FINAL
ENVIRONMENTAL ASSESSMENT (EA) FOR MODIFICATION OF AIRSPACE UNITS R-3008A/B/C FROM VISUAL FLIGHT RULES (VFR) TO VFR-INSTRUMENT FLIGHT RULES (IFR) AT MOODY AIR FORCE BASE, GEORGIA



September 2015

Finding of No Significant Impact
Modification of Airspace Units R-3008A/B/C from
Visual Flight Rules (VFR) to VFR-Instrument Flight Rules (IFR)

Moody Air Force Base, Georgia

Pursuant to provisions of the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 to 4270d, implementing Council on Environmental Quality (CEQ) Regulations, 40 C.F.R. 1500-1508, and 32 C.F.R. Part 989, Environmental Impact Analysis Process, the U.S. Air Force (Air Force) assessed the potential environmental consequences associated with the change in the weather operations category of airspace units R-3008 A/B/C at Grand Bay Range, Moody Air Force Base (AFB), Georgia, from visual flight rules (VFR) to VFR-instrument flight rules (VFR-IFR). This action would minimize the number of training hours lost by allowing full utilization of Grand Bay Range during periods of IFR operations. The Environmental Assessment (EA) for the VFR-IFR change is hereby incorporated by reference in this decision document.

The purpose of the Proposed Action is to reduce the number of aircraft training hours lost for all Moody AFB aircraft types on Grand Bay Range due to IFR weather condition requirements. The Proposed Action is needed because training hours are limited due to weather less than VFR conditions. In 2014, the R-3008 airspace was scheduled for 3,591 flying hours, and the airspace was closed due to weather for approximately 260 hours. The Proposed Action would result in the ability to more fully utilize the existing airspace to conduct operations that were previously authorized in the 2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment* by simply allowing operations during inclement weather that would otherwise be cancelled. While the Proposed Action would allow approximately 250 more hours of flight availability than under current conditions (which equates to approximately 12.5 percent more flight hours and 505 annual sorties), this additional availability would still remain under previously assessed and approved levels of flight activity (U.S. Air Force, 2012). The Proposed Action is needed to minimize lost training opportunities for existing Moody-based weapons systems, minimize range scheduling issues, and allow full utilization of the range within the operational hours published.

Range operations are currently restricted to VFR operations as a result of the final 1986 Moody AFB Environmental Impact Statement (EIS) that established the range and restricted airspace. Since 1986 there have been significant improvements in aircraft navigational and weapons delivery systems. Safety in employing current systems has also greatly increased since the mid-1980s. Also, Moody AFB's current air traffic control radar system is among the newest in the Air Force's inventory, with Federal Aviation Administration (FAA)-fed backup capability that enhances aircraft safety on range. Consequently, Grand Bay Range can now safely support operations regardless of VFR or IFR conditions. Local procedures also ensure safety of aircraft operating on the range.

The hours for range operations would not change under this Proposed Action. Additionally, under the Proposed Action there would be no change in current flight patterns, aircraft utilized, types of training, or distribution of day/night operations.

DESCRIPTION OF THE PROPOSED ACTION (EA Section 2.2)

The Proposed Action is to identify a method for reducing the number of Moody AFB aircraft training hours lost on Grand Bay Range due to VFR weather condition requirements (1,500-foot ceiling and 3-mile visibility in accordance with 14 C.F.R. 91.155 [Basic VFR Weather Minimums]). As stated previously, the Proposed Action does not involve changes in current range operating hours, flight patterns, aircraft utilized, types of training, or distribution of day/night operations.

NO ACTION ALTERNATIVE (EA Section 2.6)

The No Action Alternative would continue to restrict flight operations on the range and in R-3008 A/B/C under VFR conditions and, therefore, would result in the continued loss of training opportunities.

SUMMARY OF FINDINGS (EA Chapter 4)

The following resource areas are addressed in detail in the EA, Sections 4.1 through 4.6, respectively: airspace, noise, safety, air quality, cultural resources, and biological resources. No significant impacts to any of these resources have been identified. Additionally, no significant adverse cumulative impacts would result from activities associated with the Proposed Action when considered with past, present, or reasonably foreseeable future projects at Moody AFB.

On June 11, 2015, Moody AFB completed National Historic Preservation Act Section 106 consultation with the Georgia State Historic Preservation Officer (SHPO) for potential impacts to cultural resources. The SHPO concurred on a finding of no adverse effect to cultural resources. Moody AFB also provided notification of and request for input on the Proposed Action to 13 Native American tribes; none of the tribes identified any concerns associated with the Proposed Action. On June 30, 2015, Moody AFB completed Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service regarding listed species, which concurred on a "No Effect" determination for listed species.

PREFERRED ALTERNATIVE

The Preferred Alternative is to implement the Proposed Action.

FINDING OF NO SIGNIFICANT IMPACT

Based on my review of the facts and analyses contained in the attached EA, which is hereby incorporated by reference, conducted under the provisions of NEPA, CEQ Regulations, and 32 C.F.R. Part 989, I conclude that implementation of the Preferred Alternative (Proposed Action) cumulatively with other projects at Moody AFB will not result in significant environmental impacts. Accordingly, an EIS is not required. The signing of this Finding of No Significant Impact completes the environmental impact analysis process.

Jennifer L. Kilbourn Date 30 Sep 15

JENNIFER L. KILBOURN, Colonel, USAF
Chief, Civil Engineer Division (ACC/A4C)

FINAL
ENVIRONMENTAL ASSESSMENT (EA) FOR MODIFICATION OF AIRSPACE UNITS R-3008A/B/C FROM VISUAL FLIGHT RULES (VFR) TO VFR-INSTRUMENT FLIGHT RULES (IFR) AT MOODY AIR FORCE BASE, GEORGIA

September 2015



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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

ACAM	Air Conformity Applicability Model
AFB	Air Force Base
AFI	Air Force Instruction
AGE	aerospace ground equipment
AGL	above ground level
APE	Area of Potential Effects
ATC	air traffic control
ATIS	Automated Terminal Information Service
BASH	bird/wildlife-aircraft strike hazard
BGEPA	*Bald and Golden Eagle Protection Act*
BWC	bird watch condition
C.F.R.	Code of Federal Regulations
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CH_4	methane
CO	carbon monoxide
CO_2e	carbon dioxide equivalent
dB	decibels
dBA	A-weighted decibels
DNL	day-night average sound level
DNR	(Georgia) Department of Natural Resources
DoD	Department of Defense
E	endangered
EA	Environmental Assessment
EIS	Environmental Impact Statement
ESA	*Endangered Species Act of 1973*
°F	Fahrenheit
FAA	Federal Aviation Administration
FY	Fiscal Year
G1	critically imperiled globally
G2	imperiled globally
G3	rare and local throughout range or in a special habitat or narrowly endemic
G4	apparently secure
G5	demonstrably secure globally
GHG	greenhouse gas
GNAHRGIS	Georgia Natural, Archaeological, Historic Resources Geographic Information System
GWP	global warming potential
HAPs	hazardous air pollutants
HP	horsepower
Hz	hertz
IFR	instrument flight rules
INRMP	*Integrated Natural Resources Management Plan*
L_{max}	maximum sound level
MBTA	*Migratory Bird Treaty Act*
MDS	Mission Design Series
MOAs	Military Operations Areas
MSL	mean sea level
MTRs	military training routes
% NC	engine core speed
N/A	not applicable
N_2O	nitrous oxide

NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	*National Environmental Policy Act*
NETC	Northeast Training Complex
NHP	(Georgia) Natural Heritage Program
NOISEMAP	a noise modeling software program
NOTAM	Notice to Airmen
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
NWR	National Wildlife Refuge
PM_{10} and $PM_{2.5}$	particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively
R	rare
RAPCON	Radar Approach Control
RNM	Rotorcraft Noise Model
ROI	region of influence
S/A	similarity of appearance
S1	critically imperiled in Georgia
S2	imperiled in Georgia
S3	rare and uncommon throughout the state or in a special habitat or narrowly endemic
S4	apparently secure
S5	demonstrably secure in the state
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SUA	special use airspace
T	threatened
TCPs	traditional cultural properties
U	unusual
U.S.C.	United States Code
ULZ	Unimproved Landing Zone
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VFR	visual flight rules
VMC	visual meteorological conditions
VOC	volatile organic compound
WMA	Wildlife Management Area

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1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force, Air Combat Command proposes to change the weather operations category of airspace units R-3008A/B/C at Grand Bay Range, Moody Air Force Base (AFB), Georgia, from visual flight rules (VFR) to VFR-instrument flight rules (VFR-IFR). This action would minimize the number of training hours lost by allowing full utilization of Grand Bay Range during periods of IFR operations.

There are two sets of rules for flying any aircraft: VFR and IFR. Weather and airspace are typically the limiting factors requiring VFR or IFR navigation. Under VFR, a pilot navigates and flies primarily by external visual cues. The pilot uses the view from the cockpit to keep the aircraft straight and level and navigates from place to place by looking at landmarks on the ground (roads, rivers, buildings, etc.). The pilot can also use instruments if desired, but the law requires that the pilot be able to see and fly visually. This requires visual meteorological conditions (VMC), which are conditions in which pilots have sufficient visibility to fly the aircraft maintaining visual separation from terrain and other aircraft. The Federal Aviation Administration (FAA) defines VFR/VMC weather conditions as a 1,000-foot ceiling with 3 statute miles of visibility (14 C.F.R. 91.155 [*Basic VFR Weather Minimums*]), while the Air Force requires a 1,500-foot ceiling with 3 miles of visibility (Air Force Instruction [AFI] 11-214 [*Air Operations Rules and Procedures*]). Under instrument meteorological conditions weather conditions are such that visual cues are unavailable and, thus, pilots are required to fly under IFR, wherein a pilot navigates using instruments in the cockpit. IFR flights typically work in conjunction with air traffic controllers, who use radar to advise IFR flights of other aircraft in the area, thereby maintaining a safe distance between them.

Typically, when Grand Bay Range is active, aircraft using the range are operating using their instruments and air traffic controls (ATCs) (similar to IFR) within VMC. Under the Proposed Action, when weather is such that VMC/VFR is unavailable, pilots would be able to navigate under IFR.

1.2 LOCATION OF THE PROPOSED ACTION

Moody AFB comprises a total of 11,881 acres in Lowndes and Lanier Counties in south-central Georgia (see Figure 1-1), which includes the Main Base, Grand Bay Range, and Grassy Pond. Nearby cities include Valdosta, about 10 miles to the southwest, and

Lakeland, about 6 miles northeast. Moody AFB is approximately 85 miles northeast of Tallahassee, Florida, and 120 miles northwest of Jacksonville, Florida. The closest major cities in Georgia are Macon, 150 miles north, and Atlanta, 220 miles north. Georgia State Highway 125 (Parker Greene Highway/Bemiss Road) is the primary access road to the main base. The main base portion, situated east of Parker Greene Highway/Bemiss Road (State Highway 125), includes the administrative, base support, aircraft operations, and maintenance areas, as well as the airfield. The location of the Proposed Action is the airspace over Grand Bay Range comprising units R-3008A/B/C. Figure 1-2 shows the location of the airspace affected.

1.3 PURPOSE AND NEED FOR THE ACTION

The purpose of the Proposed Action is to reduce the number of aircraft training hours lost for all Moody AFB aircraft types on Grand Bay Range due to VFR weather condition requirements. The Proposed Action is needed because training hours are limited due to weather under VFR conditions. In fiscal year (FY) 2013, 215 training hours were lost due to weather conditions less than VFR; in 2014, the R-3008 airspace was scheduled for 3,591 flying hours, and the airspace was closed due to weather for approximately 260 hours.

Range operations are currently restricted to VFR operations as a result of the final 1986 Moody AFB Environmental Impact Statement (EIS) that established the range and restricted airspace. Since 1986 there have been significant improvements in aircraft navigational and weapons delivery systems. Safety in employing current systems has also greatly increased since the mid-1980s. Also, Moody AFB's current ATC radar system is among the newest in the Air Force's inventory, with FAA-fed backup capability that enhances aircraft safety on range. Consequently, Grand Bay Range can now safely support operations regardless of VFR or IFR conditions.

Several aircraft (such as the HH-60, Raven unmanned aerial vehicle, A-10, and HC-130) have operational training requirements at less-than-VFR conditions, and ground weapons training can be accomplished in any weather as long as the target is clearly distinguished. Currently the range is available for 3,934 annual training hours, with current operating hours being 8:00 AM to 1:30 AM Monday – Thursday; 8:00 AM to 5:00 PM on Friday. There are exceptions for when the range is being maintained or when there are special exercises which result in respective range closures or hour extensions. The hours for range operation will not change under this Proposed Action.



Figure 1-1. Location of Moody AFB

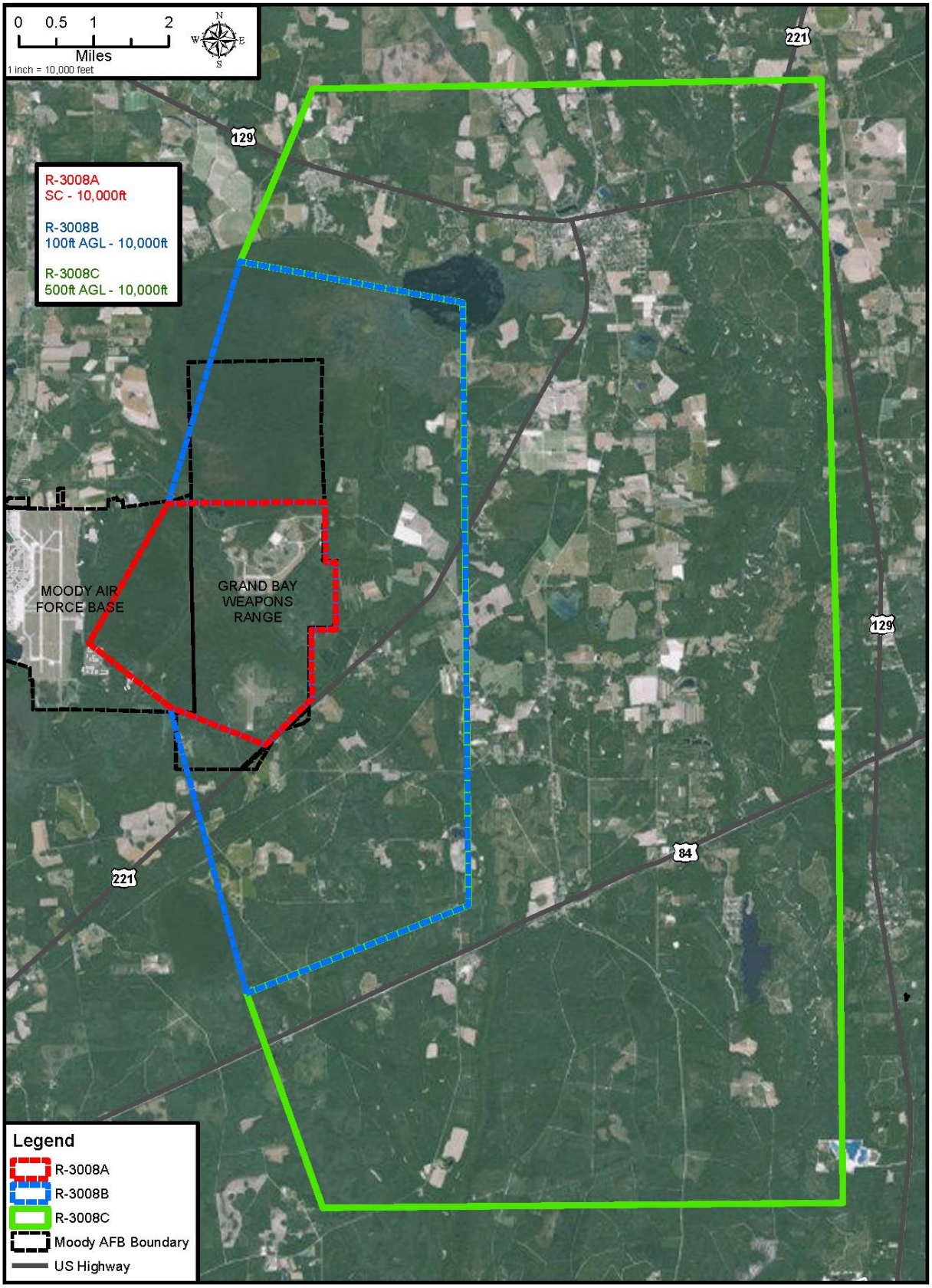


Figure 1-2. Airspace Affected by the Proposed Action

Additionally, under the Proposed Action there would be no change in flight patterns, types of aircraft utilized, types of training, or distribution of day/night operations from the current condition.

The Proposed Action would result in the ability to more fully utilize the existing airspace to conduct operations that were previously authorized in the 2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment* by simply allowing operations during inclement weather that would otherwise be cancelled. While the Proposed Action would allow approximately 250 more hours of flight availability than under current conditions (which equates to approximately 12.5 percent more flight hours and 505 annual sorties), this additional availability would still remain under previously assessed and approved levels of flight activity (U.S. Air Force, 2012). The Proposed Action is needed to minimize lost training opportunities for existing Moody-based weapons systems, minimize range scheduling issues, and allow full utilization of the range within the operational hours published.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This Environmental Assessment (EA) identifies, describes, and evaluates the potential environmental impacts that may result from implementing the Proposed Action as well as a no action alternative. As appropriate, the affected environment and environmental consequences may be described in terms of site-specific descriptions or regional overview. In addition, the document identifies measures that would prevent or minimize environmental impacts.

The National Environmental Policy Act (NEPA) requires Federal agencies to consider the environmental consequences of proposed actions in the decision-making process (U.S.C. 4321, et seq.). The Council on Environmental Quality (CEQ) was established under NEPA, 42 U.S.C. 4342, et seq., to implement and oversee Federal policy in this process. In 1978, the CEQ issued regulations implementing the NEPA process under Title 40, C.F.R., Parts 1500–1508. The CEQ regulations require that the Federal agency considering an action evaluate or assess the potential consequences of the action or alternatives to the action, which may result in the need for an EA or EIS. Under 40 C.F.R.:

- An EA must briefly provide sufficient evidence and analysis to determine whether a finding of no significant impact or an EIS should be prepared.
- An EA must facilitate the preparation of an EIS if required.

The proposed activities addressed within this document constitute a Federal action and, therefore, must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action must include the development of an EA to address the environmental issues related to the proposed activities. The Air Force Environmental Impact Analysis Process is accomplished via procedures set forth in CEQ regulations and 32 C.F.R. Part 989.

1.5 COOPERATING AGENCY AND INTERGOVERNMENTAL COORDINATION/CONSULTATIONS AND PUBLIC/AGENCY REVIEW

This section describes the notification, coordination, and consultation processes for agencies, Native American tribes, and the public.

As part of the intergovernmental coordination process, the Air Force provided notification of, and sought input on, the Proposed Action from the following agencies: the FAA, Georgia Department of Community Affairs, Georgia Department of Natural Resources' (DNR) Wildlife Resources Division, Lowndes County Commission, U. S. Fish and Wildlife Service (USFWS), Banks Lake National Wildlife Refuge (NWR), Georgia Environmental Protection Division, Georgia Historic Preservation Division, South Georgia Regional Planning Council, and the Lanier, Lowndes, and Echols County Commissions. Appendix A (*Public Involvement: Agency, Tribal, and Public Coordination/Notification*) includes correspondence with these agencies.

On June 11, 2015, Moody AFB completed National Historic Preservation Act (NHPA) Section 106 consultation with the Georgia State Historic Preservation Officer (SHPO) for potential impacts to cultural resources. The SHPO concurred on a finding of no adverse effect to cultural resources (see Appendix A). Moody AFB completed Endangered Species Act (ESA) Section 7 consultation with the USFWS regarding listed species on June 30, 2015, which concurred on a "No Effect" determination for listed species. The SHPO and USFWS consultation correspondence is included in Appendix A.

Additionally, Moody AFB provided notification of, and request for input on, the Proposed Action to 13 Native American tribes as part of the government-to-government consultation process as identified in Executive Order 13175, *Consultation with Indian Tribal Governments*; Department of Defense (DoD) Instruction 4710.01, *DoD Interactions with Federally-Recognized Tribes; and* AFI 90-2002, *Air Force Interactions with Federally-Recognized Tribes*. These tribal governments were also consulted regarding impacts to

tribal resources under Section 106 of the *NHPA*. None of the tribes identified any concerns associated with the Proposed Action. A list of tribes contacted and associated correspondence is provided in Appendix A.

Finally, the Air Force published a public notice in the *Valdosta Daily Times* on July 29, 2015, and the *Echols County Echo* and *Lanier County Advocate* on July 28, 2015, inviting the public to review and comment on the EA, which was made available at the South Georgia Regional Library in Valdosta, Georgia, and on the Moody AFB website at http://www.moody.af.mil/environmentalinitiative.asp. The Air Force also provided all the aforementioned agencies a copy of the Draft EA seeking comment. Correspondence is provided in Appendix A). The public comment and agency review period ended on August 31, 2015. No comments on the Proposed Action or EA were received from the public or regulatory agencies.

1.6 ORGANIZATION OF THE DOCUMENT

This EA follows the requirements established by CEQ regulations (40 C.F.R. 1500–1508). This document consists of the following chapters:

1. Purpose and Need for Action
2. Description of Proposed Action and Alternatives
3. Affected Environment
4. Environmental Consequences
5. Cumulative Impacts
6. Special Operating Procedures and Mitigations
7. Persons/Agencies Contacted
8. List of Preparers
9. References

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2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the Proposed Action, the alternatives that the Air Force considered but did not carry forward, and the No Action Alternative. The potential environmental impacts of the Proposed Action and alternatives are summarized at the end of this chapter.

2.2 PROPOSED ACTION

The Proposed Action is to identify a method for reducing the number of Moody AFB aircraft training hours lost on Grand Bay Range due to VFR weather condition requirements (1,500-foot ceiling and 3-mile visibility in accordance with 14 C.F.R. 91.155 [*Basic VFR Weather Minimums*]). As discussed in Section 1.3, the Proposed Action would result in the ability to more fully utilize the existing airspace to conduct operations that were previously authorized in the 2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment* by simply allowing operations during inclement weather. While the Proposed Action would allow approximately 250 more hours of flight availability than under current conditions (which equates to approximately 12.5 percent more flight hours and 505 annual sorties), this additional availability would still remain under previously assessed and approved levels of flight activity (U.S. Air Force, 2012). All operations would remain in compliance with FAA and DoD guidelines for special use airspace (SUA).

2.3 SELECTION STANDARDS

NEPA and CEQ regulations mandate the consideration of reasonable alternatives to a proposed action. "Reasonable alternatives" are those that also could be utilized to meet the purpose of and need for a proposed action.

Per the requirements of 32 C.F.R. §989, the Air Force Environmental Impact Analysis Process regulations, selection standards are used to identify alternatives for meeting the purpose and need for an Air Force action. In addition, selection standards may be used to narrow the range of alternatives to focus analyses, so as to meet the directive that environmental analyses be analytic rather than encyclopedic.

Given the scope of the purpose and need as described previously in Section 1.3, the following selection standards have been identified:

1) Allow operations during "less-than-VFR" conditions (i.e., less than 1,500-foot ceiling and 3-mile visibility).
2) Reduce training hours lost due to less-than-VFR conditions for all Moody AFB aircraft types.
3) Control by Moody AFB to allow unhindered access/scheduling to avoid loss of training hours.

2.4 SCREENING OF ALTERNATIVES

In compliance with NEPA and 32 C.F.R. 989, which implements the NEPA process, the Air Force must consider reasonable alternatives to the Proposed Action. The following potential alternatives that might meet the purpose and need for reducing the number of training hours lost on Grand Bay Range during weather conditions that preclude VFR operations were considered:

1) **Change the R-3008A/B/C AP-1A/1B (see** Figure 1-2**) weather operation categorization from "VFR" to "VFR-IFR."** As a result of this alternative, aircraft would be able to legally operate on the range in both VFR and IFR weather conditions within the current level of flight operations assessed at Grand Bay Range. It is estimated that this alternative would reduce the number of training hours the range loses due to inclement weather by up to 250 hours. It is further estimated that these available training hours would result in 505 additional annual sorties over the current condition (this level of operation would still be within those previously analyzed and approved under the 2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*). Operational hours for the range would not change, and there would be no change in airspace size, location, traffic patterns, or types of events.
2) **Utilize other ranges for training when conditions at Grand Bay Range are less than VFR.** This alternative would involve utilization of other ranges outside of Moody AFB.
3) **Fly above the weather conditions.** Flying using VFR requires aircraft meet Mission Design Series (MDS)-specific cloud clearances. Fixed-wing aircraft could operate using VFR on the range at heights above weather conditions

that do not permit VFR flight. However, helicopters and unmanned aerial vehicles that only fly and train at low altitudes would still be required to meet cloud clearances and would not be able to fly above the weather.

2.5 ALTERNATIVES CONSIDERED BUT ELIMINATED

The selection standards described in Section 2.3 were applied to the alternatives listed above to determine which alternative(s) would fulfill the purpose and need for the action. The following alternatives have been eliminated from further consideration because they do not meet the selection standards associated with the purpose and need:

- **Utilize other ranges for training when conditions at Grand Bay Range are less than VFR.** This alternative was eliminated because it would involve utilizing ranges that are not under control of Moody AFB. Consequently, Moody AFB trainees may not be able to access external ranges when needed, which would not serve the purpose of reducing training hours lost. Additionally, travel time to other ranges would result in a loss of training hours and additional fuel costs.
- **Fly above the weather conditions.** This alternative was eliminated because it does not provide a solution for all Moody AFB aircraft. Each aircraft type (fixed wing, rotary wing, unmanned) has a different cloud clearance requirement. While fixed-wing aircraft and some unmanned aircraft could operate above weather conditions that do not permit VFR flight, helicopters and other unmanned aircraft that only fly and train at low altitudes would not be served by this alternative because training opportunities would still be limited by weather conditions. Therefore, this alternative would not meet the purpose of reducing training hours lost for all Moody aircraft types.

2.6 NO ACTION ALTERNATIVE

As discussed previously, in FY13, 215 training hours were lost due to weather conditions less than VFR, and halfway through FY14, 167 training hours have been lost due to weather conditions less than VFR. The No Action Alternative would continue to restrict flight operations on the range and in R-3008A/B/C under VFR conditions and, therefore, would result in the continued loss of training opportunities.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

Alternative screening indicates that the only alternative that meets all the selection standard requirements and the purpose and need is to change the R-3008A/B/C AP-1A/1B weather operation categorization from "VFR" to "VFR-IFR." Therefore, this is the Air Force's Preferred Alternative and the Proposed Action discussed within the context of this EA.

The Proposed Action is the only "action alternative" carried forward for analysis.

2.8 IMPACT SUMMARY

2.8.1 Environmental Issues Not Carried Forward for Detailed Analysis

Based on the scope of the Proposed Action, resource areas with minimal or no impacts were identified through a preliminary screening process. The following describes the resource areas not carried forward for detailed analysis, along with the rationale for their elimination.

The following resource areas were not analyzed in detail in this EA because the Proposed Action would not interact with these resources and, therefore, there would be no potential impact or change in the current condition of the resource.

Land use: This resource encompasses current uses of land within the Proposed Action's region of influence (ROI) (e.g., agriculture, recreation, commercial, residential). Analysis would focus on whether the Proposed Action would change or affect current land use designations and usage. There would be no change in land use designations or effects on usage under the airspace affected by the Proposed Action.

Infrastructure: This resource encompasses transportation and utilities within the Proposed Action's ROI. Analysis would focus on whether the Proposed Action would affect transportation or result in new or increased utilities usage. The Proposed Action does not involve use of infrastructure or utilities.

Geologic resources: Geologic resources include soils and underlying geologic resources within the ROI; analysis would focus on effects on these resources from ground-disturbing activities and other actions. The Proposed Action does not involve any ground disturbance.

Water resources: Water resources include surface water, groundwater, wetlands, and floodplains within the ROI; analysis would focus on impacts to these

resources from proposed activities. The Proposed Action does not involve use or disturbance of water resources.

Solid/hazardous materials and waste: This resource area addresses the use of solid and hazardous materials and the production of associated wastes. Analyses focus on whether the Proposed Action would require the use of any of these materials, whether wastes would be produced, how these would be disposed of, and any potential effects to waste disposal processes or facilities. The Proposed Action would increase use of fuels and other solid and hazardous materials associated with better utilization of the range; however, use of such materials is typical to aircraft operations and would fall under existing Air Force operational requirements and controls. No adverse impacts are anticipated and this issue was not analyzed in detail.

Socioeconomics and environmental justice: Socioeconomics involves analyzing potential impacts to the local economy, while environmental justice addresses the potential for disproportionate impacts to low-income and minority populations per Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*). Based on the results of noise analysis, no impacts to the public are anticipated from the Proposed Action. The USFWS raised concerns regarding potential negative impacts to recreational use of the Banks Lake and Okefenokee NWRs associated with increased noise and operational visibility (see Appendix A). The Okefenokee NWR would not be affected by the Proposed Action, because it is not located under the affected airspace. Furthermore, noise analysis conducted for this EA determined that the ability to conduct operations during inclement weather during normal range operating hours would potentially result in a less than 1-decibel (dB) increase in current noise conditions within the affected airspace. This increase would be barely noticeable over the current condition within the Banks Lake NWR and would not be expected to negatively impact recreational use under the existing airspace. Additionally, IFR utilization would not affect current operation levels over the weekends, which the USFWS identified as a time frame of particular concern. As a result, no socioeconomic or environmental justice impacts have been identified and these issue areas were not carried forward for further, detailed analyses.

2.8.2 Summary of Environmental Issues Analyzed in the EA

Table 2-1 summarizes the impacts associated with the Proposed Action and No Action Alternative.

Table 2-1. Alternative Impact Summary and Comparison

Resource / Issue Area	Proposed Action	No Action
Airspace	No significant adverse impacts have been identified. The Proposed Action would simply involve a change in airspace designation from VFR to VFR-IFR, providing for optimal use of existing airspace.	R-3008A/B/C airspace would continue to operate as it does under current conditions, and there would be no change. As a result, the No Action Alternative would not result in any additional impacts to airspace beyond the scope of normal conditions and influences within the region.
Noise	Under the Proposed Action, availability of Grand Bay Range would be expected to increase by about 12.5% annually; however, the number of sorties this would accommodate would still be within previously approved levels. No other aspect of flying operations (e.g., aircraft types, altitudes, percentage of operations conducted late at night) would change under the Proposed Action. The day-night average sound level (DNL) at locations near the range would increase by less than 1-dB. IFR operations could be noticed, but noise impacts associated with the IFR operations would not be expected to be considered significant.	Under the No Action Alternative, the airspace would continue to operate as it does under current conditions. Noise levels would not change relative to current noise levels, and there would be no new noise impacts.
Safety	Due to the proposed improvement in airspace availability, the Proposed Action would result in an associated slight increase in the potential for aircraft mishaps (2 to 3 more per year) related to routine operations or as a result of an aircraft impact with wildlife. Moody AFB pilots are IFR-rated and routinely fly under IFR conditions. Additionally, current aircraft flight safety policies and procedures are designed to ensure that the potential for aircraft mishaps is reduced to the lowest possible level. To minimize the potential for any future bird-aircraft strikes, Moody AFB would continue to implement an aggressive BASH program, including the Wildlife Hazard Warning System. Additionally, Moody AFB would continue to coordinate extensively with on-staff USDA wildlife experts regarding BASH-related issues. No significant adverse impacts to safety would be expected with continued implementation of existing mishap prevention and BASH program procedures.	Under the No Action Alternative, the airspace would continue to operate as it does under current conditions. Therefore, the likelihood of aircraft mishaps or BASH would remain as under current conditions. With the continuation of policies and procedures in place to ensure the safety of the public as well as military personnel, there would be no adverse impacts associated with the No Action Alternative.

