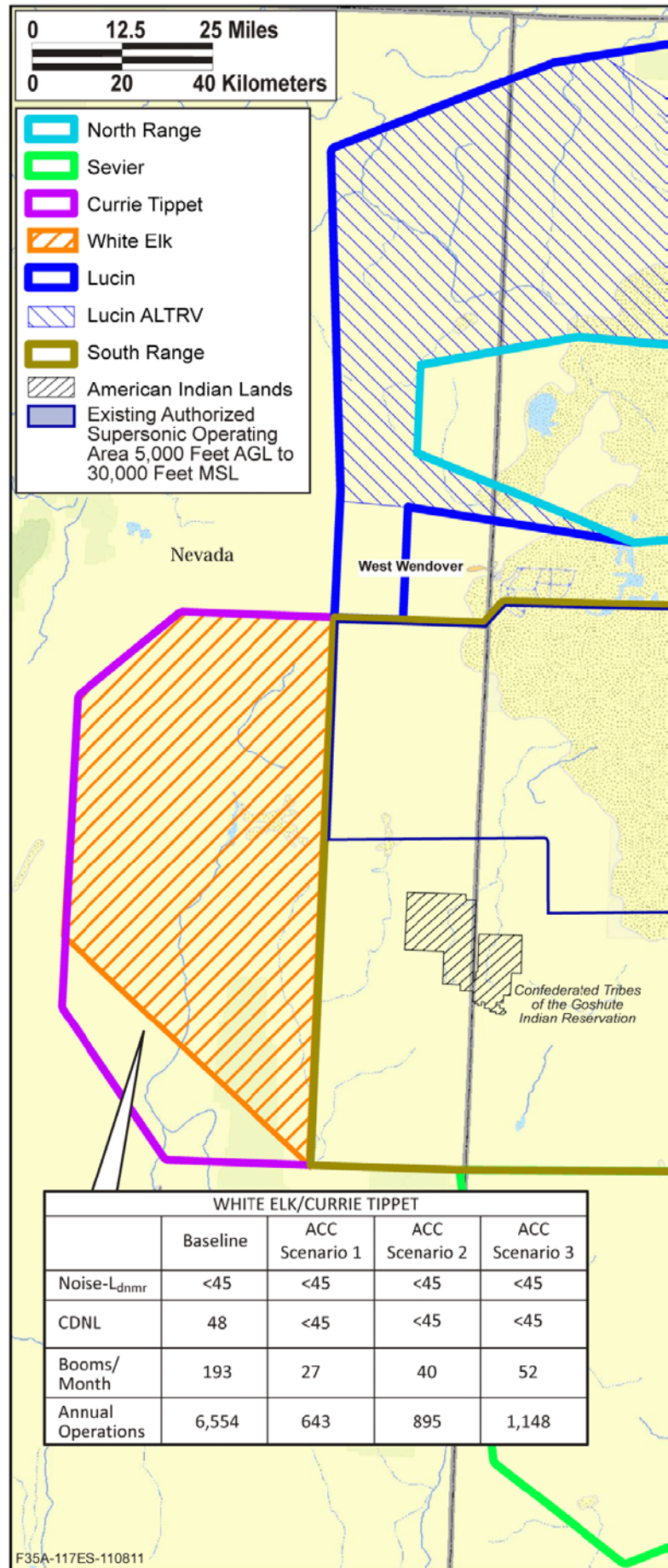


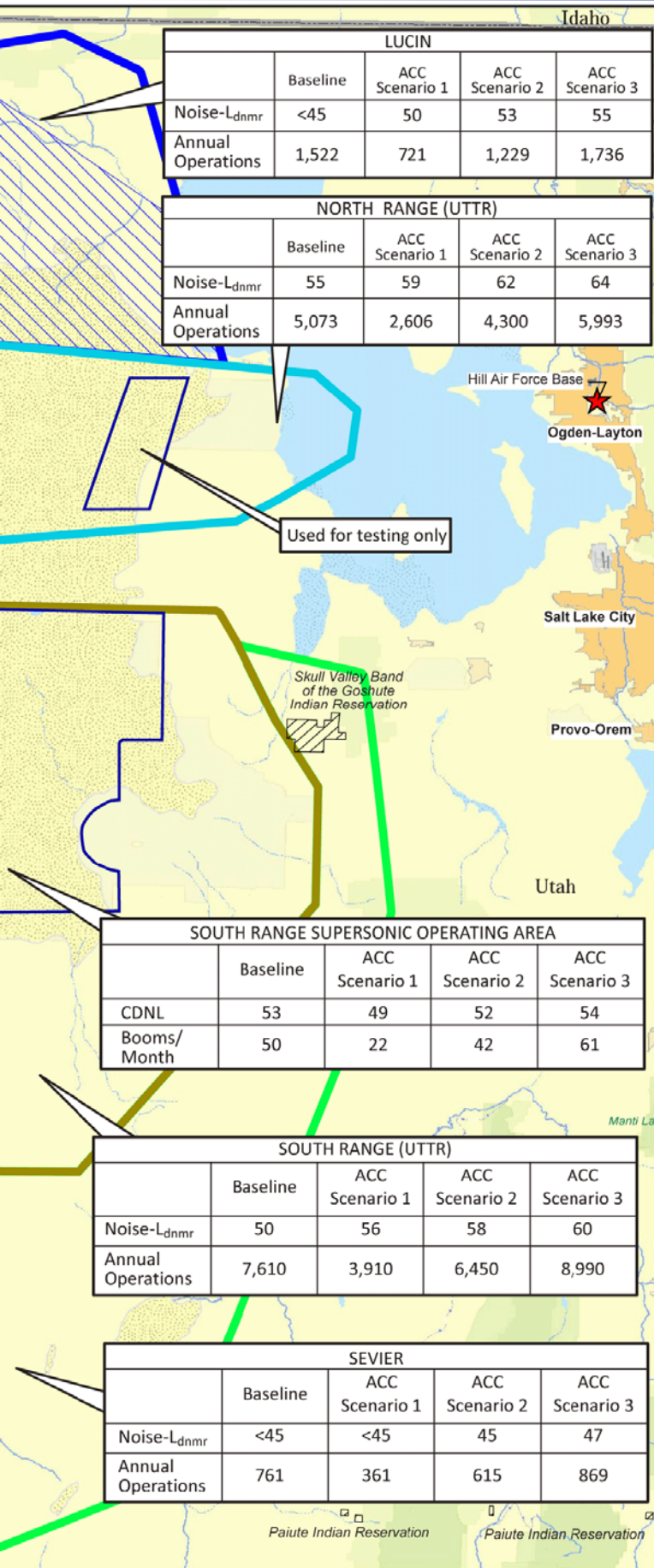
Airspace and Range Use. Figure 7-3 depicts the airspace and range units proposed for use by the F-35As. Data presented in the figure include total annual operations for all aircraft under baseline, ACC Scenario 1, ACC Scenario 2, and ACC Scenario 3. With replacement of the F-16s with the F-35As, such operations would fall below baseline levels in ACC Scenarios 1 and 2, but exceed those levels slightly under ACC Scenario 3. The F-35As, however, would fly more time at higher altitudes than the legacy F-16s, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 10 to 30 percent by the F-16s.

Required supersonic operations would be conducted only in areas approved for its use (i.e., South Range) or above 30,000 feet MSL. Supersonic operations in the North Range are only used for testing purposes.

Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. For Lucin, North Range, and South Range, subsonic noise levels would increase perceptibly (i.e., 3 dB or greater) in all scenarios. None, however, would exceed 65 dB. The airspace overlies a few communities; it also extends above an American Indian reservation. These locations would experience perceptible changes in noise and increased annoyance from aircraft operations. However, potential overflights per flying day would decrease by about 14 and 4, respectively for ACC Scenarios 1 and 2. Although operations would increase by 6 per flying day in ACC Scenario 3, the F-35A operations would commonly occur at higher altitudes than current F-16s. Noise levels in Sevier and White Elk/Currie Tippet would remain low and generally consistent with ambient conditions.

Figure 7-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by Hill AFB





Sonic booms in the portion of South Range where supersonic activities can occur would increase from 50 to 61 per month under ACC Scenario 3. The number of sonic booms would decrease under ACC Scenarios 1 and 2, relative to baseline conditions.

Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

Under ACC Scenario 3, persons under the Lucin, North Range, and South Range airspace could perceive an increase in noise. Such increases would likely add to the percentage of the population annoyed by aircraft noise. Persons recreating in special land use areas, such as a wilderness study area, may consider additional noise especially intrusive. However, under ACC Scenarios 1 and 2, per flying day overflights would decrease measurably. Given the proposed increase in use of higher altitudes, the potential for low-altitude overflights of any specific location would be minimal.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.

8.0 JACKSONVILLE AGS ALTERNATIVE OVERVIEW

8.1 AIRCRAFT TRANSITION

Jacksonville AGS would accommodate 18 (ANG Scenario 1) or 24 (ANG Scenario 2) F-35A aircraft. The F-15C mission and 18 F-15C aircraft currently at the installation would either be reassigned or retired. Table 8-1 presents the two F-35A beddown scenarios.

Base	Aircraft Drawdown	F-35A Beddown Scenarios		Total	Net Change in Aircraft
	Based F-15C	ANG 1	ANG 2		
Jacksonville AGS	18	18		18	0
			24	24	+6



Figure 8-1. Jacksonville AGS Construction Projects – ANG Scenarios 1 and 2

8.2 CONSTRUCTION

A total of three facility modification and renovation projects would be required to support beddown of the F-35As at Jacksonville AGS under either scenario (Figure 8-1 and Table 8-2). None of these projects would disturb new ground; all modifications would occur within existing facilities. Proposed to occur in 2017, these modifications and renovations would cost an estimated \$0.4 million.

<i>Year</i>	<i>Action</i>	<i>Total Affected Area (acres)</i>	<i>New Impervious Surface (acres)</i>
2017	Renovate Building 1005 for F-35A Simulator Bays	0	0
2017	Provide 270V DC Power in Building 1001 (6 Bays)	0	0
2017	Provide Additional Secure Space, Building 1027	0	0
Total	Cost: \$400,000	0	0

Note: ¹All construction includes only internal modifications; consequently, there are no associated affected areas of new impervious surfaces.

8.3 AIRFIELD OPERATIONS

The F-35As would employ similar take-off and landing procedures as currently used by the F-15Cs at Jacksonville AGS. However, the new aircraft operations would include fewer closed patterns overall, thereby reducing total airfield operations (Table 8-3). Flight profiles would also vary somewhat from the F-15Cs, but the F-35As would adhere to existing restrictions and avoidance procedures. No flying between 10:00 p.m. and 7:00 a.m. would be planned for the F-35As, although civil and commercial aircraft at Jacksonville International Airport (IAP) would continue to fly during this period.

<i>Jacksonville AGS Basing Scenario</i>	<i>ANG Scenario 1</i>	<i>ANG Scenario 2</i>
Based F-15C	-7,223	-7,223
Other Military Aircraft	1,807	1,807
Transients ¹	3,209	3,209
F-35A	5,486	7,296
Jacksonville IAP	116,840	116,840
Total	126,370	128,180
Percent Change from Baseline	-1.4%	+0.06%

Source: Wyle 2010.

Note: ¹Transients include visiting P-3, UH-60; other based military includes C-130 and C-12.

8.4 PERSONNEL

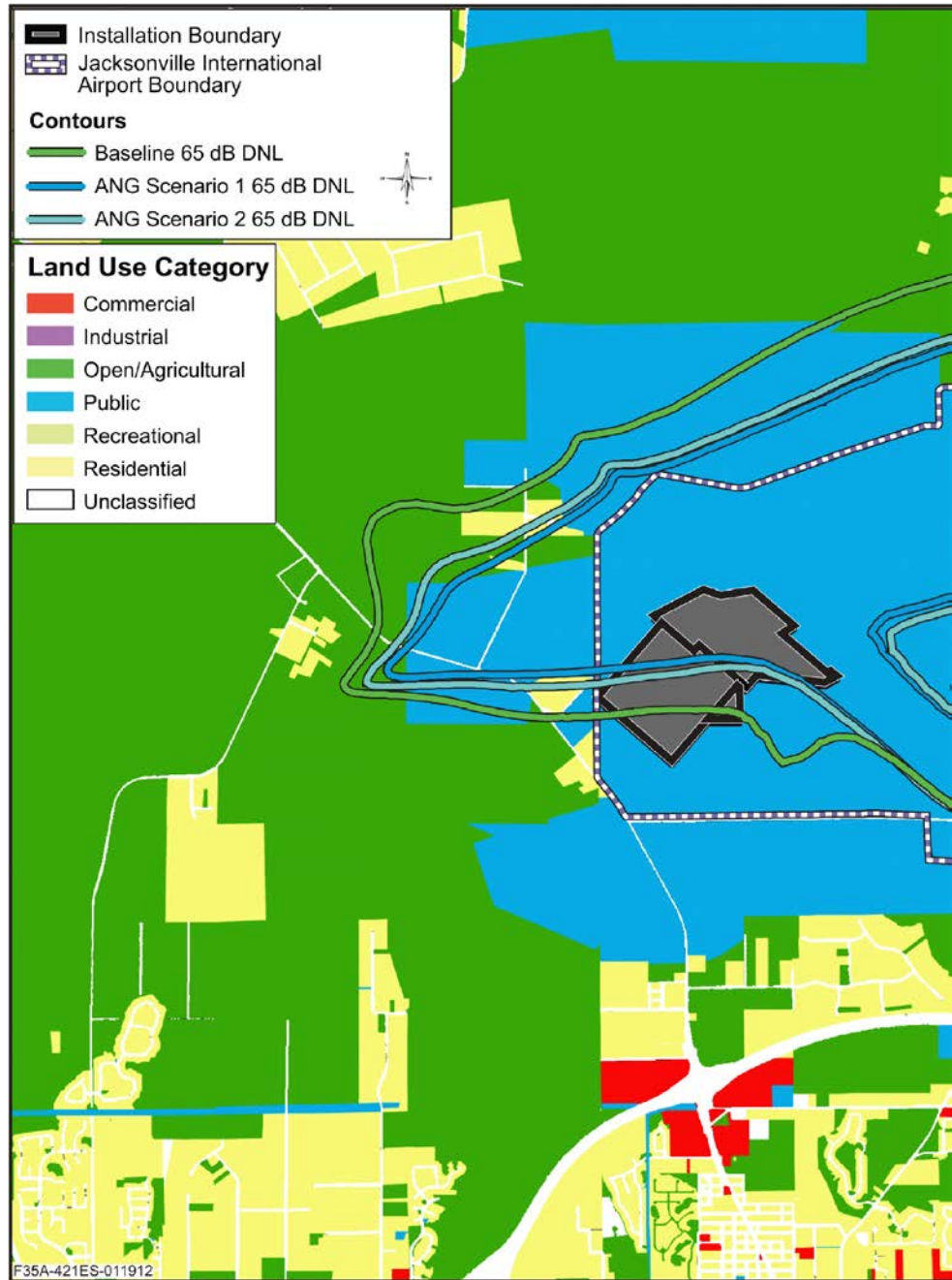
The Air Force expects that existing staffing levels would be sufficient to support operation and maintenance of 18 F-35As at Jacksonville AGS (ANG Scenario 1). Beddown of six more F-35As (24 total – ANG Scenario 2) would require addition of 249 (24 percent increase) more military personnel (Table 8-4).

	<i>Baseline</i>	<i>Proposed Scenarios</i>		<i>Net Change Per Scenario</i>	
	<i>F-15C Personnel</i>	<i>F-35A Personnel</i>		<i>ANG 1</i>	<i>ANG 2</i>
	<i>Total</i>	<i>ANG 1</i>	<i>ANG 2</i>		
Total	1,035	1,035	1,284	0	+249

8.5 JACKSONVILLE AGS ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. Jacksonville IAP is a joint-use airfield that currently accommodates over 116,000 commercial and civilian aircraft operations each year. Combined with operations by based F-15Cs, as well as other based and transient military aircraft, these operations produce noise as reflected by the baseline 65 dB DNL contour depicted in Figure 8-2. This figure overlays the 65 dB DNL contours for both scenarios at Jacksonville AGS relative to the baseline 65 dB DNL contour. As this comparison reveals, all off-installation portions of the noise contours from the two ANG Scenarios fall within the area of the baseline contour. The affected area mostly overlays the airport itself and open/agricultural lands.

Figure 8-2. Jacksonville AGS Comparison of Baseline and Projected 65 dB DNL Noise Contours for Both Scenarios



Under both scenarios, the overall area affected by noise levels of 65 dB DNL or greater would decrease as would residential land use subject to noise levels 65 to 75 dB DNL (Table 8-5). Land use would not change and the effects of overflights would be dominated by commercial aircraft.

Table 8-5. Change in Acres of Defined Residential Land Use Within the 65 to 75 dB DNL Contour Area at Jacksonville AGS			
	<i>Baseline (acres)</i>	<i>Projected (acres)</i>	<i>Change (acres)</i>
ANG Scenario 1	125	10	-115
ANG Scenario 2	125	36	-89

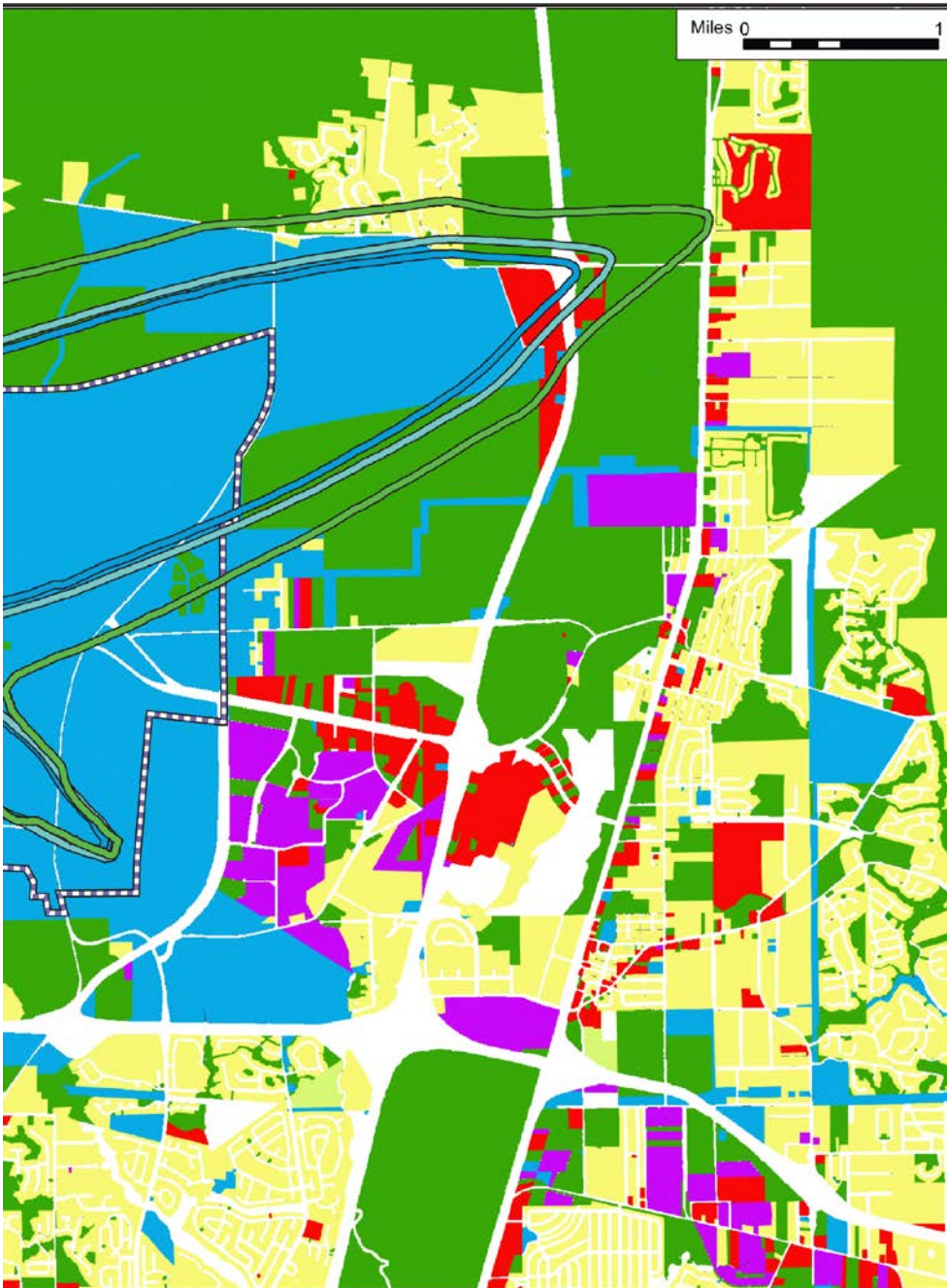


Table 8-6 compares baseline ANG Scenario 1 and ANG Scenario 2 acreage, population, and households affected by noise levels of 65 dB DNL or greater at and around the installation. As these data show, both scenarios would reduce impacts as compared to baseline conditions.

Table 8-6. Acreage, Population, and Households under 65-85 dB DNL Contours for Baseline and ANG Scenarios 1 and 2 (Proposed/Baseline)

Contour Band (dB DNL)	Acreage	Population	Households
ANG Scenario 1			
65 – 70	1,360/2,197	29/68	9/21
70 – 75	360/945	0/0	0/0
75 – 80	10/36	0/0	0/0
80 - 85	0/64	0/0	0/0
85+	0/0	0/0	0/0
Total	1,730/3,242	29/68	9/21
ANG Scenario 2			
65 – 70	1,637/2,197	58/68	18/21
70 – 75	515/945	0/0	0/0
75 – 80	33/36	0/0	0/0
80 - 85	0/64	0/0	0/0
85+	0/0	0/0	0/0
Total	2,185/3,242	58/68	18/21

Noise effects also consider individual overflights. As presented in Table 8-7, the F-35A would generally be louder than the F-15Cs under all modes of flight as measured by single overflight metrics (SEL and L_{max}).