Table 2-1. Alternative Impact Summary and Comparison, Cont'd

Resource / Issue Area	Proposed Action	No Action
Air Quality	The Proposed Action would result in an approximate increase in air emissions of less than 1% over current conditions. No significant impacts have been identified.	Air quality would not be affected by the No Action Alternative; air emissions would remain as they are under current conditions.
Cultural Resources	Cultural resources would not be adversely affected by the proposed airspace designation. The sole NRHP-listed structure would not be affected. On June 11, 2015, Moody AFB completed NHPA Section 106 consultation with the SHPO for potential impacts to cultural resources. The SHPO concurred on a finding of no adverse effect to cultural resources (see Appendix A). No issues have been identified by the SHPO or Native American tribes.	Cultural resources would not be adversely affected by the No Action Alternative.
Biological Resources	There would be no impacts to the use of prescribed fire on Banks Lake National Wildlife Refuge (NWR) or Grand Bay Wildlife Management Area as a result of the Proposed Action, especially because the atmospheric conditions resulting in low visibility and the need for IFR operations would typically not be conducive to smoke dispersal. IFR periods would, therefore, not generally coincide with authorized periods of prescribed burning. In addition, there would be no other effects on continued management actions at these or other conservation areas. Wildlife species could be impacted by aircraft noise and direct physical strikes due to IFR activities under the Proposed Action. The number of individuals impacted by IFR operations would likely be low compared with overall population numbers, and only a portion would be low-altitude flights and/or flights over sensitive habitats such as Banks Lake NWR. No wading bird colonies would be impacted. Some individuals are likely habituated to aircraft noise and presence due to ongoing operations. The potential for bird-aircraft strikes would occur under IFR activities, particularly during migration seasons, at night, during takeoffs and landings, and during low-altitude flights. With continued implementation of Moody AFB's BASH Plan, this potential would not result in significant impacts to any bird species or populations. Implementation of the Proposed Action would not jeopardize the continued existence of any species or result in	Under the No Action Alternative, the airspace would continue to operate as it does under current conditions and, therefore, no potential occurrences of wildlife disturbance or direct strikes would also remain at current levels. The effects to wildlife resulting from aircraft operations would remain the same as those under existing conditions. There would be no significant effects to biological resources under the No Action Alternative.

Table 2-1. Alternative Impact Summary and Comparison, Cont'd

Resource / Issue Area	Proposed Action	No Action
	an overall decrease in population diversity, abundance, or fitness of any wildlife species, including migratory birds or species protected under the Endangered Species Act or Bald and Golden Eagle Protection Act. Moody AFB completed Endangered Species Act Section 7 consultation with the U.S. Fish and Wildlife Service regarding listed species on June 30, 2015, which concurred on a "No Effect" determination for listed species (Appendix A).	

AFB = Air Force Base; BASH = bird/wildlife aircraft strike hazard; dB = decibel; IFR = instrument flight rules; NHPA = National Historic Preservation Act; NRHP = National Register of Historic Places; SHPO = State Historic Preservation Officer; USDA = U.S. Department of Agriculture; VFR = visual flight rules

3. AFFECTED ENVIRONMENT

3.1 AIRSPACE

3.1.1 Definition of the Resource

The nation's airspace is structured and managed by the FAA in a manner that most safely and efficiently serves both civilian and military interests. In doing so, the FAA has designated four different types of airspace that are further categorized into five Classes (A through E) where FAA rules and regulations govern aircraft operations and the ATC services provided within each. The R-3008A/B/C restricted areas are a type of SUA that the FAA has specifically designated to contain and protect hazardous air and ground activities, such as those conducted on Grand Bay Range. When restricted areas are activated by the using agency for these types of operations, any flight by nonparticipating aircraft within this airspace, while not wholly prohibited, is subject to restrictions. Entry into an active restricted area without authorization from the using/controlling agency may put both participating and nonparticipating aircraft at risk. The airspace discussions address only those FAA-designated airspace types/classifications considered relevant to the Proposed Action (FAA, 2014).

3.1.2 Existing Conditions

The existing airspace environment within the ROI includes R-3008A/B/C/D, the Moody 1 and 2 Military Operations Areas (MOAs), several military training routes (MTRs), and the Class D, E, and G airspace areas encompassing the different public and private airports within this region. There are also several Federal airways, jet routes, and area navigation routes traversing this airspace that are "highways" used by the ATC system to transit IFR air traffic across the National Airspace System. ATC ensures these flights and other IFR airport traffic are separated from other airspace uses in the region, to include R-3008 operations; therefore, these routes and their uses are not considered a factor for the Proposed Action. The following describes those airspace uses within and adjacent to the R-3008A/B/C complex.

The R-3008 restricted area supporting Grand Bay Range operations is subdivided into the three subareas as shown in Figure 1-2. As noted on this figure, the smaller A subarea extends from the range surface up to 10,000 feet above mean sea level (MSL), while the outer B and larger C subareas start at 100 feet and 500 feet above ground level (AGL), respectively, also extending up to 10,000 feet MSL. As depicted on aeronautical charts, R-3008C excludes airspace below 1,500 feet AGL within 1 nautical mile of

Lakeland, Georgia, to minimize lower altitude flights directly over this city. A private airfield (Christians Folly Airport) is also located within R-3008C where the 500-foot floor elevation permits aircraft to enter/exit this airfield beneath this restricted area when active. While not part of the Proposed Action or discussed any further, an R-3008D segment overlies all three A/B/C subareas and is activated, as needed, for higher-altitude training activities between 10,000 and 28,000 feet MSL.

The published period of use for R-3008A/B/C is 7:00 AM to 10:00 PM Monday–Friday, although they may be scheduled for other time periods outside these daily windows provided that a Notice to Airmen (NOTAM) is issued at least six hours in advance. NOTAMs are used to notify civilian pilots of this planned use so they can plan their flights accordingly to avoid this airspace when active. In FY13, a total of 5,977 annual aircraft sorties were conducted in R-3008A/B/C during the 2,956 hours this airspace was activated to support Grand Bay Range training activities. This usage, coupled with the location and size of the R-3008A/B/C airspace, has had little effect on other aircraft flights in the area, since most air traffic transiting between the different airports in this region typically operate west or north of these restricted areas.

R-3008A/B/C is surrounded by the Moody 1 and Moody 2 North/South MOAs, which abut the restricted area lateral boundaries. Hazardous activities, including munitions delivery training, are conducted in the restricted area, and nonparticipating aircraft are restricted from entering when the area is activated. Nonparticipating aircraft operating under VFR (i.e., aircraft operating under weather conditions enabling good visibility) are permitted to transit the MOAs when they are activated, but nonparticipating aircraft operating under IFR are routed around active MOAs. Moody 1 and 2 MOAs may be used either separately or in conjunction with the R-3008A/B/C restricted areas.

Several MTRs transit throughout the ROI that pass through the Moody 1 and 2 MOAs and near R-3008A/B/C. MTRs are low-altitude "corridors" used by military aircraft to conduct nonhazardous high-speed combat tactics where, in many cases, they terminate near or within SUA where aircraft may transition to other training activities within that airspace. MTRs are also not restrictive to nonparticipating aircraft where both VFR and military pilots must exercise see-and-avoid practices.

Most aircraft performing mission activities in Grand Bay Range operate out of Moody AFB where the 5-mile-radius Class D airspace surrounding the base and extending from the surface up to and including 2,700 feet MSL overlaps the R-3008A/B/C airspace. The Moody AFB control tower is responsible for all aircraft

operations within this airspace. The Class E airspace surrounding the Class C area and also extending into the restricted areas contains the instrument approach procedures pilots use, as necessary, to navigate to the Moody runways. Both classes are depicted on aeronautical charts.

The Valdosta Radar Approach Control (RAPCON) Facility at Moody AFB provides ATC services to the base and several other airports within its area of responsibility while also controlling aircraft transiting to/from R-3008A/B/C and the Moody 1/2 MOAs. This facility also provides required separation between other nonparticipating IFR aircraft transiting this region and this training airspace when active. As noted in Section 1.3, the RAPCON's new ATC radar system provides improved radar capabilities that enhance aircraft safety in Grand Bay Range and the surrounding airspace.

Overall, the close proximity of the R-3008A/B/C airspace to Moody AFB, the ATC services provided by the Moody ATC RAPCON and control tower, and the cooperative efforts of all concerned have provided for a safe environment for all air traffic operating in this region.

3.2 NOISE

3.2.1 Definition of the Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. Noise is the inverse of the resource being considered in this section—a sound environment that is quiet and/or desirable to the sound receptor (i.e., a person or animal hearing the sound). Responses to noise vary widely according to the characteristics of the sound source, the distance between the noise source and the receptor, and the time of day as well as the sensitivity and expectations of the receptor.

Sound intensity varies widely (from a soft whisper to a jet engine), and it is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is −6.

The frequency (or pitch) of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the

acoustic energy. Low-frequency sounds are heard as rumbles or roars, and high-frequency sounds are heard as screeches.

The communication of sound intensity is refined to account for frequency through the use of "A-weighting." The normal human ear can hear frequencies from about 20 to 20,000 Hz. However, not all sounds in this range are heard equally well. Therefore, through internal electronic circuitry, some sound meters are calibrated to emphasize frequencies in the 1,000- to 4,000-Hz range. The human ear is most sensitive to frequencies in this range, and sounds measured with these instruments are termed "A-weighted." For purposes of this document, dB levels provided are A-weighted unless otherwise noted. Examples of typical A-weighted sound levels of common sounds are shown in Figure 3-1.

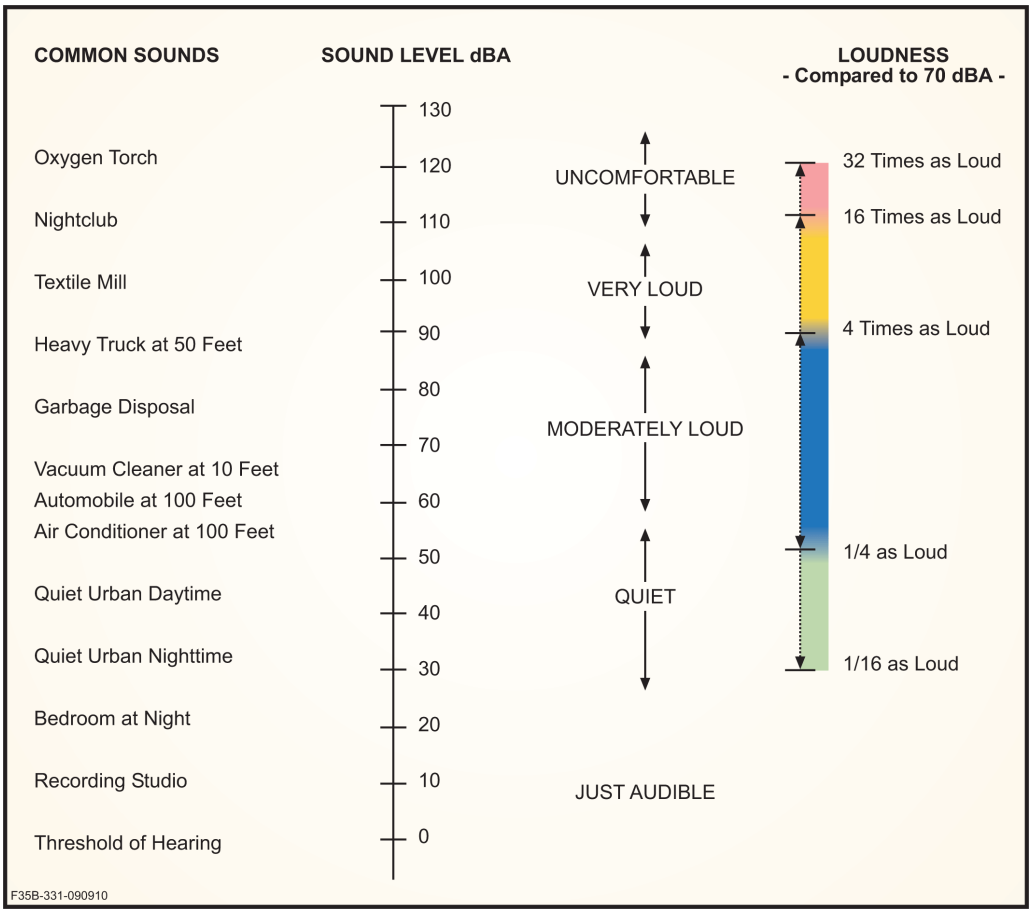


Figure 3-1. Typical A-Weighted Levels of Common Sounds

The word "metric" is used to describe a standard of measurement. As used in environmental noise analysis, there are many different types of noise metrics. Each metric has a different physical meaning, or interpretation, and each metric was developed by researchers attempting to represent the effects of environmental noise.

The metrics supporting the assessment of noise from aircraft operations and other activities evaluated in this document are the maximum sound level (L_{max}), and the day-night average sound level (DNL).

Maximum sound level (L_{max}). The highest A-weighted sound level measured during a single event in which the sound level changes value as time goes on (e.g., an aircraft overflight) is called the L_{max}. L_{max} is a useful metric for judging a noise event's interference with conversation and other common activities.

Day-night average sound level (DNL). The DNL metric sums individual A-weighted noise events and averages the resulting dB levels over a 24-hour period. Thus, it is a composite metric that considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. This metric adds 10 dB to those events that occur between 10:00 PM and 7:00 AM to account for the increased intrusiveness of noise events that occur at night when ambient noise levels are normally lower than during the day.

Ignoring the nighttime penalty, DNL may be thought of as the continuous or cumulative A-weighted sound level that would be present if all of the variations in sound level over the given time period were smoothed out so as to contain the same total sound energy. It is fully recognized that the DNL metric does not provide specific information on the number of noise events or the specific individual sound levels that occur. For example, a DNL of 65 dB could result from a very few noisy events or a large number of quieter events.

Although it does not represent the sound level heard at any one particular time, DNL does accurately represent the total sound exposure at a location. Social surveys have found the DNL metric to be the best predictor of community annoyance resulting from transportation noise. Its use is endorsed by the scientific community and several governmental agencies (USEPA, 1974; Federal Interagency Committee on Urban Noise, 1980; Federal Interagency Committee on Noise, 1992).

3.2.2 Existing Conditions

The ROI for noise includes Grand Bay Range, as well as areas adjacent to the range. Banks Lake NWR is located to the north of Grand Bay Range, and Moody AFB is to the west of the range. The remainder of the area surrounding the range is rural and characterized by farms and scattered residences.

The area is regularly exposed to elevated noise levels generated by military training operations. Table 3-1 lists maximum noise levels associated with direct

overflights by the A-10, A-29, C-130, and H-60 aircraft based at Moody AFB. Other military aircraft that are not based at Moody AFB, including the F-18 and H-1, use the range for training but less frequently.

Aircraft flight tracks at Grand Bay Range vary widely based on mission requirements but are concentrated near ground targets. Noise levels associated with aircraft training at Grand Bay Range exceed 65 dB DNL on the range, with the highest noise levels in the vicinity of the targets. Under current conditions, there are about 316 approaches made to Grand Bay Range targets and landing zones per average annual day (approximately 115,268 annually). The scenario described as "current conditions" reflects an operations tempo that would occur if all Moody AFB based units were to not deploy for an entire year. The current conditions scenario also reflects the operations of A-29 aircraft. Approaches to targets and landing zones include approaches directly or indirectly from Moody AFB as well as approaches originating from other airfields (i.e., transient aircraft).

Table 3-1. Direct Overflight Single-Event Maximum Noise Levels (L_{max})

Aircraft	Flight Configuration	L_{max} (dBA) at Altitude (feet AGL)				
		100	300	500	900	1,200
A-10[1]	5325 %NC	114	103	98	91	87
A-29[1,2]	100% torque	103	93	88	82	79
C-130J[1]	2500 HP	106	96	91	85	82
H-60[3]	80 knots	90	82	76	72	69

AGL = above ground level; dBA = A-weighted decibels; L_{max} = maximum sound level; RNM = Rotorcraft Noise Model; HP = horsepower; % NC = engine core speed
1. SELCALC; used median monthly average acoustic propagation conditions (67° F and 69% relative humidity).
2. A-29 modeled as T-6 (PT6A-68 engine) + 3dB as per the *Final EA for A-29 Light (LAS) Training Beddown* (U.S. Air Force, 2014).
3. RNM; used median monthly average acoustic propagation conditions (67° F and 69% relative humidity); used SH-60B reference acoustic data.

Noise levels under current conditions are depicted in Chapter 4 (Figure 4-1) to provide comparison with the Proposed Action.

Noise resulting from training operations at Grand Bay Range is not limited to aircraft noise. Munitions use on the range includes aerial gunnery training and explosive ordnance disposal detonations. High explosives are not permitted on the range; bombs and rockets delivered to targets on the range are inert, meaning they contain only a small spotting charge and generate little noise on impact. Munitions noise at Grand Bay Range is discussed in the Moody AFB Range Expansion Environmental Analysis BNOISE Screening Analysis (U.S. Air Force, 2013).

The area surrounding Grand Bay Range is rural and generally quiet when military training operations are not under way. Farm equipment and vehicle noise are heard intermittently throughout the year, and gunfire during hunting season is occasionally a part of the noise environment. Under normal circumstances, noise levels in a rural setting typically range between 35 and 44 dB DNL (USEPA, 1974) when military training is not under way.

3.3 SAFETY

3.3.1 Definition of the Resource

This section addresses flight safety associated with activities conducted by Moody AFB as they relate to the Proposed Action. Flight safety primarily examines potential aircraft accidents that may occur as a result of aircraft mishaps, including mid-air collisions with other aircraft. Flight safety also includes the potential for collisions between wildlife and aircraft, known as bird/wildlife-aircraft strike hazard (BASH).

The ROI for safety is the R-3008A/B/C airspace and associated local areas within the flight pattern of installation aircraft as these relate to proposed activities.

3.3.2 Existing Conditions

Aircraft Safety

It is impossible to predict when and if an aircraft accident may occur. Major considerations in any accident are loss of life and damage to property. The probability of an aircraft crashing into a populated area is extremely low, but it cannot be totally discounted. Several factors are relevant in the case of Moody AFB. First, the region around the base mostly consists of rural or natural areas. Also, military pilots are instructed to avoid direct overflight of population centers at very low altitudes. Finally, the limited amount of time the aircraft is over any specific geographic area limits the probability that a disabled aircraft would crash into a populated area.

Moody AFB has established a comprehensive aircraft mishap prevention program, as required by AFI 91-202, *The US Air Force Mishap Prevention Program*, dated 05 August 2011, to minimize loss of Air Force resources and protect personnel from death or injuries. Elements of the mishap prevention program include establishing:

- A process for tracking and trending incidents, as well as methods for determining program effectiveness.
- Metrics for measuring performance.

- Safety goals, objectives, and milestones that support Air Force established goals.
- Methods to identify and disseminate safety "best practices."

Over the last 10 years, there have been four Class A mishaps associated with Moody AFB aircraft. Class A mishaps are the most serious and result in loss of life, permanent total disability, a total cost in excess of $1 million, destruction of an aircraft, or damage to an aircraft beyond economical repair. Three of these mishaps were associated with the A-10 aircraft. The fourth mishap was associated with an HH-60 helicopter while the helicopter was remotely deployed.

Over that same 10-year span, four near-miss Hazardous Air Traffic Reports were recorded at the installation. A near miss is generally considered to be any circumstance in flight where the distance separating two aircraft is considered by either pilot to have constituted a hazardous situation involving a risk of collision.

In case an aircraft mishap does occur from a mid-air collision or because of other factors, there are well-established emergency response procedures currently in place. When normal, scheduled flying is in progress, Moody AFB maintains a highly trained emergency response team. If an aircraft accident occurs on non-Federal property, the agency initially responding would likely be the local fire department. Moody AFB emergency response teams are also available to respond to aircraft crashes off-base. Once the situation is stabilized, an investigation area would normally be established around the accident scene. The site would be secured by Air Force personnel, and the investigation phase would ensue. After all required investigations and related actions on the site are complete, the aircraft would be removed by Air Force personnel.

Overall, the purpose of these response procedures is to 1) save lives, property, and material by timely and correct response to mishaps; 2) quickly and accurately report mishaps to higher headquarters; and 3) investigate the mishap to preclude the recurrence of the same or a similar mishap.

Bird/Wildlife Aircraft Strike Hazard (BASH)

Bird-aircraft strikes constitute a safety concern because of the potential for damage to aircraft or injury to aircrews or local populations if an aircraft should crash. Over the last 25 years (1989 through 2014), the Air Force BASH Team documented 98,449 bird strikes nationally. Of these, 38 resulted in Class A mishaps where the aircraft was destroyed. These occurrences constituted approximately 0.04 percent of all reported bird-aircraft strikes (U.S. Air Force, 2015a).

The primary danger to aircraft is posed by birds. Terrestrial species (primarily deer, coyotes, skunks, and foxes) constitute only about 3 percent of total collisions (FAA and USDA, 2014). By count, the top 50 wildlife strikes involving Air Force aircraft from 1995 to 2014 were 1) various bird species (28, 814 strikes/$182 million in damages); 2) various bat species (1,678 strikes/$1.7 million in damages); and 3) "other," which may include terrestrial species (254 strikes/$ 0.7 million in damages) (U.S. Air Force, 2015a).

Although aircraft may encounter birds at altitudes of 30,000 feet MSL or higher, most birds fly close to the ground. Over 97 percent of reported bird strikes occur below 3,000 feet AGL. Approximately 30 percent of bird strikes happen in the airport environment, and almost 55 percent occur during low-altitude flight training. In addition, aircraft face collision dangers from other wildlife, such as deer, during takeoff or landing.

From 2004 through 2013, there were a total of 681 reported incidents of bird-aircraft strikes around Moody AFB, or an average of approximately 68 bird strikes per year. Of these, 51 resulted in some level of damage to the aircraft; however, no Class A mishaps or human fatalities have occurred. Table 3-2 summarizes bird strikes at the installation according to aircraft and lists the total damage incurred as a result of these strikes.

Table 3-2. Recent Bird Strike History for Moody AFB Aircraft (2004 to 2013)[a]

Aircraft	Number of Bird Strikes	Damaging Bird Strikes	Total Cost of Damage ($)
T-6	70	1	$100,000
T-38	39	9	$885,000
A-10[b]	85	26	$1,008,000
HH-60G[c]	127	2	$705
HC-130[c]	360	13	$175,957
Total	**681**	**51**	**$2,169,662**

Source: Griffin, 2014
Note: a. These strikes include known local area strikes around Moody AFB, as well as strikes from unknown locations. The strikes in unknown locations may have occurred well away from Moody AFB; however, information is unavailable to determine the actual location. Additionally, the T-6 and T-38 aircraft are no longer at Moody AFB.
b. A-10 data is from 2007 to 2014.
c. Sims, 2015

To minimize the potential for bird-aircraft strikes, Moody AFB has implemented an aggressive BASH program, including development of a BASH plan (Moody AFB, 2010). As part of this program, Moody AFB has established a Wildlife Hazard Warning System to be used for the immediate exchange of information between ground agencies and aircrews concerning the existence and location of birds posing a hazard to safe

flying operations. Based on the potential for bird hazards, the following bird watch conditions (BWCs) have been established:

- **Low**. Wildlife activity on or around the airfield representing low potential.
- **Moderate**. Wildlife activity near the active runway or other specific location representing increased potential for strikes. A moderate condition requires increased vigilance by all agencies and supervisors and caution by aircrews.
- **Severe**. Wildlife activity on or immediately above the active runway or other specific location representing high potential for strikes. Supervision and aircrews must thoroughly evaluate mission need before conducting operations in areas under construction.

Each flying unit must verify the BWC prior to commencing flying operations. Additionally, the BWC is included in the hourly Automated Terminal Information Service (ATIS) information if the condition is either moderate or severe. The absence of an advisory on the ATIS means the BWC is low. Any change in BWC is transmitted on control tower frequency by Moody AFB. Finally, all personnel working on or near the airfields must be perceptive to potentially hazardous bird activity and must immediately notify the Moody AFB Operations Office of any such activity (Moody AFB, 2010).

At training areas outside the airfield, such as Grand Bay Range, pilots must coordinate with the designated range/zone controlling officer to determine the minimum hazard and to change flight patterns as required to avoid bird activity (Moody AFB, 2010).

At Moody AFB, increased migratory bird activity typically occurs from 01 October to 28 February. Species of blackbirds and songbirds are of particular concern due to their intensity of activity around sunrise and sunset during winter. During this time frame, the following guidelines are followed to the maximum extent possible:

- Make every effort to not schedule takeoffs, landings, and low-level flights from one hour before to one hour after sunrise and sunset.
- Alter en route altitudes during low-level training, when necessary.
- Alter altitudes in military operating/training areas or ranges, when necessary.
- Minimize transition training in the local pattern and conduct this type of training only during a BWC of low or moderate.

According to historical bird strike data, during March to May and September to November, night migrations of neotropical migrants are significant. Neotropical migrants are a classification of songbirds that primarily migrate at night to and from the tropics of South America and North America every spring and fall. Roughly 75 percent of the songbirds migrate at levels between 500 and 2,000 feet AGL from dusk until dawn, and peak bird migration occurs during a half to full moon phase with thin to no cloud coverage. During this time frame, the following recommendations are implemented when possible:

- Limit flying at night unless mission critical.
- Increase altitudes (greater than 2,000 feet) during periods of the flight that do not require low-level flying (Moody AFB, 2010).

Moody AFB has a U.S. Department of Agriculture (USDA) wildlife biologist on staff to further assist with BASH-related issues, including removal of wildlife. For example, when birds congregate, various bioacoustic and pyrotechnic dispersal techniques are employed to reduce the bird density, with physical means employed to remove any deer, coyote, and red fox from the airfield. If required, other control measures that could be used are detailed in the BASH plan (Moody AFB, 2010).

3.4 AIR QUALITY

3.4.1 Definition of the Resource

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million or micrograms per cubic meter.

The current standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards established under the Clean Air Act (CAA) of 1990. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. The NAAQS provide both short- and long-term standards for the following criteria pollutants: carbon monoxide, nitrogen dioxide, sulfur dioxide, particulate matter equal to or less than 10 and 2.5 micrometers, ozone, and lead.

Under the CAA it is the responsibility of the individual states to achieve and maintain the NAAQS. To accomplish this, states use the U.S. Environmental Protection

Agency (USEPA)-required State Implementation Plan (SIP). A SIP identifies goals, strategies, schedules, and enforcement actions designed to reduce the level of pollutants in the air and bring the state into compliance with the NAAQS.

All areas of the U.S. are designated as having air quality better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Areas where there are insufficient air quality data for the USEPA to form a basis for attainment status are unclassifiable. Thus, such areas are treated as attainment areas until proven otherwise. "Maintenance areas" are those that were previously classified as nonattainment but where air pollution concentrations have been successfully reduced to levels below the standard. Maintenance areas are subject to special maintenance plans to ensure compliance with the NAAQS.

Hazardous air pollutants (HAPs) are chemicals that are known or suspected of causing cancer or other serious health effects. Unlike the criteria pollutants, HAPs currently do not have national ambient standards. Some, volatile organic compounds (VOCs) are classified as HAPs. VOCs are also ozone precursors and include any organic compound involved in atmospheric photochemical reactions, except those designated by a USEPA administrator as having negligible photochemical reactivity. HAPs are not covered by the NAAQS but may present a threat of adverse human health or environmental effects under certain conditions.

3.4.2 Existing Conditions

Climate

Moody AFB is located within the interior climate region of Georgia, which is characterized as being humid subtropical. During the summer months, the area experiences long spells of warm and humid weather. The average high temperature ranges from the upper 80s degrees Fahrenheit (°F) to the low 90s °F. July is the warmest month of the year with an average maximum temperature of 90.4°F. Winters are cool with average temperatures in the high 40s to low 50s °F. January is the coldest month of the year (36.2°F monthly average). Temperature variations between night and day tend to be moderate during summer and winter; differences can reach 22°F and 26°F, respectively. Precipitation is fairly evenly distributed throughout the year, with an average of 45 inches per year primarily in the form of rain (Idcide, 2014). Snowfall occurs a few days per year and is considered rare. Winds typically come from the north in the fall and winter and south in the summer, averaging between 3 and 6 miles per hour (National Climatic Data Center, 1998). Strong, gusty winds associated with

thunderstorms and tropical systems and occasional hail and sleet affect the region (State Climate Office of North Carolina, 2014).

Air Quality

Moody AFB is located in Lowndes and Lanier Counties. According to USEPA, both counties are in attainment for all criteria pollutants (USEPA, 2014), and a conformity determination would not be required. The proposed Grand Bay Range project area is located in both Lowndes and Lanier Counties, therefore, the two-county area is the ROI used for the air quality analysis.

Emissions that would be generated were compared with Lowndes and Lanier County emissions obtained from USEPA's 2011 National Emissions Inventory (NEI). NEI data are the latest available; these are presented in Table 3-3. The county data include emissions amounts from point sources, area sources, and mobile sources. *Point sources* are stationary sources that can be identified by name and location. *Area sources* are point sources from which emissions are too low to track individually, such as a home or small office building, or a diffuse stationary source, such as wildfires or agricultural tilling. *Mobile sources* are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and nonroad. On-road sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Nonroad sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2011).

Table 3-3. Current Criteria Pollutant Emissions Inventory for Lowndes and Lanier County, Georgia

Criteria Pollutant (tons/year)						
County	**CO**	**NO_X**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**VOCs**
Lowndes	33,591	6,475	16,457	3,814	784	25,765
Lanier	5,931	482	4,271	1,068	22.46484	13,558
Total	**39,522**	**6,956**	**20,728**	**4,882**	**807**	**39,324**

Source: USEPA, 2011
CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; SO_2 = sulfur dioxide; VOC = volatile organic compound

GHG Emissions/Current

Greenhouse gases (GHGs) are gases that trap heat in the atmosphere; the accumulation of these gases in the atmosphere has been attributed to the regulation of Earth's temperature. Human activity in the past century is "very likely" (90 percent

chance) the cause of the observed increase in GHG concentrations (Intergovernmental Panel on Climate Change, 2007). Thus, regulations to inventory and decrease emissions of GHGs have been promulgated. On October 30, 2009, the USEPA published a rule for the mandatory reporting of GHGs from sources that, in general, emit 25,000 metric tons or more of carbon dioxide equivalent per year in the United States. The USEPA also recently promulgated the Prevention of Significant Deterioration and Title V GHG Tailoring Rule, which will impose GHG permitting requirements on existing major sources with major modifications and certain new major sources. At this time, a threshold of significance has not been established for the emissions of GHGs.

The six primary GHGs, defined in Section 19(i) of Executive Order 13514, are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Each GHG has an estimated global warming potential (GWP), which is a function of its atmospheric lifetime and its ability to absorb and radiate infrared energy emitted from the Earth's surface. The GWP allows GHGs to be compared with each other by converting the GHG quantity into the common unit "carbon dioxide equivalent." Current GHG emissions for Lowndes and Lanier Counties, obtained from USEPA's 2011 NEI, are summarized in Table 3-4.

Table 3-4. Current Greenhouse Gas Emissions Inventory for Lowndes and Lanier County, Georgia

Greenhouse Gases (tons/year)				
County	**CO_2**	**N_2O**	**CH_4**	**CO_2e**
Lowndes	967,520	34	97	980,077
Lanier	57,610	3	4	58,604
Total	**1,025,130**	**37**	**100**	**1,038,681**

Source: USEPA, 2011
CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide

3.5 CULTURAL RESOURCES

3.5.1 Definition of the Resource

Cultural resources consist of prehistoric and historic sites, structures, artifacts, and any other physical or traditional evidence of human activity considered relevant to a particular culture or community for scientific, traditional, religious, or other reasons. As defined under 32 CFR 800 (l)(1), "Historic Property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related and located within

such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria."

The following subsections describe known historic properties within the areas underneath the affected airspace that are potentially eligible for listing on the NRHP. These include any archaeological resources considered eligible or potentially eligible for listing on the NRHP, as well as any currently listed. These may also include historic structures, historic districts, any of the known eligible historic cemeteries, or traditional cultural properties (TCPs).

3.5.2 Existing Conditions

The Area of Potential Effects (APE) for this Proposed Action is the land beneath the affected airspace shown in Figure 1-2 and Figure 3-2. Within this APE, there are 33 identified archaeological sites; of these, 21 are located in Lanier County and 12 are in Lowndes County. Ten of the sites are considered prehistoric lithic scatters, nine sites contain historic and prehistoric components, eight sites are prehistoric artifact scatters, five sites are historic artifact scatters, and one site is a historic cemetery. No sites have been evaluated as eligible for listing on the NRHP; site 9LW67 was recently evaluated and determined as ineligible for listing on the NRHP. Sites 8LN8 and 8LN50 are described in the Georgia database as "unknown" as to NHRP eligibility. Sites 9LN11, 8LN27, and 8LN49 are also described as unknown as to eligibility but are 50 percent or more destroyed by subsequent development and timbering (GNAHRGIS, 2015; Moody, AFB 2012). The nearest historic structure considered eligible for the NRHP is the base water tower; it is located on the west side of the runway approximately 1 mile from the affected airspace.

The sole NRHP-listed resource under the airspace is the Lanier County Auditorium and Grammar School located in the city of Lakeland, Georgia (Figure 3-2).

Two structures still remain from a three-building complex originally constructed in 1925. The Lanier County Auditorium and Grammar School is significant in architecture as an unusual and distinctive example of eclectic early 20th century meshing of Georgian Revival architecture with more nontraditional elements. The remaining buildings are also considered significant for their educational attachment, because they are the only remaining facilities associated with the county's first consolidated school system. These structures are listed under National Register Criteria A and C (NPS, 2015).

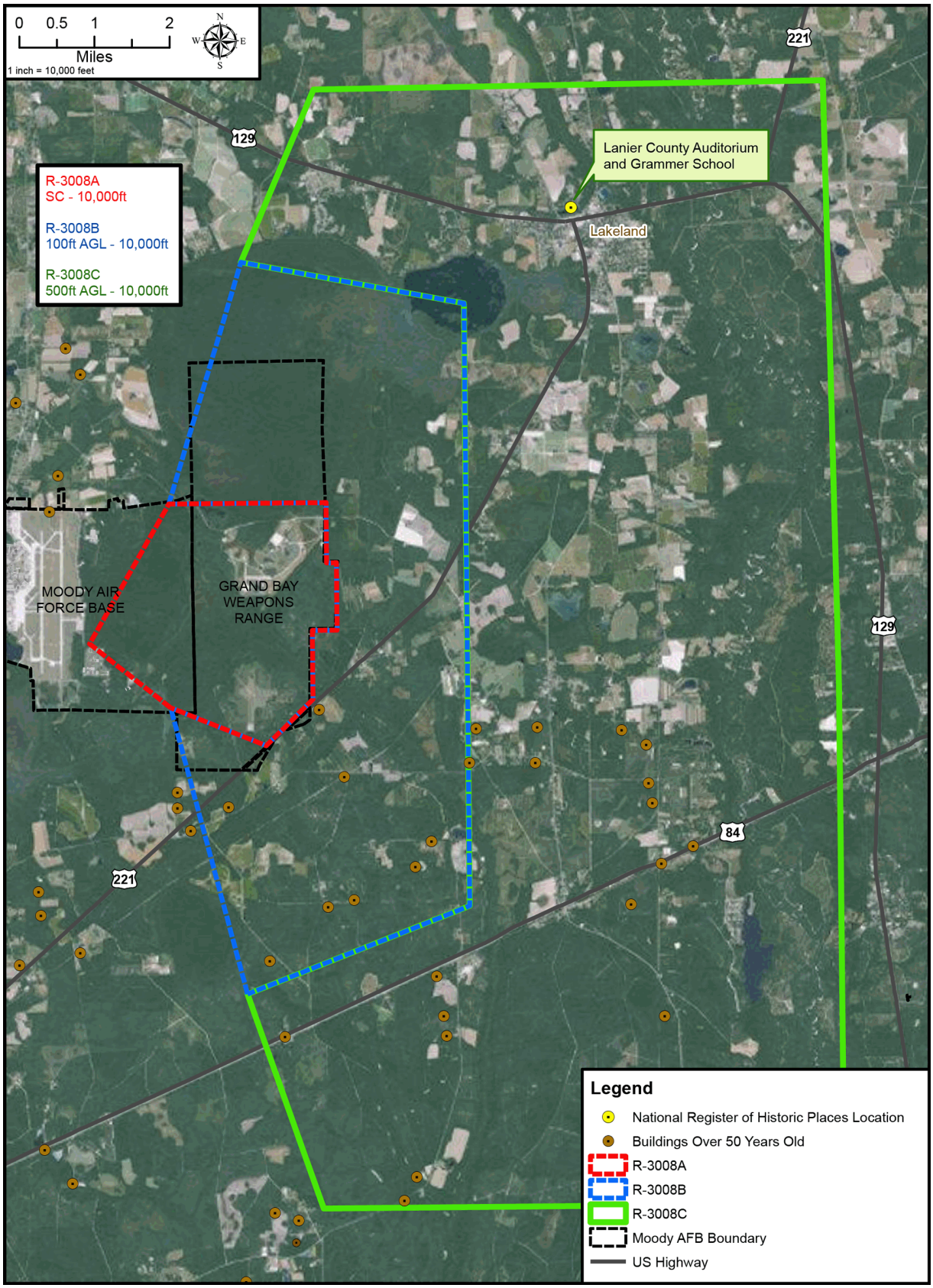


Figure 3-2. Location of NRHP Site and Structures 50 Years or Older Within the APE (APE Represented by the Depicted Airspace Subareas)

No other NRHP-listed historic structures or buildings fall within the vicinity of the APE for this project (GNAHRGIS, 2015; Moody AFB, 2012).

There are no identified TCPs on Moody AFB associated with American Indian traditions or beliefs, and no known TCPs under Moody airspace. Although the Air Force has not conducted any surveys or investigations off Moody AFB property that have focused on identifying either TCPs or sacred sites, the installation has consulted with the appropriate Native American tribes to determine there are no known sites within the APE for this project (Moody AFB, 2012); none of the tribes identified any concerns associated with the Proposed Action.

On June 11, 2015, Moody AFB completed NHPA Section 106 consultation with the Georgia SHPO for potential impacts to cultural resources. The SHPO concurred on a finding of no adverse effect to cultural resources (see Appendix A).

3.6 BIOLOGICAL RESOURCES

3.6.1 Definition of the Resource

For purposes of this EA, biological resources include plant and animal species and the habitats in which they occur. The ROI for biological resources consists of the airspace and underlying lands that would be affected by additional aircraft operations under IFR conditions. These areas would include Moody AFB as well as the off-base areas underlying R-3008A/B/C. Some wildlife species may reside in the area for relatively long time periods, while others, such as birds, could have temporary or irregular occurrence due to movements associated with migrations, foraging, or other life functions. This section describes plant and animal species and natural community types that are typical of the ROI and also identifies biological resources that are protected by Federal or state law or statute. Species with regulatory protection or those otherwise considered rare or vulnerable to human disturbance are defined as *sensitive species* in this document. Sensitive species are protected by and/or listed under the ESA, Migratory Bird Treaty Act (MBTA), the Bald and Golden Eagle Protection Act (BGEPA), Executive Order 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*), the Georgia DNR, and the Georgia Natural Heritage Program (NHP).

The ESA prohibits the unauthorized take of threatened or endangered species, where "take" is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct. An endangered species is defined as any species in danger of extinction throughout all or a significant portion of

its range, while a threatened species is defined as any species likely to become an endangered species in the foreseeable future. The ESA also requires critical habitat to be identified for listed species. Critical habitat is defined as the physical and biological features essential for a species' conservation, including food, water, and shelter, among others. In addition to endangered and threatened designations, the USFWS has identified an additional status category of "candidate species." Candidate species are those species for which sufficient information is available to propose them as endangered or threatened under the ESA, but for which development of a proposed regulation is precluded by other, higher-priority listing activities.

Moody AFB completed ESA Section 7 consultation with the USFWS regarding listed species on June 30, 2015, which concurred on a "No Effect" determination for listed species (Appendix A).

The Georgia DNR provides lists of protected plants and animals, which may be designated as endangered, threatened, rare, or unusual. The definitions of "endangered" and "threatened" are the same as those provided under the Federal ESA. "Rare" species are considered to be those species that are not listed as endangered or threatened but that should be protected because of their scarcity. "Unusual" species are defined as those species deserving of special consideration and, in the case of plants, subject to commercial exploitation.

Georgia's NHP also lists species for which conservation is considered desirable based on their association with relatively undisturbed habitats, as well as their recreational, aesthetic, or cultural value. A number of global and state NHP designations are available, including:

- G1: critically imperiled globally
- G2: imperiled globally
- G3: rare and local throughout range or in a special habitat or narrowly endemic
- G4: apparently secure
- G5: demonstrably secure globally
- S1: critically imperiled in Georgia
- S2: imperiled in Georgia
- S3: rare and uncommon throughout the state or in a special habitat or narrowly endemic

- S4: apparently secure
- S5: demonstrably secure in the state

The MBTA provides for the conservation of migratory birds, which are defined as any species or family of birds that live, reproduce, or migrate within or across international borders at some point during their annual life cycle. Unless permitted, the MBTA prohibits the taking of migratory birds. The USFWS published a rule authorizing incidental take of migratory birds during military readiness activities in 2007. If such activities may result in a significant adverse effect on a population of a migratory bird species, the action proponent must confer with the USFWS to develop mitigation measures. A "significant adverse effect" is defined as an effect that could, within a reasonable period of time, diminish the capacity of a population of migratory bird species to sustain itself at a biologically viable level. A population is "biologically viable" when its ability to maintain its genetic diversity, reproduce, and function effectively in its native ecosystem is not significantly harmed. Military readiness activities include training and testing actions related to combat but do not include activities such as construction projects, even if the construction is in support of combat training.

Migratory birds are further addressed in Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, which requires Federal agencies to evaluate the effects of their actions on migratory birds (with an emphasis on species of concern). Species of concern are those identified in 1) the USFWS report *Migratory Nongame Birds of Management Concern in the United States*, 2) priority species identified by established plans such as those prepared by Partners In Flight, or 3) listed species in 50 C.F.R. 17.11, Endangered and Threatened Wildlife.

The BGEPA prohibits, without a permit issued by the USFWS, the taking of bald (*Haliaeetus leucocephalus*) or golden (*Aquila chrysaetos*) eagles. "Take" is defined as to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb. "Disturb" is defined as actions that result in or are likely to result in injury, decreased productivity, or nest abandonment.

3.6.2 Existing Conditions

Vegetation and Habitats

Although vegetation and habitats would not be directly affected by air operations under IFR, these resources support and affect the occurrence and

distribution of wildlife species in the ROI. Information on vegetation and plant community associations on Moody AFB is provided in the base's *Integrated Natural Resources Management Plan* (INRMP) (Moody AFB, 2013). Although the INRMP primarily provides information on base-controlled property, the descriptions are considered representative of natural areas and their associated wildlife species in the vicinity of the base. The exception is that agricultural lands, which could support some wildlife species at least occasionally, are present below the affected airspace. However, it is not expected that the presence of agricultural fields in the region would affect the overall wildlife species composition, and information provided in the INRMP is considered sufficient for describing the ROI. Natural vegetation communities on and near Moody AFB consist of wetland habitat, longleaf (*Pinus palustris*)/slash pine (*P. elliottii*) forest, pine plantation, and mixed hardwood forest.

Wildlife

The natural areas and agricultural lands of the ROI provide habitat that supports a large number of wildlife species. A total of 24 amphibian, 38 reptile, 34 mammal, 169 bird, and 23 fish species have been documented on Moody AFB (Moody AFB, 2013). Species considered representative of wetland and upland forest habitats are listed in (Table 3-5 and Table 3-6). In addition to the mammals listed in the tables, seven bat species have been documented in forested and/or wetland habitats on the base (BHE Environmental, Inc., 2001).

Table 3-5. Representative Wildlife Species of Wetland Habitats

Common Name	Scientific Name	Common Name	Scientific Name
Mammals		Birds	
Opossum	*Didelphis virginiana*	Red-shouldered hawk	*Buteo lineatus*
Raccoon	*Procyon lotor*	Pileated woodpecker	*Dryocopus pileatus*
Gray fox	*Urocyon cinereoargenteus*	Downy woodpecker	*Picoides pubescens*
Gray squirrel	*Sciurus carolinensis*	Red-bellied woodpecker	*Melanerpes carolinus*
Eastern cottontail rabbit	*Sylvilagus floridanus*	Northern flicker	*Colaptes auratus*
White-tailed deer	*Odocoileus virginianus*	Yellow-bellied sapsucker	*Sphyrapicus varius*
North American beaver	*Castor canadensis*	Carolina chickadee	*Poecile carolinensis*
Reptiles		Tufted titmouse	*Baeolophus bicolor*
Eastern box turtle	*Terrapene carolina carolina*	Carolina wren	*Thryothorus ludovicianus*
Common snapping turtle	*Chelydra serpentina*	Blue-gray gnatcatcher	*Polioptila caerulea*
Eastern cottonmouth	*Agkistrodon piscivorus*	Great crested flycatcher	*Myiarchus crinitus*
Southern water snake	*Nerodia fasciata*	Ruby-crowned kinglet	*Regulus calendula*
Eastern mud snake	*Farancia abacura abacura*	Eastern kingbird	*Tyrannus tyrannus*

Table 3-5. Representative Wildlife Species of Wetland Habitats, Cont'd

Common Name	Scientific Name	Common Name	Scientific Name
Amphibians		White-eyed vireo	*Vireo griseus*
Spotted salamander	*Ambystoma maculatum*	Red-eyed vireo	*Vireo olivaceus*
Tiger salamander	*Ambystoma tigrinium*	Northern parula	*Setophaga americana*
Green tree frog	*Hyla cinerea*	Common grackle	*Quiscalus quiscula*
Eastern spadefoot toad	*Scaphiopus holbrooki*	Blue jay	*Cyanocitta cristata*
Southern toad	*Bufo terrestris*	Brown thrasher	*Toxostoma rufum*
		Gray catbird	*Dumetella carolinensis*
		Northern cardinal	*Cardinalis cardinalis*
		Hooded warbler	*Setophaga citrina*
		Prothonotary warbler	*Protonotaria citrea*
		Wood duck	*Aix sponsa*
		Great blue heron	*Ardea herodias*
		Great egret	*Ardea alba*
		Belted kingfisher	*Megaceryle alcyon*

Source: Moody AFB, 2013

Table 3-6. Representative Wildlife Species of Pine and Hardwood Habitats

Common Name	Scientific Name	Common Name	Scientific Name
Mammals		Birds	
Opossum	*Didelphis virginiana*	Northern bobwhite quail	*Colinus virginianus*
Raccoon	*Procyon lotor*	Red-shouldered hawk	*Buteo lineatus*
Striped skunk	*Mephitis mephitis*	Yellow-billed cuckoo	*Coccyzus americanus*
Gray fox	*Urocyon cinereoargenteus*	Ruby-throated hummingbird	*Archilochus colubris*
Fox squirrel	*Sciurus niger*	Pileated woodpecker	*Dryocopus pileatus*
Gray squirrel	*Sciurus carolinensis*	Downy woodpecker	*Picoides pubescens*
Eastern cottontail rabbit	*Sylvilagus floridanus*	Red-bellied woodpecker	*Melanerpes carolinus*
White-tailed deer	*Odocoileus virginianus*	Northern flicker	*Colaptes auratus*
Reptiles		American crow	*Corvus brachyrhynchos*
Eastern box turtle	*Terrapene carolina carolina*	Carolina chickadee	*Poecile carolinensis*
Five-lined skink	*Eumeces inexpectatus*	Tufted titmouse	*Baeolophus bicolor*
Timber rattlesnake	*Crotalus horridus*	Brown-headed nuthatch	*Sitta pusilla*
Black racer	*Coluber constrictor*	Carolina wren	*Thryothorus ludovicianus*
Eastern cottonmouth	*Agkistrodon piscivorus*	Blue-gray gnatcatcher	*Polioptila caerulea*
Eastern indigo snake	*Drymarchon corais couperi*	Ruby-crowned kinglet	*Regulus calendula*

Table 3-6. Representative Wildlife Species of Pine and Hardwood Habitats, Cont'd

Common Name	Scientific Name	Common Name	Scientific Name
Gopher tortoise	*Gopherus polyphemus*	Wild turkey	*Meleagris gallopavo*
Amphibians		White-eyed vireo	*Vireo griseus*
Little grass frog	*Pseudacris ocularis*	Red-eyed vireo	*Vireo olivaceus*
Squirrel tree frog	*Hyla squirella*	Northern parula	*Setophaga americana*
Eastern spadefoot toad	*Scaphiopus holbrooki*	Common grackle	*Quiscalus quiscula*
		Summer tanager	*Piranga rubra*
		Eastern towhee	*Pipilo erythrophthalmus*
		White-throated sparrow	*Zonotrichia albicollis*

Source: Moody AFB, 2013

Two notable natural areas occur within the ROI (Figure 3-3). The Banks Lake NWR is located approximately 1 mile northeast of the main base, adjacent to the northern boundary of Grand Bay Range. The NWR is over 4,000 acres in size and includes about 1,000 acres of marsh, 1,644 acres of cypress swamp, 900 acres of open water, and 15 acres of uplands. Banks Lake is the most prominent feature of the area. The refuge supports a variety of wildlife species (primarily aquatic species), including wading birds, marsh birds, migratory waterfowl, bald eagle, round-tailed muskrat (*Neofiber alleni*), turtles, American alligator (*Alligator mississippiensis*), and numerous amphibians. Large numbers of sandhill cranes (*Grus* spp.) and wood storks (*Mycteria americana*), among other bird species, use the area.

The Grand Bay Wildlife Management Area (WMA) is located immediately south of Moody AFB but also includes some area of base property. The WMA comprises 8,663 acres of Federal, state, county, and private property. The Federal portion, which totals 5,874 acres, is owned by Moody AFB and includes the Grand Bay Range. Habitats consist of creek and bay swamp, pine flatwoods, mixed hardwood/pine stands, and open field. Both of these areas provide excellent wildlife habitat and, in particular, support a diversity of resident and migratory birds. The state-listed round-tailed muskrat has been documented in Grand Bay WMA. A wading bird (heron, egret, and ibis) rookery is located within the state-owned portion of the WMA.

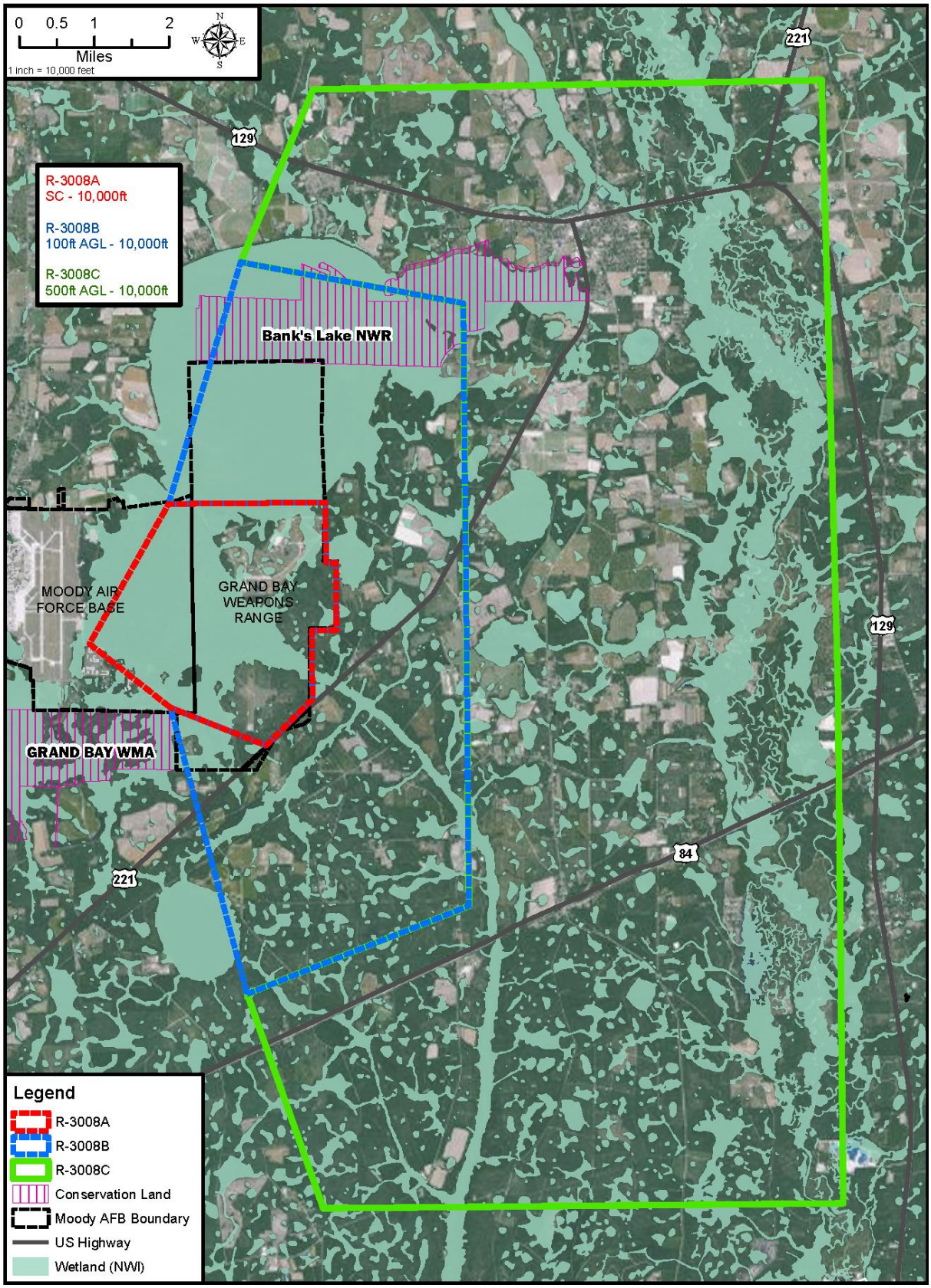


Figure 3-3. Wildlife Conservation Areas in the ROI

Sensitive Species

Sensitive species with known or potential occurrence on or near Moody AFB, and with the potential to be impacted by the Proposed Action, are listed in (Table 3-7). Plant species are not provided, because the Proposed Action does not include ground-disturbing activities. Fish species are not included because noise associated with air operations would not substantially affect the underwater environment, and there would be no other mechanism of impact to underwater species. Seven of the referenced species are protected by Federal laws (ESA, BGEPA, and MBTA). A brief description of each Federally listed and Federal candidate species can be found at the USFWS website (http://www.fws.gov/endangered/).

Table 3-7. Sensitive Species with Known or Potential Occurrence On or Near Moody AFB

Common Name	Scientific Name	Federal Status	State Status	NHP Status
Amphibians				
Frosted flatwoods salamander	*Ambystoma cingulatum*	T	T	G2/S2
Striped newt	*Notophthalmus perstriatus*	Candidate	T	G2G3/S2
Broad-striped dwarf siren[1]	*Pseudobranchus striatus striatus*	None	None	G5/S3
Birds				
Bachman's sparrow[1]	*Aimophila aestivalis*	None	R	G3/S3
American bittern[1]	*Botaurus lentiginosus*	None	None	G4/S3?
Little blue heron[1]	*Egretta caerulea*	None	None	G5/S3?
Yellow-crowned night heron	*Nyctanassa violacea*	None	None	G5/S3S4
Black-crowned night heron	*Nycticorax nycticorax*	None	None	G5/S4
Southeastern American kestrel[1]	*Falco sparverius paulus*	None	None	G5/S3
Florida sandhill crane[1]	*Grus canadensis pratensis*	None	None	G5/S1
Greater sandhill crane[1]	*Grus canadensis tabida*	None	None	G5/S2
Wood stork[1]	*Mycteria americana*	T	E	G4/S2
Southern bald eagle[1]	*Haliaeetus l. leucocephalus*	BGEPA	E	G4/S2
Loggerhead shrike[1]	*Lanius ludovicianus migrans*	None	None	G5/S?
Mammals				
Florida black bear	*Ursus americanus floridanus*	None	None	G5T2/S2
Northern yellow bat[1]	*Lasiurus intermedius*	None	None	G4G5/S2S3
Southeastern myotis[1]	*Myotis austroriparius*	None	None	G3G4/S3
Round-tailed muskrat[1]	*Neofiber alleni*	None	T	G3/S3
Reptiles				
American alligator[1]	*Alligator mississippiensis*	T (S/A)	None	G5/S4
Eastern indigo snake[1]	*Drymarchon corais couperi*	T	T	G4/S3
Striped crayfish snake	*Regina alleni*	None	None	G5/S2
Southern hognose snake[1]	*Heterodon simus*	None	None	G2/S2

Table 3-7. Sensitive Species with Known or Potential Occurrence On or Near Moody AFB, Cont'd

Common Name	Scientific Name	Federal Status	State Status	NHP Status
Eastern coral snake[1]	*Micrurus fulvius*	None	None	G5/S3
Gopher tortoise[1]	*Gopherus polyphemus*	Candidate	T	G3/S3
Striped mud turtle[1]	*Kinosternon baurii*	None	None	G5/S3
Alligator snapping turtle[1]	*Macrochelys temminckii*	None	T	G3G4/S3
Spotted turtle	*Clemmys guttata*	None	U	G5/S3

Source: Moody AFB, 2013; Moody AFB, 2008; Georgia DNR, 2013
BGEPA = Bald and Golden Eagle Protection Act; E = endangered; NHP = Natural Heritage Program; R = rare; S/A = similarity of appearance; T = threatened; U = unusual; ? = questionable rank, best guess provided
1. Species identified on Moody AFB.

The frosted flatwoods salamander (*Ambystoma cingulatum*), wood stork (U.S. breeding population), American alligator, and eastern indigo snake (*Drymarchon corais couperi*) are listed as threatened under the ESA, while the striped newt (*Notophthalmus peristriatus*) and gopher tortoise (*Gopherus polyphemus*) are candidate species. The bald eagle is protected under the BGEPA, as well as the MBTA. The frosted flatwoods salamander and striped newt occur in the geographic region of the installation but have not been observed on the base, and habitat conditions are generally considered marginal (Palis, 2005).

Ten species are listed as endangered, threatened, rare, or unusual by the State of Georgia. Six of these species are protected by Federal laws and are discussed above. Descriptions of the remaining four species can be found at the Georgia DNR's Wildlife Resources Division website (http://www.georgiawildlife.com/rare_species_profiles). The round-tailed muskrat and alligator snapping turtle (*Macrochelys temminckii*) are listed by the state as threatened, while Bachman's sparrow (*Aimophila aestivalis*) is listed as rare and the spotted turtle (*Clemmys guttata*) is considered unusual. The spotted turtle occurs in the geographic region of Moody AFB but has not been documented on the installation. The remaining three species have been identified on the base.

Of the sensitive species listed above, the wood stork and bald eagle are considered to have the greatest potential to be affected and are described further. The wood stork is a large, long-legged wading bird that occurs from the southeastern United States to South America (USFWS, 1997). Wood storks nest in large colonies, using trees located in wetlands or on islands surrounded by standing water. In Georgia, the nesting period generally begins in late winter or early spring and concludes by late summer. Wood storks forage in a wide variety of shallow wetlands, ponds, or seasonally flooded ditches where there is a concentration of fish or other

aquatic prey. There are no wood stork rookeries within the affected airspace. The closest rookery to Grand Bay Range is located about 13 miles to the west, near Hahira, Georgia. Two other rookeries are located about 15 to 18 miles north and northwest of the base. Wood storks are occasionally seen in the wetlands on Moody AFB and surrounding areas when suitable foraging conditions exist (Moody AFB, 2008). The species has been sighted at Banks Lake NWR, Shiner Pond (located along the central-northern boundary of the base), Dudley's Hammock (located in the south-central portion of Moody AFB), and Grand Bay Creek (the major wetland drainage that flows off the base to the southeast). However, wood storks typically do not use the Grand Bay-Banks Lake watershed for extensive foraging, and the existing scrub-shrub habitat on Grand Bay Range is considered marginal stork habitat.

The bald eagle, protected under the BGEPA and MBTA, occurs throughout Georgia, but nesting activity appears to be concentrated along the coast and near major rivers, wetlands, and reservoirs in the southern and central portions of the state (Georgia DNR, 2010). Bald eagles are usually found near open water. Diet consists of fish, waterfowl and other birds, turtles, small mammals, and carrion. Nesting is not known on or near Moody AFB; the closest nesting site is about 15 miles south at Grassy Pond Recreational Annex (Moody AFB, 2013). Eagles are occasionally observed foraging in wetlands on the base, particularly near Shiner Pond and Oldfield Bay (located immediately north of Grand Bay Weapons Range), and may forage occasionally at other nearby areas as well.

4. ENVIRONMENTAL CONSEQUENCES

4.1 AIRSPACE

4.1.1 Analysis Methodology

The airspace assessment considers if and to what extent a proposed action may affect all military and civilian airspace uses within the ROI. This includes examining any proposed changes or additions to the existing airspace structure, current versus projected future aircraft operations, and other such factors that could adversely affect the flight safety in the region. As a cooperating agency, the FAA also reviews the proposed action for any such conditions that may affect their air traffic flows and system capabilities.

4.1.2 Proposed Action

The Proposed Action would permit military aircraft to conduct their mission activities in the R-3008A/B/C restricted areas under instrument meteorological conditions where they are currently limited to VMC. As noted in Section 2.2, this would result in a reduction in the hours of scheduled use lost to inclement weather of approximately 250 hours, equating to about 505 aircraft sorties. The Proposed Action would improve availability of the range by about 12.5 percent annually, which is still within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*). IFR operations under the Proposed Action would have a negligible effect on other airspace uses in this area.

During those periods when weather conditions would require that military aircraft operate under IFR in Grand Bay Range/R-3008 restricted areas, nonparticipating IFR flights in the area would be separated from this airspace and other IFR air traffic in the same manner as always provided by the Valdosta RAPCON and Moody AFB control tower. Since VFR aircraft are not permitted to operate in those weather conditions that do not meet regulated visibility and cloud ceiling requirements, those aircraft should not be a factor for military aircraft during Grand Bay Range IFR operations. Regardless of the existing VFR or IFR weather conditions, military aircrews are constantly vigilant for other nonparticipating aircraft operating within their training environment using both visual observations and the aircraft's radar system capabilities, as equipped.

No significant adverse impacts to airspace have been identified under the Proposed Action.