Table 8-7. SEL and L_{max} Comparison for Jacksonville AGS

Event	Based F-15A ¹				F-35A ²			
	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off ³ (1,000 feet AGL)	112	104	90%	275	119	116	100%	300
Military Power Take-off ³ (1,000 feet AGL)	112	104	90%	275	119	116	100%	300
Arrival (non-break, through 1,000 feet AGL, gear down ⁴)	100	92	82%	180	99	95	40%	180
Overhead Break (downwind leg, 2,000 feet AGL, gear down)	78	70	72%	180	93	87	40%	200
Low Approach and Go (downwind leg, 2,000 feet AGL, gear down)	95	85	82%	180	93	87	40%	210

Jacksonville AGS nominal elevation = 30 feet MSL; Weather: 69°F, 80% Relative Humidity; dBA = A-weighted decibel; NC=Engine Core revolutions per minute; kts = knots. Source: Wyle 2011.

Notes: ¹Modeled F-16C with F110-GE-100 engine; ²Modeled with reference acoustic data for an F-35A (Air Force 2009); ³Power reduced from Afterburner to military power prior to reaching 1,000 feet AGL; ⁴F-15C values reflect gear up conditions.

Air Quality. Under Scenario 1, emissions would decrease for all seven pollutant categories. Under Scenario 2, minor increases in SO_x would result. Neither ANG Scenario 1 nor 2 would introduce emissions that would deteriorate regional air quality; the area would remain in attainment for all federal and state air quality standards. Table 8-8 presents the emissions from operations under each scenario.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance

personnel learn more about the aircraft’s capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single engine aircraft, and an extensive, rigorous testing program. Overall, the risks of an aircraft mishap are not expected to increase substantially.

Biological Resources. Under ANG Scenarios 1 and 2, facility renovation projects would produce no surface disturbance and would not impact biological resources. Noise from aircraft operations would increase only under ANG Scenario 2, but the wildlife in the area of Jacksonville IAP have become habituated to it. As such, no impacts to wildlife, threatened and endangered species, wetlands, or plants would occur. Decreased airfield operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. Similarly, use of higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no impacts to National Register-eligible archaeological, architectural, or traditional cultural properties. Letters sent to federally recognized American Indian Tribes initiated government-to-government consultation in January 2010, and consultation is on-going. All consultation will be completed before publication of the Final EIS.

Socioeconomics. ANG Scenario 1 would not change military personnel authorizations associated with Jacksonville AGS, nor change military payrolls. With no additional personnel authorizations, the scenario would not impact regional employment, income, or regional housing market. ANG Scenario 2 would generate an increase of 249 military personnel authorizations, and an annual increase in salaries of approximately \$3.4

Table 8-8. Proposed Annual Operational Emissions under ANG Scenarios 1 and 2 at Jacksonville AGS

Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x	PM ₁₀	PM _{2.5}	CO ₂ e ¹
ANG Scenario 1							
Aircraft	12.68	32.75	0.42	17.36	1.13	1.13	11,945
Engine Runups	0.29	0.19	0.01	0.13	0.01	0.01	92
AGE ²	3.86	3.44	0.21	0.97	0.31	0.30	895
POVs	34.42	1.69	2.23	0.04	0.10	0.10	1,857
Total Annual ANG Scenario 1 Emissions							
Baseline Annual Emissions	209.15	62.90	39.42	19.46	5.82	5.46	26,580
Net Change	-157.01	-24.83	-36.54	-0.96	-4.27	-3.92	-11,791
Major Source Threshold	250	250	250	250	250	250	-
GHG	-	-	-	-	-	-	25,000
ANG Scenario 2							
Aircraft	14.17	37.56	0.47	19.75	1.28	1.28	13,588
Engine Runups	0.39	0.26	0.01	0.18	0.01	0.01	122
AGE ²	5.13	4.57	0.28	1.29	0.42	0.40	1,194
POVs	43.06	2.12	2.79	0.05	0.13	0.13	2,329
Total Annual ANG Scenario 2 Emissions	62.74	44.51	3.56	21.26	1.83	1.82	17,232
Baseline Annual Emissions	209.15	62.90	39.42	19.46	5.82	5.46	26,580
Net Change	-146.41	-18.39	-35.86	1.80	-3.99	-3.64	-9,348
Major Source Threshold	250	250	250	250	250	250	-
GHG	-	-	-	-	-	-	25,000

Notes:

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

million. Either scenario would expend an estimated \$0.4 million in 2015 for proposed modification projects. The Jacksonville area would likely provide the skilled workers for the temporary construction jobs.

Environmental Justice. Table 8-9 displays the total population, total minority population, percentage minority, total low-income population, and percent low-income for the areas in the vicinity of Jacksonville AGS affected by noise greater than or equal to 65 dB DNL. As the data demonstrate, the percentage of minority and low-income populations affected under baseline conditions are below the state averages. Under both scenarios, affected low-income populations would remain below the state average. ANG Scenario 1 and 2 would affect a slightly higher or equal proportion of minority populations relative to state average, but the actual number of people affected would decrease substantially.

	<i>Total Population</i>	<i>Minority Population</i>	<i>Percent Minority</i>	<i>Low-Income Population</i>	<i>Percent Low-Income</i>
Baseline	68	13	19	8	11
ANG Scenario 1	29	7	24	3	10
ANG Scenario 2	58	13	22	5	9

Ground Traffic and Transportation. Despite a negligible, short-term increase in construction traffic, ANG Scenario 1 would not change travel demand for the base or affect the Level of Service (LOS) for any portion of the roadway network. A 24 percent increase in personnel would increase traffic volume for ANG Scenario 2, especially on “Guard weekends.” This level would exceed the primary LOS threshold by 12.2 percent, but not the secondary and more critical threshold.

Other Resources. The EIS analyzed the potential environmental consequences of implementing ANG Scenario 1 and 2 on three other resources: geology, soils, and water (JX3.5 in the EIS); community facilities and public services (JX3.13); and hazardous materials and waste (JX3.15). No aspect of the beddown scenarios would result in impacts to these resources.

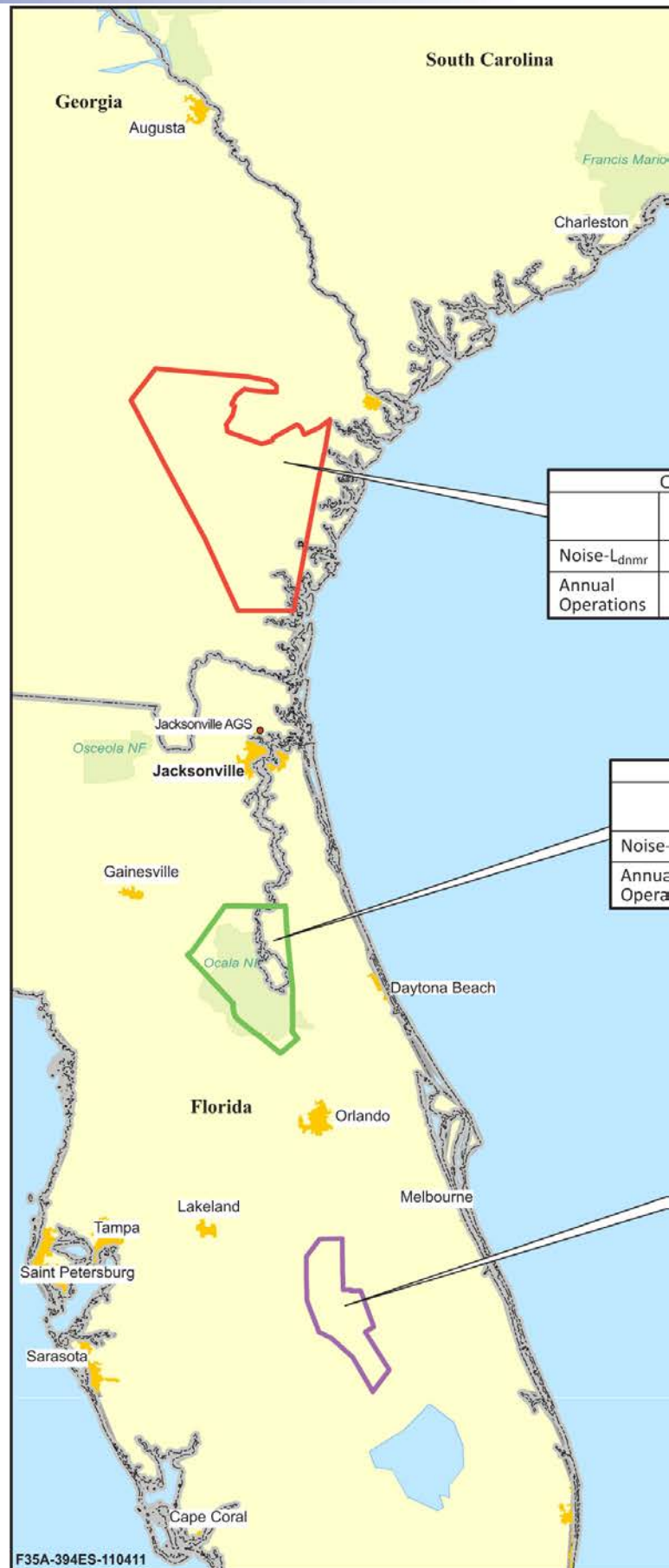


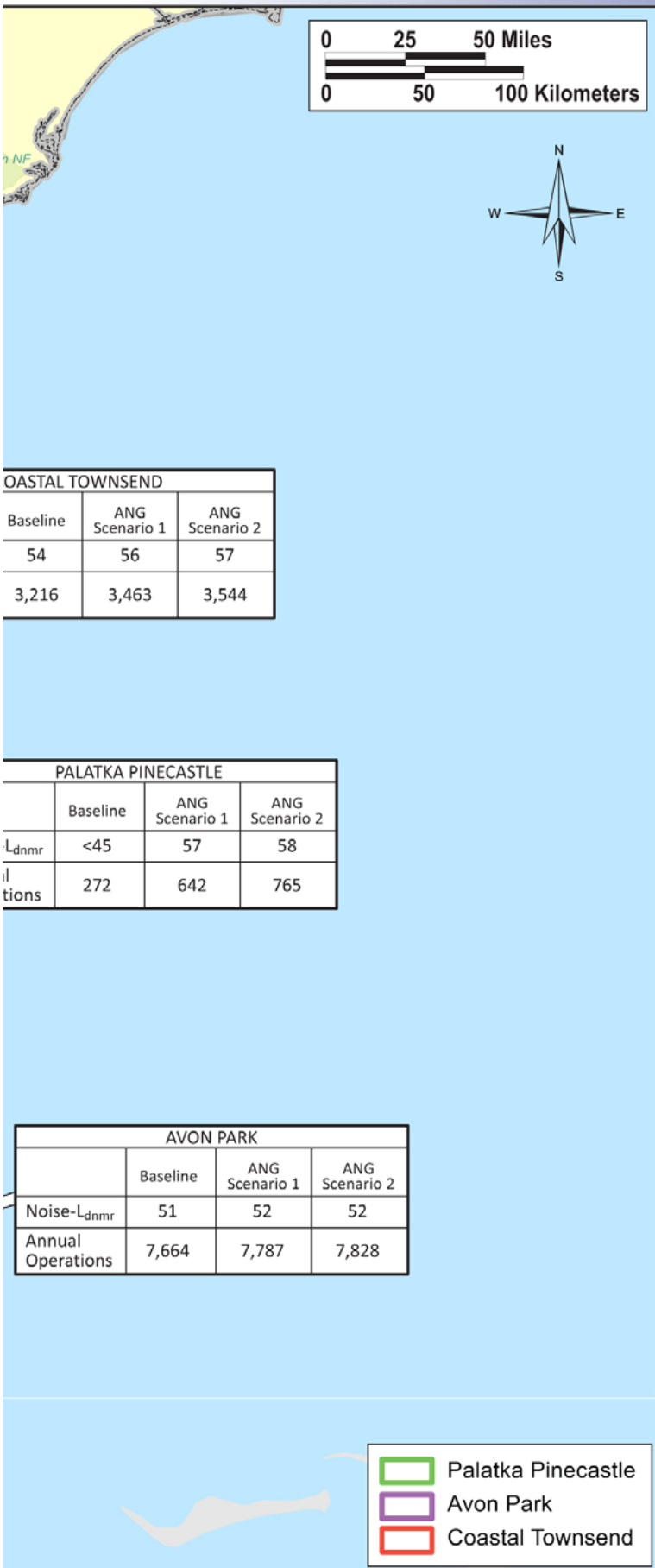
Airspace and Range Use. Figure 8-3 depicts the main overland airspace and range units proposed for use by the F-35As. Data presented in the figure includes total annual operations for all aircraft under baseline, ANG Scenario 1, and ANG Scenario 2. Such operations would increase above baseline levels in both scenarios due to a shift in use to these units. Increases would range from less than one operation per flying day to less than two per flying day. The F-35As would fly more time at higher altitudes than the legacy F-15Cs, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 10 to 30 percent by the F-15Cs.

F-35As from Jacksonville AGS would also fly in overwater Warning Areas, established over the Atlantic Ocean. In a grouping of Warning Areas known as a Special Operating Area, the F-15Cs from Jacksonville AGS perform about 1,600 operations annually. Such activity represents a continuation of baseline operations and would not alter conditions in the overwater airspace. Required supersonic operations would also be conducted only in these Warning Areas, at least 15 nautical miles offshore or above 30,000 feet MSL.

Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. For Coastal Townsend, subsonic noise levels would increase perceptibly (i.e., 3 dB or greater) in ANG Scenario 2. Neither scenario, however, would exceed 65 dB. Noise levels in Palatka Pinecastle would increase substantially and perceptibly resulting in a doubling of perceived sound in both scenarios. Avon Park noise would increase but not perceptibly. The limited number of low-altitude overflights per day would decrease, thereby reducing potential impacts from single events. In the Coastal Townsend airspace, operations per flying day would increase under ANG Scenario 1 by about 1 and 1.25 for ANG Scenario 2. Total operations per flying day in Palatka Pinecastle would increase by a maximum of 1.9 per day.

Figure 8-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by Jacksonville AGS





Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

In areas under the Coastal Townsend and Palatka Pinecastle airspace, persons on the ground could perceive an increase in noise. Such increases would likely add to the percentage of the population annoyed by aircraft noise. A few small communities occur under these units, although most land under Palatka Pinecastle consists of the Ocala National Forest. Persons recreating in special land use areas, such as a national forest, may consider additional noise especially intrusive. However, the low number of operations per flying day coupled with the F-35As use of higher altitudes would minimize the potential for repeated low-altitude overflights of a specific location.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.

9.0 McENTIRE JNGB ALTERNATIVE OVERVIEW

9.1 AIRCRAFT TRANSITION

McEntire JNGB would accommodate 18 (ANG Scenario 1) or 24 (ANG Scenario 2) F-35A aircraft. The F-16 mission and 24 aircraft currently at the installation would either be reassigned or retired. Table 9-1 presents the two F-35A beddown scenarios.

Base	Aircraft Drawdown	F-35A Beddown Scenarios		Total	Net Change in Aircraft
	Based F-16	ANG 1	ANG 2		
McEntire JNGB	24	18		18	-6
			24	24	0



Figure 9-1. McEntire JNGB Construction Projects – ANG Scenarios 1 and 2

9.2 CONSTRUCTION

A total of two facility modification projects and an addition to a building for a simulator would be required to support beddown of the F-35As at McEntire JNGB under either scenario (Figure 9-1 and Table 9-2). Only one of these projects would disturb new ground, affecting less than an acre. Proposed to occur in 2013, these projects would cost an estimated \$1.2 million.

<i>Year</i>	<i>Action</i>	<i>Total Affected Area (acres)</i>
2013	Provide 28/270V DC Power in Building 253 (6 Bays)	0
2013	Provide 28/270V DC Power in Building 1046 (1 Bay)	0
2015	Addition and Alteration to Building 1057 ECM Pod Shop for new 2-Bay F-35A Simulator	0.76
Total	Cost: \$1,175,000	0.76

9.3 AIRFIELD OPERATIONS

The F-35As would employ similar take-off and landing procedures as currently used by the F-16s at McEntire JNGB. However, the new aircraft operations would include fewer closed patterns overall, thereby reducing total airfield operations (Table 9-3). Flight profiles would also vary somewhat from the F-16s, but the F-35As would adhere to existing restrictions and avoidance procedures. No flying between 10:00 p.m. and 7:00 a.m. would be planned for the F-35As, although other based and transient military aircraft would continue to fly during this period.

<i>Aircraft</i>	<i>ANG Scenario 1</i>	<i>ANG Scenario 2</i>
Based F-16	-12,007	-12,007
Based Army helicopters/other aircraft	18,485	18,485
Transients ¹	582	582
F-35A	5,486	7,296
Total	24,553	26,363
Percent Change from Baseline	-21%	-15%

Note: ¹Includes F-15C, KC-135, C-21, A-10, and others.

Under both scenarios, total operations would decrease. These decreases would stem from drawdown of the 24 based F-16s, as well as reductions in pattern work at the airfield.

9.4 PERSONNEL

For ANG Scenario 2, the Air Force expects that existing staffing levels would be sufficient to support operation and maintenance of 24 F-35As at McEntire JNGB. Beddown of six fewer F-35As in ANG Scenario 1 (18 total) would require reduction of 371 (24 percent decrease) fewer military personnel (Table 9-4).

	<i>Baseline</i>	<i>Proposed Scenarios</i>		<i>Net Change Per Scenario</i>	
	<i>F-16 Personnel</i>	<i>F-35A Personnel</i>		<i>ANG 1</i>	<i>ANG 2</i>
		<i>ANG 1</i>	<i>ANG 2</i>		
Total	1,554	1,183	1,554	-371	0

9.5 McENTIRE JNGB ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. McEntire JNGB currently accommodates over 31,000 based and transient military aircraft operations each year. Combined, these operations produce noise as reflected by the baseline 65 dB DNL contour depicted in Figure 9-2. This figure overlays the 65 dB DNL contours for both scenarios and baseline conditions at McEntire JNGB. As this comparison demonstrates, 65 dB DNL contours from the two ANG Scenarios are entirely encompassed by the baseline contours. No new areas would be exposed to these noise levels. Contours for ANG Scenario 1 and 2 would narrow, particularly in the west.

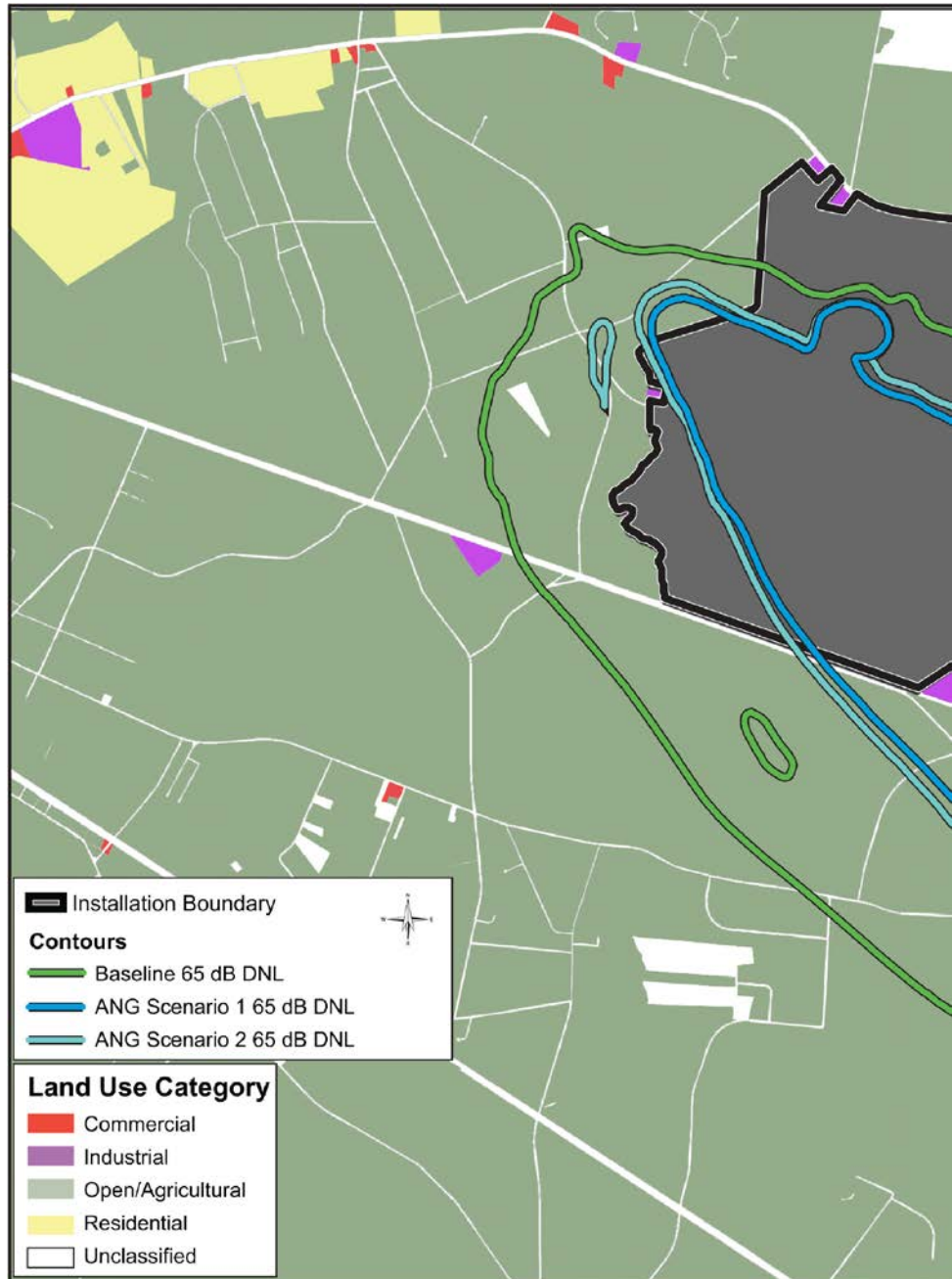
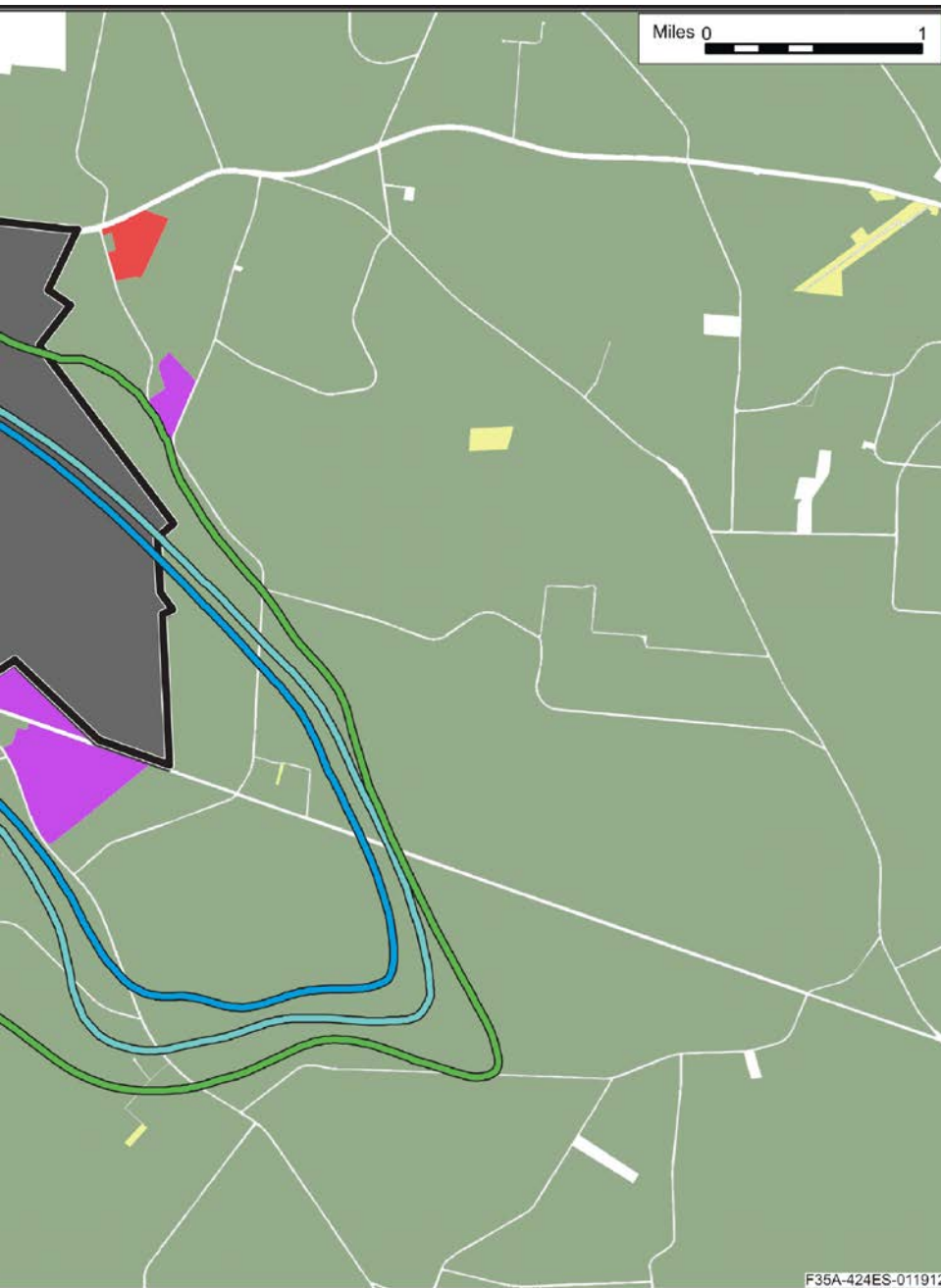