4.1.3 No Action Alternative

R-3008A/B/C airspace would continue to operate as it does under current conditions and there would be no change. As a result, the No Action Alternative would not result in any additional impacts to airspace beyond the scope of normal conditions and influences within the region.

4.2 NOISE

4.2.1 Analysis Methodology

Public annoyance is the most common impact associated with exposure to elevated noise levels. As described in Section 3.2.1, annoyance due to aircraft noise can be predicted based on the noise metric DNL (Schultz, 1978; Finegold et al., 1994). When subjected to DNL of 65 dB, approximately 12 percent of persons so exposed will be "highly annoyed" by the noise. At levels below 55 dB, the percentage of annoyance is correspondingly lower (less than 3 percent). Based on numerous sociological surveys and recommendations of Federal interagency councils, the most common benchmark referred to is 65 dB DNL. Above this threshold not all land uses are considered to be compatible, according to guidelines adopted by the DoD (DoD Instruction 4165.57).

The programs NOISEMAP and Rotorcraft Noise Model (RNM) were used to calculate time-averaged noise levels based on expected aircraft flight paths, altitudes, engine power settings, and airspeeds. The flight paths used in noise modeling are representative and would vary according to winds, weather conditions, and other factors. RNM is a program designed to handle the complex noise distribution patterns generated by rotorcraft, and it was used for modeling H-60 operations noise. NOISEMAP was used to model all fixed-wing aircraft noise and noise generated by rotorcraft for which RNM reference acoustic data are not yet available. SH-60B reference acoustic data was used as a surrogate for HH-60 noise levels.

Reference acoustic data for the A-29 Super Tucano is not available in the noise model NOISEMAP. As described in the *Final EA for A-29 Light Air Support (LAS) Training Beddown* (U.S. Air Force, 2014), the T-6 Texan II was used as a surrogate for the A-29 because of similarities between the aircraft, including aircraft size and similar engine type. The actual difference in noise level between the T-6 aircraft and the A-29 aircraft is not known. Because of this, the A-29 was modeled conservatively as 3 dB louder than the T-6.

In keeping with current Air Force policy, time-averaged noise levels were calculated for an average annual day (i.e., total annual operations divided evenly across 365 days). Modeling included the effects of terrain and land cover on the propagation of noise.

4.2.2 Proposed Action

As noted in Section 2.2, this would result in a reduction in the hours of scheduled use lost to inclement weather of approximately 250 hours, equating to about 505 aircraft sorties. The Proposed Action would improve availability of the range by about 12.5 percent annually, which is still within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*). Approaches to targets and landing zones on Grand Bay Range would be about 356 per day (124,624 annual) under the Proposed Action. No other aspect of training would change under the Proposed Action. The types of aircraft, times of day during which aircraft fly, altitudes used, and other characteristics of range training would remain the same as under current conditions. Noise levels associated with individual training operations would not change relative to noise levels experienced currently (see Table 3-1). The expected 12.5 percent improvement in range availability would result in increases in time-averaged noise levels of less than 1 dB DNL at locations near the range. Noise contours depicting noise levels under current conditions and the Proposed Action are shown in Figure 4-1. In accordance with Air Force standard practice, noise contours are shown in 5-dB increments ranging from 65 to 85 A-weighted dBs (dBA) DNL. In other NEPA documents, the 60-dBA DNL noise contour may be shown for informational purposes, but this EA includes the standard contour set.

Under current conditions, when VFR minimums are not met at Grand Bay Range, Moody AFB-based aircraft conduct training elsewhere (e.g., MOAs). Because the total number of flying hours per year allocated to Moody AFB flying units would not change under the Proposed Action, the expected IFR activities at Grand Bay Range would be linked to a decrease in flying operations in other areas. Noise levels in these areas and along flight paths used to access these areas would decrease slightly under the Proposed Action.

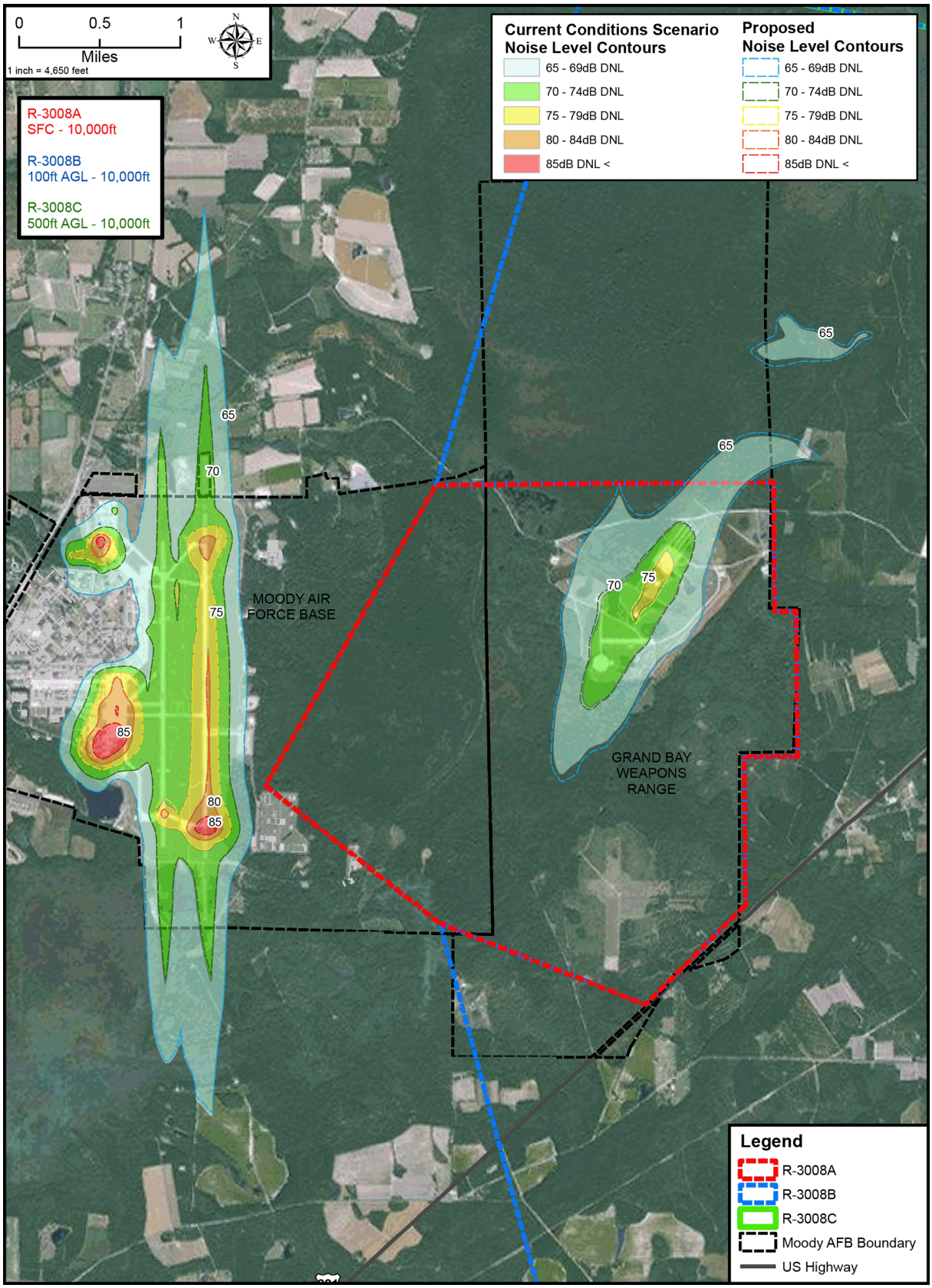


Figure 4-1. Current and Proposed Time-Averaged Aircraft Noise Levels (DNL)

Availability of Grand Bay Range for transient aircraft under IFR conditions would also be expected to improve by about 12.5 percent annually. Any decrease in flying operations at locations other than Grand Bay Range by aircraft that are not based at Moody AFB would occur at locations that are outside of the ROI.

Based on the results of noise analyses, while IFR activities could be noticed, noise impacts associated with IFR activities would not be expected to be considered significant, and the expected level of activity resulting from IFR availability is still within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*).

4.2.3 No Action Alternative

Under the No Action Alternative, aircraft operations would continue to occur as they do under current conditions. Noise levels would not change relative to current noise levels, and there would be no new noise impacts.

4.3 SAFETY

4.3.1 Analysis Methodology

This section evaluates the potential for the Proposed Action to increase safety risks as well as the Air Force's capability to manage these risks. Potential impacts related to safety were considered significant if proposed activities would create a situation involving endangerment to life or health or pose an unusual risk to military personnel or nearby residents and the general public off-site.

4.3.2 Proposed Action

Aircraft Safety

The Air Force calculates Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory. Combat losses due to enemy action are excluded from these statistics. The Class A mishap rate per 100,000 flying hours can be used to compute a statistical projection of anticipated time between mishaps.

Air Force aircraft-specific mishap rates are calculated using historical data and are based on the number of mishaps (regardless of cause) per 100,000 hours of flight time. For example, a mishap rate of 1.0 indicates that, historically, the aircraft has experienced one mishap every 100,000 flight hours. The 10-year (2005 to 2014) Class A mishap rates for aircraft typically flown at Moody AFB are 0.25 for C-130, 0.93 for T-38, 0.5 for A-10, and 0.2 for T-6 (U.S. Air Force, 2015b). The Proposed Action would result

in a decrease in scheduled hours lost to inclement weather of about 250 hours over current operations. Using the T-38 as an example (highest historical mishap rate), this would equate to an additional annual probability of a Class A mishap of only 0.23 percent for this aircraft.

This analysis makes only a statistical prediction regarding the frequency of mishaps and may not represent real-world conditions. Moody AFB pilots are IFR-rated and routinely fly under IFR conditions. Additionally, current aircraft flight safety policies and procedures at Moody AFB (as described in Chapter 3) are designed to ensure that the potential for aircraft mishaps is reduced to the lowest possible level. These safety policies and procedures would continue under the Proposed Action.

If a mishap does occur, Moody AFB has the resources available to respond. This would include the proposed fire station facility. The fire station would house fire-fighting equipment, such as fire trucks and firefighting/rescue gear, which would be deployed as needed in case of a mishap. The potential for mid-air collisions or near misses associated with privately owned aircraft (such as crop dusters) would be minimal, because proposed flight operations would be limited to the restricted airspace over the installation.

Bird/Wildlife Aircraft Strike Hazards

Over the last 10 years, there have been 681 reported incidents of bird-aircraft strikes around Moody AFB, or an average of approximately 68 bird strikes per year. As discussed in Biological Resources (Section 4.6), if the percentage improvement in annual airspace availability (approximately 12.5 percent) is directly proportional to a percentage increase in bird strikes, there could be a potential for two to three additional bird strikes per year resulting from the proposed IFR operations. The overall risks associated with bird-aircraft strikes is expected to remain low; none of the bird-aircraft strikes occurring at Moody AFB have resulted in a Class A mishap, although some resulted in significant damage to aircraft.

To minimize the potential for any future bird-aircraft strikes, Moody AFB would continue to implement an aggressive BASH program, including the Wildlife Hazard Warning System. Additionally, Moody AFB would continue to coordinate extensively with on-staff USDA wildlife experts regarding BASH-related issues.

No significant adverse impacts to safety would be expected with continued implementation of existing mishap prevention and BASH program procedures.

4.3.3 No Action Alternative

Under the No Action Alternative, there would be no change to the airspace designation; therefore there would be no change in the likelihood of aircraft mishaps or BASH under the current condition. With the continuation of policies and procedures in place to ensure the safety of the public as well as military personnel, there would be no adverse impacts associated with the No Action Alternative.

4.4 AIR QUALITY

4.4.1 Analysis Methodology

The CAA Section 176(c), General Conformity, requires Federal agencies to demonstrate that their proposed activities would conform to the applicable SIP for attainment of the NAAQS. General conformity applies only to nonattainment and maintenance areas. If the emissions from a Federal action proposed in a nonattainment area exceed annual *de minimis* thresholds identified in the rule, a formal conformity determination is required for that action. The thresholds are more restrictive as the severity of the nonattainment status of the region increases. The project region is designated as attainment for all criteria pollutants (USEPA, 2014). The criteria pollutants were compared with Lowndes and Lanier County emissions, which are in attainment for all criteria pollutants.

In order to evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities were compared with the total emissions on a pollutant-by-pollutant basis for the ROI's 2011 NEI data. Potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The CEQ defines significance in terms of context and intensity in 40 C.F.R. 1508.27. This requires the significance of the action to be analyzed with respect to the setting of the proposed action and based relative to the severity of the impact. The CEQ NEPA regulations (40 C.F.R. 1508.27[b]) provide 10 key factors to consider in determining an impact's intensity. To provide a more conservative analysis, the two counties were selected as the ROI instead of the USEPA-designated Air Quality Control Region, which is a much larger area.

The Air Conformity Applicability Model (ACAM) Version 5.0.1 was utilized to provide a level of consistency with respect to emissions factors and calculations. The ACAM provides estimated air emissions from proposed Federal actions in areas designated as nonattainment and/or maintenance for each specific criteria and precursor pollutant as defined in the NAAQS. ACAM was utilized to calculate aircraft emissions. Also calculated were aerospace ground equipment (AGE) emissions associated with IFR aircraft training operations. Equations and emission factors can be found in Appendix B, *Air Quality*.

The air quality analysis focused on aircraft emissions associated with aircraft operating during IFR weather conditions.

GHGs were included in the analysis. The primary source of carbon dioxide emissions would be fuel combustion from aircraft emissions during training activities. GHG emissions were compared with the CEQ's minimum level of 25,000 metric tons (27,558 tons) as a level at which consideration would be required in NEPA documentation. Air quality calculations are provided in Appendix B.

4.4.2 Proposed Action

Emissions associated with the Proposed Action are calculated and summarized in Table 4-1. Impacts would amount to 0.09 percent or less of each of the criteria pollutants. GHG emissions would be less than 25,000 metric tons (27,558 tons).

Table 4-1. Alternative 1 Air Emissions Compared with Lowndes and Lanier County Emissions (tons per year)

	Emissions (tons/year)						
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_x**	**VOCs**	**CO_2e**
Lanier and Lowndes County baseline	**6,956**	**20,728**	**4,882**	**807**	**39,324**	**1,038,681**	**1,038,681**
Aircraft emissions	6.445	3.833	1.328	0.739	0.091	2.187	3,370
Percent of county emissions[1]	*0.09%*	*0.02%*	*0.03%*	*0.09%*	*0.00%*	*0.00%*	*0.32%*

Source: USEPA, 2013

CO = carbon monoxide; CO_2e = carbon dioxide equivalent; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; SO_x = sulfur oxides; VOC = volatile organic compound

1. Includes Lanier and Lowndes County, Georgia.

Based on air emissions modeling and analysis, the Proposed Action would not be expected to result in any significant increase in air emissions, and no adverse impacts would occur.

4.4.3 No Action Alternative

The No Action Alternative would not result in any additional impacts to air quality beyond the scope of normal conditions and influences within the ROI.

4.5 CULTURAL RESOURCES

4.5.1 Analysis Methodology

For purposes of this EA, cultural resources, along with a description of their state of investigation and condition, are presented for analysis as they intersect with the APE created by the undertaking. As defined under 36 C.F.R. 800.16(d), "the Area of Potential Effect is the geographic area or areas within which an undertaking may directly or indirectly cause changes in the character or use of historic properties, if such properties exist. The area of potential effects is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking." The APE for this project is assumed not to extend beyond the footprint of the project boundaries as defined under each alternative area.

Analysis focuses on 1) assessing the potential for impacts to archaeological sites and historic structures from aircraft-generated noise and/or vibration and 2) identifying methods to reduce the potential for adverse effects to cultural resources from these activities.

Potential impacts to cultural resources can occur by physically altering, damaging, or destroying a resource or by altering characteristics of the surrounding environment that contribute to the resource's significance. Resources can also be impacted by neglecting the resource to the extent that it deteriorates or is destroyed.

4.5.2 Proposed Action

As noted in Section 2.2, this would result in a reduction in the hours of scheduled use lost to inclement weather of approximately 250 hours, equating to about 505 aircraft sorties. The Proposed Action would improve availability of the range by about 12.5 percent annually, which is still within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*). Given the nature of the Proposed Action, subsurface and ground level archaeological resources would not be affected. Aboveground structures do have the potential to be impacted by aircraft operations if 1) the noise generated by the activity is at a level where physical damage may occur due to significant vibration, or 2) the level of noise is at a level that makes use of the building impossible. In the second case, it is

presumed that abandonment would eventually lead to disrepair and the eventual degradation of the structure. In the case of subsurface and surficial archaeological deposits, it is unlikely that any such resources would be affected given the nature of this activity.

The sole NRHP-listed resource in the affected airspace is the former Lanier County Auditorium and Grammar School in Lakeland, Georgia. Two factors of the Proposed Action include: 1) a current minimum flight altitude of 1,500 feet over Lakeland, Georgia and 2) flights in IFR would only occur during inclement weather. Both of these factors would make visual impacts less likely than already occurring flight operations. Because the structure has not been affected by current fight operations and no significant noise impacts are expected from the implementation of the Proposed Action, no adverse effects to cultural resources would occur.

The nature of the Proposed Action would make inadvertent discoveries of cultural resources unlikely. However, if cultural resources are discovered during implementation of the Proposed Action, activities in the area would cease and the discovery would be reported immediately to the cultural resource manager and the Section 106 process would be initiated (Moody AFB, 2012).

Moody AFB provided notification of, and request for input on, the Proposed Action to Native American tribes as part of the government-to-government consultation process as identified in Executive Order 13175, *Consultation with Indian Tribal Governments*. These tribal governments, as well as the Georgia SHPO, were also consulted regarding impacts to cultural and tribal resources under Section 106 of the NHPA. On June 11, 2015, Moody AFB completed NHPA Section 106 consultation with the Georgia SHPO for potential impacts to cultural resources. The SHPO concurred on a finding of no adverse effect to cultural resources and none of the tribes identified any concerns with the Proposed Action. A list of tribes contacted and associated tribal and SHPO consultation correspondence is provided in Appendix A (*Public Involvement: Agency, Tribal, and Public Coordination/ Notification*).

4.5.3 No Action Alternative

Under the No Action Alternative, the Air Force would continue current training operations without IFR airspace availability. As a result, impacts to cultural resources would not be expected under this alternative.

4.6 BIOLOGICAL RESOURCES

4.6.1 Analysis Methodology

Analysis of biological resources considered potential impacts to vegetation and wildlife, including sensitive species. There is no potential for direct impacts to vegetation. The animal resources potentially affected are identified based on habitat type and on previous documented occurrence. The analysis included an assessment of impacts resulting from potential aircraft noise disturbance and bird strikes due to IFR air operations. Where appropriate, projected conditions were compared with current conditions and a determination was made as to whether impacts would be adverse. Direct and indirect impacts are included in the analysis. For wildlife in general, an adverse impact would diminish species health. A significant adverse impact would be one that is likely to jeopardize the continued existence of a species or result in an overall decrease in population diversity, abundance, or fitness. Where applicable, potential impacts were analyzed in the context of definitions contained in specific environmental laws.

4.6.2 Proposed Action

Under the Proposed Action, wildlife could be disturbed or physically impacted due to IFR air operations within R-3008A/B/C. As noted in Section 2.2, allowing for IFR operations would result in a reduction in the hours of scheduled use lost to inclement weather of approximately 250 hours, equating to about 505 aircraft sorties. The Proposed Action would improve availability of the range by about 12.5 percent annually, which is still within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*).

Implementation of the Proposed Action would not result in new types of impacts to wildlife, as there would be no new types of aircraft or flight profiles compared with existing conditions. The difference would consist of additional airspace availability under IFR conditions and corresponding potential to disturb or strike an animal. Impacts to birds in particular may be affected by different weather conditions.

Habitat Effects

Although there would be no direct impacts to vegetation or other habitats resulting from the Proposed Action, Banks Lake NWR expressed concerns (see Appendix A) regarding the Proposed Action's effect on the use of prescribed fire for habitat management at the refuge. Prescribed fire is used to maintain wetlands in conservation areas of the Grand Bay-Banks Lake complex near Moody AFB, including

the Banks Lake NWR and Grand Bay WMA. However, atmospheric conditions resulting in low visibility and the need for IFR operations would typically not be conducive to smoke dispersal, and IFR periods would not generally coincide with periods authorized for prescribed burning under Georgia Forestry Commission permits. In addition, the Proposed Action would have no other effects on the continued management of natural resources at either of these conservation areas. The Air Force would continue to coordinate with the Georgia DNR and the USFWS regarding prescribed fire in conservation areas. Therefore, the Air Force expects that there would be no significant impacts to the management of conservation areas under the Proposed Action.

Wildlife Disturbance

While the ability to operate under IFR conditions would be within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*), IFR activities would result in potential for wildlife disturbance due to noise and, in the case of low-altitude flights, visual perception of the aircraft. The percentage of flights at various altitudes would be proportional to current operations under existing conditions. The likelihood of individual and population-level impacts due to noise or visual disturbance is often difficult to evaluate and may vary between species, among individuals of the same or similar species, or even within the same individual at different times or under varying circumstances.

The ROI includes pine, mixed hardwood/pine, wetland, and agricultural habitats, and a variety of mammal, bird, reptile, and amphibian species occur in the area. Possible effects to wildlife resulting from aircraft noise and perception have been analyzed in previous environmental documentation. Aircraft takeoffs, landings, and low-altitude flights would likely disturb or cause a startle reaction in individuals of some wildlife species. Short-term startle effects could cause temporary displacement of individual animals, including migratory birds and other protected species (for example, bald eagle) that could use the area for resting, foraging, or other activities either temporarily or throughout a particular season. There is also some potential for hearing damage or threshold shifts for individuals near or directly underneath low-altitude flight paths (Manci et al., 1988; Efroymson et al., 2000; and U.S. Air Force, 2001).

However, the number of individual animals impacted by IFR air operations would likely be low compared with overall population numbers. The range is available Monday through Friday under typical circumstances, which results in 260 days of availability per year, not including holidays or special closures. The Proposed Action

would be expected to result in an average of about 2 additional sorties and 1 additional hour of flight time per weekday. There would typically be no additional operations on weekends. The Proposed Action would occur in the context of over 76,000 annual operations in the overall Grand Bay Range under existing conditions. Only some subset of these operations would be low-altitude flights and/or flights over sensitive habitats such as Banks Lake NWR. The wading bird colony in Grand Bay WMA would not be impacted. At least some individuals potentially affected are likely habituated to aircraft noise and presence due to ongoing operations at the main base airfield and in the weapons range. Wildlife species (particularly some bird species) may become habituated to repeated noise over time and show no observable reaction. Additionally, as stated previously, additional IFR airspace availability would remain within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*).

Weather conditions may also influence the number and species composition of affected wildlife, particularly bird species. It is expected that IFR conditions would typically include some combination of precipitation, fog, cloud cover, and increased wind speed. These conditions could affect the presence of birds, particularly during migration seasons. For example, flight activity is often decreased during heavy rain or winds. In addition, overcast conditions typically reduce or eliminate the presence of thermals that are used by soaring raptors such as hawks, vultures, and others. Although the specific effects are difficult to predict, IFR weather conditions would likely affect bird occurrence. If migratory birds were resting or feeding in the affected area and weather conditions worsened, birds could delay movement from the area and be more likely to occur in areas affected by additional air operations. Conversely, migrating birds located outside the affected area might be less likely to move into locations near the base during inclement weather. Overall, long-term, population-level reactions or major behavior modifications to wildlife species, including migratory bird species, are not expected.

The Federally protected wood stork and bald eagle are sensitive species of primary concern. The types of possible disturbance to these species would generally be similar to those described above. Disruption of nesting for either species is unlikely, as there are no known nesting sites in the affected area. Disturbance would be limited to individual storks or eagles foraging in the area during IFR conditions and during flight profiles that would cause noise or other harassment impacts. As discussed above, the Proposed Action would result in approximately two additional sorties and one additional hour of flight time per weekday (no additional flights on weekends).

Although not quantified, the probability of a stork or eagle occurring during this additional flight time and being disturbed by the particular flight profile is probably low, as these species are only occasionally sighted on or near the base. The number of interactions would, therefore, probably be low, and foraging or other activities would not be substantially affected for any individual. Impacts would not be significant at the population level. In addition, Air Force and U.S. Department of Agriculture Wildlife Services personnel would conduct surveys for wood storks and bald eagles on Grand Bay Range prior to opening the range for use during IFR conditions.

Direct Physical Impacts

The Proposed Action may increase the potential for collisions between birds and aircraft, known as BASH. Bird strikes can occur during takeoffs and landings, and during flight. In addition, other wildlife such as deer and coyotes may be struck during takeoffs and landings. However, the number of strikes to wildlife species other than birds is typically low, and there would be no overall impacts to populations resulting from IFR operations. Sensitive bird species such as the wood stork and bald eagle, as well as numerous migratory species, are among those present in the ROI and, therefore, subject to aircraft strikes. The greatest potential for bird strikes would occur at night during migration seasons and during takeoffs/landings and low-altitude flights (although bird-aircraft strikes can occur at altitudes up to 30,000 feet or more).

As discussed in the Safety section (Section 4.3), there have been a total of 194 reported bird-aircraft strikes at Moody AFB over the last 10 years, for an average of about 20 strikes per year. In 2014, flying operations at Grand Bay Range were conducted for a total of about 2,000 hours. An additional 250 hours of range availability over VFR-only conditions equates to 12.5 percent more availability annually. If the percentage of availability is directly proportional to the percentage of increase in bird strikes, there could be an additional two to three bird strikes per year (only some unquantified percentage of these potential strikes would involve sensitive species). However, such a directly proportional increase may not occur for a number of reasons. The total of 194 bird strikes includes flights originating at the main base airfield (not just Grand Bay Range), so the potential number of additional strikes due to the Proposed Action could be less. Although operation of aircraft in IFR conditions would diminish the ability of aircrews to see birds in an aircraft's path, inclement weather could also decrease the amount of bird activity (the net effect of weather on bird/aircraft interaction is difficult to predict; see discussion above under "Wildlife Disturbance"). In addition, Moody AFB would continue to implement all components of the base's BASH Plan including the Wildlife Hazard Warning System, adjustments to operating

hours and altitudes based on expected seasonal and time-of-day bird activity, and wildlife control methods. Therefore, although there could be an increase in the number of bird strikes, including sensitive species such as wood stork and bald eagle, it is not anticipated that there would be a significant adverse impact to resident or migratory bird populations.

Summary of Impact Potential

In summary, no significant adverse impacts have been identified for habitat management (i.e., prescribed fire) or wildlife. Activity levels associated with implementation of the Proposed Action would still be within previously assessed and approved operational levels (2012 *Moody AFB Expansion of Sortie-Operations Environmental Assessment*).

IFR atmospheric conditions would not be conducive to conditions permitted for prescribed fire activities; therefore, it is unlikely that the two activities would occur during the same time period. Use of prescribed burning as a habitat management technique at Banks Lake NWR is not expected to be adversely impacted by the Proposed Action.

Noise and visual perception of the aircraft could cause startle reactions, temporary displacement of individuals, or hearing impacts to wildlife, including protected species. The number of individuals impacted by IFR operations (one additional hour of flight time/two additional sorties per weekday) would likely be low compared with overall population numbers and would not be considered significant compared with existing conditions.

IFR operations would result in increased potential for bird-aircraft strikes, particularly during takeoffs, landings, and low-altitude flights. The likelihood of bird strikes would be greater during migration seasons and night operations. Although the number of bird strikes could increase slightly, with continued implementation of the base's BASH Plan, IFR operations is not likely to result in significant impacts to any bird species or populations, including migratory or other sensitive species.

Implementation of the Proposed Action is not expected to jeopardize the continued existence of a species or result in an overall decrease in population diversity, abundance, or fitness of any wildlife species, including migratory birds or species protected under the ESA or BGEPA. Moody AFB completed ESA Section 7 consultation with the USFWS regarding listed species on June 30, 2015, which concurred on a "No Effect" determination for listed species. All correspondence is included in Appendix A of this EA.

4.6.3 No Action Alternative

Under the No Action Alternative, there would be no change to airspace and, therefore, no associated potential change in wildlife disturbance or direct strikes over the current condition. The effects to wildlife resulting from aircraft operations would remain the same as those under existing conditions. There would be no significant effects to biological resources under the No Action Alternative.

5. CUMULATIVE IMPACTS

According to CEQ regulations, cumulative effects analysis should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 C.F.R. 1508.7). Cumulative effects may occur when there is a relationship between a proposed action or alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental (increasing) in nature, resulting in cumulative impacts.

Actions overlapping with or in close proximity to a proposed action or alternative can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally tend to have a greater potential for cumulative effects.

Analysis was conducted by first identifying past, present, and reasonably foreseeable actions as related to the ROI for the particular resource. Cumulative impacts were then identified if the combination of proposed actions and past, present, and reasonably foreseeable actions were to interact with the resource to the degree that incremental or additive effects occur.

5.1 PAST, PRESENT, AND REASONABLY FORESEEABLE FUTURE ACTIONS

There are many ongoing activities at Moody AFB to support current and future goals of the base operations. As funding becomes available, there may be opportunities to upgrade, renovate, or expand existing mission activities or beddown new programs at the base. Based on Moody AFB 23d Wing Facilities Board meeting notes, more than 50 potential development projects have been identified for upcoming FYs (Moody AFB, 2014).

Examples of past, ongoing, and future projects include development of a new base access gate, various cantonment development projects, military housing construction, the potential Bemiss Field Unimproved Landing Zone (ULZ) upgrades, potential development of the Northeast Training Complex (NETC), and a proposed change in the operating hours of Grand Bay Range. With the exception of the change in operating hours for Grand Bay Range, these projects mainly involve ground disturbance and construction activities, although the Bemiss Field ULZ and NETC projects do involve flight operations and the NETC projects involve use of training

munitions. However, while these projects would result in additional noise at the installation, the VFR-IFR Proposed Action as described in this document would not result in any additional noise impacts on or off the installation. Therefore, the Proposed Action is not expected to contribute in any incremental or cumulative way to impacts associated with these other projects. The Bemiss ULZ and NETC projects have been assessed in separate NEPA documentation, in which cumulative impacts associated with those particular activities are addressed (U.S. Air Force 2015b and U.S. Air Force, 2015c).

To summarize, there are no past, present, or reasonably foreseeable actions within the immediate vicinity of the affected airspace other than ongoing training activities in the area, use of Grand Bay Range, airfield operations, and agricultural activities on off-base property, which have already been described as part of the current condition in this EA.

5.2 AIRSPACE

There is another proposal under separate review to amend the designated times of use for restricted areas R-3008A, B, C, and D that would expand the time frame during which these areas may be activated without prior issuance of a NOTAM. Over the years, use of these restricted areas has routinely extended past the published hours (7:00 AM to 10:00 PM local time, Monday – Friday) on Monday through Thursday, while the morning departures normally begin at 8:00 AM. This has required frequent issuance of a NOTAM for later use times that have gone to 1:30 AM. Therefore, the proposed amendment would change the time of designation for R-3008A, B, C, and D to 8:00 AM to 1:30 AM local time Monday – Thursday and 7:00 AM to 10:00 PM local time Friday, with other times announced by NOTAM six hours in advance. This change would better accommodate the vast majority of the daily operations in R-3008A/B/C/D, better inform the flying public of routine use periods for this airspace, and reduce the need to issue NOTAMs to activate the restricted areas outside the published hours (Federal Register, 2014).

The cumulative effects of changing the published hours of use for R-3008A/B/C coupled with the proposal to change the weather operation categorization from VFR to VFR-IFR would have a negligible effect on other airspace uses. As noted in Section 4.1.2, during those periods when weather conditions would require military aircraft to operate under IFR in the R-3008 restricted areas, ATC would be separating nonparticipating aircraft from this airspace and other IFR aircraft in this region per standard procedures. VFR aircraft are not permitted to operate during instrument

meteorological conditions; therefore, those aircraft should not be a factor during the Grand Bay Range IFR operations. Regardless, military aircrews are constantly vigilant for other nonparticipating aircraft that may be operating in their vicinity both visually and through use of the aircraft's radar system capabilities.

5.3 NOISE

The proposed NETC would be located adjacent to Grand Bay Range in the northeastern portion of Moody AFB. The NETC would be used for helicopter flying operations training as well as training for ground operations that involve firing of blank rounds, ground burst simulators, and boom cannons. Although aircraft transiting to and from Grand Bay Range do sometimes pass over the NETC, Grand Bay Range flying operations are most concentrated in the eastern portion of the range near the targets. Interaction of the two activities would be limited due to the physical separation of areas of concentrated activity. If both actions were to be implemented, resulting aircraft noise levels would not exceed threshold levels at known noise-sensitive locations, and the combined impacts would be expected to be considered less than significant.

Proposed improvements to Bemiss ULZ, located on the southern end of Grand Bay Range, would allow fixed-wing aircraft to land safely, whereas fixed-wing aircraft are currently only allowed to overfly the field. Bemiss Airfield is separated from the proposed NETC and its associated helicopter operations area but is beneath flight paths used during ingress to and egress from Grand Bay Range targets. Noise impacts associated with proposed fixed-wing aircraft operations at Bemiss ULZ are minimal. If both the Bemiss ULZ and the VFR-IFR proposals were to be implemented, resulting aircraft noise levels would not exceed threshold levels at known noise-sensitive locations, and the combined impacts would be expected to be considered less than significant.

The proposed increase in operating hours at Grand Bay Range is not expected to result in increased flying operations or any changes to existing flying operations (see Section 5.2). No noise impacts would be associated with the proposed change in operating hours.

If all four proposed actions (NETC, Bemiss ULZ, Grand Bay Range hours increase, and this VFR-IFR proposal) were to be implemented, noise levels would remain below threshold levels at known noise-sensitive locations. Cumulative noise impacts associated with implementation of the four actions would be expected to be considered less than significant.

5.4 SAFETY

No cumulative impacts are expected from implementation of the Proposed Action. Continued implementation of Moody AFB's mishap prevention and BASH programs would minimize the potential for any adverse impacts to flight safety.

5.5 AIR QUALITY

Air quality impacts and emissions associated with IFR aircraft operations would be minor. Depending on the timing of capital and infrastructure improvement projects occurring on Moody AFB and in the surrounding community, incremental increases in air emissions would result from construction activities. However, emissions from several, simultaneous projects are not likely to result in temporary or long-term combined emissions that would exceed county significance criteria or negatively affect attainment status. Further, the increase in aircraft and AGE emissions associated with training would be minimal and not likely to adversely affect regional air quality.

5.6 CULTURAL RESOURCES

Damage to the nature, integrity, and spatial context of cultural resources can have a cumulative impact if the initial act is compounded by other similar losses or impacts. The alteration or disturbance of historic properties may incrementally impact the cultural and historic setting of Moody AFB and surrounding areas within Lanier and Lowndes Counties.

With regard to the Proposed Action, IFR availability would not adversely affect historic properties. Therefore, the Proposed Action would not incrementally contribute to impacts from other actions on Moody AFB.

5.7 BIOLOGICAL RESOURCES

Potential cumulative impacts to biological resources would be associated with actions undertaken by the base that could affect similar habitats and the wildlife species associated with them. The wildlife species affected by the Proposed Action are also affected by other ongoing and possible future activities at Moody AFB such as aircraft flights, weapons firing, and detonations. The number of aircraft operations and other noise-producing activities could increase in the future, resulting in further wildlife disturbance and risk of bird strikes in the ROI. However, IFR aircraft operations described in this document would not likely contribute significantly to direct bird or

wildlife strikes or disturbance at the population level. Due to implementation of the base's BASH Plan, there would be no significant cumulative impacts to biological resources resulting from the Proposed Action.

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6. SPECIAL OPERATING PROCEDURES AND MITIGATIONS

No special operating procedures or mitigations would be required to mitigate impacts to airspace, noise, safety, cultural resources, or biological resources.

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7. PERSONS / AGENCIES CONTACTED

Name	Title / Responsibility
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Gregory Lee	Moody AFB Environmental Element Chief
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Federal Aviation Administration	
Georgia Department of Community Affairs	
Georgia DNR Wildlife Resources Division	
Lowndes County Commission	
Lanier County Commission	
U. S. Fish and Wildlife Service	
Banks Lake National Wildlife Refuge	
Georgia Environmental Protection Division	
Georgia Historic Preservation Division	
South Georgia Regional Planning Council	
Lanier County Commission	
Caddo Nation	
Alabama-Quassarte Tribal Town	
The Cherokee Nation	
United Keetoowah Band of Cherokee	
Muscogee (Creek) Nation	
Poarch Band of Creek Indians	
Thlopthlocco Tribal Town	
Seminole Nation of Oklahoma	
Seminole Tribe of Florida	
Kialegee Tribal Town	
Coushatta Tribe of Louisiana	
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Noise

9. REFERENCES

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APPENDIX A

PUBLIC INVOLVEMENT: AGENCY, TRIBAL, AND PUBLIC COORDINATION/NOTIFICATION

DRAFT ENVIRONMENTAL ASSESSMENT NOTICE OF AVAILABILITY

Valdosta&Lowndes

www.valdostadailytimes.com Wednesday, July 29, 2015 3A

City schools shape new VHS construction schedule

BY JASON STEWART
jason.stewart@gaflnews.com

VALDOSTA — The Valdosta Board of Education is keeping its eye on the clock.

The board's facilities committee met with Altman+Barrett Architects and JCI-Parrish Construction Management Tuesday to discuss the time frame for beginning construction on the new Valdosta High School facility.

Board member Trey Sherwood called the meeting to order at 12:05 p.m. before inviting Altman+Barrett Architects' architect Walter Altman to update the committee on the school's construction schedule.

"We appreciate what you all have done," Sherwood said. "You've done a tremendous amount of work in a short amount of time."

Altman reviewed the construction budget and moved to the most pressing issue: time.

"We're now moving on to developing this project," Altman said.

The facility needs to begin laying foundation as soon as possible in order to "handle the rainwater in January and February," Altman said.

The perceived time crunch derives from the expected rainfall at the beginning of 2016.

"The priority is getting (construction) to start before those rainy months," said Parrish Construction Group Senior Vice President Rodney Smith.

Rainy months could halt construction for multiple months, said Parrish Construction Group Vice President Charlie Griffis.

"It could cost you three months easy if we wait till January," Griffis said.

Altman discussed early site and building design plan completion.

Construction site drawings are expected to be complete by Sept. 1 and the construction manager expects to receive construction bids by Sept. 29 and site construction is expected to begin by Oct. 16.

Building drawings are expected to be completed by Oct. 15 with construction bids received by Dec. 10 and building construction is expected to begin by Jan. 11, 2016.

Committee members addressed concerns they had with the construction budget.

Board member Bill Love noted a lack of tennis facilities on the campus.

"We have a baseball field, we've got a great baseball complex, but we don't have a tennis complex," Love said. "Tennis has to go to Mackey Park, and that's a huge pain."



JASON STEWART | THE VALDOSTA DAILY TIMES

Altman+Barrett Architects' Walter Altman, right, addresses the Valdosta Board of Education's Facilities Committee Tuesday.

Altman considered Love's concern.

"We have price for that," Altman said, and then suggested Love share his concerns during construction bids.

Altman redirected the conversation away from sports facilities. The board agreed the school building was the primary concern.

"It's hard to discuss football ahead of classroom space," Altman said.

"Impossible," Sherwood said immediately after Altman. "I know we want all of it, but the reality is we've got to do what we've got to do to build a school first and foremost."

The committee discussed combining the cheerleader and wrestling spaces, but noted that would create a 17-day usage overlap.

"We're getting 99 percent of what everybody wants, and we're pretty proud of that," Altman said. "It's a big school. It's a monster of a school building."

Rainwater more than $5 million in economic impact

BY STUART TAYLOR
stuart.taylor@gaflnews.com

VALDOSTA — An economic impact of $220,000 for the month of June puts the Rainwater Conference Center's economic impact for Fiscal Year 2014-15 at more than $5 million, reported Rainwater General Manager Tim Riddle at the Valdosta-Lowndes County Tourism Authority meeting Tuesday.

Web traffic for the Rainwater Conference Center's site has also risen significantly.

For the 2014 calendar year, the site received 862,496 hits, with 30,390 visits and about 22,845 unique visitors.

So far in 2015, the site has had 764,956 hits, with 23,868 visits and about 19,867 unique visitors.

"It's a good trend that we want to see continue on our website," said Riddle. "We've starting to plateau, but we're at a much higher level."

Corey Hull with the Southern Georgia Regional Commission talked with authority members about the SGRC's long-range 2040 Transportation Vision Plan.

Of the $1 billion plan, $500 million is set aside for the maintenance of existing roads, $400 million is set aside for new projects, and $70 million is set aside for a possible urban transit system.

Hull particularly highlighted a proposed agri-tourism bicycle trail that would go through Lowndes, Cook, Berrien and Lanier counties.

As an example, Hull pointed to the Silver Comet Trail, a 61-mile bike and pedestrian trail that starts in Smyrna and goes west to the Alabama state line.

A 2013 study by Econsult Solutions found the trail has had an economic impact of $461 million.

The SGRC seeks public comment on the plan in the next month, presenting it to organizations and holding open houses.

The next open house is 4-6:30 p.m. Thursday, McMullen Southside Library, 527 Griffin Ave.

The plan is also available at http://www.sgrc.us/transportation-plans.html.

Riddle said a joint agreement with Valdosta Main Street for WFSU advertising has been finalized.

Riddle reported on a meeting with the Valdosta-Lowndes County Sports Commission.

As a result, Rainwater staff are going to prepare meeting minutes from the VLCSC monthly meeting prepared by the Tourism Authority meeting.

The VLCSC is searching for a board rep from the local restaurant community.

The next meeting of the VLCTA is 8 a.m., Aug. 25, Rainwater Conference Center. It is open to the public.

Gas prices continue to slide

STAFF, WIRE REPORTS

VALDOSTA — The average price of gasoline nationally has dropped a penny during the past two weeks to $2.82 a gallon, while Valdosta-area prices have slipped by four cents in a week.

Industry analyst Trilby Lundberg said Sunday the current average sits 76 cents below the year-ago price.

The cheapest price recorded in the continental United States was $2.33 a gallon in Birmingham, Ala.

The highest was $4.13 a gallon in Los Angeles. Lundberg said California saw huge wholesale price hikes during a brief supply shortage. She said supplies are flowing again and pump prices are poised to drop in the Golden State.

The national average price of diesel was down 6 cents during the same period to $2.86 a gallon.

Sunday, the average price for regular gasoline in Valdosta was $2.54 a gallon, down from $2.58 a week ago, according to the AAA Daily Fuel Gauge Report. Georgia as a whole had an average price of $2.56 a gallon Sunday, compared to $2.61 a week earlier, the AAA said.

Valdosta's current average price is 85 cents cheaper than a year ago, when it was $3.39, according to the AAA.

The lowest gas price reported Sunday at regular retailers was $2.29 at a site on the Madison Highway, according to the price tracking website gasbuddy.com. A week ago, the lowest price in the city was $2.40 a gallon, according to the website.

A buyer's club with a paid membership had gas for $2.27 a gallon, said gasbuddy.com.

The number of retailers selling gas for under $2.50 a gallon jumped to 58 Sunday, compared to 50 a week ago, the website said.

South Lowndes churches gather for fifth combined revival

BY DEAN POLING
dean.poling@gaflnews.com

VALDOSTA — Faith in fellowship is bringing together several south Lowndes County churches this week for a community-wide revival.

Pastor Charles Vinson, Greater Mount Calvary Baptist Church, and Pastor Lee Henderson, Second Oak Grove Baptist Church, have said they founded the South Lowndes Community-wide Revival a few years ago to create a spirit of fellowship among the churches in the southern part of the county.

The revival includes the congregations of Mount Calvary, Second Oak Grove, Francis Lake AME, Payton AME, Hosanna Baptist, Irvin Hill Baptist.

Vinson is the speaker this year. In addition to being a pastor, he has served many years with the Lowndes County Sheriff's Office.

The revival started Tuesday evening and continues today and Thursday. Services are held at Mount Calvary.

The pastors credited Velma Miles and Wendolyn Louise Nathan for the idea of the community-wide revival, now in its fifth year.

Participating churches have long supported one another. Whenever one church has revival, other church congregations attend. Many church members find themselves traveling many miles and many nights to attend other churches' revivals, according to organizers.

The South Lowndes Community-wide Revival has not hampered individual churches from having revivals, but it does allow many congregations to gather together.

"These churches have a combined history of a thousand years of providing church services," Henderson said, noting that Mount Cavalry have congregated about 150 years each.

MORE INFORMATION

What: Fifth Annual South Lowndes Community-wide Revival
Where: Mount Calvary Baptist Church, 3835 White Water Road.
When: Continues 7 p.m. today and Thursday.
More information: Call Pastor Charles Vinson, (229) 292-2276; or Pastor Lee Henderson, (229) 444-2772.

USAF ANNOUNCES AN ENVIRONMENTAL ASSESSMENT

In accordance with the National Environmental Policy Act and Air Force regulations, Moody Air Force Base (AFB) has completed a Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) to evaluate the consequences of the following stated proposed action:

The Air Force proposes to change the weather operations category of airspace units R-3008 A/B/C at Grand Bay Range, Moody AFB from Visual Flight Rules (VFR) to VFR-Instrument Flight Rules (IFR). This action would minimize the number of training hours lost during inclement weather by allowing full utilization of Grand Bay Range using aircraft instrumentation during these periods. The Proposed Action would result in the ability to more fully utilize the existing airspace to conduct operations within levels that were previously assessed and authorized in the 2012 Moody AFB *Expansion of Sortie-Operations Environmental Assessment* by simply allowing operations during inclement weather that would otherwise be canceled.

To review the Draft EA and FONSI copies are available at the South Georgia Regional Library in Valdosta, Georgia and on the Moody AFB website at http://www.moody.af.mil/environmentalinitiative.asp. The public is invited to review these documents and make comments during the 30-day comment period from now until August 29, 2015. Comments on the Draft EA can be sent to Mr. Hank Santicola, Environmental Planner, at 23 CES/CEIEA, 7258 Robbins Road, Moody AFB, GA 31699.



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Pauline Baptist Church's
Congregation invites you to worship with them.
SUNDAY SERVICES
9:45 AM..... Sunday School
11:00 AM..... Morning Worship
6:00 PM..... Evening Worship
WEDNESDAY SCHEDULE
6:30 PM
Valdosta-Morven Road - US 133
www.paulinebaptistchurch.org

TRANSMITTAL MEMORANDUM FOR DRAFT ENVIRONMENTAL ASSESSMENT TO PUBLIC AGENCIES, OTHER INTERESTED PARTIES AND MEMBERS OF THE PUBLIC

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

JUN 18 2015

MEMORANDUM FOR FEDERAL, STATE, AND LOCAL PUBLIC AGENCIES, OTHER INTERESTED PARTIES, AND MEMBERS OF THE PUBLIC

FROM: 23 CES/CD
3485 Georgia Street
Moody AFB, GA 31699

SUBJECT: Proposed Modification of Grand Bay Range Airspace Weather Category.

1. Enclosed please find a copy of the Draft Environmental Assessment (EA) the U.S. Air Force has prepared to assess the potential environmental consequences associated with changing the weather operations category of airspace R-3008 A/B/C at Grand Bay Range near Moody AFB, Georgia.

2. The Proposed Action is to change the weather category designation for the airspace over Grand Bay Range from Visual Flight Rules (VFR) to VFR-Instrument Flight Rules (IFR). The purpose of the action is to reduce the number of aircraft training hours lost on Grand Bay Range due to IFR weather condition requirements. In 2015 the R-3008 airspace was scheduled for 3,591 flying hours, and the airspace was closed due to weather for approximately 260 hours. The Proposed Action would result in the ability to more fully utilize the existing airspace to conduct operations that were previously authorized in the 2012 Moody AFB Expansion of Sortie-Operations Environmental Assessment by simply allowing operations during inclement weather that would otherwise be cancelled. At this time, the U.S. Air Force requests your comments on the Proposed Action as discussed in the Draft EA. The U.S. Air Force will select a Preferred Alternative after careful consideration of all comments received on the Draft EA and identify the Preferred Alternative decision in the Final EA in accordance with Title 40 Code of Federal Regulations, Section 1502.14(e).

3. The public comment period for this EA is 30 days. Please provide any written comments within 30 days from receipt of this letter to Mr. Hank Santicola at the above address. Libraries should file this document for public access and reference until the public comment period has ended. If you have any questions, please feel free to contact Mr. Santicola by telephone at (229) 257-2396. Thank you for your participation.

JOHN L. EUNICE, III, DAF
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment

Global Power for America

DRAFT EA AGENCY DISTRIBUTION LIST

Georgia Department of Community Affairs
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Georgia Environmental Protection Division
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Georgia DNR Wildlife Resources Division
Fitzgerald Regional Office
Attn: Mr Greg Nelms
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Georgia Historic Preservation Division
Attn: Jennifer Dixon
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Stockbridge, GA 30281

Banks Lake National Wildlife Refuge
Okefenokee National Wildlife Refuge
2700 Suwannee Canal Road
Folkston, GA 31537

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Lowndes County Commission
Jason Davenport
County Planner
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Valdosta, GA 31601

Lanier County Commission
Courthouse, 100 Main St.
Lakeland, GA 31635

U. S. Fish and Wildlife Service
Georgia Ecological Services
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Townsend, GA 31331

Federal Aviation Administration
Attn: Mr. Myron A Jenkins
FAA Eastern Service Center
1701 Columbia Avenue
College Park GA 30337

ENDANGERED SPECIES ACT SECTION 7 CONSULTATION CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

2 Jun 15

MEMORANDUM FOR U.S. FISH AND WILDLIFE SERVICE
Ecological Services Field Office
Attn: Ms. Gail Martinez
4980 Wildlife Drive NE
Townsend GA 31331

FROM: 23 CES/CC
7258 Robbins Road
Moody AFB GA 31699

SUBJECT: Endangered Species Act (ESA) Consultation for Modification of Airspace Units R-3008A/B/C from Visual Flight Rules (VFR) to VFR-Instrument Flight Rules (IFR), Moody AFB GA

1. Reference: USFWS 2014-0749, 2 July 2014, Scoping Letter for Proposed IFR Operations at Grand Bay Range (Attachment 1).

2. Moody AFB requests informal consultation per Section 7 of the ESA regarding the proposed modification and use of existing Moody AFB Airspace Units R-3008A/B/C at Moody AFB, Lanier and Lowndes Counties, GA (Attachment 2).

3. In 2012 Moody AFB completed the Expansion of Sortie-Operations Environmental Assessment (EA) to increase airspace capacity up to 4,875 hours per year for military aircraft. However, because current rules only allow aircraft to operate within this airspace when weather conditions are acceptable for VFR flight (1,500-foot ceiling and 3-mile visibility in accordance with 14 CFR 91.155, *Basic VFR Weather Minimums*), the approved aircraft operation limits have never been achieved. The proposed action involves modifying existing airspace to allow aircraft operations during inclement weather (IFR conditions), which would increase actual aircraft usage of the affected airspace from approximately 2,000 hours per year to 2,250 hours per year, a 12.5% increase in usage, but not an increase in overall assessed capacity of 4,875 hours.

4. Per your letter of 2 July 2014 (Attachment 1), this informal consultation addresses potential impacts to wood storks (*Mycteria americana*) and bald eagles (*Haliaeetus leucocephalus*):

a. WOOD STORKS: Wood storks can occasionally be seen within the wetlands on Moody AFB when water and habitat conditions are conducive to productive foraging. However, wood storks typically do not use the Grand Bay-Banks Lake watershed for extensive foraging, and the existing scrub-shrub habitat associated with Grand Bay Range is considered marginal stork habitat. A map showing the documented sightings of wood storks on Moody AFB over the last fifteen years is attached (Attachment 3). The closest wood stork rookery to the installation is located near Hahira, Georgia, approximately 13 miles from the installation and outside the affected airspace (Attachment 4). Two other rookeries are located about 15 to 18 miles north and northwest of the base.

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b. BALD EAGLES: Bald eagles are very infrequent visitors to Moody AFB, being sighted approximately once every couple of years. The closest bald eagle nesting site is about 15 miles south of Moody AFB near Lake Park, GA. There are no bald eagle nests within the affected airspace units (Attachment 4).

5. Although there is a possibility for disturbance to foraging wood storks and bald eagles present during IFR conditions, the Air Force does not believe the overall frequency of human-wildlife interactions will significantly increase since the proposed action will only result in the addition of two sorties and one hour of flight time per weekday over the current range usage, which is not an increase over the currently approved airspace capacity. Any impacts associated with this action would likely be non-lethal, primarily in the form of behavioral disruptions associated with foraging by these species, and would be infrequent and short-term disruptions at most.

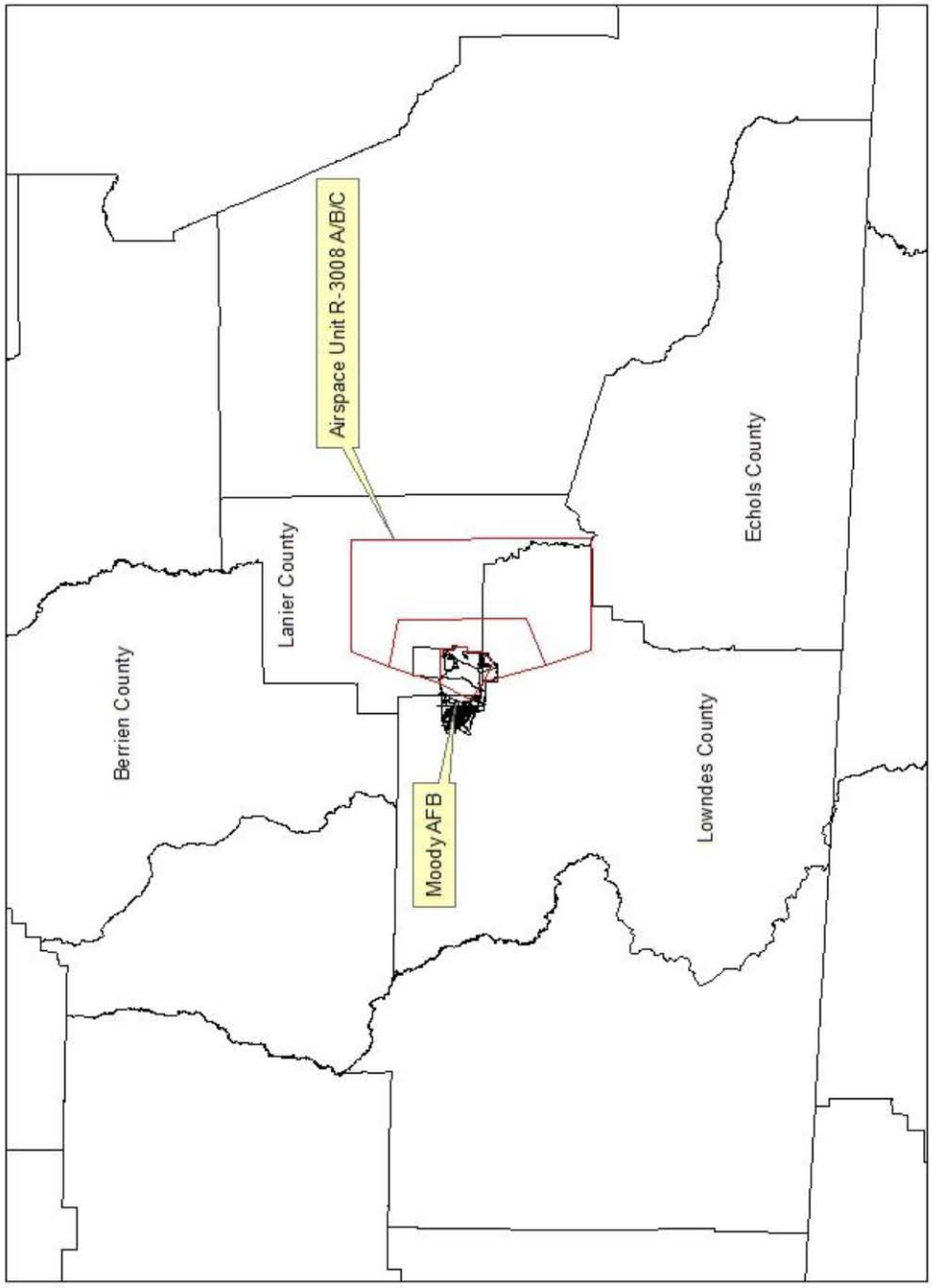
6. Because of the lack of wood stork rookeries and bald eagle nests in immediate vicinity of Moody AFB, the infrequent use of the area by wood storks and bald eagles for foraging, and the documented increases in these species populations in Georgia over the last twenty years, the Air Force believes the proposed action will not affect any listed or protected species. Therefore, Moody AFB requests your written concurrence with our determination and the conclusion of this informal consultation under Section 7 of the Endangered Species Act.

7. If you have any questions or need any further information, please contact Mr. Gregory Lee at 229-257-5881 or by e-mail at gregory.lee.5@us.af.mil.

PATRICK M. ALBRITTON, Lt Col, USAF
Commander

Attachments:
1. USFWS 2014-0749, U.S. Fish and Wildlife Service Letter, 2 July 2014
2. Location of Proposed Modification of Airspace Units R-3008A/B/C from VFR to VFR-IFR
3. Location of Wood Stork Sighting on Moody AFB
4. Location of Wood Storks and Bald Eagles in Proximity to the Airspace Units R-3008A/B/C

Location of Proposed Modification of Airspace Units R-3008A/B/C from VFR to VFR-IFR
Moody AFB, GA

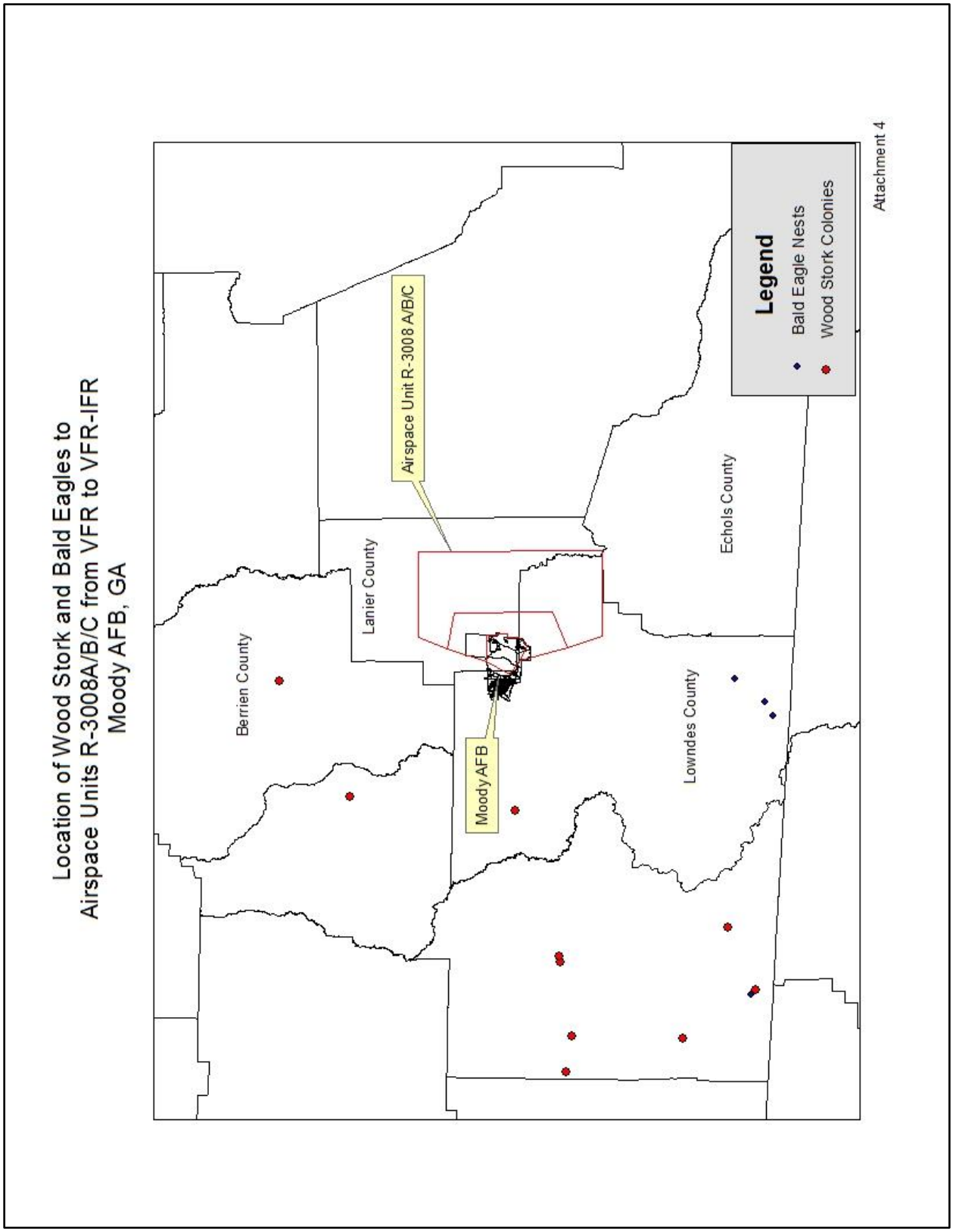


Attachment 2

Attachment 3

Wood Stork Sightings
Moody AFB, GA




Location of Wood Stork and Bald Eagles to
Airspace Units R-3008A/B/C from VFR to VFR-IFR
Moody AFB, GA
Attachment 4
Legend
Bald Eagle Nests
Wood Stork Colonies
Airspace Unit R-3008 A/B/C
Moody AFB
Berrien County
Lanier County
Echols County
Lowndes County

USFWS ENDANGERED SPECIES ACT SECTION 7 CONSULTATION RESPONSE

United States Department of the Interior

Fish and Wildlife Service
247 South Milledge Avenue
Athens, Georgia 30605

West Georgia Sub Office
P.O. Box 52560
Ft. Benning, Georgia 31995-2560

Coastal Sub Office
4270 Norwich Street
Brunswick, Georgia 31520

June 30, 2015

Lieutenant Colonel Patrick M. Albritton
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attention: Mr. Gregory Lee

Re: USFWS 2015-0733

Dear Colonel Albritton:

We received your letter initiating informal Section 7 consultation for the Modification of Airspace Units R-3008A/B/C from Visual Flight Rules (VFR) to VFR Instrument Flight Rules (IFR) at Moody Air Force Base (MAFB) in Lowndes County, Georgia. We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 *et seq.*) (ESA) and the Bald and Golden Eagle Protection Act of 1962 (BGEPA) to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

The proposed Modification of Airspace Units R-3008A/B/C from Visual Flight Rules (VFR) to VFR Instrument Flight Rules (IFR) involves modifying existing airspace to allow aircraft operations during inclement weather (IFR conditions), which would increase actual aircraft usage of the affected airspace from approximately 2,000 hours per year to 2,250 hours per year, but not an increase in overall assessed capacity of 4,875 hours.