Figure 9-2. McEntire JNGB Comparison of Baseline and Projected 65 dB DNL Noise Contours for Both Scenarios

Under both scenarios, the residential land use subject to noise levels 65 to 75 dB DNL (Table 9-5) would not change. However, areas of non-conforming residential use underlie both baseline and projected noise contours. Review of recent aerial photographs along with information from the U.S. Census revealed these residential uses, despite their non-conformance with zoning. Most of the affected area under the 65 dB DNL contours for both scenarios consists of agricultural lands.

Table 9-5. Change in Acres of Defined Residential Land Use Within the 65 to 75 dB DNL Contour Area at McEntire JNGB			
	<i>Baseline (acres)</i>	<i>Projected (acres)</i>	<i>Change (acres)</i>
ANG Scenario 1	1	1	0
ANG Scenario 2	1	1	0



As Table 9-6 shows, noise from both ANG Scenario 1 and ANG Scenario 2 would affect substantially fewer acres, people, and households than under baseline conditions. Substantial reductions in affected area would occur west of McEntire JNGB, where the contours narrow.

Noise effects also include impacts from individual overflights. As presented in Table 9-7, the F-35A would generally be louder than the F-16s under most modes of flight as measured by single overflight metrics (SEL and L_{max}).

Table 9-6. Acreage, Population, and Households under 65-85 dB DNL Contours for Baseline and ANG Scenarios 1 and 2 (Proposed/Baseline)

Contour Band (dB DNL) ¹	Acreage	Population	Households
ANG Scenario 1			
65 – 70	1,030/3,152	133/428	46/150
70 – 75	346/804	46/105	16/37
75 – 80	75/222	10/26	3/9
80 - 85	1/2	0/0	0/0
85+	0/0	0/0	0/0
Total	1,452/4,180	189/559	65/196
ANG Scenario 2			
65 – 70	1,371/3,152	171/428	60/150
70 – 75	449/804	59/105	20/37
75 – 80	127/222	17/26	6/9
80 - 85	4/2	1/0	0/0
85+	0/0	0/0	0/0
Total	1,951/4,180	248/559	86/196

Note: ¹Exclusive of upper bound for all bands.

Table 9-7. SEL and L_{max} Comparison for McEntire JNGB

Condition	Based F-16C ¹				F-35A ²			
	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L_{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off ³ (1,000 feet AGL)	117	113	95.5%	300	117	115	100%	300
Military Power Take-off ³ (1,000 feet AGL)	113	110	97%	300	117	115	100%	300
Arrival (non-break, through 1,000 feet AGL, gear down ⁴)	96	90	85%	180	99	95	40%	180
Overhead Break (downwind leg, 1,250 feet AGL, gear down)	101	94	87%	200	97	92	40%	200
Low Approach and Go (downwind leg, 1,250 feet AGL, gear down)	110	104	94%	250	97	92	40%	210
Radar Pattern (downwind leg, 1,750 feet AGL, gear up)	97	90	87%	250	86	80	30%	250

McEntire JNGB nominal elevation = 252 feet MSL; Weather: 66°F, 50% Relative Humidity; SEL = Sound Exposure Level; L_{max} = Maximum (instantaneous) Sound Level; dBA = A-weighted decibel; NC = Engine core revolutions per minute; kts = knots.

Notes: ¹Modeled F-16C with F110-PW-229 engine; ²Modeled with reference acoustic data for an F-35A; ³Power reduced from afterburner to military power prior to reaching 1,000 feet AGL; ⁴F-16C values reflect gear up conditions.

EXECUTIVE SUMMARY

Air Quality. Under Scenario 1, emissions would decrease for all seven pollutant categories. For ANG Scenario 2, SO_x would increase minimally. Neither ANG Scenario 1 nor 2 would introduce emissions that would deteriorate regional air quality; the area would remain in attainment for all federal and state air quality standards. Table 9-8 presents the emissions from operations under both scenarios.

Table 9-8. Proposed Annual Operational Emissions under ANG Scenario 1 at McEntire JNGB							
Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x	PM ₁₀	PM _{2.5}	CO ₂ e ¹
ANG Scenario 1							
Aircraft	9.03	34.37	0.39	15.04	0.90	0.88	11,767.13
Engine Runups	0.35	0.06	0.01	0.09	0.00	0.00	62.50
AGE ²	3.86	3.44	0.21	0.97	0.31	0.30	897.54
POVs	37.79	1.80	2.31	0.04	0.10	0.10	1,912.28
Total Annual ANG Scenario 1 Emissions	53.02	39.67	2.91	16.14	1.32	1.28	14,639
Baseline Annual Emissions	197.62	127.10	22.64	20.16	8.10	7.60	33,685
Net Change	-144.60	-87.43	-19.73	-4.02	-6.77	-6.31	-19,045
Major Source Threshold	250	250	250	250	250	250	-
GHG Standard	-	-	-	-	-	-	25,000
ANG Scenario 2							
Aircraft	12.01	45.69	0.51	20.00	1.20	1.16	15,645.75
Engine Runups	0.46	0.08	0.01	0.12	0.00	0.00	82.99
AGE ²	5.13	4.57	0.28	1.29	0.42	0.40	1,193.87
POVs	58.96	2.66	3.43	0.06	0.15	0.15	2,715.22
Total Annual ANG Scenario 2 Emissions	76.56	53.01	4.23	21.47	1.77	1.72	19,638
Baseline Annual Emissions	197.62	127.10	22.64	20.16	8.10	7.60	33,685
Net Change	-121.06	-74.09	-18.41	1.31	-6.33	-5.88	-14,047
Major Source Threshold	250	250	250	250	250	250	-
GHG Standard	-	-	-	-	-	-	25,000

Notes:

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single engine aircraft, and an extensive, rigorous testing program. Overall, the risks of an aircraft mishap are not expected to increase substantially.

Biological Resources. Under ANG Scenarios 1 and 2, one construction project would produce 0.76 acre of surface disturbance, but would not impact plants, wildlife, wetlands, or special status species. Noise from aircraft operations would decrease, and the wildlife in the area of McEntire JNGB have become habituated to it. As such, no impacts to wildlife or threatened and endangered species would occur. Decreased airfield operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. Similarly, use of higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no impacts to National Register-eligible archaeological, architectural, or traditional cultural properties. Letters sent to federally recognized American Indian Tribes initiated government-to-government consultation in January 2010, and consultation is on-going. All consultation will be completed by publication of the Final EIS.

Socioeconomics. ANG Scenario 1 would reduce 371 military personnel authorizations associated with McEntire JNGB and decrease military payrolls by \$4.5 million. However, the scenario would not impact regional

employment, income, or regional housing market. ANG Scenario 2 would retain the same number of military personnel authorizations as under baseline. Either scenario would expend an estimated \$1.2 million in 2013 and 2015 for the proposed projects. The McEntire JNGB area would likely provide the skilled workers for the temporary construction jobs.

Environmental Justice. Table 9-9 displays the total population, total minority population, percentage minority, total low-income population, and percent low-income for the areas in the vicinity of McEntire JNGB affected by noise greater than or equal to 65 dB DNL. These affected populations occupy residential areas not in conformance with local land use regulations. As the data demonstrate, the percentage of minority populations affected under baseline conditions already greatly exceeds the state average of 33 percent. This existing problem would not noticeably increase under ANG Scenarios 1 and 2. Baseline low-income populations account for 15 percent of the affected population, or 1.2 percent above the state average. ANG Scenario 1 would add to this existing problem, increasing the low-income population affected by about 1 percent.

**Table 9-9. Minority and Low-Income Populations
Affected by Noise of 65 dB DNL or Greater at McEntire JNGB**

	<i>Total Population</i>	<i>Minority Population</i>	<i>Percent Minority</i>	<i>Low-Income Population</i>	<i>Percent Low-Income</i>
Baseline	559	414	74	83	15
ANG Scenario 1	189	142	75	30	16
ANG Scenario 2	248	184	74	38	15

Ground Traffic and Transportation. Despite a negligible, short-term increase in construction traffic, ANG Scenario 1 would reduce travel demand by 24 percent for the base. However, no effects on the Level of Service (LOS) for any portion of the roadway network would be expected. Baseline personnel levels would continue for ANG Scenario 2, and would not affect any LOS thresholds.

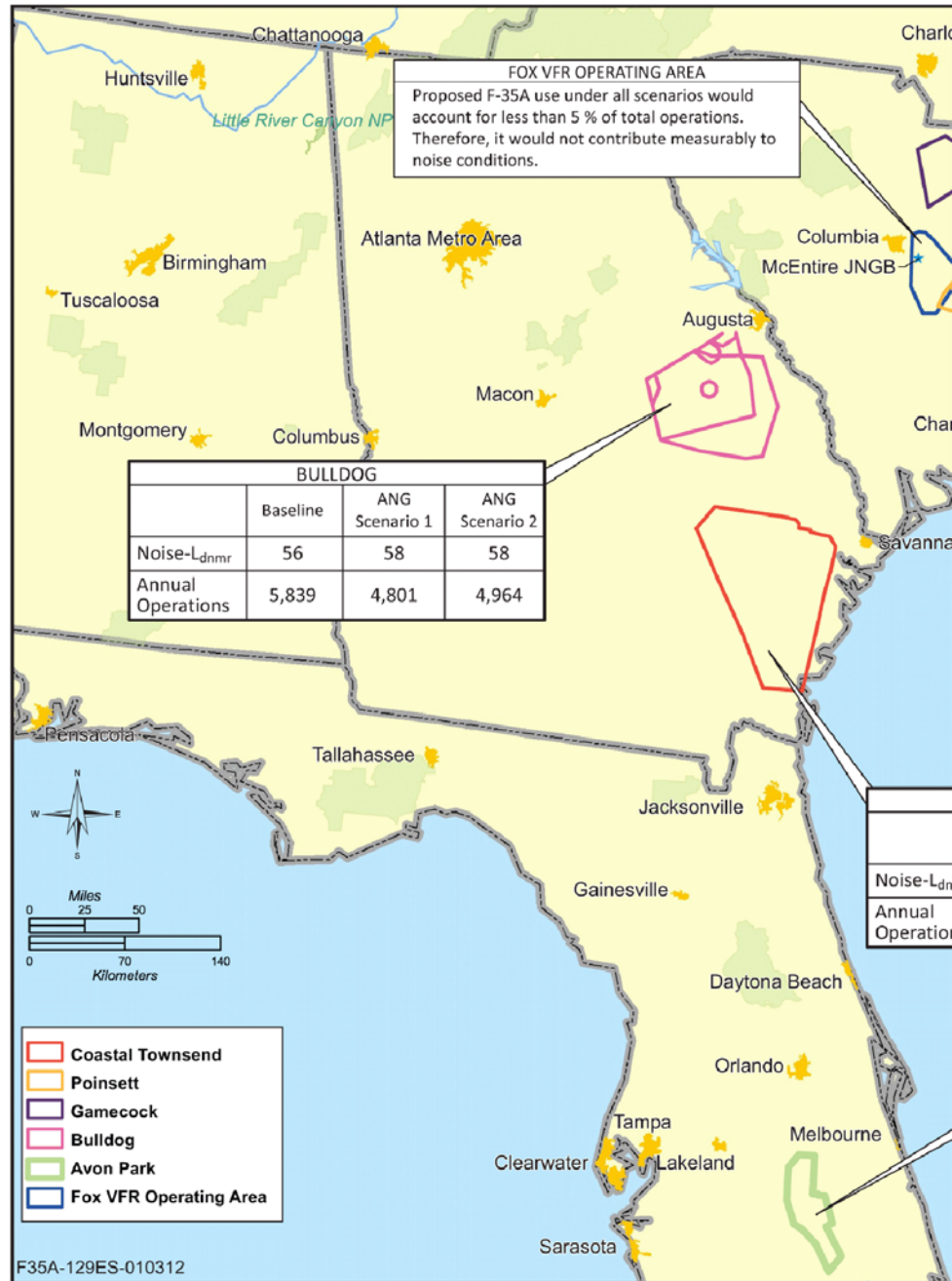
Other Resources. The EIS analyzed the potential environmental consequences of implementing ANG Scenario 1 and 2 on three other resources: geology, soils, and water (Mc3.5 in the EIS); community facilities and public services (Mc3.13); and hazardous materials and waste (Mc3.15). No aspect of the beddown scenarios would result in impacts to these resources.



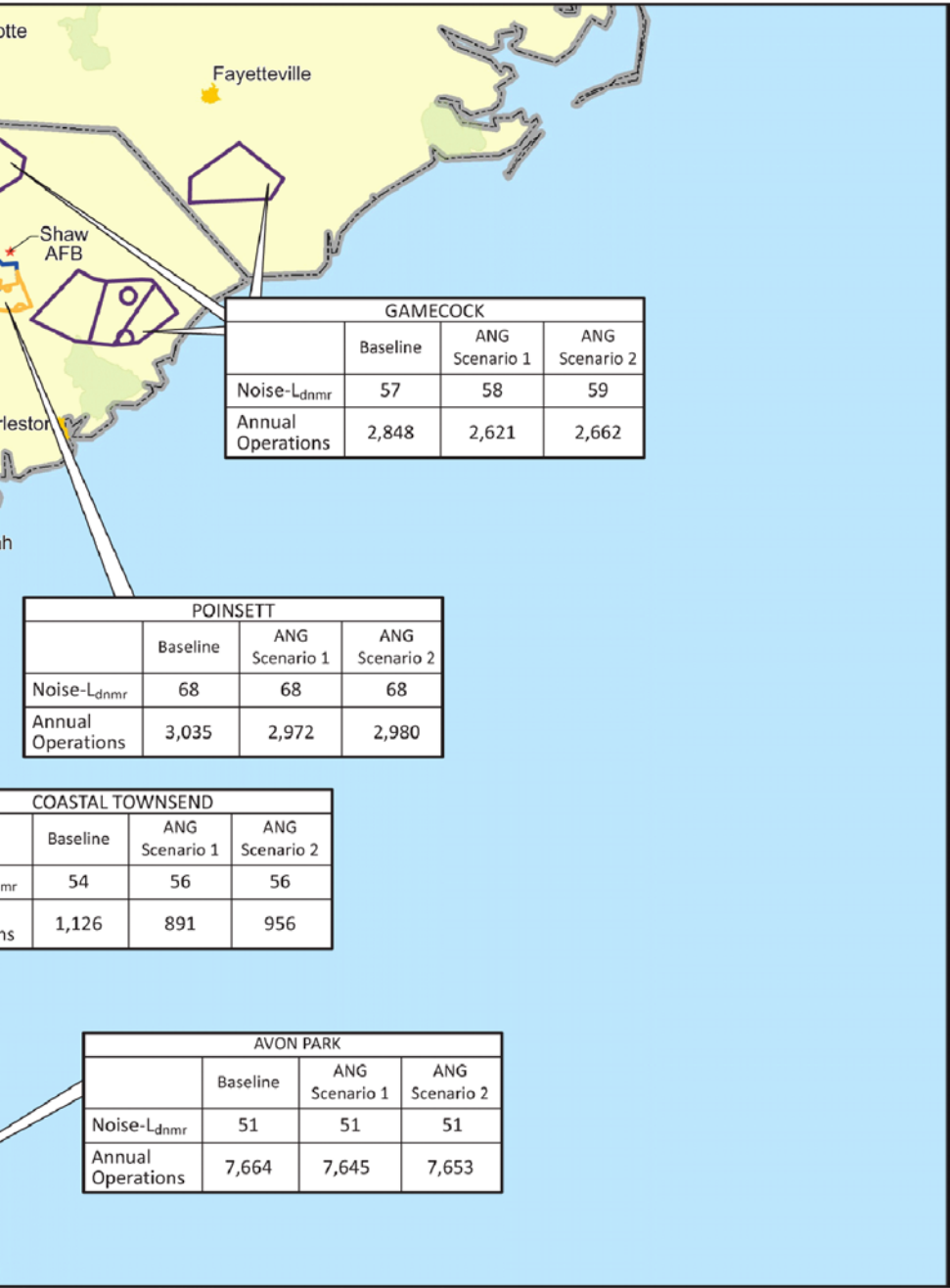
Airspace and Range Use. Figure 9-3 depicts the main overland airspace and range units proposed for use by the F-35As. Data presented in the figure include total annual legacy aircraft operations under baseline, ANG Scenario 1, and ANG Scenario 2. Such operations would fall below baseline levels in both ANG Scenario 1 and ANG Scenario 2. The F-35As would also fly more time at higher altitudes than the legacy F-16s, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 10 to 30 percent by the F-16s.

The F-35As from McEntire JNGB would primarily use the existing Bulldog, Gamecock, Poinsett, and Coastal Townsend airspace units. The Fox VFR Operating Area would receive limited use, and Avon Park would get used rarely, if at all. For all airspace units, operations per flying day would decrease below baseline in both scenarios. In turn, low-altitude operations would also decrease.

Figure 9-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by McEntire JNGB



F-35As from McEntire JNGB would also fly in overwater Warning Areas, although to a lesser degree than current conditions. Required supersonic operations would be conducted only in these Warning Areas, at least 15 nautical miles offshore or above 30,000 feet MSL. Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. For Bulldog and Gamecock, subsonic noise levels would increase imperceptibly (i.e., 1 to 2 dB) under both scenarios. Neither would exceed 65 dB. Although the Poinsett airspace and associated range would continue to experience noise levels of 68 L_{dnmr}, no change from baseline noise levels would occur under either scenario. Noise levels in Coastal Townsend airspace would increase perceptibly in ANG Scenario 2, but not in ANG Scenario 1.



Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

In areas under Coastal Townsend airspace, persons on the ground could perceive an increase in noise if ANG Scenario 2 were implemented. Such increases would likely add to the percentage of the population annoyed by aircraft noise. Several communities underlie this airspace, including Hinesville with a population of more than 30,000. The F-35As would continue to avoid these communities in accordance with Federal Aviation Administration regulations. Persons recreating in special land use areas, such as state parks, may consider additional noise especially intrusive. However, the low number of operations per flying day coupled with the F-35As use of higher altitudes would minimize the potential for repeated low-altitude overflights of a specific location.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.

10.0 MOUNTAIN HOME AFB ALTERNATIVE OVERVIEW

10.1 AIRCRAFT TRANSITION

Mountain Home AFB would accommodate 24 (ACC Scenario 1), 48 (ACC Scenario 2), or 72 (ACC Scenario 3) F-35A aircraft. The F-35A aircraft would add to the existing inventory of 56 F-15E/SGs; no aircraft would be drawn down at the base. Table 10-1 presents the three F-35A beddown scenarios.

Table 10-1. Baseline and Proposed Aircraft Beddown						
Base	Existing Aircraft	F-35A Beddown Scenarios			Total	Net Change in Aircraft
	Based F-15E/SG	ACC 1	ACC 2	ACC 3		
Mountain Home AFB ¹	56	24			80	+24
			48		104	+48
				72	128	+72

Note:

¹No drawdown of existing aircraft would occur. The 56 based F-15Es/SGs would remain and operate after any F-35A beddown.