Two species were identified as potentially occurring within the action area and possibly affected by the proposed action. These species are: wood stork (*Mycteria americana*) and the bald eagle *(Haliaeetus leucocephalus)*. Your letter states that there is a possibility for disturbance to foraging wood storks and bald eagles during IFR conditions and that any impacts associated with the Proposed Action would likely be non-lethal in the form of behavioral disruptions associated with the foraging by these species and would be infrequent and short term disruptions.

Based on the information provided in your letter and the proposed action is not expected to significantly impact fish and wildlife resources under the U.S. Fish and Wildlife Service jurisdiction. We concur with your *"no affect"* determination. Based on the known distribution of the federally protected species in and around the proposed action area and the scope of the proposed action, we do not anticipate significant risks of adverse effects on these protected species as a result of implementing the proposed action.

If you have any further questions, please contact our Coastal Georgia Sub Office biologist, Gail Martinez, at 912-832-8739 extension 7.

Sincerely,

Robert Brooks

for Strant Colwell
Coastal Georgia Supervisor

NATIONAL HISTORIC PRESERVATION ACT SECTION 106 CONSULTATION CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

14 MAY 2015

MEMORANDUM FOR Ms. Jennifer Dixon
Historic Preservation Division, GA Department of Natural Resources
Jewett Center for Historic Preservation
2610 GA Hwy 155, SW
Stockbridge GA 30281

FROM: 23 CES/CD
7258 Robbins Road
Moody AFB GA 31699

SUBJECT: Section 106 Consultation for Modification of Airspace Units R-3008A/B/C from Visual Flight Rules (VFR) to VFR-Instrument Flight Rules (IFR), Moody AFB GA

1. In accordance with 54 U.S.C. 306108 (commonly known as Section 106 of the National Historic Preservation Act), Moody AFB (Attachment 1) is requesting consultation with your agency in regards to the proposed modification and use of existing Moody AFB Airspace Units R-3008A/B/C at Moody AFB, Lanier and Lowndes Counties, GA. The Area of Potential Effect (APE) for this project is the land beneath the affected airspace (Attachment 2).

2. In 2012 Moody AFB completed the Expansion of Sortie-Operations Environmental Assessment (EA) to increase airspace capacity up to 4,875 hours per year for military aircraft. However, because current rules only allow aircraft to operate within this airspace when weather conditions are acceptable for VFR flight (1,500-foot ceiling and 3-mile visibility in accordance with 14 CFR 91.155, *Basic VFR Weather Minimums*), the approved aircraft operation limits have never been achieved. The proposed action involves modifying existing airspace to allow aircraft operations during inclement weather (IFR conditions), which would increase actual aircraft usage of the affected airspace from approximately 2,000 hours per year to 2,250 hours per year, a 12.5% increase in usage, but not an increase in overall assessed capacity of 4,875 hours.

3. Within this APE, there are 36 identified archeological sites (22 in Lanier County and 14 in Lowndes County). Ten of the sites are considered prehistoric lithic scatters, 10 sites contain both historic and prehistoric components, 9 sites are prehistoric artifact scatters, 5 sites are historic artifact scatters, and 1 site is an historic cemetery (GNAHRGIS, 2015). None of these sites are considered eligible or potentially eligible for listing under the National Register of Historic Places (NRHP). Because the proposed action involves only minimal increases in flight times within existing airspace, subsurface and ground level historic properties would not be adversely affected.

4. There is one NRHP-listed historic property within the APE, the Lanier County Auditorium and Grammar School, located in the city of Lakeland, GA (Attachment 3). Two structures remain from a three-building complex originally constructed in 1925, and were listed under National Register Criteria A and C. Although above-ground structures have the potential to be directly impacted by aircraft operations through vibration-caused physical damage and noise increases, there have been no identified impacts on this facility resulting from the existing

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aircraft use of this military airspace, and the minimal increase in flight time is unlikely to cause a cumulative impact to this historic resource. Additionally, there are unlikely to be any indirect aesthetic effects on this facility since the increase in flight time would be dispersed throughout the airspace and would be conducted during inclement weather when aircraft would be less visible to the public.

5. No NRHP-eligible resources on Moody AFB property are located within the affected airspace boundaries. The only facility within the APE over 50 years of age is Bemiss Field (Attachment 4), which was investigated in 2011 and determined ineligible for NRHP listing (Attachment 5). A survey of the installation real property records and previous historical building surveys confirm there are no other facilities 50 years of age or older within the APE on Moody AFB that have not been evaluated for eligibility under any NRHP criterion

6. Moody AFB initiated Government-to-Government consultation with applicable Native American Tribes for the proposed action. Based on previous installation surveys and communication with the various tribal agencies, there are no identified Traditional Cultural Properties (TCPs) or sacred sites within the APE.

7. Consultation with the State Historic Preservation Office was completed in 2012 for the Expansion of Sortie-Operations EA, a similar action involving airspace utilization increases. During that consultation, your office concurred with the determination that no historic properties or archeological resources listed or eligible for listing in the NRHP would be affected by that undertaking (Attachment 6).

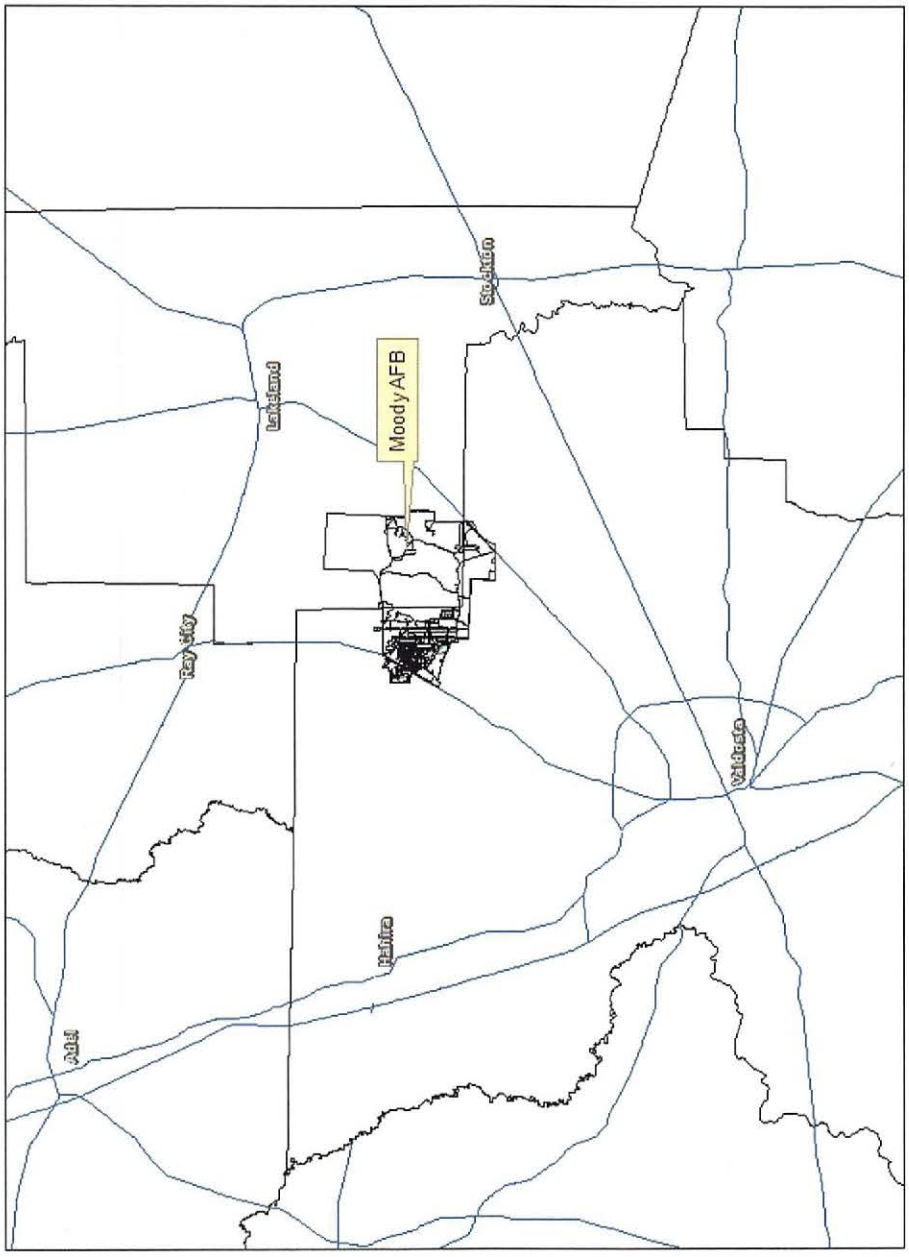
8. The Air Force does not believe the proposed undertaking has the potential to adversely affect any cultural resources, and we request your review of our determination of no adverse effect in accordance with 54 U.S.C. 306108 (commonly known as Section 106 of the National Historic Preservation Act). If you have any comments or inputs on this proposed action or need any additional information, please contact Mr. Gregory Lee, 23 CES/CEIE, 7258 Robbins Road, Moody AFB, GA 31699, gregory.lee.5@us.af.mil, (229) 257-5881.

JOHN L. EUNICE, III, DAF
Deputy Base Civil Engineer

Attachments:
1. Location of Moody AFB
2. Location of APE for Proposed Modification of Airspace Units R-3008A/B/C from VFR to VFR-IFR
3. Location of NRHP-Listed Resources (Lanier County Auditorium and Grammar School) within the APE
4. Location of Bemiss Field (Non-Eligible) within the APE
5. GDNR SHPO Concurrence Letter, 6 July 2011, Moody AFB World War II and Cold War-Era Historic Property Survey
6. GDNR SHPO Concurrence Letter, 27 March 2012, Expand Sortie-Opertionas & Weapons Expenditure Increase, Lowndes County, Georgia, HP-090428-006

Attachment 1

Location of Moody AFB, GA



Preliminary Draft EA for VFR-IFR in R-3008A/B/C at Moody AFB
February 2015

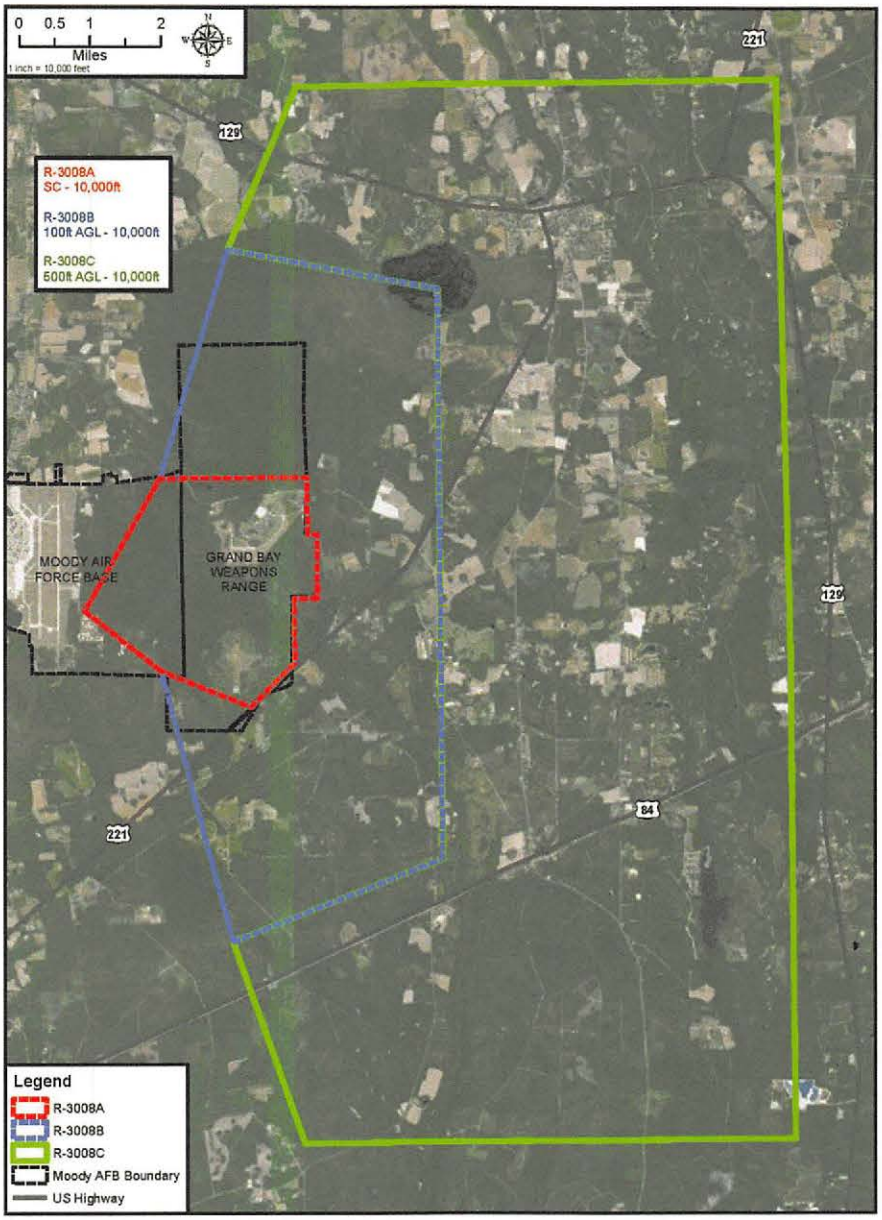


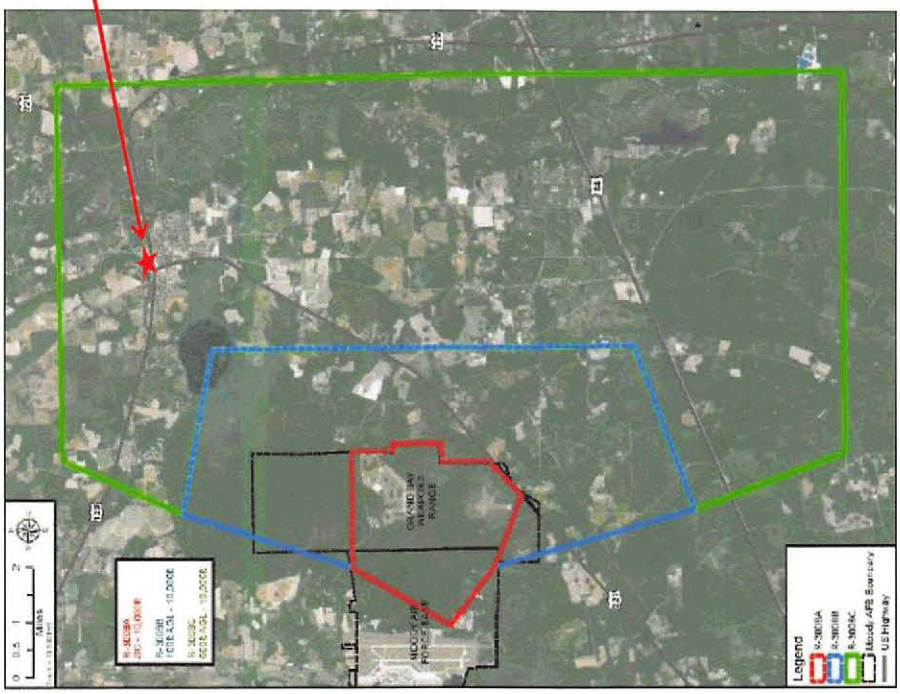
Figure 1-2. Airspace Affected by the Proposed Action

1-4

Attach 2

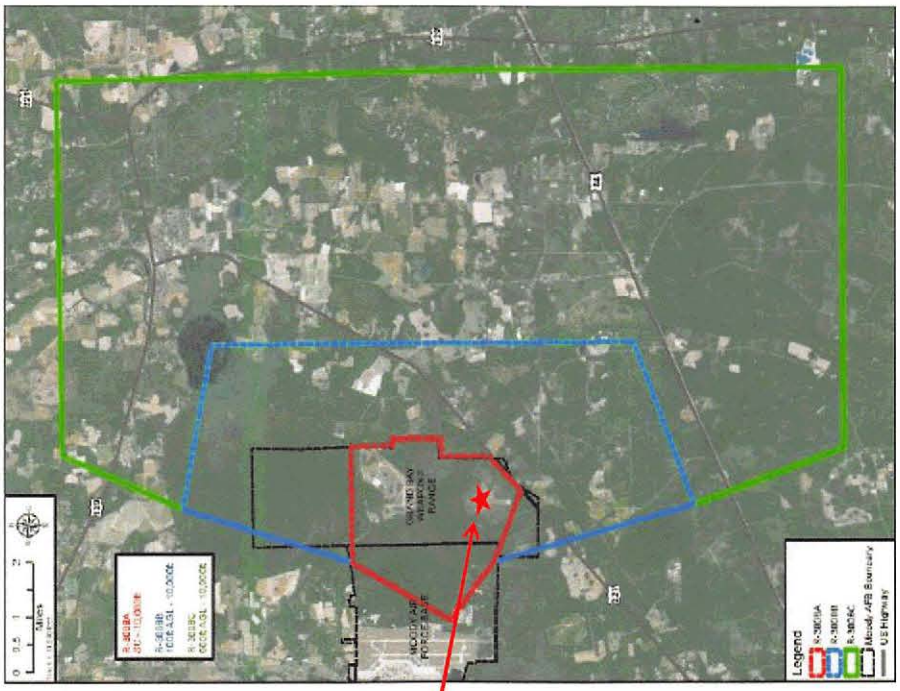
Attachment 3

Proximity of NRHP-Listed Resources to APE
VFR to VFR-IFR Project, Moody AFB, GA



Attachment 4

Proximity of Bemiss Field (Non-Eligible) to APE
VFR to VFR-IFR Project, Moody AFB, GA



Bemiss Field

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

May 23, 2011

Marsha Prior, Ph.D.
Director, Historical Research Services
Geo-Marine, Inc.
2201 K Avenue, Suite A2
Plano, Texas 75074
mprior@geo-marine.com

RE: Moody AFB: World War II & Cold War-Era Historic Property Survey
Lowndes County, Georgia
FP-110422-001

Dear Dr. Prior:

The Historic Preservation Division (HPD) has reviewed the draft report entitled *Moody Air Force Base: World War II and Cold War-Era Historic Property Survey* prepared by Geo-Marine, Inc. and dated April 2011. Our comments are offered to assist the United States Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 110 of the National Historic Preservation Act of 1966, as amended.

Thank you for submitting this survey. Based on the information provided, HPD concurs with the recommendation that 40 of the 42 surveyed sites should be considered ineligible for inclusion in the National Register of Historic Places (NRHP). These include WWII Era resources 104, 112, 556, 617, 907, 908, 917, 918, 921, 976, 979 and 101 and Cold War-Era resources 23, 97, 108, 567, 571, 574, 623, 755, 757, 758, 769, 977, 988, 997, 1703-1705, 3148, 7001, and 7046 at Moody AFB and resources 2007, 2018, 2025, 20202, 20213, 20421, 20431, and 20441 at Grassy Pond Recreation Area. However, regarding Cold War Resources 451 (COMM Computer Training/former Disaster Preparedness) and 753 (Parachute Shop/Survival Equipment)at Moody AFB, we are unable to concur with the survey's finding that these buildings are not NRHP-eligible due to lack of architectural or historical significance and loss of integrity. In order to evaluate these resources, we need additional information. Specifically, we need historic photographs, views of all sides of the buildings, dates of alterations and context other than the buildings are not significant. In addition, regarding Resource 753, in our opinion a construction date of 1962 does not require that this building be evaluated under Criterion G.

Please refer to project number FP-110422-001 in future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact Elizabeth Shirk, Environmental Review Coordinator, at (404) 651-6624.

Sincerely,

Elizabeth Shirk

Karen Anderson-Cordova, Program Manager
Environmental Review & Preservation Planning

KAC/ECS

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GASHPO.ORG

Attach 5

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

July 6, 2011

Marsha Prior, Ph.D.
Director, Historic Research Services
Geo-Marine, Inc.
2201 K Avenue, Suite A2
Plano, Texas 75074

RE: Moody AFB: World War II & Cold War-Era Historic Property Survey
Lowndes County, Georgia
FP-110422-001

Dear Dr. Prior:

The Historic Preservation Division (HPD) has reviewed the additional information submitted concerning the above referenced project. Our comments are offered to assist the United States Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 110 of the National Historic Preservation Act of 1966, as amended (NHPA).

Thank you for submitting the additional information we requested to complete our review. Based on the information received, HPD concurs with the recommendation that resources 451 and 753 should be considered ineligible for inclusion in the National Register of Historic Places (NRHP).

Please refer to project number **FP-110422-001** in any future correspondence on this project. If we may be of further assistance, please do not hesitate to contact Elizabeth Shirk, Environmental Review Coordinator, at (404) 651-6624.

Sincerely,

Karen Anderson-Córdova
Program Manager
Environmental Review and Preservation Planning

KAC:ebp

cc: Bill Hersch, Geo-Marine, Inc. (bhersch@geo-marine.com)

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
404.656.2840 | FAX 404.657.1368 | WWW.GASHPO.ORG

The structures likely to be original to the facility include the two concrete sluices (20441a and 20441b), a high-velocity pump (20441f), and a fish-cleaning house (20441g). The smaller of the two concrete sluices (20441a) does not appear to be in use. This structure has a rectangular concrete headwall and two indentations where gates were likely placed. The second concrete sluice (20441b) is an open-air rectangular structure with a concrete and wood box at its north end. The high-velocity pump (20441f) is a series of metal pipes and valves that are surrounded by protective wood fencing and is associated with the fish-cleaning house (20441g). The fish-cleaning house (20441g) is a small square structure located on the shoreline of Grassy Pond. This structure displays vertical siding, a front-gabled standing-seam metal roof, screened wrap-around windows, a metal-screened door, and wood stilt supports. The structure is accessed by an elevated wooden deck.

Replacement structures associated with the shoreline facility at Grassy Pond include a floating boat slip (20441c) and two floating docks (20441d and 20441e). The floating boat slip (20441c) is an open-air structure with a low-pitched gabled roof and multiple boat slips. A wood plank dock with metal railing leads out to the floating boat slip. The two floating docks (20441d and 20441e) are wood plank with no or partial wooden railings.

When the resources are taken as a whole, they retain integrity of location, setting, feeling, and association. However, the resources are also not a significant example of architectural or engineering workmanship and, due to the replacement of several structures, the integrity of materials and design associated with the resources has been compromised.

The resources are less than 50 years of age and therefore must be evaluated under Criterion Consideration G. As a support structures for Moody AFB, the facilities lacks exceptional historical or engineering importance. Facilities 20441a-g are utilitarian water conveying structures with no exceptional design or engineering merit. Although the resources were constructed during the Cold War, the facilities do not represent the philosophy, strategy, and/or technology associated with the Cold War. The resources have not made an exceptionally important contribution to broad patterns in our history, are not associated with the lives of persons of exceptional national importance, are not of exceptional architectural importance, and do not yield nor are likely to yield information of exceptional importance to human history or prehistory. Therefore, Facility 20441a-g is recommended not eligible for NRHP inclusion under Criterion Consideration G. Based upon the function of the resources as support structures for the installation, and because the structures do not convey any other architectural or associative historic significance, the resources have little potential of meeting the requirements for historic significance under the standard NRHP criteria once they reach 50 years of age.

Resource 101

Bemiss Field (Resource 101) does not bear an official facility number and was not included in the real property list provided by the Moody AFB staff, but the absence of the field in other historical investigations and the prominence of the field at the Grand Bay Weapons Range merits an evaluation of this resource. Although the original construction date of the field is unknown, 1943 aerial photography clearly shows the paved bisecting airstrips as oriented in a north/south east/west direction (Figure 68). Located approximately 2 miles southeast of Moody AFB, the field was most likely an auxiliary or "satellite" field and was designated "Bemiss Auxiliary Army Airfield #3." The field closed at the end of WWII; however, historic maps denoted the field as "Bemiss AF" as late as 1949. According to the February 1956 Jacksonville Sectional Chart, the

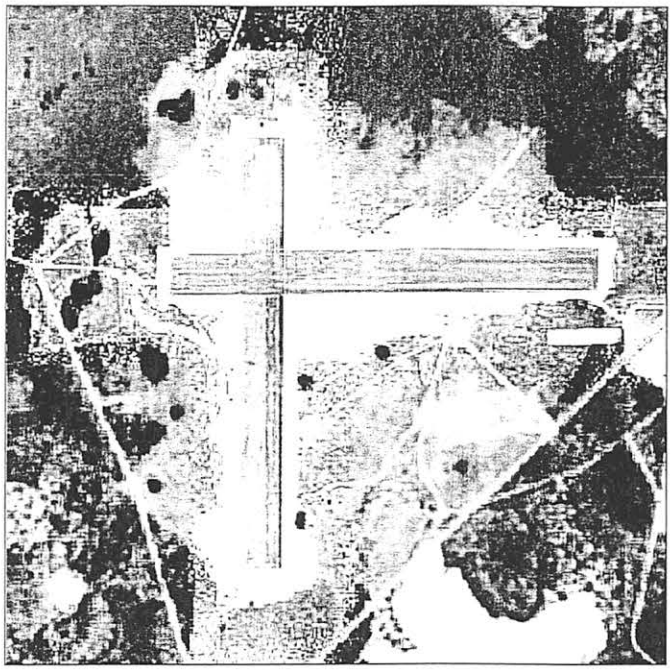


Figure 68. Resource 101, Bemiss Field, 1943 aerial photograph (source: U.S. Department of Agriculture 1943).

field consisted of a combined 5,000 feet of paved surface (Figure 69). However, an update of the same chart, dated 1964, depicts the field as "Abandoned airport" (Freeman 2009). According to informal interviews, the field was used for parasail training as recently as the 1970s. The airstrips have been altered due to the removal of the original asphalt paving and the growth of a large amount of vegetation at the east side of the field (Figure 70). According to Moody AFB staff, the site will be used for C-130 transport training—specifically takeoff and landing at unimproved airstrips. Currently, the area is used as a target practice sighting range and contains a number of pieces of equipment, including tanks and all terrain vehicles (Figure 71).

The resource retains integrity of location, setting, design, association, and feeling; however, the material integrity of the resource has been lost due to the removal of the original asphalt strip. In addition, the structure is not a significant example of architectural workmanship.

Historically, resource 101 is associated with the WWII mission of Moody AFB; however, due to the change from the original use for the facility to an ammunition test range, this association has been lost. The resource is also not associated with any other historically significant events or persons under NRHP Criteria A or B. In addition, due to a lack of engineering integrity, the resource does not possess sufficient significance to meet NRHP eligibility under Criterion C at the state or national level of significance. The resource has little potential to provide information that may contribute to an understanding of human history or prehistory under Criterion D. Therefore, the resource is recommended not eligible for listing in the NRHP.

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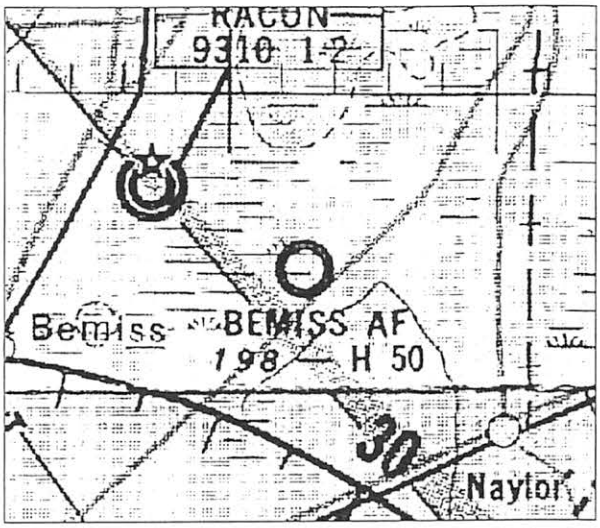


Figure 69. Resource 101, Bemiss Field, 1956 Jacksonville Sectional Chart (source: Freeman 2009).

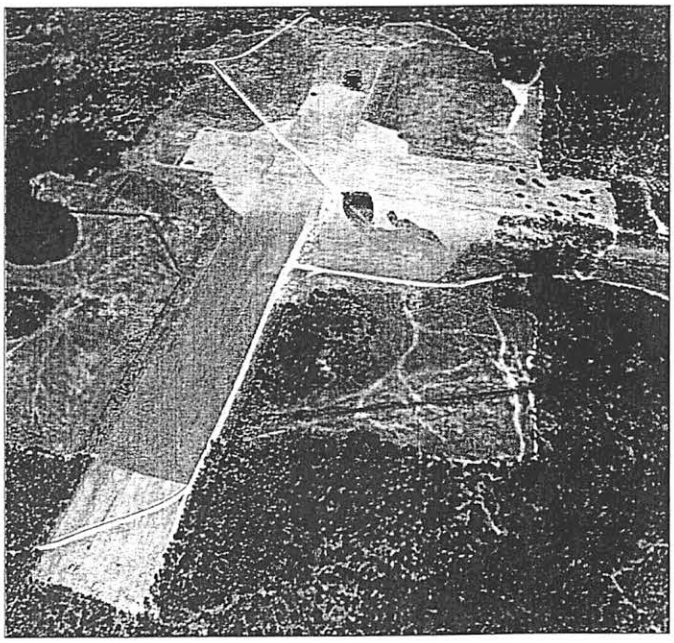


Figure 70. Resource 101, Bemiss Field, 2006 (source: Freeman 2009).

94

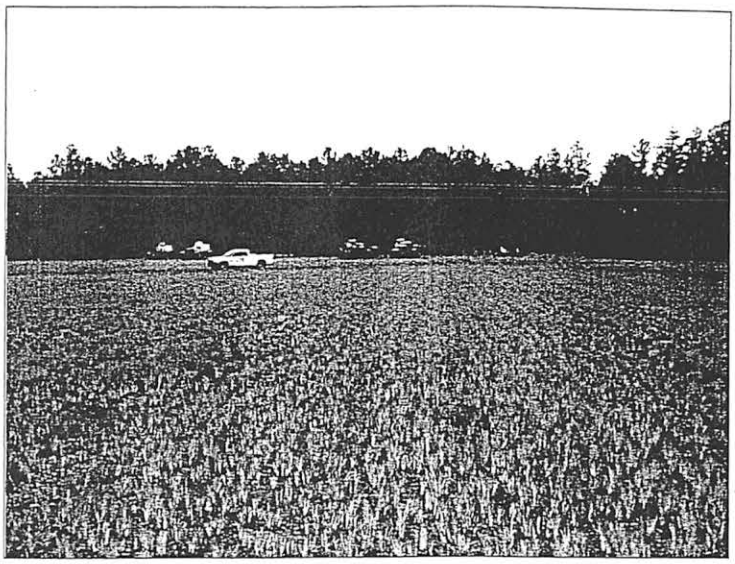


Figure 71. Resource 101, Berniss Field, facing south.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

March 27, 2012

John L. Eunice, III, DAF
Deputy Base Civil Engineer
Department of the Air Force
23D Civil Engineer Squadron (ACC)
Moody Air Force Base, Georgia
Attn: Gregory Lee (gregory.lee@moody.af.mil)

RE: Moody Air Force Base: Expand Sortie-Operations & Weapons Expenditure Increase
Lowndes County, Georgia
HP-090428-006

Dear Mr. Eunice:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base in complying with provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of the increase in operations within established airspace and increase in ordnance use at Townsend Range, Georgia. Based on the submitted information, HPD concurs that the proposed project will have **no effect** on archaeological resources or historic structures that are listed in or eligible for listing in the National Register of Historic Places (NRHP), as defined in 36 CFR Part 800.4(d)(1). Please note that historic and/or archaeological resources may be located within the project's area of potential effect (APE), however, at this time it has been determined that they will not be impacted by the above-referenced project. Furthermore, any changes to this project as proposed will require further review by our office for compliance with Section 106.