Figure 10-1. Mountain Home AFB Construction Projects – ACC Scenarios 1, 2, and 3

10.2 CONSTRUCTION

A maximum of 21 facility construction, modification, and renovation projects would be required to support beddown of the F-35As at Mountain Home AFB under ACC Scenario 3 (Figure 10-1 and Table 10-2). Four and nineteen projects, respectively, would be required for the other two scenarios. Approximately 11 acres of previously disturbed ground would be affected. Proposed to occur from 2013 to 2015, the construction would cost an estimated \$52 million under ACC Scenario 3, with lesser amounts for the other scenarios.

10.3 AIRFIELD OPERATIONS

The F-35As would employ generally similar take-off and landing procedures as currently used by the F-15E/SGs at Mountain Home AFB. While the new aircraft would fly fewer closed patterns overall, the F-35A operations would be additive to existing airfield operations (Table 10-3). Flight profiles would also vary somewhat from the F-15E/SGs, but the F-35As would adhere to existing restrictions and avoidance procedures. About 0.6 percent of the time, the F-35A would fly between 10:00 p.m. and 7:00 a.m. and operations during environmental night would increase by less than one per day. Existing F-15E/SG aircraft would continue to fly 12 percent of the time during this period.

10.4 PERSONNEL

Staffing levels to support operation and maintenance of F-35A aircraft would increase under all scenarios (Table 10-4), with the F-35A personnel added to existing base personnel. Under

Year	Action	Total Affected Area (acres)
ACC Scenario 1 (24 F-35As)		
2013	New Munitions Storage, Hayman Igloo	0.44
2013	New F-35A Parts Storage Facility	0.83
2013	New 4-Bay Fight Simulator Facility	1.29
2013	New Munitions Inspection Facility	0.61
ACC Scenario 1 Total Cost: \$16,900,000		3.17
ACC Scenario 2 (48 F-35As) adds the following to Scenario 1		
2014	New Vehicle Maintenance, Building 1100	0.36
2014	New Munitions Administration Facility	0.66
2014	New Munitions Inspection Facility	0.61
2015	Internal Alterations to Squad Operations, Building 196	0
2015	Internal Alterations to Squad Operations, Building 271	0
2015	Internal Alterations to Squad Operations, Building 278	0
2015	Internal Alterations to Squad Operations, Building 210	0
2015	Internal Alterations, Building 277	0
2015	Internal Alterations, Building 211	0
2015	Construct Airfield markings	0
2015	Addition and Alteration to Weapons Release Shop, Building 1225	0.83
2015	Construct HAMS Yard	1.29
2015	Construct R-11 petroleum, oil, and lubricants Parking	0.87
2015	Repair Multiple Hangars, electrical upgrade	0
2015	MSA Mobility Equipment Storage	0.51
ACC Scenario 2 Total Cost: \$36,348,000		8.98
ACC Scenario 3 (72 F-35As) adds the following to Scenarios 1 and 2		
2015	New Squadron Operations and AMU facility	2.08
2015	New 6-Bay Fight Simulator Facility	1.48
ACC Scenario 3 Total Cost: \$51,948,000		11.39

Aircraft	ACC Scenario 1	ACC Scenario 2	ACC Scenario 3
Based F-15E/SG	28,766	28,766	28,766
Transients ¹	3,846	3,846	3,846
F-35A	10,667	21,334	32,001
Total	43,279	53,946	64,613
Percent Increase from Baseline	+32.7%	+65.4%	+98.1%

Note: ¹Transients include Gowen Field aircraft pattern work, F-15C, KC-135, C-21, A-10, and others.

Aircraft	Baseline	Proposed Scenarios		
	F-15E/SG Personnel	F-35A Personnel		
		ACC 1	ACC 2	ACC 3
F-15E/SG	1,306	1,306	1,306	1,306
F-35A	0	532	1,064	1,596
BOS Personnel	N/A	53	106	159
Total Personnel	1,306	1,891	2,476	3,061
Net Change	N/A	+585	+1,170	+1,755

ACC Scenario 3, total military personnel authorizations for the base would increase by 39 percent, with lesser increases for the other scenarios.

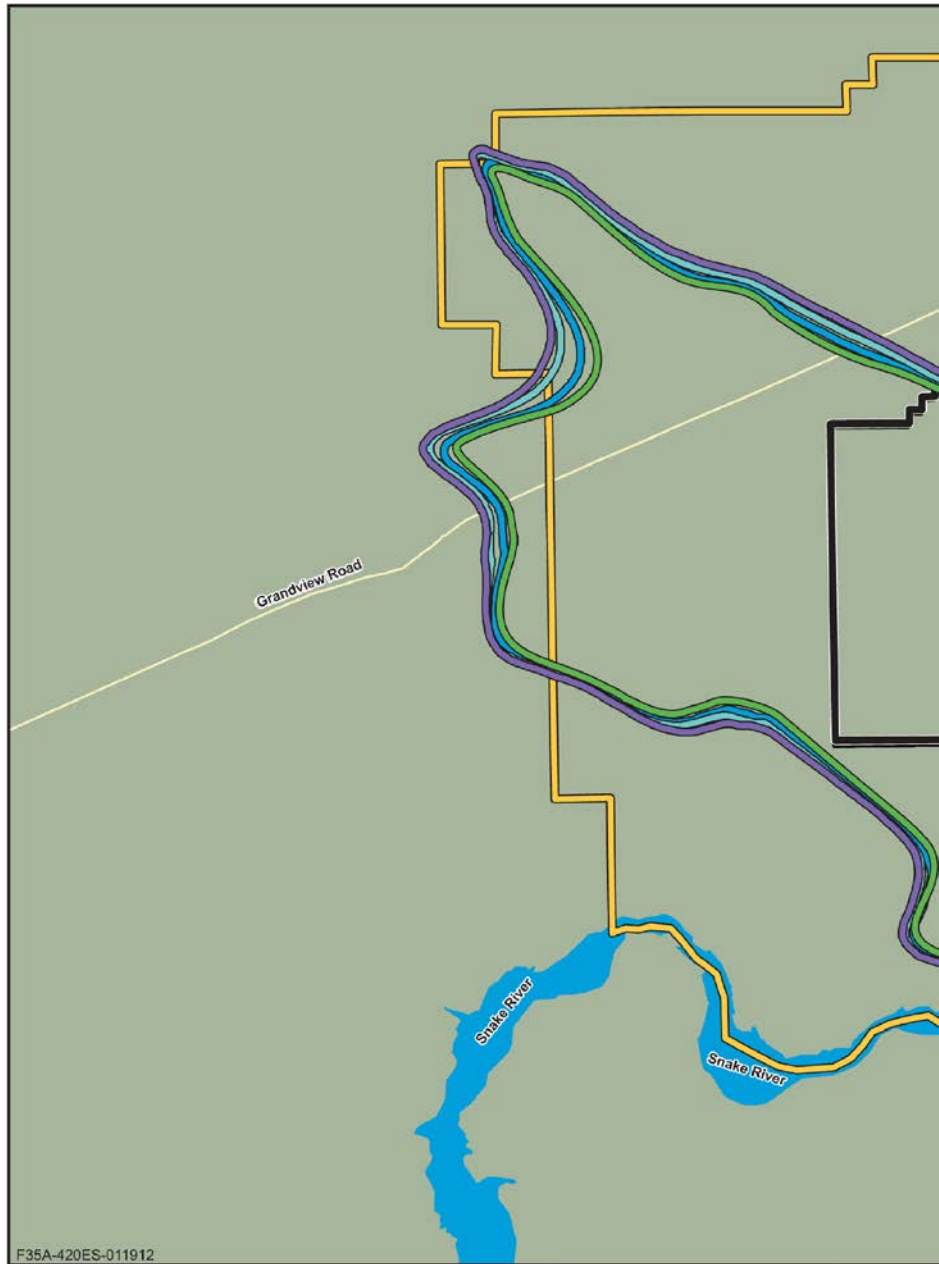
10.5 MOUNTAIN HOME AFB ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. Mountain Home AFB accommodates a total of over 30,000 military aircraft operations per year, including those by based F-15E/SGs, as well as transient aircraft. These operations produce noise as reflected by the baseline 65 dB DNL contour depicted in Figure 10-2.

Figure 10-2. Mountain Home AFB Comparison of Baseline and Projected 65 dB DNL Noise Contours for All Scenarios

This figure overlays the 65 dB DNL contours for all three ACC Scenarios at Mountain Home AFB. As this comparison indicates, the 65 dB DNL contour from the scenarios would exceed the baseline, but not by much. All off-base areas within the 65 dB DNL contour consist of open/agricultural lands. No residential lands underlie the affected area, although a single ranch residence does occur to the west of the base and underlies the 75 to 80 dB DNL contours. Land use defined under the Elmore County Air Base Hazard Zone has prevented encroachment and promoted compatible uses of private lands around the base.

Table 10-5 on the next page shows, more acres would be affected by noise levels of 65 dB or greater under the ACC Scenarios compared to baseline. No zoned residential areas would fall within the 65 dB DNL contours. Noise effects also include impacts from individual overflights. As presented in Table 10-6, the F-35A would generally be louder than the F-15E/SGs under most modes of flight (except afterburner/take-off/re-entry/radar patterns) as measured by single overflight metrics (SEL and L_{max}).



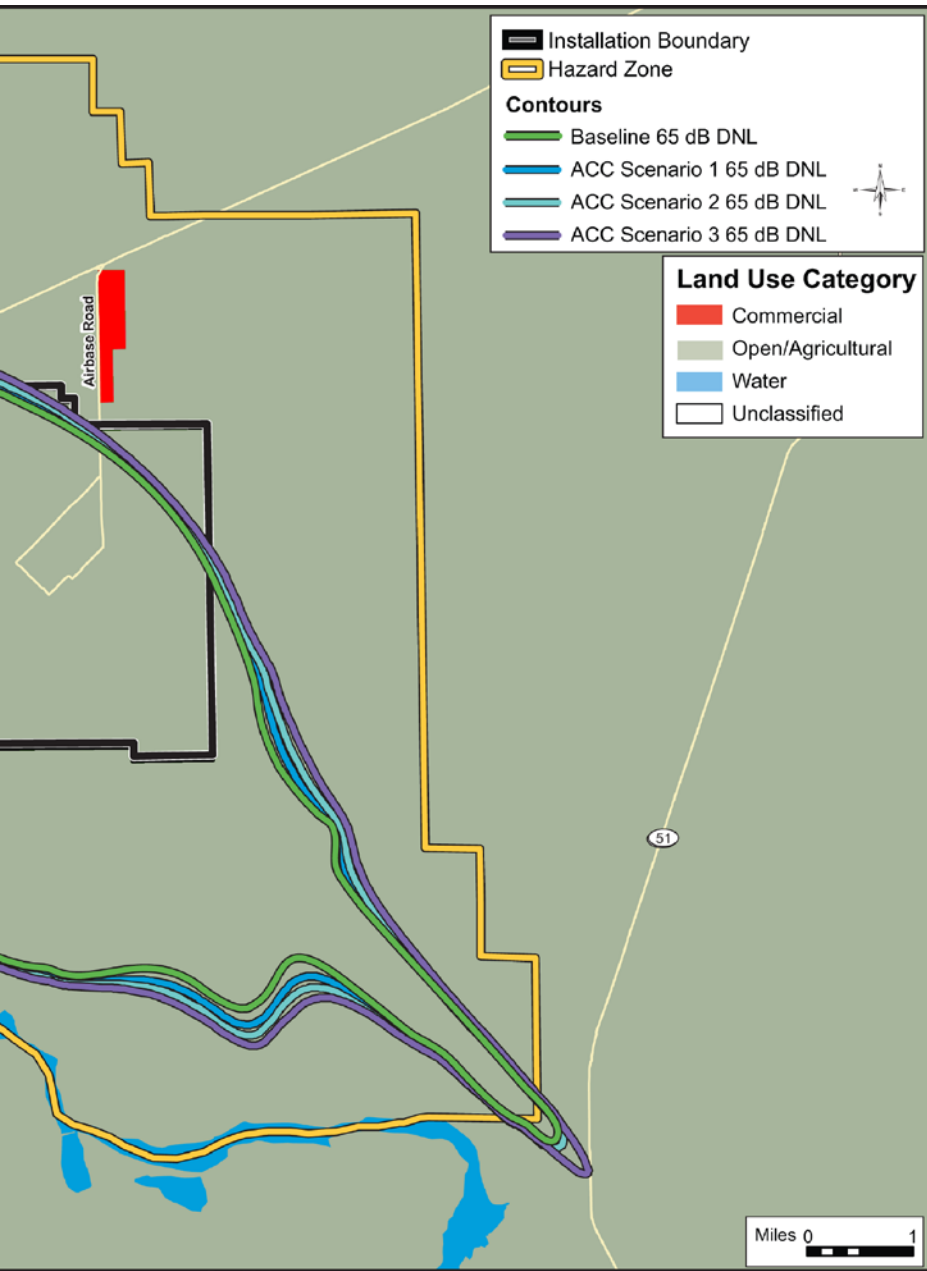


Table 10-5. Acreage, Population, and Households under 65-85 dB DNL Contours for Baseline and ACC Scenarios 1, 2, and 3 (Proposed/Baseline)

Contour Band (dB DNL) ¹	Acreage	Population	Households
ACC Scenario 1			
65 – 70	9,056/8,504	0/0	0/0
70 – 75	4,131/3,874	0/0	0/0
75 – 80	1,445/1,292	3/3	1/1
80 – 85	178/135	0/0	0/0
85+	0/0	0/0	0/0
Total	14,810	3/3	1/1
ACC Scenario 2			
65 – 70	9,658/8,504	0/0	0/0
70 – 75	4,409/3,874	0/0	0/0
75 – 80	1,602/1,292	3/3	1/1
80 – 85	222/135	0/0	0/0
85+	0/0	0/0	0/0
Total	15,891/13,805	3/3	1/1
ACC Scenario 3			
65 – 70	10,275/8,504	0/0	0/0
70 – 75	4,691/3,874	0/0	0/0
75 – 80	1,746/1,292	3/3	1/1
80 – 85	548/135	0/0	0/0
85+	0/0	0/0	0/0
Total	17,260/13,805	3/3	1/1

Note: ¹Exclusive of upper bound for all bands.

Table 10-6. SEL and L_{max} Comparison for Mountain Home AFB

Condition	Based F-15E/SG ¹				F-35A ²			
	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off ³ (1,000 feet AGL)	116	108	92%	300	116	113	100%	300
Military Power Take-off ³ (1,000 feet AGL)	116	108	92%	300	116	113	100%	300
Arrival (non-break, through 1,000 feet AGL, gear down ⁴)	104	95	83%	155	99	95	40%	180
Overhead Break (downwind leg, 1,800 feet AGL, gear down)	80	73	72%	200	94	88	40%	200
Low Approach and Go (downwind leg, 1,800 feet AGL, gear down)	96	87	82%	200	94	88	40%	210
Re-entry Pattern (downwind leg, 1,300 feet AGL, gear up)	94	87	80%	300	84	79	30%	300
Radar Pattern (downwind leg, 1,300 feet AGL, gear up)	97	90	82%	300	85	80	30%	250

Mountain Home AFB nominal elevation = 2,996 feet MSL; Weather: 55°F, 47% Relative Humidity; SEL = Sound Exposure Level; L_{max} = Maximum (instantaneous) Sound Level; dBA = A-Weighted Decibel; NC = Engine core revolutions per minute; kts = knots.

Notes: ¹Modeled F-15E/SG with F110-PW-229 engine. ²Modeled with reference acoustic data for an F-35A (Air Force 2009a). ³Power reduced from afterburner to military power prior to reaching 1,000 feet AGL. ⁴F-15E/SG values reflect gear-up conditions.

EXECUTIVE SUMMARY

Air Quality. Under all three scenarios, emissions would increase for all major pollutant categories. However, the area enjoys good air quality and none of the scenarios would introduce emissions that would affect regional air quality. The area would remain in attainment for all federal and state air quality standards. As an example, Table 10-7 presents the emissions from operations under ACC Scenario 3 which supports the largest number of aircraft and operations.

Table 10-7. Proposed Annual Operational Emissions under ACC Scenario 3 at Mountain Home AFB							
Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x	PM ₁₀	PM _{2.5}	CO ₂ e ¹
Aircraft	49.98	207.86	2.10	5.19	0.73	0.73	68,569.89
Engine Run-Ups	1.51	0.24	0.04	0.06	0.00	0.00	264.26
AGE ²	39.65	35.37	7.78	9.62	11.67	11.32	4,615.93
POVs	109.66	4.95	6.37	0.11	0.29	0.29	5,270.28
Total Annual ACC Scenario 3 Emissions	200.80	248.41	16.29	14.98	12.69	12.69	74,115.75
Baseline Annual Emissions	514.34	421.22	61.43	13.46	28.57	22.51	68,582
Net Change	715.13	669.63	77.72	28.44	41.26	35.20	142,698.21
Major Source Threshold	250	250	250	250	250	250	-
GHG Standard	-	-	-	-	-	-	25,000

Notes:

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance personnel learn more about the aircraft's capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single engine aircraft, and an extensive, rigorous testing program. Overall, the risks of an aircraft mishap are not expected to increase substantially.

Biological Resources. Under ACC Scenario 3, a total of 11.39 acres of previously disturbed ground would be affected. This construction would not impact plants, wildlife, wetlands, or special status species. Noise from aircraft operations would increase, but the wildlife in the area of Mountain Home AFB have become habituated to it. As such, no impacts to wildlife, threatened and endangered species, wetlands, or plants would occur. Increased airfield operations would result in an increased opportunity for bird/wildlife-aircraft strikes to occur; however, use of higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no impacts to National Register-eligible archaeological, architectural, or traditional cultural properties. Letters sent to federally recognized American Indian Tribes initiated government-to-government consultation in January 2010, and consultation is on-going. All consultation will be completed before publication of the Final EIS.

Socioeconomics. ACC Scenario 1 would result in an increase of 585 military and civilian personnel authorizations; with an annual increase of approximately \$22.7 million in salaries. As an indirect effect, this would result in an estimated increase of 240 jobs with \$10.8 million in labor income. ACC Scenario 2, with an increase of 1,170 military and civilian personnel authorizations, would result in \$45.3 million in salaries directly and an estimated increase of 479 indirect jobs and \$21.6 million in labor income. ACC Scenario 3 would increase

military and civilian personnel authorizations by 1,755 with a payroll of \$68.0 million in salaries. ACC Scenarios 1, 2, and 3 would also expend an estimated \$17 million, \$36 million, and \$52 million in 2013 through 2015 for proposed construction projects.

Environmental Justice. Analysis shows that the total population of three persons affected by off-base noise of 65 dB DNL or greater includes no minorities or low-income individuals. As such, there would be no disproportionate effects on minority or low-income individuals under any of the scenarios.

Ground Traffic and Transportation. Short-term increases in construction traffic would not affect the Level of Service (LOS) under any scenario. All three scenarios would increase traffic, particularly during peak hours. ACC Scenarios 1 and 2 would result in traffic increases that exceed the primary LOS threshold, but not the secondary and more critical threshold. ACC Scenario 3 would exceed both thresholds, resulting in a reduction of LOS for portions of the roadway network.

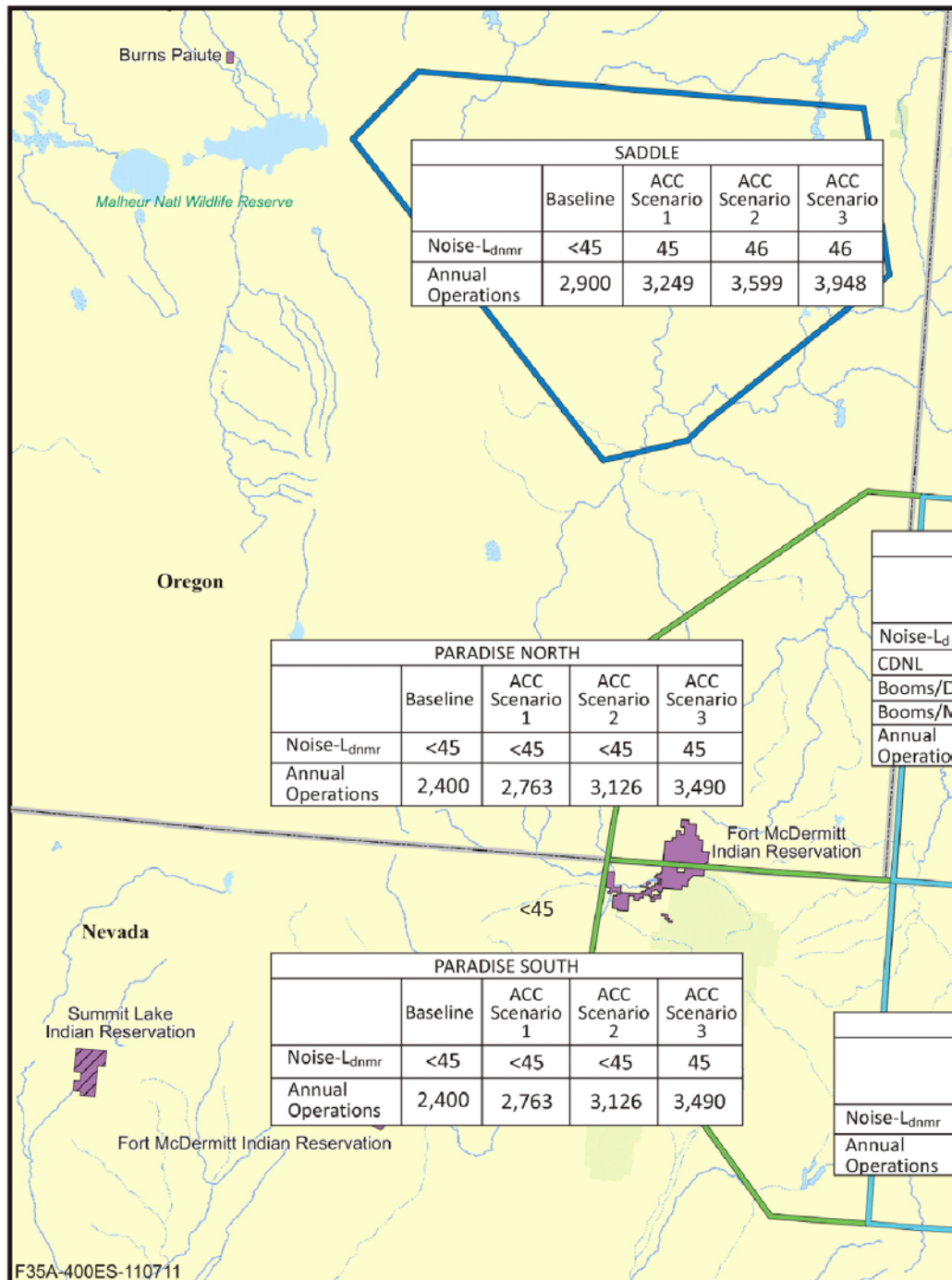
Other Resources. The EIS analyzed the potential environmental consequences of implementing ACC Scenarios 1, 2, and 3 on three other resources: geology, soils, and water (MH3.5 in the EIS); community facilities and public services (MH3.13); and hazardous materials and waste (MH3.15). No aspect of the beddown scenarios would result in impacts to geology, soils, and water or hazardous materials and waste. Addition of military personnel and dependents under all three scenarios would require the City of Mountain Home and Elmore County to adjust community and public services to these new levels. However, both have the capacity to accommodate these changes without diminishment of current conditions.



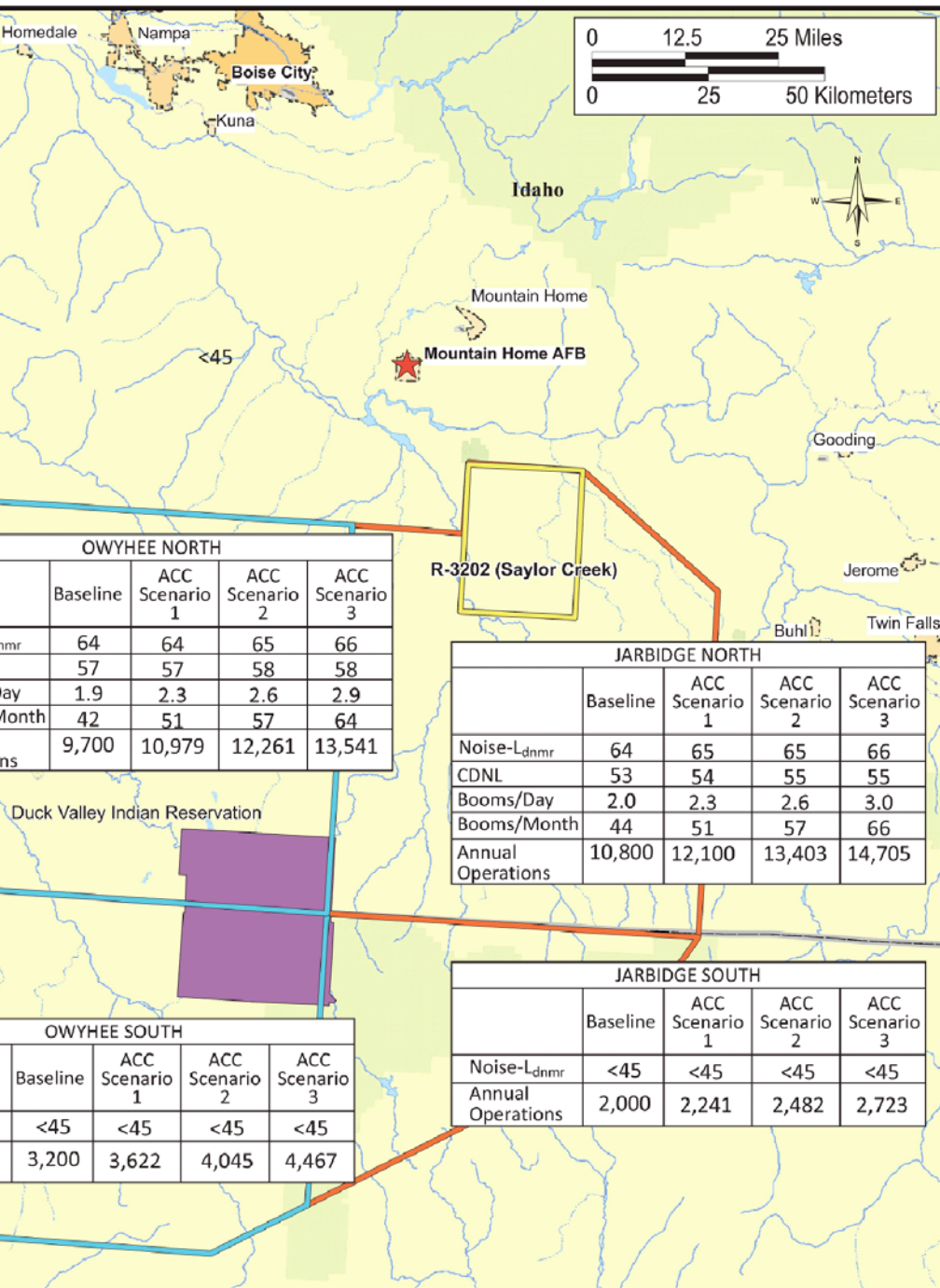
Airspace and Range Use. Figure 10-3 depicts the main airspace and range units proposed for use by the F-35As. Data presented in the figure includes total annual operations for all aircraft under baseline, ACC Scenarios 1, 2, and 3. With addition of the F-35As, the total annual operations would increase in all airspace units under each proposed scenario. The F-35As, however, would fly more time at higher altitudes than the F-15E/SGs, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 24 percent by the F-15E/SG.

Required supersonic operations would be conducted only in Jarbidge and Owyhee, where supersonic flight is currently authorized. Supersonic flight would occur above 15,000 feet MSL, with 90 percent occurring above 30,000 feet MSL. Supersonic flight over the Duck Valley Indian Reservation would continue to be prohibited.

Figure 10-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by Mountain Home AFB



Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. Under ACC Scenarios 1 and 2, subsonic noise would either not change or increases would be imperceptible. Noise levels in Jarbidge North and Owyhee North would be 64 to 65 dB Ldnmr in these scenarios. Under ACC Scenario 3, noise levels would increase imperceptibly by 2 dB in Owyhee North and Jarbidge North. Noise levels would remain at or near below 45 dB Ldnmr in all scenarios for the other airspace units. The number of sonic booms would increase 22 per month in Jarbidge North and 22 per month in Owyhee North under ACC Scenario 3.



Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

Under ACC Scenarios 2 and 3 under Owyhee and Jarbidge, persons on the ground would perceive an increase in noise. While the population beneath the airspace is sparse, a few communities and two American Indian Reservations would be affected. Such increases would likely add to the percentage of the population annoyed by aircraft noise. For the Duck Valley Indian Reservation, continued adherence to avoidance requirements would limit the noise exposure to its residents. Persons recreating in special land use areas, such as wilderness areas, may consider additional noise especially intrusive. A noticeable increase in sonic booms in the Jarbidge and Owyhee airspaces would add to this annoyance and sense of intrusion.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.

11.0 SHAW AFB ALTERNATIVE OVERVIEW

11.1 AIRCRAFT TRANSITION

Shaw AFB would accommodate 24 (ACC Scenario 1), 48 (ACC Scenario 2), or 72 (ACC Scenario 3) F-35A aircraft. The F-16 mission and 72 aircraft currently at the installation would either be reassigned or retired. Table 11-1 presents the three F-35A beddown scenarios.

Table 11-1. Baseline and Proposed Aircraft Beddown						
Base	Aircraft Drawdown	F-35A Beddown Scenarios			Total	Net Change in Aircraft
	Based F-16	ACC 1	ACC 2	ACC 3		
Shaw AFB	72	24			24	-48
			48		48	-24
				72	72	0

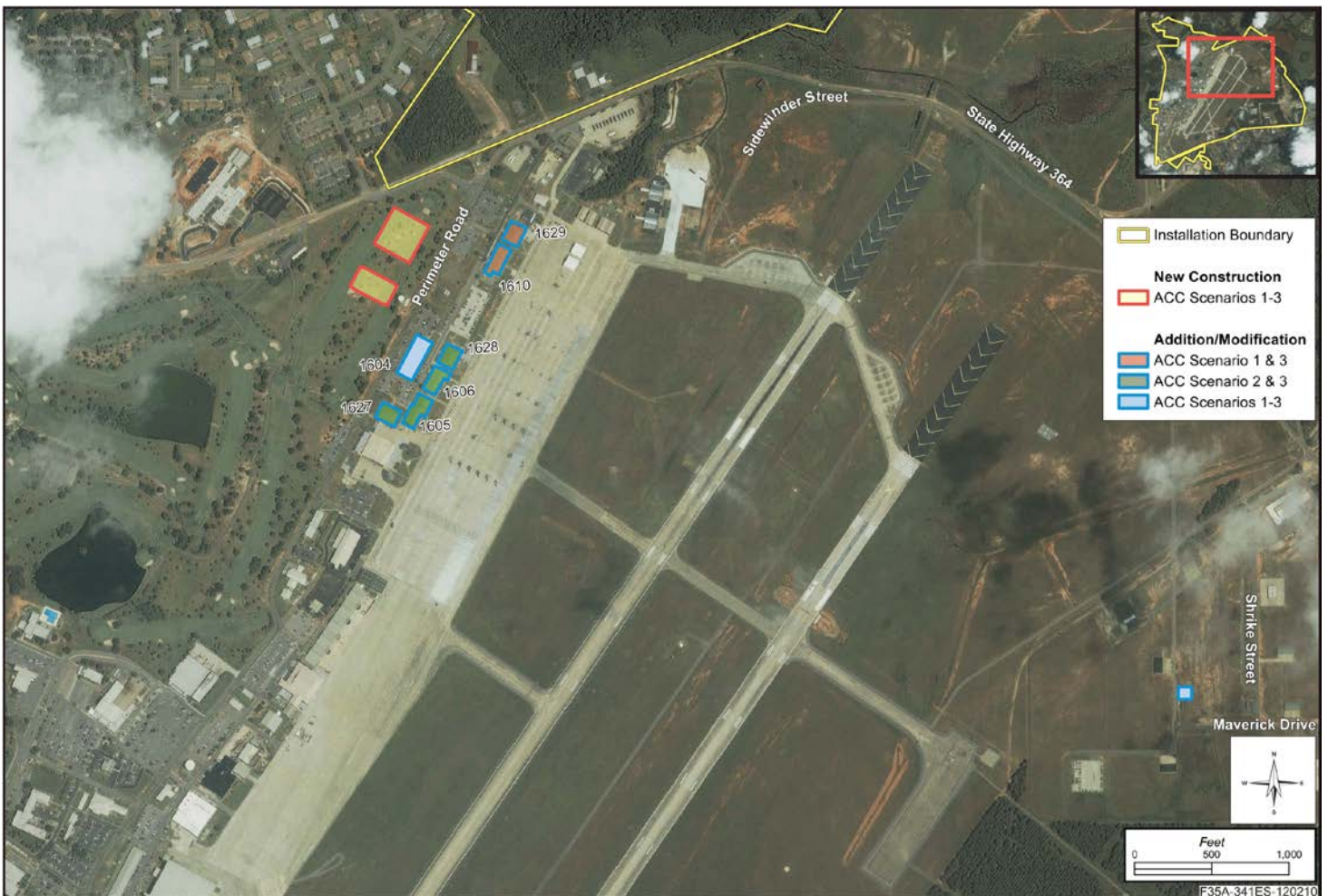


Figure 11-1. Shaw AFB Construction Projects – ACC Scenarios 1, 2, and 3

11.2 CONSTRUCTION

A total of up to nine facility construction, modification, and renovation projects for each of the three ACC scenarios would be required to support beddown of the F-35As at Shaw AFB beginning in 2013 (Figure 11-1 and Table 11-2). Approximately 5.5 acres of previously disturbed ground would be affected. The primary difference between the three scenarios is the internal alteration of one Squadron Operations Facility per scenario (i.e., one for ACC Scenario 1; two for ACC Scenario 2; and three for ACC Scenario 3).

Table 11-2. Proposed Construction and Modifications for Shaw AFB		
Year	Action	Total Affected Areas (acres)
ACC Scenario 1 (24 F-35As)		
2013	Construction of a new F-35A 6-Bay Flight Simulator	2.15
2013	Construction of a new F-35A 6-Bay Flight Simulator: roadways and new parking areas	0.89
2013	Internal alteration of 1 Squadron Operation Facility, Building 1610	0
2013	Internal alteration of 1 Aircraft Maintenance Unit (AMU), Building 1629	0
2013	Internal alteration of Parts Storage Facility (Building 1614)	0
2013	Alternative Location - New Parts Storage Facility	2.09
2013	Repair Hayman Igloo	0.35
2015	Addition and Alteration Various Facilities	0
ACC Scenario 1 Total Cost: \$22,150,000		5.48
ACC Scenario 2 (48 F-35As) adds or revises the following to Scenario 1		
2013	Internal alteration of 2 Squadron Operation Facilities, Buildings 1605 and 1606	0
2013	Internal alteration of 2 AMUs, Buildings 1627 & 1628	0
ACC Scenario 2 Total Cost: \$22,300,000		5.48
ACC Scenario 3 (72 F-35As) adds or revises the following to Scenario 1 and Scenario 2		
2013	Internal alteration of 3 Squadron Operation Facilities, Buildings 1605, 1606, and 1610	0
2013	Internal alteration of 3 AMUs, Buildings 1627, 1628, & 1629	0
ACC Scenario 3 Total Cost: \$22,450,000		5.48

Note: *Total calculation included above with construction of new flight simulator facility.

11.3 AIRFIELD OPERATIONS

The F-35As would employ generally similar take-off and landing procedures as currently used by the F-16s at Shaw AFB. However, the new aircraft would fly fewer closed patterns overall, thereby reducing total airfield operations (Table 11-3). Flight profiles would also vary somewhat from the F-16s, but the F-35As would adhere to existing restrictions and avoidance procedures. About 0.6 percent of the time, the F-35A would fly between 10:00 p.m. and 7:00 a.m., resulting in a decrease in total operations during environmental night under all scenarios.

11.4 PERSONNEL

Staffing levels to support operation and maintenance of 24 F-35As at Shaw AFB and the replacement of 72 legacy aircraft would reduce personnel authorizations by 1,320 under ACC Scenario 1 (Table 11-4). In the maximum case (ACC Scenario 3), the addition of 72 F-35As would decrease total personnel authorizations by 150.

Table 11-3. Comparison of ACC Scenarios – Airfield Operations

Aircraft	ACC Scenario 1	ACC Scenario 2	ACC Scenario 3
Based F-16	-45,094	-45,094	-45,094
Transients ¹	3,450	3,450	3,450
F-35A	10,667	21,334	32,001
Total	14,117	24,784	35,451
Percent Change from Baseline	-70.9%	-48.9%	-26.9%

Note: ¹Transients include visiting F-15C, KC-135, C-21, A-10, other.

Table 11-4. Proposed Military Personnel Changes: Shaw AFB

Aircraft	Baseline	Proposed Scenarios		
	F-16 Personnel	F-35A Personnel		
		ACC 1	ACC 2	ACC 3
F-16	1,905	-1,905	-1,905	-1,905
F-35A	0	532	1,064	1,596
BOS Personnel	N/A	53	106	159
Total Personnel	1,905	585	1,170	1,755
Net Change	N/A	-1,320	-735	-150

11.5 SHAW AFB ENVIRONMENTAL CONSEQUENCES

Noise and Land Use. Shaw AFB currently accommodates over 48,000 total operations each year. Combined with other based and transient military aircraft, the based F-16 operations produce noise as reflected by the baseline 65 dB DNL contour depicted in Figure 11-2. Contours (65 dB DNL) for ACC Scenarios 1, 2, and 3 are overlaid onto the baseline contour. As this comparison shows, ACC Scenarios 1, 2, and 3 noise affects narrower but longer areas than baseline noise contours. Much of the affected area would continue to consist of open/agricultural lands. Industrial lands off the ends of the base would continue to be affected by higher noise levels compared to baseline.

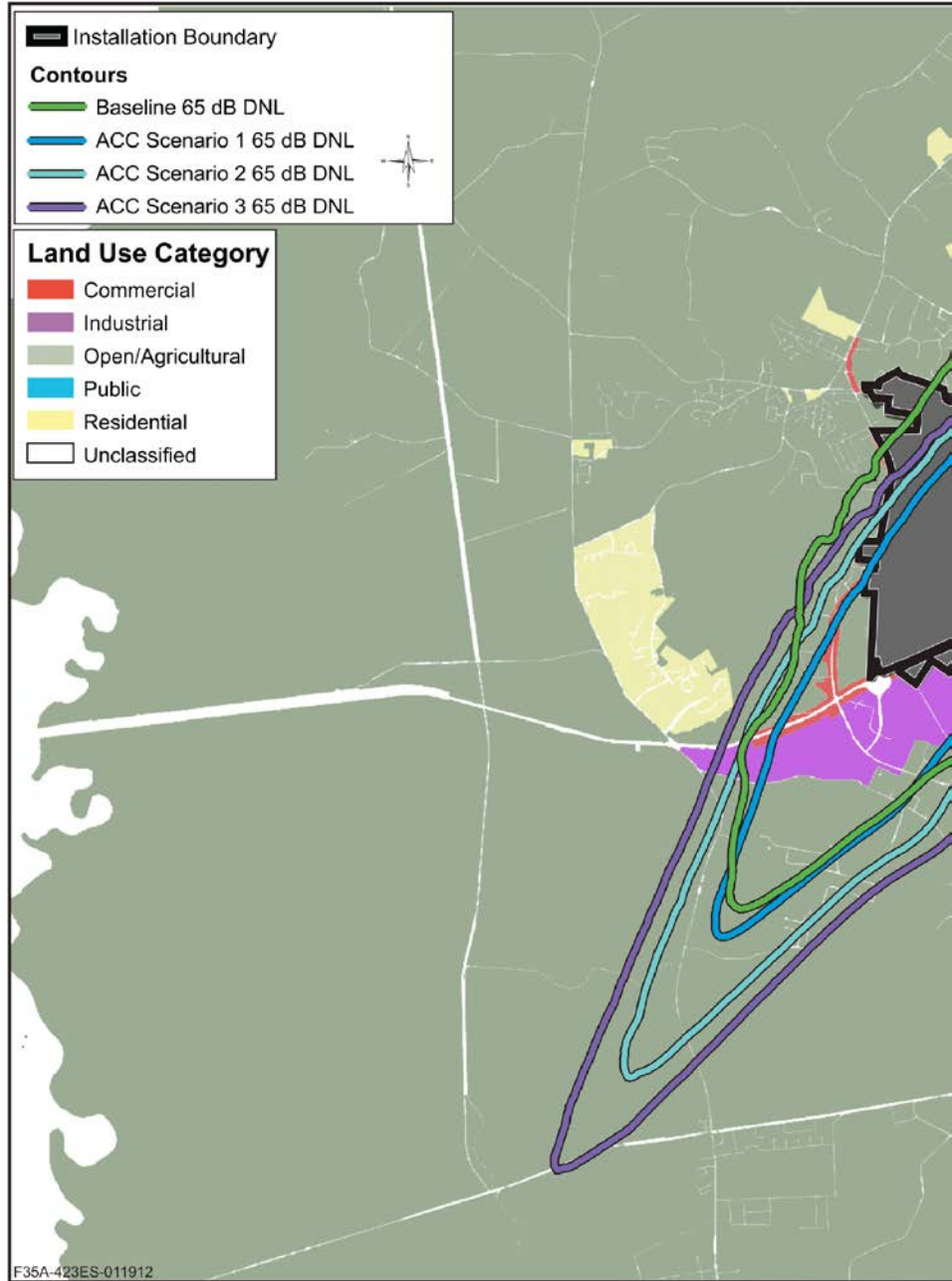
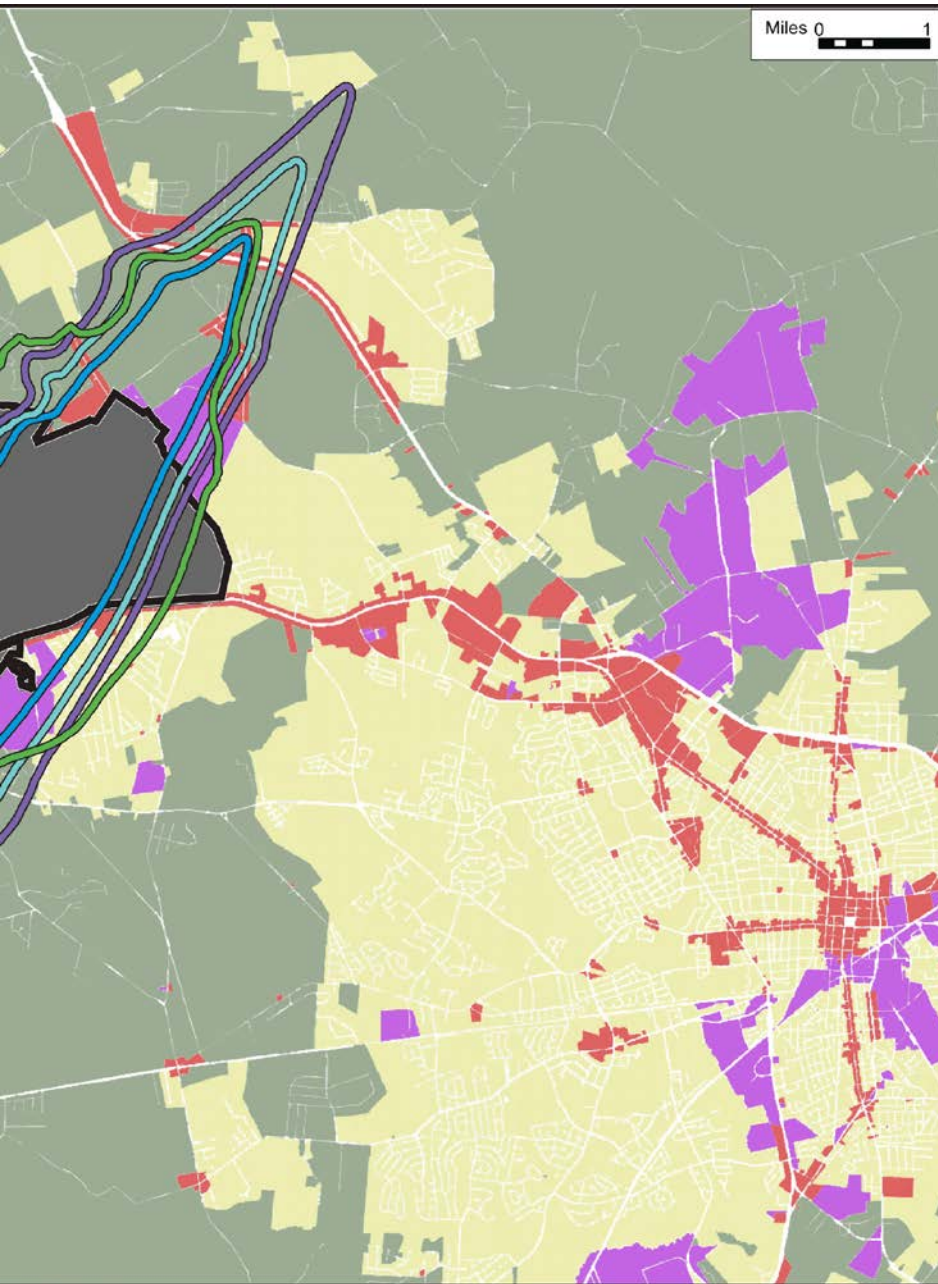


Figure 11-2. Shaw AFB Comparison of Baseline and Projected 65 dB DNL Noise Contours for All Scenarios

Under ACC Scenario 1, the overall area and residential land use subject to noise levels 65 to 80 dB DNL would decrease. Under ACC Scenarios 2 and 3, the overall area affected by noise levels of 65 dB DNL or greater would increase, but residential land use subject to noise levels 65 to 80 dB DNL would decrease (Table 11-5). No residential areas would be newly subject to noise above 65 dB DNL under any scenario.