Please refer to project number **HP-090428-006** in any future correspondence regarding this undertaking. If we may be of further assistance, please do not hesitate to contact Erin Parr, Environmental Review Specialist, at (404) 651-6546.

Sincerely,

Elizabeth Shirk
Environmental Review Coordinator

ES:ebp

cc: Michael Jacobs, Southern Georgia Regional Commission

254 WASHINGTON STREET, SW | GROUND LEVEL | ATLANTA, GEORGIA 30334
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SHPO CONSULTATION RESPONSE

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

June 11, 2015

John L. Eunice, III, DAF
Deputy Base Civil Engineer
Department of the Air Force
23D Civil Engineer Squadron (ACC)
Moody Air Force Base, Georgia
Attn: Gregory Lee

RE: Moody AFB: Change Flight Operations, Grand Bay Range, Valdosta
Lowndes County et. al., Georgia
HP-140605-001

Dear Mr. Eunice:

The Historic Preservation Division (HPD) has received the information submitted concerning the above referenced undertaking. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base (AFB) in complying with provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA).

The subject project consists of modifying existing airspace to allow aircraft operations during inclement weather, which translates to a 12.5% increase in hours. Based on the submitted information, HPD finds that there are multiple historic resources within the project's area of potential effect, both on and off of the AFB, which are eligible or listed in the National Register of Historic Places (NRHP), including the NRHP-listed Lanier County Auditorium and Grammar School. However, HPD concurs that no historic properties that are listed or eligible for listing in the National Register of Historic Places will be affected by this undertaking, as defined in 36 CFR Part 800.4(d)(1), due to the nature of the activity.

This letter evidences consultation with our office for compliance with Section 106 of the NHPA. It is important to remember that any future changes to this project as it is currently proposed may require additional consultation. HPD encourages federal agencies and project applicants to discuss such changes with our office to ensure that potential effects to historic resources are adequately considered in project planning.

Please refer to project number **HP-140605-001** in any future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact me at jennifer.dixon@dnr.ga.gov or (770) 389-7851.

Sincerely,

Jennifer Dixon, MHP, LEED Green Associate
Program Manager
Environmental Review & Preservation Planning

2610 GA HWY 155, SW | STOCKBRIDGE, GA 30281
770.389.7844 | FAX 770.389.7878 | WWW.GEORGIASHPO.ORG

OTHER AGENCY CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS UNITED STATES AIR FORCE
WASHINGTON DC

HQ USAF/A7CI
1260 Air Force Pentagon
Washington, DC 20330-1260

SEP 29 2014

Mr. Dennis E. Roberts
Director, Airspace Services
Orville Wright Building (FOB10A)
Federal Aviation Administration
800 Independence Ave, SW
Washington, DC 20591

Dear Mr. Roberts:

The Air Force requests your formal participation as a Cooperating Agency in preparation of an Environmental Assessment (EA) for the Grand Bay Range VFR to VFR-IFR project, as prescribed in the President's Council on Environmental Quality National Environmental Policy Act (NEPA) Regulations, 40 CFR 1501.6, *Cooperating Agencies.* The Air Force is conducting an EA in support of converting range and Restricted Area R-3008 A/B/C/D airspace from VFR only operations to VFR and IFR operations.

As a cooperating agency, the Air Force requests you participate in various portions of the EA development as may be required, to include:

a. Assuming responsibility, upon request by the Air Force, for developing information and preparing analysis on issues for which you have special expertise;

b. Making staff available to enhance interdisciplinary review capability; and

c. Responding, in writing, to this request.

The Air Force requires that the support of cooperating agencies be timely to avoid unnecessary delays in the NEPA process. Should you or your staff have further questions regarding this memo, our point of contact is Mr. Hank Santicola at (229) 257-2396, or he can be reached by e-mail at henry.santicola.2@us.af.mil.

EDWIN H. OSHIBA, Colonel, USAF
Chief, Strategic Plans and Programs Division
DCS/Logistics, Installations, and Mission Support

cc:

Federal Aviation Administration Eastern Service Center

Global Power For America

U.S. Department
of Transportation
**Federal Aviation
Administration**

OCT 27 2014

Colonel Edwin H. Oshiba
HQ USAF/A7CI
Washington, DC 20330-1260

Dear Colonel Oshiba:

Thank you for your letter of September 29 regarding cooperation of the Environmental Assessment (EA) for the Grand Bay Range VFR to VFR-IFR.

As the change of Grand Bay Range VFR to VFR-IFR involves Special Use Airspace (SUA), the FAA will cooperate following the guidelines described in the Memorandum of Understanding (MOU) between the FAA and the Department of Defense Concerning SUA Environmental Actions, dated October 4, 2005, and in accordance with 40 CFR § 1501.6, NEPA regulations regarding cooperating agencies.

Modification of this SUA resides under the jurisdiction of the Eastern Service Center, Operations Support Group, College Park, GA. The Eastern Service Center will be the primary focal point for matters related to both airspace and environmental matters. Mr. Myron A. Jenkins serves as Acting Manager of the Operations Support Group. FAA Order 7400.2, Procedures for Handling Airspace Matters, Chapter 32, indicates that airspace modifications and environmental processes should be conducted in tandem as much as possible; however, they are separate processes. Approval of either the aeronautical process or the environmental process does not automatically indicate approval of the entire proposal. I have enclosed Appendix 2, 3, and 4 of FAA Order 7400.2 for additional details.

A copy of the incoming correspondence and this response is being sent to Mr. Jenkins for further processing of your proposal. If you have any questions, please contact Mr. Jenkins at 404-305-5571.

Sincerely,

Dennis E. Roberts
Director, Airspace Services

Enclosure
FAA Order 7400.2, Appendices 2-4

cc: Mr. Myron A. Jenkins
FAA Eastern Service Center
Mr. Hank Santicola
U.S. Air Force

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

MEMORANDUM FOR FEDERAL, STATE, AND LOCAL PUBLIC AGENCIES

FROM: 23 CES/CD
3485 Georgia Street
Moody AFB, GA 31699-1707

SUBJECT: Proposed IFR Operations on Grand Bay Range at Moody AFB, GA

1. The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008A/B/C, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

2. The purpose of the proposed action is to change the weather operations category of Grand Bay Range and the overlying airspace, R-3008 A/B/C, from VFR to VFR-IFR to allow full utilization of Grand Bay range during periods of IFR weather conditions. Currently, Grand Bay Range operates under VFR only. Air Force Instructions require clouds to be at least 1500 feet above the surface (1500' ceiling) with 3 statute miles of visibility for VFR operations. Currently, the range halts scheduled operations when weather conditions are less than a 1500' ceiling or less than 3 miles visibility. Under the proposed action Grand Bay Range would now support operations that can be accomplished on range regardless of VFR or IFR conditions. Ground training, HH-60 helicopter aircraft, Raven Unmanned Aerial Vehicles and A-10 aircraft all have training requirements that can be accomplished during IFR weather conditions. The proposed action would occur during existing range hours; no expansion of hours is proposed as part of this action. Because the range is currently restricted to VFR only weather conditions, the proposed action would result in 250 annual hours of additional range usage occurring within existing published hours.

3. The EA for the proposed action will be prepared in compliance with the National Environmental Policy Act of 1969, 42 United States Code (USC), the Council on Environmental Quality NEPA Regulations, 40 Code of Federal Regulations (CFR), and the Air Force's Environmental Impact Analysis Process, 32 CFR 989. As part of this EA, we request your assistance in identifying potential areas of environmental impact to be addressed.

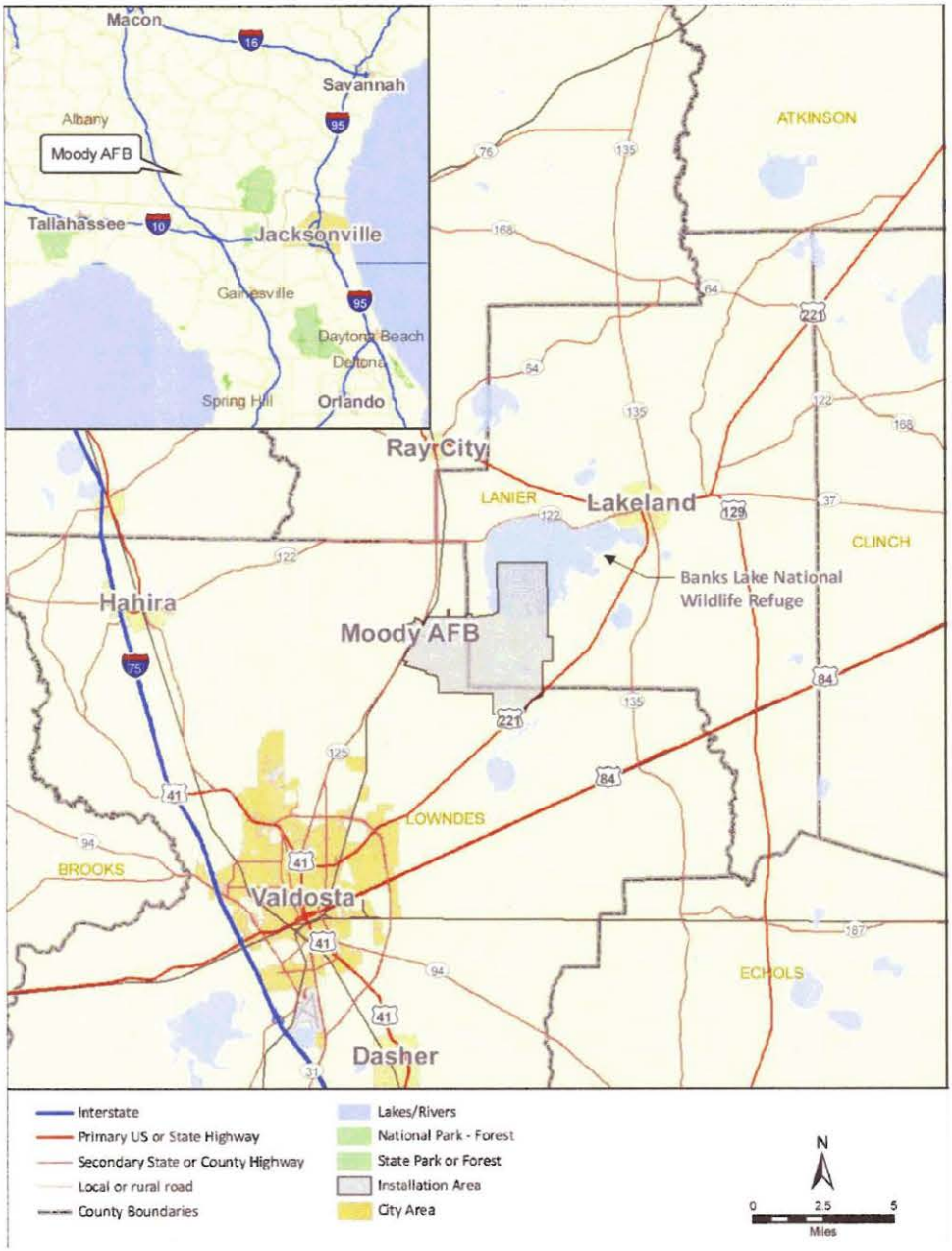
Global Power for America

4. If you have any specific items of interest about the proposal, we would like to hear from you within 30-days of receipt of this letter. Please contact the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699, or via e-mail at henry.santicola.2@us.af.mil, or by phone at (229) 257-2396 with any questions or concerns you or your staff may have.

JOHN L. EUNICE, III, GS-14, DAFC
Deputy Base Civil Engineer

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Proposed Action

3



Attachment 1

4

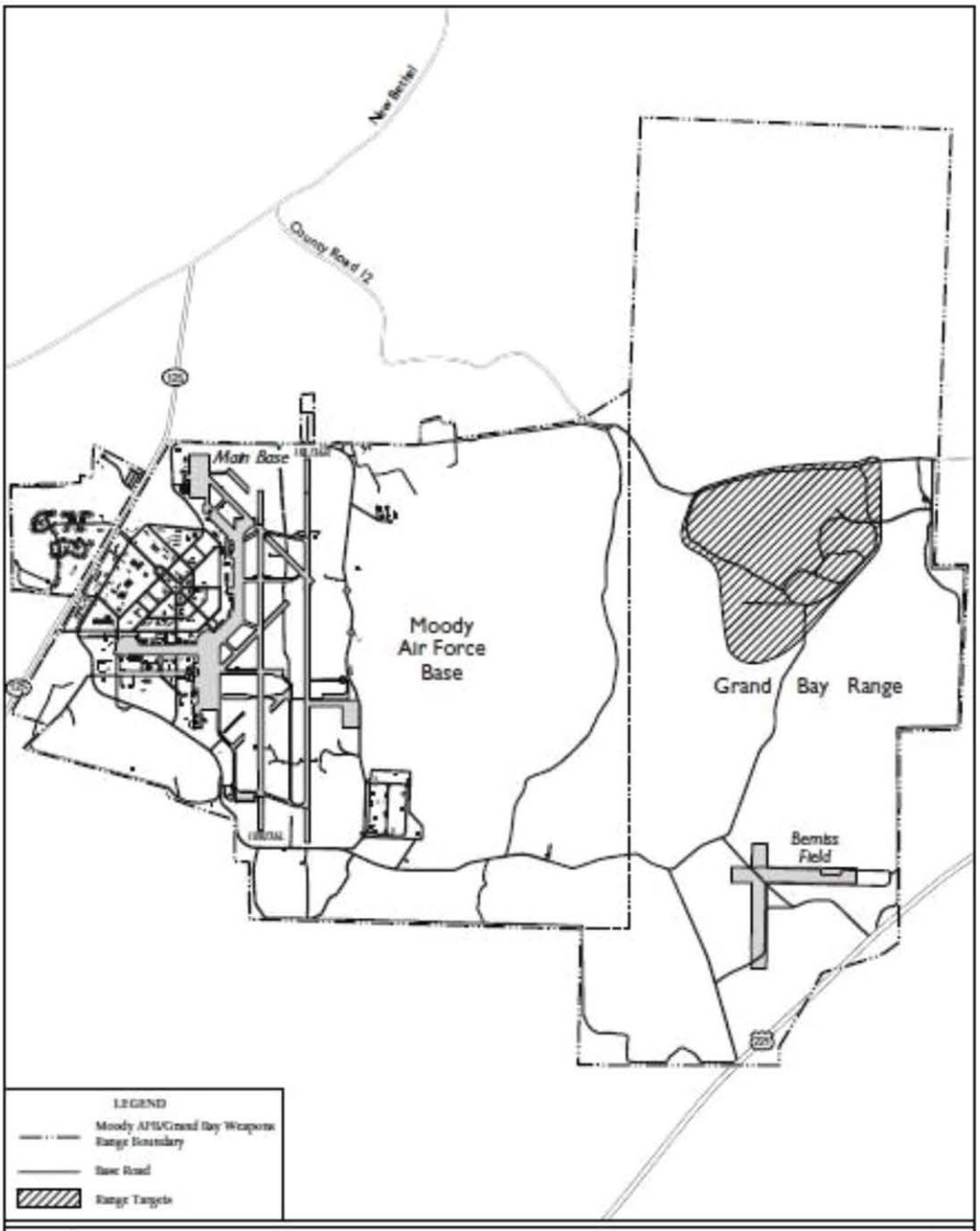


Figure 1-1
Location of Moody AFB, Grand Bay Range, and Bemiss Field

Attachment 2

United States Department of the Interior
Fish and Wildlife Service

Okefenokee National Wildlife Refuge
Banks Lake National Wildlife Refuge
2700 Suwannee Canal Road
Folkston, Georgia 31537
(912) 496-7366

June 11, 2014

Mr. Hank Santicola
EA Project Manager
23rd Civil Engineer Squadron
3485 Georgia St.
Moody AFB, GA 31699

Subject: Proposed IFR Operations on Grand Bay Range at Moody Air Force Base, Georgia

Dear Mr. Santicola:

Thank you for the opportunity to comment on the Environmental Assessment (EA) to assess impacts of changing Visual Flight Rules (VFR) to Instrument Flight Rules (IFR) on operations at Grand Bay Range, Georgia. The rule change will result in an additional 250 hours of additional range usage annually. Such a change will impact the mission of the U.S. Fish and Wildlife Service (USFWS) at both the Banks Lake and Okefenokee National Wildlife Refuges (NWR).

Banks Lake
Banks Lake NWR near Lakeland, Georgia has been impacted by air flights and combat mission training connected with Moody Air Force Base since its designation as a National Wildlife Refuge in 1985. Banks Lake NWR is currently a very popular local and regional fishery resource for southeast Georgia. As ecotourism increases, Lanier County has promoted additional recreational opportunities beyond fishing to include wildlife observation and photography at the refuge.

We are concerned about the impacts of the proposed action on refuge visitation. The annual visitation to the refuge is currently 20,000 visitors per year, and is increasing as development expands in and around Moody Air Force Base and nearby Valdosta and Lowndes County. Additional flights over the refuge will negatively impact the visitors' connection with nature due to noise and sight intrusion. This would be especially noticeable on weekends when the majority of our visiting public uses the refuge.

The refuge and surrounding agricultural lands attract numerous wildlife species to the area as well. Resident and migratory sandhill cranes, wood storks, great blue herons, white ibis and

other large wading birds, in addition to numerous hawks and bald eagles, use the area in large numbers. Increased flights over the refuge will increase the potential for bird strikes, especially in poor weather conditions for visibility is limited.

Prescribed fire is an important management tool for maintaining the wetlands within the Grand Bay-Banks Lake complex. We are concerned that additional overflights will restrict the ability to use prescribed fire as a necessary management tool due to increased concerns the Air Force may have with smoke management. We request that the Air Force continue to accommodate requests from the Georgia Department of Natural Resources and the USFWS for prescribed burning so that both agencies can accomplish their resource management goals.

Okefenokee National Wildlife Refuge

Although it was unclear from your project description if additional flights would take place over the Okefenokee NWR, we would like to emphasize our concern if this is part of the proposed action. We request that the Environmental Assessment address potential impacts of the proposed action on the degradation of the Wilderness character and Wilderness experience that the Okefenokee NWR provides to the American public. We request the opportunity to work with your office to both quantify when and how often there will be additional air operations over the Okefenokee NWR and discuss operational guidelines for military overflights that will minimize impacts to our mission as much as possible.

To help you understand our concerns for the impact of Moody Air Operations over the Okefenokee NWR, we offer the following information. The refuge has over 353,000 acres of congressionally designated Wilderness within its boundaries. The Okefenokee Wilderness is the third largest designated Wilderness east of the Mississippi River. Over 200,000 visitors come to the refuge each year. A significant number are repeat visitors that have come to know, respect, and now expect a quality of Wilderness experiences with every visit. Refuge staff, volunteers, contractors, concessionaires, and even researchers incorporate Wilderness values of solitude and natural system functions into everyday work.

The eco-tourism industry spawned by refuge Wilderness experiences has become the core of an "Economic Engine" that helps to power the economies of five rural counties. The report, titled *Banking on Nature 2006: The Economic Benefits to Local Communities of National Wildlife Refuge Visitation* estimated that in 2005, domestic travelers to the Okefenokee NWR added a total of $74.60 million dollars to Charlton, Ware and Clinch counties.

A large portion of our visitors are day-use visitors who boat, fish, photograph, observe wildlife and attend environmental education activities and interpretive programs. They are accustomed to some of the intrusions imposed by the "crush" of other visitors but can and do seek relief by finding out-of-the-way locations on the refuge where others rarely visit. Multi-day and night Wilderness visitors are fewer in number but their passion for Wilderness cannot be under estimated. They are insistent that the quality of their visits to a Wilderness not be degraded by outside, unnatural circumstances. For instance, they are accustomed to not having cell phone coverage and often comment about how quiet and serene the Wilderness areas continue to be.

Visual jet streams are obtrusive in a Wilderness area, along with the light and noise pollution caused by overflights. Visitors are intrigued with and truly embrace the ideal of not hearing car horns, automobile traffic, heavy equipment, televisions, radios, etc.

The Stephen C. Foster State Park near Fargo, Georgia accommodates about one third of our annual visitation during a normal year. Since the majority of their visitors stay in their commercial campground or in rental cabins, this group plus overnight Wilderness campers within the western portion of the refuge will be severely impacted by any increased air traffic within their visible and auditory airspace.

An additional issue is the 1,500+ colonial wading birds that nest in the northwest quadrant of the refuge. An increase in flights over this area during the nesting season may impact the nesting success for these birds.

As our comments illustrate, we believe there is potential impact to the economies of small rural counties affected by this proposal. We believe that the general public and recreational visitors to these affected refuges should have the opportunity to provide verbal comments through public meetings as well as through comments solicited through local and regional newspapers.

We thank you for allowing us to identify our issues and concerns early on in the EA process. If there are any questions or any way that we can help with this project in the future, please do not hesitate to contact me (email: Michael_Lusk@fws.gov; phone: 912-496-7366 ext. 226).

Sincerely,

Michael Lusk
Refuge Manager
Okefenokee National Wildlife Refuge

United States Department of the Interior

Fish and Wildlife Service
105 West Park Drive, Suite D
Athens, Georgia 30606
Phone: (706) 613-9493
Fax: (706) 613-6059

West Georgia Sub-Office
Post Office Box 52560
Fort Benning, Georgia 31995-2560
Phone: (706) 544-6428
Fax: (706) 544-6419

Coastal Sub-Office
4980 Wildlife Drive
Townsend, Georgia 31331
Phone: (912) 832-8739
Fax: (912) 832-8744

July2, 2014

Mr. John L Eunice, III
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attention: Mr. Hank Santicola

Re: USFWS 2014-0749

Dear Mr. Santicola:

Thank you for your letter initiating early coordination for the proposed IFR operations on Grand Bay Range at Moody Air Force Base (AFB) in Lowndes County, Georgia. We submit the following comments in accordance with provisions of the Endangered Species Act of 1973, as amended; (16 U.S.C. 1531 *et seq.*) (ESA), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), the Migratory Bird Treaty Act of 1918 (MBTA), to further the conservation of fish and wildlife resources and their habitat, including federally listed threatened and endangered species.

Your letter states that the United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody AFB to assess the potential environmental impacts associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008 A/B/C, from Visual Flight Rules (VFR) only operations to also permit Instrument Flight Rules (IFR) operations. Your letter also states that that there is no proposed change or expansion to the currently scheduled operating hours and the proposed action would occur during existing range hours. The proposed action would allow for operations to occur regardless of VFR or IFR conditions, thus creating an additional 250 hours of additional range use within existing published hours.

Based on the information provided in your letter, there is one federally listed species that may be affected by the proposed action. This species is the wood stork *(mycteria americana)*. Additionally, the bald eagle *(haliaeetus leucocephalus)* is protected under the BGEPA and the MBTA and may be affected by the proposed action.

We appreciate the opportunity to comment during the planning stages of your project. If you have any additional questions, please write or call staff biologist Gail Martinez at 912-832-8739 extension 7.

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

FEB 18 2015

23d Civil Engineer Squadron
3485 Georgia Street
Moody AFB GA 31699

Mr. Myron A. Jenkins
Mr. Gerald E. Lynch
FAA Eastern Service Center
1701 Columbia Avenue
College Park GA 30337

Dear Mr. Jenkins and Mr. Lynch,

The Air Force requests your review of the Preliminary Draft Environmental Assessment (attachment 1) to Change R-3008A/B/C Weather Operations from Visual Flight Rules (VFR) to Visual Flight Rules/Instrument Flight Rules (VFR/IFR) at Moody AFB, Georgia as prescribed in the President's Council on Environmental Quality, National Environmental Policy Act (NEPA) Regulations, 40 CFR 1501.6, *Cooperating Agencies.*

On 27 October 2014 the FAA accepted cooperating agency status for this environmental assessment (attachment 2). Per FAA Order 7400.2, the proponent submits a Preliminary Draft EA or EIS to the Service Area environmental specialist. The Service Area environmental specialist shall then provide comments, in consultation with the airspace specialist and the Environmental Programs Group, back to the Proponent.

The Air Force requires that the support of cooperating agencies be timely to avoid unnecessary delays in the NEPA process. Should you or your staff have further questions regarding this memo, our point of contact is Mr. Hank Santicola at DSN 460-2396, commercial (229) 257-2396, or he can be reached by e-mail at henry.santicola.2@us.af.mil. Please provide comments on the attached Comment Response Matrix (attachment 3) to Mr. Santicola by Friday, 3 April 2015.

JOHN L. EUNICE, III, GS-14, DAF
Deputy Base Civil Engineer

Attachments:
1. PDEA for Modification of R-3008A/B/C from VFR to VFR-IFR at Moody AFB, GA
2. FAA Cooperating Agency Letter dated 27 October 2014
3. Comment Response Matrix

Global Power for America

TRIBAL CORRESPONDENCE

DEPARTMENT OF THE AIR FORCE
23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

MEMORANDUM FOR TRIBAL HISTORIC AND CULTURAL PRESERVATION OFFICERS

FROM: 23 CES/CEIE
3485 Georgia Street
Moody AFB, GA 31699-1707

SUBJECT: Proposed IFR Operations on Grand Bay Range at Moody AFB, GA

1. The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia (GA) to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008A/B/C, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. There is no construction, new airspace, or ground disturbing activities associated with this proposal.

2. The purpose of the proposed action is to change the weather operations category of Grand Bay Range and the overlying airspace, R-3008 A/B/C, from VFR to VFR-IFR to allow full utilization of Grand Bay range during periods of IFR weather conditions. Currently, Grand Bay Range operates under VFR only. Air Force Instructions require clouds to be at least 1500 feet above the surface (1500' ceiling) with 3 statute miles of visibility for VFR operations. Currently, the range halts scheduled operations when weather conditions are less than a 1500' ceiling or less than 3 miles visibility. Under the proposed action Grand Bay Range would now support operations that can be accomplished on range regardless of VFR or IFR conditions. Ground training, HH-60 helicopter aircraft, Raven Unmanned Aerial Vehicles and A-10 aircraft all have training requirements that can be accomplished during IFR weather conditions. The proposed action would occur during existing range hours; no expansion of hours is proposed as part of this action. Because the range is currently restricted to VFR only weather conditions, the proposed action would result in 250 annual hours of additional range usage occurring within existing published hours.

3. The EA for the proposed action will be prepared in compliance with the National Environmental Policy Act of 1969, 42 United States Code (USC), the Council on Environmental Quality NEPA Regulations, 40 Code of Federal Regulations (CFR), and the Air Force's Environmental Impact Analysis Process, 32 CFR 989. As part of this EA, we request your assistance in identifying potential areas of environmental impact to be addressed.

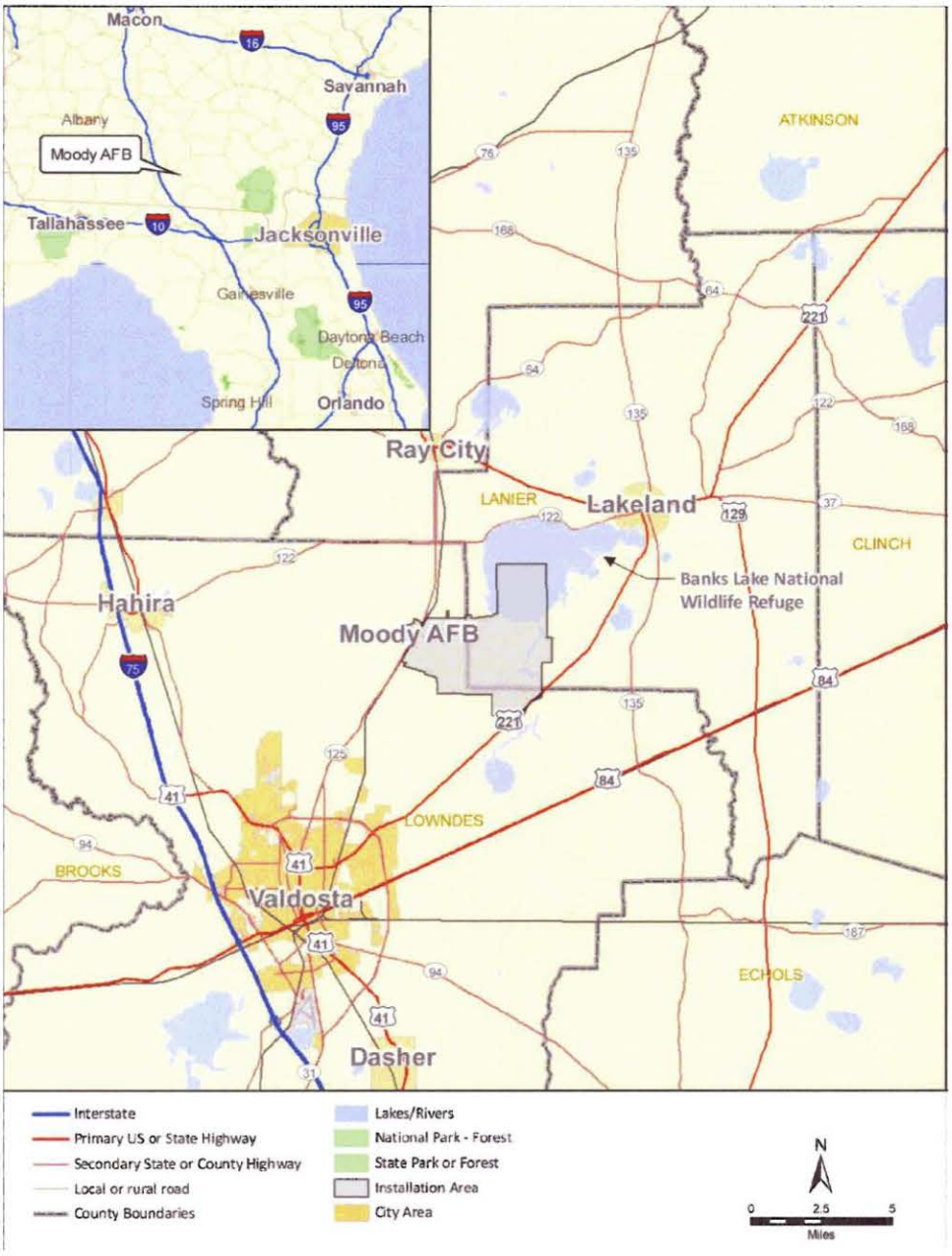
Global Power for America

4. If you have any specific items of interest about the proposal, we would like to hear from you within 30-days of receipt of this letter. Please contact the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699, or via e-mail at henry.santicola.2@us.af.mil, or by phone at (229) 257-2396 with any questions or concerns you or your staff may have.