Table 11-5. Change in Acres of Defined Residential Land Use Within the 65 to 80 dB DNL Contour Area at Shaw AFB

	<i>Baseline (acres)</i>	<i>Projected (acres)</i>	<i>Change (acres)</i>
ACC Scenario 1	352	51	-301
ACC Scenario 2	352	165	-187
ACC Scenario 3	352	337	-15



As Table 11-6 shows, more acres would be affected by noise levels of 65 dB or greater from ACC Scenarios 2 and 3 compared to baseline. However, both population and numbers of households would fall below baseline levels for these scenarios.

Table 11-6. Off-Base Noise Exposure under ACC Scenarios 1, 2, and 3 for Shaw AFB (Proposed/Baseline)

Contour Band (dB DNL) ¹	Acreage	Population	Households
ACC Scenario 1			
65 – 70	2,176/3,464	725/1,453	278/541
70 – 75	701/1,404	269/741	103/289
75 – 80	112/208	46/105	15/35
80 – 85	0/7	11/0	3/0
85+	0/0	0/0	0/0
Total	2,989/5,083	1,051/2,299	399/865
ACC Scenario 2			
65 – 70	3,909/3,464	1,124/1,453	426/541
70 – 75	1,389/1,404	525/741	204/289
75 – 80	362/208	132/105	48/35
80 – 85	31/7	27/0	8/0
85+	0/0	0/0	0/0
Total	5,691/5,083	1,808/2,299	686/865
ACC Scenario 3			
65 – 70	5,531/3,464	1,477/1,453	555/541
70 – 75	2,001/1,404	684/741	263/289
75 – 80	618/208	236/105	90/35
80 – 85	84/7	39/0	12/0
85+	0/0	0/0	0/0
Total	8,234/5,083	2,436/2,299	923/865

Note: ¹Exclusive of upper bound for all bands.

Noise effects also consider individual overflights. As presented in Table 11-7, the F-35A would generally be louder than the F-16s under most modes of flight (except re-entry and radar patterns) as measured by single overflight metrics (SEL and L_{max}).

Table 11-7. SEL and L_{max} Comparison for Shaw AFB

Condition	Based F-16C ¹				F-35A ²			
	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)	SEL (dBA)	L _{max} (dBA)	Power (%NC)	Speed (kts)
Afterburner Take-off ³ (1,000 feet AGL)	110	104	104%	300	118	115	100%	300
Military Power Take-off ³ (1,000 feet AGL)	110	104	104%	300	118	115	100%	300
Departure Holddown (6,000 MSL, 5,758 AGL)	73	64	90%	350-400	85	77	55%	300-400
Arrival (non-break, through 1,000 feet AGL, gear down) ⁴	88	82	87%	180	99	95	40%	180
Overhead Break (downwind leg, 1,800 feet AGL, gear down)	92	83	92%	200	94	88	40%	200
Low Approach and Go (downwind leg, 1,800 feet AGL, gear down)	92	83	92%	200	94	88	40%	210
Re-entry Pattern (downwind leg, 1,300 feet AGL, gear up)	90	83	92%	300	85	80	30%	300
Radar Pattern (downwind leg, 1,300 feet AGL, gear up)	94	85	92%	250	85	80	30%	250

Shaw AFB nominal elevation = 242 feet MSL; Weather: 63°F, 67% Relative Humidity; SEL = Sound Exposure Level; L_{max} = Maximum (instantaneous) Sound Level; dBA = A-weighted decibel; NC = Engine core revolutions per minute; kts = knots.

Notes: ¹Modeled F-16C with F110-GE-100 engine.; ²Modeled with reference acoustic data for an F-35A (Air Force 2009a); ³Power reduced from afterburner to military power prior to reaching 1,000 feet AGL; ⁴F-16C values reflect gear up conditions.

Air Quality. Under Scenarios 1 and 2, emissions would decrease for all pollutant categories. In contrast, SO_x would increase negligibly in Scenario 3. No scenario would introduce emissions that would deteriorate regional air quality; the area would remain in attainment for all federal and state air quality standards. As an example, Table 11-8 presents the emissions from operations under ACC Scenario 3 which involves the largest number of aircraft and operations.

Table 11-8. Proposed Annual Operational Emissions under ACC Scenario 3 at Shaw AFB

Activity	Pollutants in Tons per Year						
	CO	NO _x	VOCs	SO _x ¹	PM ₁₀	PM _{2.5}	CO ₂ e ²
Aircraft	72.09	200.60	2.47	92.94	6.38	6.19	68,789
Engine Runups	1.44	0.24	0.04	0.36	0.01	0.01	249
AGE ²	19.83	17.68	1.07	4.98	1.61	1.56	4,616
POVs	96.50	4.36	5.61	0.10	0.25	0.25	4,638
Total Annual ACC Scenario 3 Emissions	189.85	222.88	9.18	98.38	8.26	8.01	78,292
Baseline Annual Emissions	834.98	346.18	118.99	97.64	61.63	56.48	126,624
Net Change	-645.13	-123.30	-109.81	0.73	-53.37	-48.47	-48,332
Major Source Threshold	250	250	250	250	250	250	-
GHG Standard	-	-	-	-	-	-	25,000

Notes:

¹CO₂e = (CO₂ * 1) + (CH₄ * 21) + (N₂O * 310), (40 CFR 98, Subpart A, Table A-1) in metric tons per year.

²With the exception of SO_x (which the JSF program office has not determined as of this date) these data reflect F-35A specific AGE equipment.

Safety. Construction and modification would be consistent with established safety protocols and would not increase safety risks. The F-35A is a new type of aircraft; historical trends show that mishap rates of all types decrease the longer an aircraft is operational and as flight crews and maintenance personnel learn more about the aircraft’s capabilities and limitations. The F-35A will have undergone extensive testing prior to the time the beddown would occur. In addition, the F-35A engine is the product of 30 years of engineering, lessons learned from previous single-engine aircraft, and an extensive, rigorous testing program. Overall, the risks of a mishap are not expected to increase substantially.

Biological Resources. Under ACC Scenarios 1, 2, and 3, construction would produce 5.48 acres of surface disturbance. This construction would not impact plants, wildlife, wetlands, or special status species. Noise from aircraft operations would increase under ACC Scenarios 2 and 3, but the wildlife in the area of Shaw AFB have become habituated to it. As such, no impacts to wildlife or threatened and endangered species would occur. Decreased airfield operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. Similarly, more time spent at higher altitudes by the F-35As would reduce potential strikes in altitude zones where birds mostly fly.

Cultural and Traditional Resources. There would be no impacts to National Register-eligible archaeological, architectural, or traditional cultural properties. Letters sent to federally recognized American Indian Tribes initiated government-to-government consultation in January 2010, and consultation is on-going. All consultation will be completed before publication of the Final EIS.

Socioeconomics. ACC Scenario 1 would reduce military and BOS personnel associated with Shaw AFB by 1,320 and decrease military payrolls by \$50 million. ACC Scenario 2 would reduce personnel by 735 and payroll by \$27 million; ACC Scenario 3 by 150 people and \$4 million. All scenarios would expend an estimated \$22 million for the proposed projects. However, the scenario would not impact regional employment, income, or regional

housing market. The Shaw AFB area would likely provide the skilled workers for the temporary construction jobs.

Environmental Justice. Table 11-9 displays the total population, total minority population, percentage minority, total low-income population, and percent low-income for the areas in the vicinity of Shaw AFB affected by noise greater than or equal to 65 dB DNL. As the data demonstrate, the percentage of minority populations affected under baseline conditions already greatly exceeds the state average of 33 percent. This existing issue would be exacerbated under ACC Scenarios 1, 2, and 3. Baseline low-income populations account for 20 percent of the affected population, or 5.7 percent above the state average. All scenarios would add to this existing problem.

Table 11-9. Minority and Low-Income Populations Affected by Noise of 65 dB DNL or Greater at Shaw AFB					
	<i>Total Population</i>	<i>Minority Population</i>	<i>Percent Minority</i>	<i>Low-Income Population</i>	<i>Percent Low-Income</i>
Baseline	2,299	1,078	48	447	20
ACC Scenario 1	1,050	506	48	218	20
ACC Scenario 2	1,808	869	48	367	20
ACC Scenario 3	2,436	1,177	48	489	20

Ground Traffic and Transportation. Despite a negligible, short-term increase in construction traffic, no effects on the Level of Service (LOS) for any portion of the roadway network would be expected. Under all scenarios, traffic would decrease. Baseline personnel levels would decrease under all scenarios and would not affect any LOS thresholds.

Other Resources. The EIS analyzed the potential environmental consequences of implementing ACC Scenario 1, 2, and 3 on three other resources: geology, soils, and water (SH3.5 in the EIS); community facilities and public services (SH3.13); and hazardous materials and waste (SH3.15). No aspect of the beddown scenarios would result in impacts to these resources.



Airspace and Range Use. Figure 11-3 depicts the main overland airspace and range units proposed for use by the F-35As. Data presented in the figure include total annual operations for all aircraft under baseline, ACC Scenario 1, ACC Scenario 2, and ACC Scenario 3. Such operations would fall below baseline levels in ACC Scenario 1, but would increase under ACC Scenarios 2 and 3. The F-35As would also fly more time at higher altitudes than the legacy F-16s, operating 80 percent of the time above 23,000 feet mean sea level (MSL) in comparison to 10 to 30 percent by the F-16s.

The F-35As from Shaw AFB would primarily use the existing Bulldog, Gamecock, Poinsett, and Coastal Townsend airspace units. Dare County and Avon Park would receive limited use. In all airspace units, operations per flying day would decrease and low-altitude overflights would be reduced.

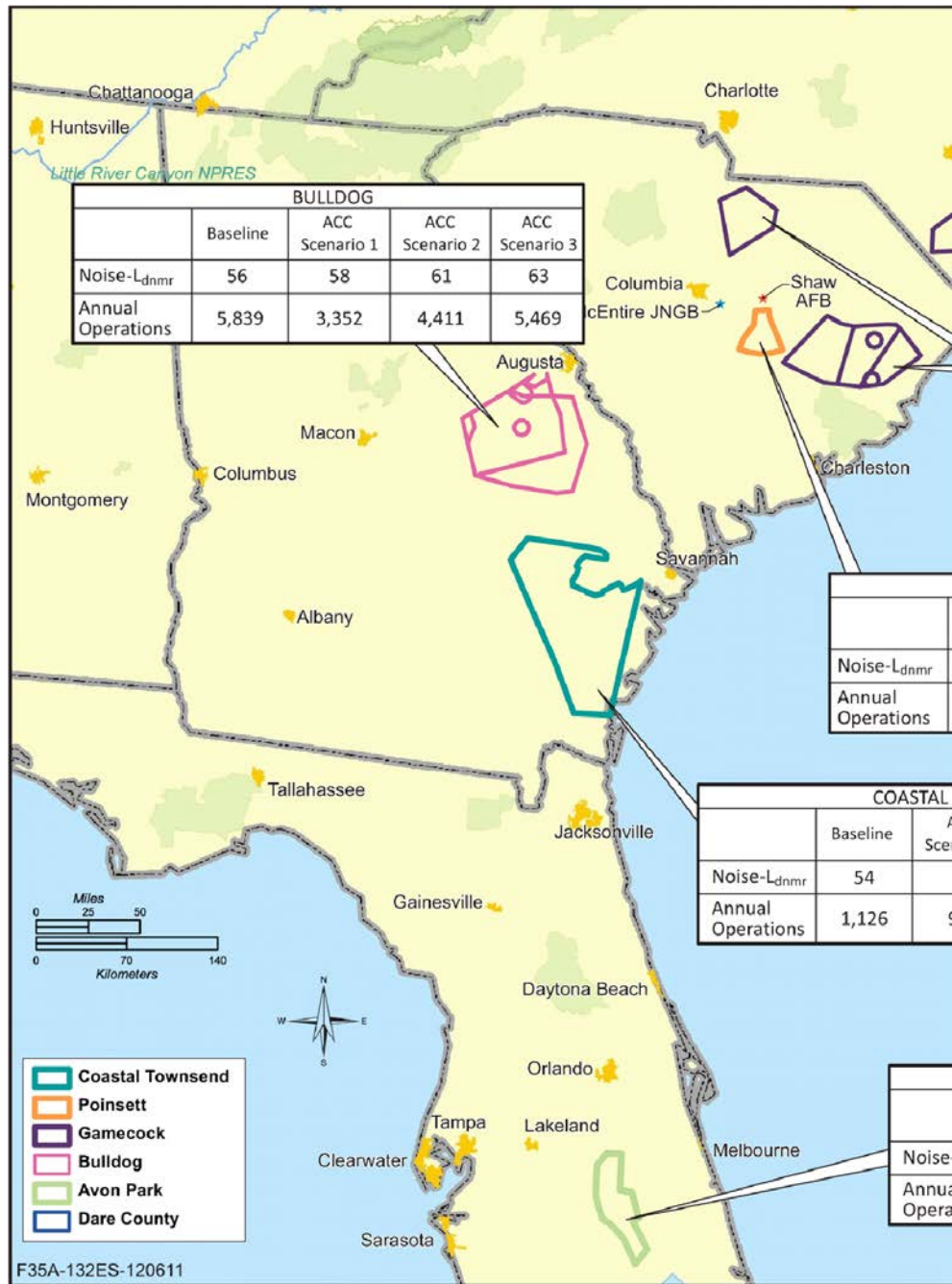
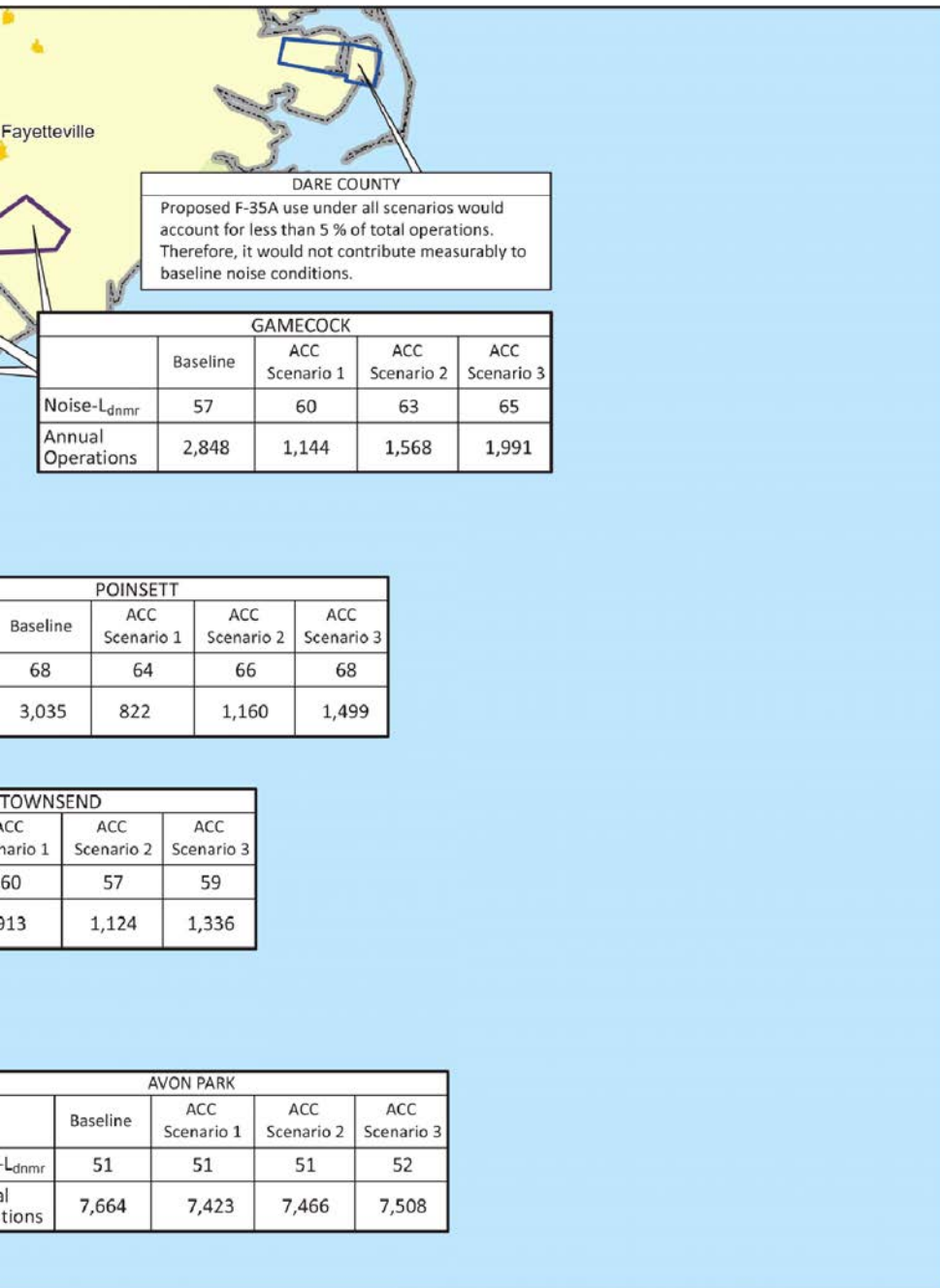


Figure 11-3. Baseline and Proposed Operations and Noise Environment for Airspace Used by Shaw AFB

F-35As from Shaw AFB would also fly in overwater Warning Areas, although to a lesser degree than current use. Required supersonic operations would be conducted only in these Warning Areas, at least 15 nautical miles offshore or above 30,000 feet MSL.

Noise represents the primary effect of F-35A operations in the airspace units and over the ranges. For Bulldog, Coastal Townsend, and Gamecock, subsonic noise levels would increase perceptibly (i.e., 6 to 8 dB) under ACC Scenario 3. None would exceed 65 dB L_{dnmr} , but Gamecock would be subject to 65 dB L_{dnmr} under Scenario 3. Although the Poinsett airspace and associated range would continue to experience noise levels of 68 dB L_{dnmr} , no change from baseline noise levels would occur under any scenario.



Due to the generally high altitudes for F-35A operations, the large size of the airspace units, and the dispersed nature of overflights, operations by the F-35A would not substantially affect land use status, management, or recreation under the airspace units. For similar reasons, no impacts to cultural or natural resources are expected.

In areas under Bulldog, Coastal Townsend, and Gamecock airspace, persons on the ground could perceive an increase in noise if ACC Scenario 3 were implemented. Such increases would likely add to the percentage of the population annoyed by aircraft noise. Several communities underlie this airspace, including Hinesville with a population of more than 30,000. Persons recreating in special land use areas, such as state parks, may consider additional noise especially intrusive. The F-35As would continue to adhere to Federal Aviation Administration regulations for avoidance of communities and structures.

Air quality under the airspace is generally good and without numerous large stationary sources. F-35A operations would not contribute to any deterioration of air quality since more

than 95 percent of the time they would fly above 3,000 feet AGL, the mixing height for emissions.

Disproportionate impacts to minority and low-income populations would occur in Scenario 3 under the Gamecock airspace. Noise would increase to 65 dB L_{dnmr} in that location.

No changes to airspace structure or management would occur with beddown of the F-35As. Use of these long-established airspace units and continued adherence to procedures and regulations would assure safe and efficient use. No conflicts or increased safety risks would be anticipated.

12.0 CUMULATIVE EFFECTS

Cumulative effects can result from the interaction of the proposed action with past, present, and reasonably foreseeable future actions. The goal of this analysis is to determine if such interactions produce greater impacts than would result from the proposed action (i.e., F-35A beddown) alone. For each alternative location, an effort has been made to identify actions that overlap in time and/or location with the beddown. In all cases, the effects of past actions, including aircraft operations, have been incorporated into the analysis of baseline conditions. On-going and future actions that have a potential to interact with the proposed action are included in this cumulative analysis. Assessment of these cumulative effects enables decision-makers to have the most current information available so that they can evaluate the environmental consequences of the beddown of the F-35A aircraft.

All of the six alternative locations consist of active, dynamic military installations. At each, numerous on-going and planned construction and infrastructure projects could occur during the same time period as slated for F-35A construction. These projects range from small renovations to road realignments to major facility construction. In all cases, the analysis demonstrated that none of these on-installation actions would be expected to result in more than negligible impacts individually or cumulatively. All the actions affect very specific, circumscribed areas geographically separated from F-35A renovations, and the magnitude of the actions is minimal. Short duration, temporary increases in localized noise, air emissions, and traffic would occur, but the combined effects would remain well below any standards or regulatory thresholds. For this reason, the following discussion focuses on the potential cumulative effects of actions affecting the airspace associated with each alternative location. McEntire JNGB and Shaw AFB are discussed together since the same cumulative actions apply to both.

12.1 BURLINGTON AGS

Two ongoing projects apply to the airspace—the Condor MOA expansion proposal and construction of wind turbines. The wind turbine projects would not affect airspace management or use in the Condor MOA. Changes to the Condor MOA would also have little cumulative effect when considered with the F-35A beddown at Burlington AGS. Under this proposal, Condor 1 and 2 MOAs would be combined and the floor of the MOA would be lowered. Since F-35A aircraft would fly mostly at altitudes above 23,000 feet MSL, noise levels from the combined actions would be less than 45 dB L_{dnmr} .

12.2 HILL AFB

No cumulative airspace actions would apply to Hill AFB at this time.

12.3 JACKSONVILLE AGS

No cumulative airspace actions would apply to Jacksonville AGS at this time.

12.4 McENTIRE JNGB AND SHAW AFB

One airspace proposal, designated the Airspace Training Initiative, is in process. This on-going initiative involves numerous modifications to the Bulldog MOAs, and could permit the F-35As from McEntire JNGB or Shaw AFB (or both) to use the airspace more extensively than proposed in this beddown EIS. Should it be determined that the F-35A needed to use this modified airspace differently at some point in the future, separate environmental analysis would be required.

Since McEntire JNGB and Shaw AFB are within close proximity to one another, they use similar airspace. Beddown of the F-35A at both locations could alter use of the airspace. It is possible that under the F-35A basing, McEntire JNGB and Shaw AFB could receive up to 72 F-35A aircraft. Combined operations from both installations would affect airspace both installations currently use (Poinsett, Bulldog, Coastal Townsend, and Gamecock), resulting in cumulative noise levels from 64 dB L_{dnmr} in Bulldog to 71 dB L_{dnmr} in Poinsett. These cumulative noise levels would represent substantial and perceptible increase of 3 to 9 dB. While no land status would change and few communities would be affected (most of Poinsett is a training range with no communities), these increases in noise would generate notably higher degrees of annoyance among underlying populations. Minorities and low-income populations would not be disproportionately affected by noise in the areas under Poinsett or Coastal Townsend. Since small, dispersed minority and low income populations with proportions above the state average exist under Gamecock and noise levels would increase 9 dB to 66 L_{dnmr} , the potential exists for disproportionate impacts to minority and low-income populations under the Gamecock airspace.

12.5 MOUNTAIN HOME AFB

Mountain Home AFB is an active military installation that undergoes continual changes in mission and in training requirements. A series of aircraft beddown and other decision over the past decade created the current operational and environmental conditions for Mountain Home AFB and its associated training airspace. In addition, a total of 34 proposed construction projects independent of the F-35A beddown are ongoing or planned (such as the USAF-led Royal Saudi Air Force (RSAF) F-15SA basing) at Mountain Home AFB. Other on-going maintenance and repair activities are also likely to occur at the base during this period. None of these actions would be expected to result in more than negligible impacts individually or cumulatively since they affect very specific, circumscribed areas geographically separated from F-35A renovations. Short duration, temporary increases in localized noise, air emissions, and traffic would occur, but the combined effects would remain well below any standards or regulatory thresholds.

One reasonably foreseeable action, Air Education and Training Command's (AETC) F-35A Training proposal, could cumulatively interact with the proposed action if the Boise Air Terminal were selected for beddown of up to 72 F-35A aircraft. Under the AETC proposal, the F-35As from the Idaho ANG could conduct up to 21,272 annual operations at Mountain Home AFB, particularly pattern work and low approaches and departures. Combined with any ACC scenario under the proposed action, these activities would substantially increase operations at the base. When combined with ACC Scenario 3 (32,001 airfield operations), operations at the airfield would increase by 53,273 operations or 163 percent over the no action. Addition of this many operations would expand the area affected by 65 dB DNL or greater by 4,842 acres. While such an expansion would occur, the zoning around the base has precluded residential development and establishment of schools and hospitals, thereby limiting the potential for additive effects from the airfield noise.

In the airspace, the maximum combined subsonic noise levels in the Jarbidge and Owyhee airspace would be 67 and 68 L_{dnmr} , respectively. All other noise levels would be much less than 65 L_{dnmr} (from 45 to 53 L_{dnmr}). The noise increase of 3 to 4 dB would be perceptible under Jarbidge North and Owyhee North, as would the 9 dB increase under the Saddle MOA. However, few people would be affected by the increase in noise as population is low in these areas. Increase in noise would not affect the Duck Valley Indian Reservation under the Owyhee North MOA as aircraft do not fly within 5 miles of Owyhee, NV and per the 1996 settlement agreement, Mountain Home AFB agreed to fly no lower than 15,000 feet AGL over the reservation barring national security

contingencies. Cumulative supersonic noise levels from the use of the airspace would increase 5 dB CDNL over baseline in the Owyhee North airspace and 3 to 4 dB CDNL in Jarbidge North. Sonic booms would increase, on average, by 59 booms per month, or about 134 percent over no action. In Owyhee North, sonic booms would, on average, increase by 55 per month or about 130 percent over no action. These changes in the number of booms would be perceptible and likely cause annoyance in people underlying the airspace. No supersonic operations are permitted over the Duck Valley Indian Reservation at any time; therefore, there would be no increase in sonic booms with both proposals.

If both the F-35A operational beddown and the RSAF basing actions were to occur, there would be substantial increases in the number of aircraft based at Mountain Home AFB, in airfield and airspace operations, and in personnel and construction. Issues related to adequate ramp space for aircraft and security along the flightline could occur if both actions were to take place. Maintenance of aircraft and disposal of hazardous materials and waste would occur in accordance with existing plans and procedures; therefore there would be no impacts due to an increase in aircraft at the base. Construction for both actions would occur in previously disturbed areas and no adverse impacts would occur to soils, water, hazardous waste management, biological or cultural resources. Neither action separately or together would negatively impact on-base or off-base housing, or community and infrastructure.

For subsonic noise, the maximum combined noise levels in the Jarbidge North and Owyhee North airspace would be 68 L_{dnmr} . All other noise levels would be less than 65 L_{dnmr} (from 46 to 48 L_{dnmr}). Supersonic noise levels in Jarbidge North and Owyhee North would increase by 4 to 5 dB. In Jarbidge North under ACC Scenario 3 combined with the RSAF proposal, sonic booms would increase, on average, by 40 booms per month, or about 91 percent over no action. In Owyhee North, booms would, on average, increase by 39 per month or about 87 percent over no action. As with subsonic noise, the increase would be perceptible, however, few people would be affected. No change would occur to noise on the Duck Valley Indian Reservation or disproportionately affect other minority or low-income populations.

With the addition of all three actions--operational F-35As at Mountain Home AFB (up to 72 aircraft), training F-35A aircraft from the Boise AGS (72 aircraft), and 18 RSAF F-15SA aircraft, total training operations by the Air Force would increase by approximately 42,000 (increasing 126 percent compared to the no action). The maximum combined subsonic noise levels in Jarbidge North and Owyhee North would be 69 dB L_{dnmr} and 68 dB L_{dnmr} , respectively. Cumulative noise levels from supersonic activity in the airspace would increase by 4 dB CDNL in Owyhee North and by 5 dB CDNL in Jarbidge North. Sonic booms per day would increase by 167 percent beneath Owyhee North MOA (approximately 3 per day) and by 180 percent (3.6 per day) in Jarbidge North. These changes in the number of booms would be perceptible and likely cause annoyance in people underlying the airspace. No supersonic operations are permitted over the Duck Valley Indian Reservation at any time; therefore, there would be no increase in sonic booms or supersonic noise. Overall, these changes in the noise levels would be perceptible. Coordination with affected communities and jurisdictions on potential avoidance procedures could provide some reduction in impacts for selected locations but would not tend to reduce noise to quiet levels. Capacity of various MOAs to support combined operations safely may require further consideration. Higher levels of activity could add to the workload of air traffic controllers and generate a need for additional airspace management personnel. Therefore, cumulative impacts from all actions would be

adverse but would not exceed significance thresholds for safety, land use, environmental justice or biological or cultural resources.

13.0 SIMPLIFIED COMPARISON OF ENVIRONMENTAL CONSEQUENCES BY ALTERNATIVE AND SCENARIO

This section presents a comparative analysis of the alternative locations and aircraft beddown scenarios presented in the Draft EIS. The decisions to be made associated with the EIS are:

- Where to base operational F-35A aircraft.
- How many aircraft to be beddown at the selected alternative location or locations.
- What actions could be implemented to avoid or reduce, to the extent practicable, significant environmental impacts?

In addition to these decisions regarding the F-35A operational aircraft, the on-going dynamics of an active military base occur at each alternative location. The most noticeable of these activities will be the retirement and/or reassignment of legacy aircraft.

Environmental consequences for each of the six operational basing alternatives are summarized in this section. In each case, the baseline conditions are presented first, followed by the estimated environmental effects for the specific aircraft scenario. Each beddown scenario and each alternative basing location will have different environmental results, as described in the Draft EIS and summarized in this Executive Summary. This section presents a color chart (Figure 13-1) and a table (Table 13-1) that summarizes the consequences for each resource. This table provides the basis for assignment of the colors for each alternative location and relevant training aircraft scenarios. The colors represent the following:

- Green – Analysis demonstrates some beneficial or adverse environmental consequences, with the overall result being neither beneficial nor adverse.
- Tan – Analysis identifies potential adverse environmental consequences, burdens on the resource, or issues with the resource.
- Yellow – Analysis identified unavoidable adverse environmental impacts.

Split boxes represent a designation combining two categories presented above. Some of the impacts would fall into one category, with others falling in a different category. Therefore, it is not certain what the overall impact to the resource would be as a result of implementing the proposed action. Each color on the chart is derived from analysis presented in the Draft EIS.

NEPA requires focused analyses on the areas and resources, such as wildlife or socioeconomics which are potentially affected by the proposed action or an alternative. Because the F-35A is a new aircraft that is under development, some data normally used to predict noise, air quality, and safety conditions cannot be obtained at this time. The data used in this Draft EIS represent the best available information on the aircraft components, engine, flight characteristics, training airspace, and other requirements. For the beddown alternatives and scenarios identified for this proposed action, such summaries and comparisons are presented in Table 13-1. Comparing and differentiating among alternatives comprise a fundamental premise of the NEPA process.

EXECUTIVE SUMMARY

Alternative	Airspace	Noise	Air Quality	Safety	Geology, Soils, and Water	Terrestrial Communities	Wetlands	T&E Species	Cultural and Traditional Resources ¹	Land Use ²	Socioeconomics	Environmental Justice	Community Facilities & Public Services	Transportation	Hazardous Materials and Waste
Burlington AGS Base															
Baseline															
18 Aircraft															
24 Aircraft															
Burlington AGS Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
18 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
Hill AFB Base															
Baseline															
24 Aircraft															
48 Aircraft															
72 Aircraft															
Hill AFB Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
48 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
72 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
Jacksonville AGS Base															
Baseline															
18 Aircraft															
24 Aircraft															
Jacksonville AGS Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
18 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
McEntire JNGB Base															
Baseline															
18 Aircraft															
24 Aircraft															
McEntire JNGB Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
18 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
Mountain Home AFB Base															
Baseline															
24 Aircraft															
48 Aircraft															
72 Aircraft															
Mountain Home AFB Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
48 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
72 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
Shaw AFB Base															
Baseline															
24 Aircraft															
48 Aircraft															
72 Aircraft															
Shaw AFB Airspace															
Baseline					N/A		N/A				N/A		N/A	N/A	N/A
24 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
48 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A
72 Aircraft					N/A		N/A				N/A		N/A	N/A	N/A

Analysis demonstrates some beneficial or adverse environmental consequences, with the overall result being neither beneficial nor adverse.

Analysis identifies potential adverse environmental consequences, burdens on the resource, or issues with the resource.

Analysis has identified unavoidable adverse environmental impact.

Split boxes represent a designation combining two categories presented above. Some of the impacts would fall into one category, with others falling in a different category. Therefore, it is not certain what the overall impact to the resource would be as a result of implementing the proposed action. Each color on the chart is derived from analysis presented in the Draft EIS.

Notes:

- (1) Split tan/green designations mean that American Indian consultation is on-going and issues may be identified.
- (2) Noise drives the yellow or tan coding for bases due to land use incompatibility.

Figure 13-1. Simplified Comparison of Environmental Consequences of Beddown Alternatives and Scenarios

Table 13-1. Comparative Summary of Environmental Consequences

Location in EIS:	Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
Airspace Management and Use	<p>BR3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 2.3 percent decrease in total annual airfield operations under Scenario 1 and 0.7 percent decrease under Scenario 2. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under either scenario. 7 percent decrease in total operations under Scenario 1 and 19 percent increase under Scenario 2. No adverse impacts on airspace use and management. 	<p>HL3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 50 percent decrease in total annual airfield operations under Scenario 1; 27.2 percent decrease under Scenario 2; and 4.4 percent decrease under Scenario 3. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under any scenarios. 61 percent decrease in total operations under Scenario 1; 37 percent decrease under Scenario 2; and 13 percent decrease for Scenario 3. No adverse impacts on airspace use and management. 	<p>JX3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 1.4 percent decrease in total annual operations under Scenario 1 and 0.06 percent increase under Scenario 2. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under any scenarios. 4 percent increase in total operations under Scenario 1 and 10 percent increase under Scenario 2. No adverse impacts on airspace use and management. 	<p>MC3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 21 percent decrease in total annual airfield operations under Scenario 1 and 15.2 percent decrease under Scenario 2. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under any scenarios. 7 percent decrease in total operations under Scenario 1 and 6 percent decrease under Scenario 2. No adverse impacts on airspace use and management. 	<p>MH3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 32.7 percent increase in total annual airfield operations under Scenario 1; 65.4 percent increase under Scenario 2; and 98.1 percent increase under Scenario 3. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under any scenarios. 13 percent increase in total operations under Scenario 1; 26 percent increase under Scenario 2; and 39 percent increase under Scenario 3. No adverse impacts on airspace use and management. 	<p>SH3.1</p> <p>Base:</p> <ul style="list-style-type: none"> No adverse impacts to airspace management and use within the local air traffic environment. 70.9 percent decrease in total annual airfield operations under Scenario 1; 48.9 percent decrease under Scenario 2; and 27.1 percent decrease under Scenario 3. <p>Airspace:</p> <ul style="list-style-type: none"> No change to current configuration of airspace under any scenarios. 30 percent decrease in total operations under Scenario 1; 21 percent increase under Scenario 2; and 12 percent decrease under Scenario 3. No adverse impacts on airspace use and management.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

Location in EIS:	Burlington AGS	Hill AFB	Jacksonville AGS	McEntire JNGB	Mountain Home AFB	Shaw AFB
Noise	<p>BR3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: +289 Population: +1,820 Households: +938 Representative Receptors: +6 Scenario 2: Affected by 65 dB DNL or greater: Acres: +672 Population: +2,863 Households: +1,366 Representative Receptors: +7 <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: Perceptible increase in 2 airspace units. Supersonic: Supersonic events would not affect populations, communities, special land uses, or other resources. 	<p>HL3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: -1,166 Population: -2,552 Households: -874 Representative Receptors: -9 Scenario 2: Affected by 65 dB DNL or greater: Acres: -490 Population: -790 Households: -275 Representative Receptors: -2 <p>Scenario 3: Affected by 65 dB DNL or greater: Acres: +183 Population: +1,103 Households: +360 Representative Receptors: no change</p> <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: Perceptible increase in 3 airspace units. Supersonic: Sonic booms per month decrease by 194, 161, and 141 in Scenarios 1, 2, and 3, respectively. 	<p>JX3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: -1,512 Population: -39 Households: -12 Representative Receptors: -2 Scenario 2: Affected by 65 dB DNL or greater: Acres: -1,057 Population: -10 Households: -3 Representative Receptors: -2 <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: Perceptible increase in 1 airspace unit. Supersonic: Supersonic events would not affect populations, communities, special land uses, or other resources. 	<p>MC3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: -2,728 Population: -370 Households: -131 Representative Receptors: -6 Scenario 2: Affected by 65 dB DNL or greater: Acres: -2,229 Population: -311 Households: -110 Representative Receptors: -3 <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: Perceptible increase in 1 airspace unit. Supersonic: Supersonic events would not affect populations, communities, special land uses, or other resources. 	<p>IMH3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: +1,005 Population: 0 Households: 0 Representative Receptors: +1 Scenario 2: Affected by 65 dB DNL or greater: Acres: +2,086 Population: 0 Households: 0 Representative Receptors: +1 <p>Scenario 3: Affected by 65 dB DNL or greater: Acres: +3,455 Population: 0 Households: 0 Representative Receptors: +1</p> <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: No perceptible increases in airspace units. Supersonic: Sonic booms per month increase by 9, 15, and 22 for Owyhee North under Scenarios 1, 2, and 3. Sonic booms increase by 7, 13, and 22 for Jarbidge North in Scenarios 1, 2, and 3, respectively. 	<p>SH3.2</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1: Affected by 65 dB DNL or greater: Acres: -2,094 Population: -1,248 Households: -466 Representative Receptors: -9 Scenario 2: Affected by 65 dB DNL or greater: Acres: +608 Population: -491 Households: -179 Representative Receptors: -4 <p>Scenario 3: Affected by 65 dB DNL or greater: Acres: +3,151 Population: +146 Households: +58 Representative Receptors: -2</p> <p>Airspace:</p> <ul style="list-style-type: none"> Subsonic: Perceptible increase in 3 airspace units. Supersonic: Supersonic events would not affect populations, communities, special land uses, or other resources.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

<p>Location in EIS: Air Quality</p>	<p>Burlington AGS ACC Scenario 1 = 18 F-35As ACC Scenario 2 = 24 F-35As ACC Scenario 3 = 72 F-35As Replace 18 F-16s</p> <p>BR3.3</p> <p>Base:</p> <ul style="list-style-type: none"> Under both scenarios, emissions would not be introduced that would exceed threshold levels or would substantially deteriorate regional air quality. Area is in attainment for all criteria pollutants; no conformity determination required. Regional emissions of CO₂e would incrementally decrease under Scenario 1 and increase under Scenario 2. <p>Airspace:</p> <ul style="list-style-type: none"> Under both scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height. 	<p>Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s</p> <p>HL3.3</p> <p>Base:</p> <ul style="list-style-type: none"> For all scenarios, emissions would not reach or exceed established <i>de minimis</i> thresholds for criteria pollutants currently in nonattainment or maintenance; therefore, no conformity determination required. Regional emissions of CO₂e with construction and operations activities from all three scenarios would decrease. <p>Airspace:</p> <ul style="list-style-type: none"> Under all scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height. 	<p>Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs</p> <p>JX3.3</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1 and 2, emissions would decrease when compared to baseline conditions. Scenarios 1 and 2 would not introduce emissions that would substantially deteriorate regional air quality. Area is in attainment for all criteria pollutants; no conformity determination required. Regional emissions of CO₂e with construction and operations activities from all three scenarios would decrease. <p>Airspace:</p> <ul style="list-style-type: none"> Under both scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height. 	<p>McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s</p> <p>Mc3.3</p> <p>Base:</p> <ul style="list-style-type: none"> Under both scenarios, emissions would decrease and would not introduce emissions that would exceed threshold levels or would substantially deteriorate regional air quality. Area is in attainment for all criteria pollutants; no conformity determination required. Regional emissions CO₂e would incrementally decrease under both scenarios. <p>Airspace:</p> <ul style="list-style-type: none"> Under both scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height. 	<p>Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain</p> <p>MH3.3</p> <p>Base:</p> <ul style="list-style-type: none"> Under all scenarios, emissions would increase when compared to baseline conditions; however, these emissions would not exceed threshold levels and would not degrade regional air quality. Area is in attainment for all criteria pollutants; no conformity determination required. Regional emissions of CO₂e would incrementally increase under all scenarios. <p>Airspace:</p> <ul style="list-style-type: none"> Under all scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height. 	<p>Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s</p> <p>SH3.3</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1 and 2, emissions would decrease when compared to baseline conditions. For Scenario 3, all emissions except for SO_x would decrease; however, these emissions would not exceed threshold levels and would not degrade regional air quality. Area is in attainment for all criteria pollutants; no conformity determination required. Regional emissions of CO₂ and other GHGs would incrementally decrease under all scenarios. <p>Airspace:</p> <ul style="list-style-type: none"> Under all scenarios, emissions within the training airspace would be negligible because over 95 percent of the operations would occur well above the mixing height.
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Table 13-1. Comparative Summary of Environmental Consequences (con't)

<p>Location in EIS: Aircraft Safety</p>	<p>Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s</p> <p>BR-3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total annual airfield operations for based fighter aircraft would decrease by 2.3 percent and 0.7 percent under Scenarios 1 and 2, respectively, with commensurate decrease in mishap potential. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. No increase in flare use. Probability of flare debris strike negligible (0.0021/year). Potential decrease of bird/wildlife-aircraft strike hazards and aircraft mishaps below baseline levels. 	<p>Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s</p> <p>HL3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total annual airfield operations for based fighter aircraft would decrease by 50.1, 27.2, and 4.4 percent under Scenarios 1, 2, and 3, respectively, with commensurate decrease in mishap potential. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. No increase in flare use. Probability of flare debris strike negligible (0.00044/year). Potential decrease of bird/wildlife-aircraft strike hazards and aircraft mishaps below baseline levels. 	<p>Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs</p> <p>JX3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total annual airfield operations for based fighter aircraft would decrease by 1.4 percent under Scenario 1 and increase 0.06 percent for Scenario 2, with relatively no change. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. No increase in flare use. Probability of flare debris strike is zero. No anticipated changes to bird/wildlife-aircraft strike hazards and aircraft mishaps below baseline levels. 	<p>McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s</p> <p>Mc3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total annual airfield operations for based fighter aircraft would decrease by 21.0 and 15.2 percent under Scenarios 1 and 2, respectively, with commensurate decrease in mishap potential. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. No increase in flare use. Probability of flare debris strike negligible (0.0011/year). Potential decrease of bird/wildlife-aircraft strike hazards and aircraft mishaps below baseline levels. 	<p>Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain</p> <p>MH3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total airfield operations would increase by 32.7, 65.4, and 98.1 percent under Scenarios 1, 2, and 3, respectively, with a commensurate increase in the safety risk to aircrews and personnel due to the increased accident and mishap potential. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. Because no replacement of aircraft, minor increase in use of flares with additional aircraft. Probability of flare debris strike negligible (0.00035/year). Potential increase to bird/wildlife-aircraft strike hazards and aircraft mishaps above baseline levels. 	<p>Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s</p> <p>SH3.4</p> <p>Base:</p> <ul style="list-style-type: none"> Total annual airfield operations for based fighter aircraft would decrease by 70.9, 48.9, and 27.1 percent under Scenarios 1, 2, and 3, respectively, with commensurate decrease in mishap potential. <p>Airspace:</p> <ul style="list-style-type: none"> All current fire risk management procedures would remain unaffected due to the F-35A basing. No increase in flare use. Probability of flare debris strike negligible (0.0016/year). Potential decrease of bird/wildlife-aircraft strike hazards and aircraft mishaps below baseline levels.
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Table 13-1. Comparative Summary of Environmental Consequences (con't)

	Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	McEntire JINGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
Location in EIS: Geology, Soils, and Water	BR3.5	HL3.5	JX3.5	Mc3.5	MH3.5	SH3.5
	<p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1 and 2, there would be negligible surface disturbance and no increase in impervious surfaces. For all scenarios, construction would take place internally within existing facilities and geology, topography, soils, surface water, groundwater, and floodplains would not be adversely impacted. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Scenario 1: total surface disturbance – 3.50 acres, total new impervious surfaces – 0.3 acres; Scenario 2: total surface disturbance – 4.27 acres, total new impervious surfaces – 0.5 acres; Scenario 3: total surface disturbance – 5.25 acres, total new impervious surfaces – 0.68 acres. Construction would occur on areas of the base that have been previously disturbed. No adverse impacts to geology, topography, soils, surface water, groundwater, and floodplains. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1 and 2, there would be negligible surface disturbance and no increase in impervious surfaces. Stormwater impacts to surface water would be minimized with best management practices. No adverse impacts to geology, topography, soils, surface water, groundwater, and floodplains. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Under both scenarios 0.76 acres would be disturbed and 0.06 acre of new impervious surface would be added. Stormwater impacts to surface water would be minimized with best management practices. No adverse impacts to geology, topography, soils, surface water, groundwater, and floodplains. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Scenario 1: total surface disturbance = 3.17 acres, total new impervious surfaces = 0.83 acres; Scenario 2: total surface disturbance = 8.98 acres, total new impervious surfaces = 2.63 acres; Scenario 3: total surface disturbance = 11.39 acres, total new impervious surfaces = 2.81 acres Stormwater impacts to surface water would be managed with best management practices. No adverse impacts to geology, topography, soils, surface water, groundwater, and floodplains. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Under all scenarios there would be 5.48 acres of surface disturbance and 2.61 acres of new impervious surfaces. Stormwater impacts to surface water would be managed with best management practices. No adverse impacts to geology, topography, soils, surface water, groundwater, and floodplains. <p>Airspace:</p> <ul style="list-style-type: none"> Not Applicable.
Terrestrial Communities	<p>Base:</p> <ul style="list-style-type: none"> No impacts to terrestrial vegetation or wildlife habitat under either scenario. Decreased operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife from changes in airspace operations would be minimal under both scenarios. 	<p>Base:</p> <ul style="list-style-type: none"> No impacts to terrestrial vegetation or wildlife from construction under all scenarios. Decreased operations would result in a decreased opportunity for bird/wildlife-aircraft strikes to occur. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife from supersonic operations would be minimal under all scenarios. 	<p>Base:</p> <ul style="list-style-type: none"> Impacts to terrestrial vegetation would be minor. Decreased operations would result in a decreased opportunity for bird/wildlife-aircraft strikes. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife from proposed changes in subsonic and supersonic operations would be minimal. No supersonic operations over land. 	<p>Base:</p> <ul style="list-style-type: none"> Impacts to terrestrial vegetation would be minor. Decreased operations would result in a decreased opportunity for bird/wildlife-aircraft strikes. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife from proposed changes in subsonic and supersonic operations would be minimal. No supersonic operations over land. 	<p>Base:</p> <ul style="list-style-type: none"> No impacts to terrestrial vegetation. Follow BASH plan to reduce possibility of bird/wildlife-aircraft strikes. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife from proposed changes in subsonic and supersonic operations would be minimal. 	<p>Base:</p> <ul style="list-style-type: none"> Impacts to terrestrial vegetation would be minor. Decreased operations would result in a decreased opportunity for bird/wildlife-aircraft strikes. <p>Airspace:</p> <ul style="list-style-type: none"> Impacts to wildlife would be minimal. No supersonic operations over land.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

	<i>Burlington AGS</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	<i>Hill AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	<i>Jacksonville AGS</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	<i>McEntire JNGB</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	<i>Mountain Home AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	<i>Shaw AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
Location in EIS: Wetland/ Freshwater Aquatic Communities	BR3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.	HL3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.	JX3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.	Mc3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.	MH3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.	SH3.7 <u>Base:</u> • No impacts to wetlands and other freshwater communities on the installation under all scenarios. <u>Airspace:</u> • Not applicable.
Location in EIS: Special Status Species/ Communities	BR3.8 <u>Base:</u> • No impacts to threatened and endangered species or special status communities due to construction activity. <u>Airspace:</u> • Under either scenario, impacts to listed threatened, endangered, or special status species would be minimal due to changes in airspace operations.	HL3.8 <u>Base:</u> No impacts to threatened and endangered species or special status communities due to construction activity. <u>Airspace:</u> • Under any of the scenarios, impacts to the yellow-billed cuckoo and the greater sage-grouse would be minimal due to the proposed changes in subsonic and supersonic operations.	JX3.8 <u>Base:</u> No impacts to threatened and endangered species or special status communities due to construction activity. <u>Airspace:</u> • Under either scenario, impacts to listed threatened, endangered, or special status species would be minimal due to changes in airspace operations.	Mc3.8 <u>Base:</u> No impacts to threatened and endangered species or special status communities due to construction activity. <u>Airspace:</u> • Under either scenario, impacts to listed threatened, endangered, or special status species would be minimal due to changes in airspace operations.	MH3.8 <u>Base:</u> • No impacts to threatened and endangered species or special status communities due to construction activity. Noise from proposed construction and operations is not expected to affect the burrowing owl and long-billed curlew. <u>Airspace:</u> • Under any of the scenarios, impacts to the yellow-billed cuckoo, Columbia spotted frog, and the greater sage-grouse would be minimal due to changes in airspace operations.	SH3.8 <u>Base:</u> • No impacts to threatened and endangered species or special status communities due to construction activity. <u>Airspace:</u> • Under any of the scenarios, impacts to listed threatened, endangered, or special status species would be minimal due to changes in airspace operations.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

Location in EIS: Cultural and Traditional Resources	Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
	<p>BR3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological, architectural, or traditional historic properties under either scenario. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological, architectural, or traditional historic properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January and November 2010. Consultation with American Indian Tribes is on-going. 	<p>HL3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological, architectural, or traditional historic properties under all scenarios. Building 5 is eligible for listing on the NRHP; alterations and upgrades under Scenarios 2 and 3 would not affect the building's eligibility. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological, architectural, or traditional historic properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January 2010 and met with tribes in August and November 2010. Consultation with American Indian Tribes is on-going. 	<p>JX3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological, architectural, or traditional historic properties under either scenario. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological resources, architectural resources, or traditional properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January and December 2010. Consultation with American Indian Tribes is on-going. 	<p>Mc3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological or traditional historic properties under either scenario. Building 243 has not been evaluated for NRHP-eligibility but proposed electrical upgrades would not likely affect the building's NHPA eligibility. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological resources, architectural resources, or traditional properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January and December 2010. Consultation with American Indian Tribes is on-going. 	<p>MH3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological, architectural, or traditional historic properties under all scenarios. Under Scenarios 2 and 3, Building 211 and four hangars are eligible for listing on the NRHP; alterations and upgrades would not alter the characteristics that make them NRHP-eligible. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological resources, architectural resources, or traditional properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January 2010 and January 2011. Consultation with American Indian Tribes is on-going. 	<p>SH3.9</p> <p>Base:</p> <ul style="list-style-type: none"> No impacts to archaeological, architectural, or traditional historic properties under all scenarios. <p>Airspace:</p> <ul style="list-style-type: none"> No adverse impacts would result to NRHP-eligible or listed archaeological resources, architectural resources, or traditional properties. <p>American Indian:</p> <ul style="list-style-type: none"> Letters sent to federally recognized American Indian Tribes initiating government-to-government consultation in January 2010 and January 2011. Consultation with American Indian Tribes is on-going.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

Location in EIS: Land Use	Burlington AGS ACC Scenario 1 = 18 F-35As ACC Scenario 2 = 24 F-35As Replace 18 F-16s	Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
Location in EIS: Land Use	BR3.10	HL3.10	JX3.10	Mc3.10	MH3.10	SH3.10
	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Increase 14 percent Residential: Increase 52 percent Scenario 2 Overall: Increase 34 percent Residential: Increase 80 percent</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses. 	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Decrease 50 percent Residential: Decrease 56 percent Scenario 2 Overall: Decrease 21 percent Residential: Decrease 24 percent Scenario 3 Overall: Increase 8 percent Residential: Increase 7 percent</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses. 	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Decrease 47 percent Residential: Decrease 92 percent Scenario 2 Overall: Decrease 33 percent Residential: Decrease 71 percent</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses. 	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Increase 7 percent Residential: No change Scenario 2 Overall: Increase 15 percent Residential: No change Scenario 3 Overall: Increase 25 percent Residential: No change</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses. 	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Decrease 41 percent Residential: Decrease 86 percent Scenario 2 Overall: Increase 12 percent Residential: Decrease 53 percent Scenario 3 Overall: Increase 62 percent Residential: Decrease 4 percent</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses. 	<p>Base:</p> <ul style="list-style-type: none"> No change to the existing airfield-related APZs and Clear Zones. Land area affected by noise levels equal to or greater than 65 dB DNL: <p><u>Scenario 1</u> Overall: Decrease 41 percent Residential: Decrease 86 percent Scenario 2 Overall: Increase 12 percent Residential: Decrease 53 percent Scenario 3 Overall: Increase 62 percent Residential: Decrease 4 percent</p> <p>Airspace:</p> <ul style="list-style-type: none"> No change to general land use patterns, land ownership. No change to management of lands or special use land areas beneath the airspace. No impact to community land uses.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

	<i>Burlington AGS</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	<i>Hill AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	<i>Jacksonville AGS</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	<i>McEntire JNGB</i> ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	<i>Mountain Home AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	<i>Shaw AFB</i> ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
<p>Location in EIS:</p> <p>Socioeconomics</p>	<p>BR3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – no net change in military personnel numbers. No change to change to military payrolls; no impacts to regional employment, income, or regional housing market. Scenario 2 – increase of 266 military personnel; annual increase in salaries of approximately \$3.4 million. Scenarios 1 and 2 – \$2.4 million in proposed construction expenditures and modification. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>HL3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – decrease of 1,157 military personnel; annual decrease of \$25.9 million in salaries. Scenario 2 – decrease of 572 military personnel; annual decrease of approximately \$12.9 million in salaries. Scenario 3 – increase of 13 military personnel; annual increase of approximately \$0.3 million in salaries. Scenario 1 – \$18.1 million, Scenario 2 – \$30.4 million, and Scenario 3 – \$40.8 million in proposed construction expenditures. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>JX3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – no net change in military personnel numbers. No change to military payrolls; no impacts to regional employment, income, or regional housing market. Scenario 2 – increase of 249 military personnel; annual increase of approximately \$3.4 million in salaries. Scenarios 1 and 2 – \$0.4 million in proposed modification expenditures. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Mc3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – decrease of 371 military personnel; decrease of approximately \$4.5 million in salaries. Scenario 2 – no net change in military personnel numbers. No change to military payrolls; no impacts to regional employment, income, or regional housing market. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>MH3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – increase of 585 military personnel; annual increase of approximately \$22.7 million in salaries. Estimated increase of 240 jobs; estimated \$10.8 million in labor income. Scenario 2 – increase of 1,170 military personnel; annual increase of approximately \$45.3 million in salaries. Estimated increase of 479 jobs; estimated \$21.6 million in labor income. Scenario 3 – increase of 1,755 military personnel; annual increase of approximately \$68.0 million in salaries. Scenario 1 = \$16.9 million, Scenario 2 = \$36.4 million, and Scenario 3 = \$51.5 million in proposed construction expenditures. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>SH3.11</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 – decrease of 1,320 military personnel; annual decrease of approximately \$50.0 million in salaries. Scenario 2 – decrease of 735 military personnel; annual decrease of approximately \$27.1 million in salaries. Scenario 3 – decrease of 150 military personnel; annual decrease of approximately \$4.3 million in salaries. Scenario 1 – \$22.2 million, Scenario 2 – \$22.3 million, and Scenario 3 – \$22.5 million in proposed construction expenditures. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

<p>Location in EIS: Environmental Justice</p>	<p>Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s</p> <p>BR3.12</p> <p>Base:</p> <ul style="list-style-type: none"> For both scenarios, existing disproportionate effects on minority and low-income individuals would continue. <p>Airspace:</p> <ul style="list-style-type: none"> No disproportionate or adverse impacts related to environmental justice are anticipated, nor would there be any special health or safety risks to children. 	<p>Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s</p> <p>HL3.12</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1, 2, or 3, no disproportionate effects on minority and low income individuals would occur. <p>Airspace:</p> <ul style="list-style-type: none"> No disproportionate or adverse impacts related to environmental justice are anticipated, nor would there be any special health or safety risks to children. 	<p>Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs</p> <p>JX3.12</p> <p>Base:</p> <ul style="list-style-type: none"> For both scenarios, no disproportionate effects on minority populations and low income individuals would occur. <p>Airspace:</p> <ul style="list-style-type: none"> No disproportionate or adverse impacts related to environmental justice are anticipated, nor would there be any special health or safety risks to children. 	<p>McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s</p> <p>Mc3.12</p> <p>Base:</p> <ul style="list-style-type: none"> For both scenarios, existing disproportionate effects on minority and low-income individuals would continue. <p>Airspace:</p> <ul style="list-style-type: none"> No disproportionate or adverse impacts related to environmental justice are anticipated, nor would there be any special health or safety risks to children. 	<p>Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain</p> <p>MH3.12</p> <p>Base:</p> <ul style="list-style-type: none"> For all scenarios, no disproportionate effects on minority and low income individuals would occur. <p>Airspace:</p> <ul style="list-style-type: none"> No disproportionate or adverse impacts related to environmental justice are anticipated, nor would there be any special health or safety risks to children. Aircraft noise will likely remain a major issue for Duck Valley Indian Reservation. 	<p>Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s</p> <p>SH3.12</p> <p>Base:</p> <ul style="list-style-type: none"> For all scenarios, existing disproportionate effects on minority and low-income individuals would continue. <p>Airspace:</p> <ul style="list-style-type: none"> Disproportionate adverse impacts related to environmental justice are anticipated on lands under Gamecock airspace.
<p>Location in EIS: Community Facilities</p>	<p>BR3.13</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenario 1, there would be no impacts to community facilities and services. Under Scenario 2, there would be an increase in demand for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>HL3.13</p> <p>Base:</p> <ul style="list-style-type: none"> For all scenarios, demand for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services would decrease or remain similar to that under baseline conditions. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>JX3.13</p> <p>Base:</p> <ul style="list-style-type: none"> Scenario 1 would result in no change in demand for community facilities and services. Scenario 2 would result in a 24 percent increase in demand for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Mc3.13</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1 and 2, there would be a 24 percent overall decrease and no change, respectively, in the demand for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>MH3.13</p> <p>Base:</p> <ul style="list-style-type: none"> Adequate capacity to accommodate additional growth under all scenarios for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>SH3.13</p> <p>Base:</p> <ul style="list-style-type: none"> Under Scenarios 1, 2, and 3, there would be a decrease in demand for potable water, electricity, and natural gas; wastewater and solid waste generation; and education services. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

<p>Location in EIS: Transportation</p>	<p>Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s</p>	<p>Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s</p>	<p>Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs</p>	<p>McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s</p>	<p>Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain</p>	<p>Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s</p>
<p>Location in EIS: Transportation</p>	<p>BR3.14</p>	<p>HL3.14</p>	<p>JX3.14</p>	<p>Mc3.14</p>	<p>MH3.14</p>	<p>SH3.14</p>
<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in negligible short term increases in the use of on-base roadways. Under Scenario 1, no change in travel demand for the base. Under Scenario 2, increases in peak period travel demand by 24 percent. Under Scenario 2, increase in traffic volume would exceed primary level of Service threshold by 12.2 percent but would not exceed the secondary threshold for capacity. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in minor short term increases in the use of on-base roadways. Under Scenarios 1 and 2, vehicle trips to and from the base during morning and evening peak periods would decrease. No change under Scenario 3. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in negligible short term increases in the use of some on-base roadways under both scenarios. Scenario 1 would result in no change in travel demand for the base. Under Scenario 2, increase in traffic volume would exceed primary level of Service threshold by 12.2 percent but would not exceed the secondary threshold for capacity. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in minor short term increases in the use of on-base roadways under all scenarios. Under Scenario 1, increases in traffic volume would exceed primary Level of Service threshold by 1.2 percent but would not exceed the secondary threshold for capacity. Under Scenario 2, increases in traffic volume would exceed primary Level of Service threshold by 14.2 percent but would not exceed the secondary threshold for capacity. Under Scenario 3, increases in traffic volume would exceed primary Level of Service threshold by 27.2 percent and would exceed the secondary threshold for capacity by 12.3 percent. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in minor short term increases in the use of on-base roadways under all scenarios. Scenario 1 would reduce peak period travel demand by 24 percent. Scenario 2 would result in no change in travel demand for the base. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in minor short term increases in the use of on-base roadways under all scenarios. Scenario 1 would reduce peak period travel demand by 15 percent. Scenario 2 would reduce peak period travel demand by 8 percent. Scenario 3 would decrease peak period travel demand by 2 percent. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Base:</p> <ul style="list-style-type: none"> Construction traffic could result in minor short term increases in the use of on-base roadways under all scenarios. Scenario 1 would reduce peak period travel demand by 15 percent. Scenario 2 would reduce peak period travel demand by 8 percent. Scenario 3 would decrease peak period travel demand by 2 percent. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable.

Table 13-1. Comparative Summary of Environmental Consequences (con't)

	Burlington AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-16s	Hill AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 48 F-16s	Jacksonville AGS ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 18 F-15Cs	McEntire JNGB ANG Scenario 1 = 18 F-35As ANG Scenario 2 = 24 F-35As Replace 24 F-16s	Mountain Home AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace None; Based F-15E/F-15SGs Remain	Shaw AFB ACC Scenario 1 = 24 F-35As ACC Scenario 2 = 48 F-35As ACC Scenario 3 = 72 F-35As Replace 72 F-16s
<p>Location in EIS:</p> <p>Hazardous Materials and Waste</p>	<p>BR3.15</p> <p>Base:</p> <ul style="list-style-type: none"> Quantities and types of hazardous materials needed for maintenance would be less than those currently generated by maintaining legacy aircraft. Operations involving hydrazine, cadmium, and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect known ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>HL3.15</p> <p>Base:</p> <ul style="list-style-type: none"> Quantities and types of hazardous materials needed for maintenance would be less than those currently generated by maintaining legacy aircraft. Operations involving hydrazine, cadmium, and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect known ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>JX3.15</p> <p>Base:</p> <ul style="list-style-type: none"> Quantities and types of hazardous materials needed for maintenance would be less than those currently generated by maintaining legacy aircraft. Operations involving cadmium, and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect known ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>Mc3.15</p> <p>Base:</p> <ul style="list-style-type: none"> Quantities and types of hazardous materials needed for maintenance would be less than those currently generated by maintaining legacy aircraft. Operations involving hydrazine, cadmium, and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect active ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>MH3.15</p> <p>Base:</p> <ul style="list-style-type: none"> Aircraft maintenance activities would increase and, therefore, use of hazardous material quantities would also rise. The overall waste streams are expected to increase over the amounts currently generated due to the overall increase of number of aircraft. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect active ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable. 	<p>SH3.15B</p> <p>Base:</p> <ul style="list-style-type: none"> Quantities and types of hazardous materials needed for maintenance would be less than those currently generated by maintaining legacy aircraft. Operations involving hydrazine, cadmium, and hexavalent chromium primer, and various heavy metals have been eliminated or greatly reduced for the F-35A. Any structures proposed for upgrade or retrofit would be inspected for ACM and LBP according to established procedures. Neither upgrades to existing facilities nor future operations are expected to affect known ERP locations. <p>Airspace:</p> <ul style="list-style-type: none"> Not applicable.

**United States Air Force
F-35A Operational Basing
Draft Environmental Impact Statement**

This volume contains the printed Executive Summary of the Draft Environmental Impact Statement (EIS) for the F-35A Operational Basing at six alternative locations: Burlington Air Guard Station (AGS), Vermont; Hill Air Force Base (AFB), Utah; Jacksonville AGS, Florida; McEntire Joint National Guard Base (JNGB), South Carolina; Mountain Home AFB, Idaho; and Shaw AFB, South Carolina. Attached to this volume is a CD (located in the pocket below) containing the entire Interim Draft EIS and appendices.

In order to view the Draft EIS and appendices, you will need Adobe Acrobat® Reader. If you do not already have Adobe Acrobat® Reader, you can download it from www.adobe.com. To view the Draft EIS and appendices:

- Insert the CD into the computer's CD/DVD drive.
- Open the CD/DVD drive's directory and double-click on the file named F-35A Operational Basing Interim Draft EIS.pdf.
- Navigate by scrolling through the document, click on a heading in the Table of Contents, or click on a bookmark that appears on the left of the document window.

The CD files are read-only which means you can view and/or print them from the CD. In addition, the document can be viewed and downloaded from the World Wide Web at <http://www.acplanning.org>. Public involvement is a cornerstone of the National Environmental Policy Act (NEPA) process. For this reason, the U.S. Air Force (Air Force) seeks comments on the Draft EIS from the public, governmental agencies, and non-governmental organizations. These comments, along with responses, will be provided in the Final EIS and will form part of the information used in the Air Force decision-making process.

SEND COMMENTS TO:
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Privacy Advisory for Draft EIS

Any letters or written comments received on this draft Environmental Impact Statement (EIS) may be published in the final EIS. As required by law, the Air Force will consider those comments in the final EIS which will be made available to the public. Any personal information provided will be used only to identify your desire to make a comment during the public availability period or to fulfill a request for copies of the EIS. Private address information provided with comments will be used solely to develop a mailing list for the final EIS distribution and will not be otherwise released.