HENRY J. SANTICOLA
Environmental Planner

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Proposed Action

3



Attachment 1

4

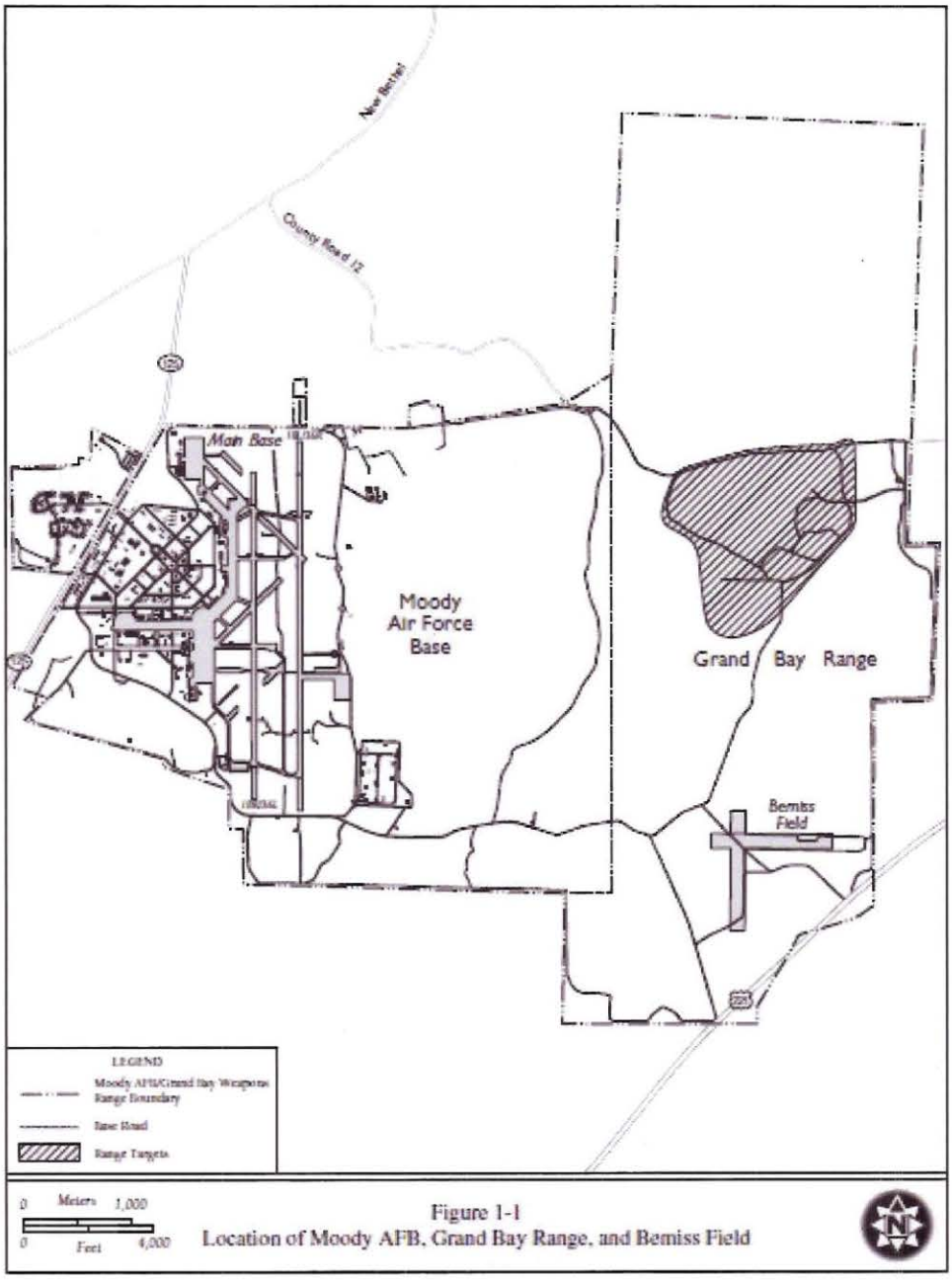


Figure 1-1
Location of Moody AFB, Grand Bay Range, and Bemiss Field

Attachment 2

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Bill John Baker, Principal Chief
The Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465

Dear Mr. Baker

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

The proposed action is to change the weather operations category of Grand Bay Range and the overlying airspace from VFR to VFR-IFR to allow full utilization of Grand Bay Range during periods of IFR weather conditions. Currently, Grand Bay Range operates under VFR only. Air Force Instructions require clouds to be at least 1500 feet above the surface (1500' ceiling) with 3 statute miles of visibility for VFR operations. Currently, the range halts scheduled operations when weather conditions are less than a 1500' ceiling or less than 3 miles of visibility. Under the proposed action Grand Bay Range would support operations on range regardless of VFR or IFR conditions. Ground training, HH-60 helicopter aircraft, unmanned aerial vehicles, and A-10 aircraft all have training requirements that can be accomplished during IFR weather conditions. No expansion of hours is proposed as part of this action. Because the range is currently restricted to VFR only weather conditions, the proposed action would result in 250 annual hours of additional range usage occurring within existing published hours.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the Grand Bay Range weather category change proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to the EA Project Manager, Mr. Hank Santicola at 23d Civil

Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Mr. Santicola at (229) 257-2396 or Henry.Santicola.2@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Grand Bay Range

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

George Wickliffe, Chief
United Keetowah Band of Cherokee
P.O. Box 746
Tahlequah, OK 74465

Dear Mr. Wickliffe

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

The proposed action is to change the weather operations category of Grand Bay Range and the overlying airspace from VFR to VFR-IFR to allow full utilization of Grand Bay Range during periods of IFR weather conditions. Currently, Grand Bay Range operates under VFR only. Air Force Instructions require clouds to be at least 1500 feet above the surface (1500' ceiling) with 3 statute miles of visibility for VFR operations. Currently, the range halts scheduled operations when weather conditions are less than a 1500' ceiling or less than 3 miles of visibility. Under the proposed action Grand Bay Range would support operations on range regardless of VFR or IFR conditions. Ground training, HH-60 helicopter aircraft, unmanned aerial vehicles, and A-10 aircraft all have training requirements that can be accomplished during IFR weather conditions. No expansion of hours is proposed as part of this action. Because the range is currently restricted to VFR only weather conditions, the proposed action would result in 250 annual hours of additional range usage occurring within existing published hours.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the Grand Bay Range weather category change proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to the EA Project Manager, Mr. Hank Santicola at 23d Civil

Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Mr. Santicola at (229) 257-2396 or Henry.Santicola.2@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Grand Bay Range

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Emman Spain, Tribal Historic Preservation Officer
Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

Dear Mr. Spain

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

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In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the Grand Bay Range weather category change proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

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Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Grand Bay Range

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Stephanie Bryan, Chairwoman
Poarch Band of Creek Indians
5811 Jack Springs Rd.
Atmore, AL 36502

Dear Chairwoman Bryan

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

George Scott, Town King
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Mr. Scott

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Kenneth Chambers, Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Mr. Chambers

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

James Billie, Chairman
Seminole Tribe of Florida
HC-61, Box 21-A
Clewiston, FL 33440

Dear Chairman Billie

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Jeremiah Hobia, Chief
Kialegee Tribal Town
P.O. Box 332
Wetumka, OK 74883

Dear Mr. Hobia

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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Lovelin Poncho, Chairman
Coushatta Tribe of Louisiana
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Ann Denson Tucker, Chairwoman
Muscogee Nation of Florida
278 Church Road
Ponce de Leon, FL 32455

Dear Chairwoman Tucker

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Map of Proposed Airspace and Ranges for the A-29 LAS Beddown at Moody AFB

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Brenda Shemayne Edwards, Chairman
Caddo Nation
P.O. Box 487
Binger, OK 73009

Dear Chairman Edwards

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Colabe III Clem Sylestine, Principal Chief
Alabama Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

Dear Mr. Sylestine

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AUG 0 8 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB GA 31699

Tarpie Yargee, Chief
Alabama-Quassarte Tribal Town
Creek Nations of Indians, Oklahoma
P.O. Box 187
Wetumka, OK 74883

Dear Mr. Yargee

The United States Air Force is in the process of preparing an Environmental Assessment (EA) at Moody Air Force Base (AFB), Georgia to assess the potential environmental consequences associated with changing Grand Bay Range and the overlying airspace, Restricted Area R-3008, from Visual Flight Rules (VFR) only operations to permit VFR and Instrument Flight Rules (IFR) operations. Moody AFB and Grand Bay range are located in south central Georgia, north of the city of Valdosta in Lowndes County (Attachment 1 and 2). There is no proposed change to the operating hours the range is currently scheduled, however the proposed action includes an annual increase of approximately 250 hours of use on the range within existing operating hours since the range would now be utilized during instrument weather conditions. At this time, only the proposed action and the no action alternative are being considered.

The proposed action is to change the weather operations category of Grand Bay Range and the overlying airspace from VFR to VFR-IFR to allow full utilization of Grand Bay Range during periods of IFR weather conditions. Currently, Grand Bay Range operates under VFR only. Air Force Instructions require clouds to be at least 1500 feet above the surface (1500' ceiling) with 3 statute miles of visibility for VFR operations. Currently, the range halts scheduled operations when weather conditions are less than a 1500' ceiling or less than 3 miles of visibility. Under the proposed action Grand Bay Range would support operations on range regardless of VFR or IFR conditions. Ground training, HH-60 helicopter aircraft, unmanned aerial vehicles, and A-10 aircraft all have training requirements that can be accomplished during IFR weather conditions. No expansion of hours is proposed as part of this action. Because the range is currently restricted to VFR only weather conditions, the proposed action would result in 250 annual hours of additional range usage occurring within existing published hours.

In accordance with Executive Order 13175, Consultation with Indian Tribal Governments, and Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations at 36 CFR Part 800, the USAF would like to initiate government-to-government consultation regarding the Grand Bay Range weather category change proposal. The USAF requests your input in identifying any issues or areas of concern you feel should be addressed in the environmental analysis. Additionally, please let us know if you believe this proposal might adversely affect any traditional cultural properties, including those of religious significance to the tribe.

To ensure the USAF has sufficient time to consider your input in the preparation of the Draft EA, please forward written issues or concerns to the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699. Though we will consider comments received at any time during the environmental impact analysis process, to the extent possible, we would like to hear from you within 30 days of receipt of this letter. If you have any questions, please contact Mr. Santicola at (229) 257-2396 or Henry.Santicola.2@us.af.mil. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachments:
1. Location of Moody AFB, Georgia
2. Location of Grand Bay Range

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Bill John Baker, Principal Chief
The Cherokee Nation
P.O. Box 948
Tahlequah, OK 74465

Dear Mr. Baker

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chief Bill John Baker, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Stephanie Bryan, Chairwoman
Poarch Band of Creek Indians
5811 Jack Springs Rd.
Atmore, AL 36502

Dear Chairwoman Bryan

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street Moody AFB GA, 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chairwoman Bryan, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

George Scott, Town King
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Mr. Scott

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. George Scott, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Kenneth Chambers, Principal Chief
Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Mr. Chambers

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. Kenneth Chambers, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

James Billie, Chairman
Seminole Tribe of Florida
30290 Josie Billie Hwy, PMB
Clewiston, FL 33440

Dear Chairman Billie

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. James Billie, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Jeremiah Hobia, Chief
Kialegee Tribal Town
P.O. Box 332
Wetumka, OK 74883

Dear Mr. Hobia

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Mr. Jeremiah Hobia, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 22 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Lovelin Poncho, Chairman
Coushatta Tribe of Louisiana
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chairman Lovelin Poncho, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 22 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Ann Denson Tucker, Chairwoman
Muscogee Nation of Florida
278 Church Road
Ponce de Leon, FL 32455

Dear Chairwoman Tucker

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chairwoman Tucker, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Brenda Shemayne Edwards, Chairman
Caddo Nation
P.O. Box 487
Binger, OK 73009

Dear Chairman Edwards

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chairman Edwards, dated 8 Aug 14

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

SEP 2 2 2014

Colonel Chad P. Franks
23d Wing Commander
23 Flying Tiger Way, Ste 1
Moody AFB GA 31699

Colabe III Clem Sylestine, Principal Chief
Alabama Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351

Dear Chief Sylestine

The United States Air Force (USAF) is preparing an Environmental Assessment to evaluate potential environmental impacts associated with changing Grand Bay Range and the overlying airspace to permit flying in weather conditions requiring instrument flight. On 8 August, 2014, the USAF invited you to participate in government-to-government consultation regarding this proposal. The USAF welcomes any input you would like to see included in the analysis. Though we will consider comments received at any time during the environmental impact analysis process, your input is most valuable to us when received early in our planning process, especially during the next few weeks. Please direct written issues or concerns to Mr. Hank Santicola, Environmental Assessment Program Manager, 3485 Georgia Street, Moody AFB GA 31699 or through email at Henry.Santicola.2@us.af.mil. Mr Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance in this effort.

Sincerely

CHAD P. FRANKS, Colonel, USAF
Commander

Attachment:
Original Government-to-Government Consultation Letter to Chief Sylestine, dated 8 Aug 14

MUSCOGEE (CREEK) NATION

Cultural Preservation — Johnnie Jacobs – Manager

September 10, 2014

Colonel Chad P. Franks
23rd Wing Commander
Department of the Air Force
Headquarters 23D Wing
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

RE: Gran Bay Range – Restricted Area R-3008
Proposed Airspace Changes
Moody AFB, Lowndes Co., GA

Dear Colonel Franks

Thank you for contacting the Muscogee (Creek) Nation Cultural Preservation Office in reference to your request for comments regarding the above project.

After review of the material provided, it has been determined that the Muscogee (Creek) Nation has no objections to this project.

Please consider this letter as our concurrence to your request and findings and support of the planned activities and projects. .

Should further information or comment be required please do not hesitate to contact me at (918) 732-7732 or by email at davidp@mcn-nsn.gov. Thank you.

Sincerely,

David J. Proctor
Muscogee (Creek) Nation
Cultural Preservation Dept.

P.O. Box 580 • Okmulgee, OK 74447 • Phone 918-732-7732 • Fax (918) 758-0649

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APPENDIX B

AIR QUALITY

AIR QUALITY

This appendix presents an overview of the Clean Air Act (CAA) and Georgia Department of Natural Resources (DNR) Air Protection Branch requirements, as well as calculations, including the assumptions used for the air quality analyses presented in the Environmental Assessment.

B.1 AIR QUALITY PROGRAM OVERVIEW

In order to protect public health and welfare, the U.S. Environmental Protection Agency (USEPA) has developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for six "criteria" pollutants (based on health-related criteria) under the provisions of the CAA Amendments of 1970. There are two kinds of NAAQS: primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (40 Code of Federal Regulations [C.F.R.] 50).

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the federal program. The Georgia DNR Air Protection Branch is the state agency that regulates air quality emissions sources in Georgia under the authority of the federal CAA and amendments, federal regulations, and state laws.

Georgia has adopted the federal NAAQS as shown in Table B-1 (Georgia DNR, 2012). In addition, Georgia has annual and 24-hour standards for sulfur dioxide.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than the NAAQS (attainment), worse than the NAAQS (nonattainment), and unclassifiable. The areas that cannot be classified (on the basis of available information) as meeting or not meeting the NAAQS for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise. Attainment areas can be further classified as "maintenance" areas, which are areas previously classified as nonattainment areas but where air pollutant concentrations have been successfully reduced to below the standard. Maintenance areas are subject to special maintenance plans and must operate under some of the

nonattainment area plans to ensure compliance with the NAAQS. Lowndes County is in attainment for all criteria pollutants.

A general conformity analysis is required to be conducted for areas designated as nonattainment or maintenance of the NAAQS if the action's direct and indirect emissions have a potential to emit one or more of the six criteria pollutants at or above concentrations standards shown in Table B-1 or the *de minimis* emission rate thresholds in Table B-2 or Table B-3.

Table B-1. Summary of National and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Federal Primary NAAQS	Federal Secondary NAAQS	Georgia Standards
Carbon monoxide (CO)	8-hour	9 ppm (10 mg/m^3)	No standard	9 ppm (10 mg/m^3)
	1-hour	35 ppm (40 mg/m^3)	No standard	35 ppm (40 mg/m^3)
Lead (Pb)	Rolling 3-month average	0.15 µg/m^3 [a]	0.15 µg/m^3	0.15 µg/m^3
Nitrogen dioxide (NO_2)	Annual	0.053 ppm[b] (100 µg/m^3)	0.053 ppm (100 µg/m^3)	0.053 ppm (100 µg/m^3)
	1-hour	100 ppb	No standard [c]	100 ppb
Particulate matter ≤10 micrometers (PM_{10})	24-hour	150 µg/m^3	150 µg/m^3	150 µg/m^3
Particulate matter <2.5 micrometers ($PM_{2.5}$)	Annual	15 µg/m^3	15 µg/m^3	15 µg/m^3
	24-hour	35 µg/m^3	35 µg/m^3	35 µg/m^3
Ozone (O_3)	8-hour	0.075 ppm[3] (157 µg/m^3)	0.075 ppm (157 µg/m^3)	0.075 ppm (157 µg/m^3)
Sulfur dioxide (SO_2)	Annual	No standard	No standard	80 µg/m^3
	24-hour[a]	No standard	No standard	365 µg/m^3
	3-hour	No standard	0.50 ppm [c] (1,300 µg/m^3)	0.50 ppm (1,300 µg/m^3)
	1-hour	75 ppb [d]	No standard	75 ppb

Source: USEPA, 2012 (federal standards); Georgia DNR, 2012 (Georgia standards)
mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter; NAAQS = National Ambient Air Quality Standards; ppb = parts per billion; ppm = parts per million

a. Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

b. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of clearer comparison to the 1-hour standard.

c. Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ('anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.

d. Final rule signed June 2, 2010. The 1971 annual and 24-hour SO_2 standards were revoked in that same rulemaking. However, these standards remain in effect until 1 year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

Table B-2. Emission Rates for Criteria Pollutants in Nonattainment Areas[1]

Pollutant	Emission Rate (tons/year)
Ozone (VOCs or NO_x)	
Serious nonattainment areas	50
Severe nonattainment areas	25
Extreme nonattainment areas	10
Other ozone nonattainment areas outside an ozone transport region	100
Marginal and moderate nonattainment areas inside an ozone transport region	
VOCs	50
NO_x	100
CO: All nonattainment areas	100
SO_2 or NO_2: All nonattainment areas	100
PM_{10}	
Moderate nonattainment areas	100
Serious nonattainment areas	70
$PM_{2.5}$	
Direct emissions	100
SO_2	100
NO_x (unless determined not to be a significant precursor)	100
VOCs or ammonia (if determined to be significant precursors)	100
Pb: All nonattainment areas	25

Source: USEPA, 2006

CO = carbon monoxide; NO_2 = nitrogen dioxide; NOx = nitrogen oxides; Pb = lead; $PM_{2.5}$ = particulate matter with a diameter less than or equal to 2.5 microns; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

1. De minimis threshold levels for conformity applicability analysis.

Table B-3. Emission Rates for Criteria Pollutants in Attainment (Maintenance) Areas[1]

Pollutant	Emission Rate (tons/year)
Ozone (NO_x, SO_2, or NO_2): All maintenance areas	100
Ozone (VOCs)	
Maintenance areas inside an ozone transport region	50
Maintenance areas outside an ozone transport region	100
CO: All maintenance areas	100
PM_{10}: All maintenance areas	100
$PM_{2.5}$	
Direct emissions	100
SO_2	100
NO_x (unless determined not to be a significant precursor)	100
VOCs or ammonia (if determined to be significant precursors)	100
Pb: All maintenance areas	25

Source: USEPA, 2006

CO = carbon monoxide; NO_x = nitrogen oxides; Pb = lead; $PM_{2.5}$ = particulate matter with a diameter less than or equal to 2.5 microns; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; SO_2 = sulfur dioxide; VOC = volatile organic compound

1. *De minimis* threshold levels for conformity applicability analysis.

Each state is required to develop a State Implementation Plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

In attainment areas, major new or modified stationary sources of air emissions on and in the area are subject to Prevention of Significant Deterioration (PSD) review to ensure that these sources are constructed without causing significant adverse deterioration of the clean air in the area. A major new source is defined as one that has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specific major source thresholds, that is, 100 or 250 tons/year based on the source's industrial category. A major modification is a physical change or change in the method of operation at an existing major source that causes a significant "net emissions increase" at that source of any regulated pollutant. Table B-4 lists the PSD significant emissions rate thresholds for selected criteria pollutants (USEPA, 1990).

Table B-4. Criteria Pollutant Significant Emissions Rate Increases Under PSD Regulations

Pollutant	Significant Emissions Rate (tons/year)
PM_{10}	15
$PM_{2.5}$	10
Total suspended particulates	25
SO_2	40
NO_x	40
Ozone (VOCs)	40
CO	100

Source: Title 40 C.F.R. Part 51

CO = carbon monoxide; NO_x = nitrogen oxides; $PM_{2.5}$ = particulate matter with a diameter less than or equal to 2.5 microns; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; VOC = volatile organic compound

The goals of the PSD program are to (1) ensure economic growth while preserving existing air quality; (2) protect public health and welfare from adverse effects that might occur even at pollutant levels better than the NAAQS; and (3) preserve, protect, and enhance the air quality in areas of special natural recreational, scenic, or historic value, such as national parks and wilderness areas. Sources subject to PSD review are required by the CAA to obtain a permit before commencing

construction. The permit process requires an extensive review of all other major sources within a 50-mile radius and all Class I areas within a 62-mile radius of the facility. Emissions from any new or modified source must be controlled using best available control technology. The air quality, in combination with other PSD sources in the area, must not exceed the maximum allowable incremental increase identified in Table B-5. National parks and wilderness areas are designated as Class I areas, where any appreciable deterioration in air quality is considered significant. Class II areas are those where moderate, well-controlled industrial growth could be permitted. Class III areas allow for greater industrial development.

Table B-5. Federal Allowable Pollutant Concentration Increases Under PSD Regulations

Pollutant	Averaging Time	Maximum Allowable Concentration (µg/m³)		
		Class I	Class II	Class III
PM_{10}	Annual	4	17	34
	24-hour	8	30	60
SO_2	Annual	2	20	40
	24-hour	5	91	182
	3-hour	25	512	700
NO_2	Annual	2.5	25	50

Source: Title 40 C.F.R. Part 51
NO_2 = nitrogen dioxide; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; PSD = Prevention of Significant Deterioration; SO_2 = sulfur dioxide; µg/m³ = micrograms per cubic meter

The Ambient Monitoring Program measures levels of air pollutants throughout the state. The data are used to determine compliance with air standards established for five compounds and to evaluate the need for special controls for various other pollutants.

The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards. Also included are areas where the ambient standards are being met, but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality, exceedances of air quality standards, and pollutant trends.

B.2 REGULATORY COMPARISONS

The CAA Section 176(c), General Conformity, requires federal agencies to demonstrate that their proposed activities would conform to the applicable SIP for attainment of the NAAQS. General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual *de minimis* thresholds identified in the rule, a formal conformity determination is required of that action. The thresholds are more restrictive as the severity of the nonattainment status of the region increases. Since the project region is designated as attainment for all criteria pollutants (USEPA, 2012), the criteria pollutants are compared with Lowndes County emissions, which are in attainment.

For the analysis, in order to evaluate air emissions and their impact on the overall region of influence (ROI), the emissions associated with the project activities were compared with the total emissions on a pollutant-by-pollutant basis for the ROI's 2008 National Emissions Inventory (NEI) data. Potential impacts to air quality are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The Council on Environmental Quality (CEQ) defines significance in terms of context and intensity in 40 C.F.R. 1508.27. This requires that the significance of the action must be analyzed in respect to the setting of the proposed action and based relative to the severity of the impact. The CEQ National Environmental Policy Act regulations (40 C.F.R. 1508.27(b)) provide 10 key factors to consider in determining an impact's intensity. To provide a more conservative analysis, the county was selected as the ROI instead of the USEPA-designated Air Quality Control Region, which is a much larger area.

B.3 PROJECT CALCULATIONS

B.3.1. General Information

- Action Location
Base: MOODY AFB
County(s): Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Action Title: MODIFICATION OF AIRSPACE UNITS R-3008A/B/C FROM VISUAL FLIGHT RULES (VFR) TO VFR-INSTRUMENT FLIGHT RULES (IFR) AT MOODY AIR FORCE BASE, GEORGIA

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2016

- Action Purpose and Need:

The purpose of the Proposed Action is to reduce the number of aircraft training hours lost for all Moody AFB aircraft types on Grand Bay Range due to VFR weather condition requirements. The Proposed Action is needed because training hours are limited due to weather under VFR conditions. In Fiscal Year (FY) 2013, 215 training hours were lost due to weather conditions less than VFR, and halfway through FY14, 167 training hours have been lost due to weather conditions less than VFR.

- Action Description:

The Proposed Action is to identify a method for reducing the number of Moody AFB aircraft training hours lost on Grand Bay Range due to VFR weather condition requirements (1,500-foot ceiling and 3-mile visibility in accordance with 14 CFR 91.155 [Basic VFR Weather Minimums]). As discussed previously, the Proposed Action does not involve changes in range operating hours, flight patterns, aircraft utilized, types of training, or distribution of day/night operations from the current condition. The Proposed Action would increase the number of hours for operations by about 250 by simply allowing operations during inclement weather.

- Point of Contact

Name: Brad Boykin
Title: CTR
Organization: Leidos
Email: boykinb@leidos.com
Phone Number: 8506093450

- Activity List:

Activity Type		Activity Title
2.	Aircraft	A-10
3.	Aircraft	A-29
4.	Aircraft	C-12
5.	Aircraft	C-130H/N/P
6.	Aircraft	F-18A/C
7.	Aircraft	MV-22
8.	Aircraft	UH-1N
9.	Aircraft	SH-60B

B.3.2. Aircraft (A-10)

B.3.2.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location

County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: A-10

- Activity Description:

1.24 additional LTOs
30 additional TGOs

- Activity Start Date

Start Month: 1
Start Year: 2016

- Activity End Date

Indefinite: Yes
End Month: N/A

End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	1.918912
SO_x	0.089763
NO_x	2.898924
CO	5.568076
PM 10	1.216419

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.650058
Pb	0.000000
NH_3	0.000000

B.3.2.2 Aircraft & Engines

B.3.2.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: A-10A
Engine Model: TF34-GE-100
Primary Function: Combat
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

B.3.2.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	390.00	39.45	1.06	2.10	106.70	8.13	3.60	3252.46
Approach	920.00	2.19	1.06	5.70	16.30	6.21	2.12	3252.46
Intermediate	460.00	23.35	1.06	2.60	78.00	8.93	6.95	3252.46
Military	2710.00	0.12	1.06	10.70	2.20	2.66	1.68	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.2.3 Flight Operations

B.3.2.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 48
Number of Annual LTOs (Landing and Take-off) cycles: 1.25
Number of Annual TGOs (Touch-and-Go) cycles: 30

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)

Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

B.3.2.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)

60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.2.4 Auxiliary Power Unit (APU)

B.3.2.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	GTCP 36-50	

B.3.2.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
GTCP 36-50	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

B.3.2.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.2.5 Aircraft Engine Test Cell

B.3.2.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell

Total Number of Aircraft Engines Tested Annually: 96

- Default Settings Used: Yes

- Annual Run-ups / Test Durations
Annual Run-ups (Per Aircraft Engine): 1 (default)
Idle Duration (mins): 12 (default)
Approach Duration (mins): 27 (default)
Intermediate Duration (mins): 9 (default)
Military Duration (mins): 12 (default)
After Burner Duration (mins): 0 (default)

B.3.2.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.2.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.2.6 Aerospace Ground Equipment (AGE)

B.3.2.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 1.25

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
48	2	No	Air Compressor	MC-1A - 18.4hp
48	8	No	Bomb Lift	MJ-1B
48	1	No	Generator Set	A/M32A-86D
48	2	No	Heater	H1
48	2	No	Hydraulic Test Stand	MJ-2A

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
48	2	No	Light Cart	NF-2
48	1	No	Start Cart	A/M32A-60A

B.3.2.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.2.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year

$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.3. Aircraft (A-29)

B.3.3.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: A-29

- Activity Description:
0.07 LTOs
1.72 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.018073
SO_x	0.000046
NO_x	0.028527
CO	0.050187
PM 10	0.000960

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000886
Pb	0.000000
NH_3	0.000000

B.3.3.2 Aircraft & Engines

B.3.3.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: T-34C
Engine Model: PT6A-27
Primary Function: General - Piston
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? Yes
Original Aircraft Name: A-29
Original Engine Name: PT6A-68A

B.3.3.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	115.00	57.70	1.06	2.43	64.00	0.50	0.45	3252.46
Approach	215.00	2.51	1.06	8.37	23.26	0.10	0.09	3252.46
Intermediate	400.00	0.00	1.06	7.00	1.20	0.25	0.23	3252.46
Military	425.00	0.00	1.06	7.81	1.01	0.24	0.22	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.3.3 Flight Operations

B.3.3.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 20
Number of Annual LTOs (Landing and Take-off) cycles: 0.07
Number of Annual TGOs (Touch-and-Go) cycles: 1.726

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 12 (default)
Takeoff (mins): 0.3 (default)
Climb Out (mins): 4.98 (default)
Approach (mins): 6 (default)
Taxi/Idle In (mins): 4 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)

AfterBurn (mins): 0 (default)

B.3.3.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL}$ = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)

1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.3.4 Auxiliary Power Unit (APU)

B.3.3.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.3.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.3.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.3.5 Aircraft Engine Test Cell

B.3.3.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 20

- Default Settings Used: Yes

- Annual Run-ups / Test Durations
Annual Run-ups (Per Aircraft Engine): 1 (default)

Idle Duration (mins): 12 (default)
Approach Duration (mins): 27 (default)
Intermediate Duration (mins): 9 (default)
Military Duration (mins): 12 (default)
After Burner Duration (mins): 0 (default)

B.3.3.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.3.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.3.6 Aerospace Ground Equipment (AGE)

B.3.3.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.07

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
20	0.5	No	Air Compressor	MC-1A - 18.4hp
20	0.17	No	Generator Set	A/M32A-86D
20	0.17	No	Heater	H1
20	0.5	No	Hydraulic Test Stand	MJ-1-1
20	1	No	Light Cart	TF-1

B.3.3.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-1-1	2.5	0.026	0.018	0.757	0.043	0.109	0.105	57.2
TF-1	0.0	0.025	0.043	0.170	0.130	0.160	0.155	30.7

B.3.3.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.4. Aircraft (C-12)

B.3.4.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: C-12

- Activity Description:
0.0011 LTOs
0.0261662 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.009445
SO_x	0.000000
NO_x	0.011759
CO	0.023369
PM 10	0.000341

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000311
Pb	0.000000
NH_3	0.000000

B.3.4.2 Aircraft & Engines

B.3.4.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: C-12
Engine Model: PT6A-27
Primary Function: General - Turboprop
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

B.3.4.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	115.00	57.70	1.06	2.43	64.00	0.50	0.45	3252.46
Approach	215.00	2.51	1.06	8.37	23.26	0.10	0.09	3252.46
Intermediate	400.00	0.00	1.06	7.00	1.20	0.25	0.23	3252.46
Military	425.00	0.00	1.06	7.81	1.01	0.24	0.22	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.4.3 Flight Operations

B.3.4.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 6
Number of Annual LTOs (Landing and Take-off) cycles: 0.0011
Number of Annual TGOs (Touch-and-Go) cycles: 0.0261662

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 19 (default)
Takeoff (mins): 0.5 (default)
Climb Out (mins): 2.5 (default)
Approach (mins): 4.5 (default)
Taxi/Idle In (mins): 7 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

B.3.4.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)

TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.4.4 Auxiliary Power Unit (APU)

B.3.4.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.4.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.4.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.4.5 Aircraft Engine Test Cell

B.3.4.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 12

- Default Settings Used: Yes

- Annual Run-ups / Test Durations

Annual Run-ups (Per Aircraft Engine):	1 (default)
Idle Duration (mins):	12 (default)
Approach Duration (mins):	27 (default)
Intermediate Duration (mins):	9 (default)
Military Duration (mins):	12 (default)
After Burner Duration (mins):	0 (default)

B.3.4.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.4.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.4.6 Aerospace Ground Equipment (AGE)

B.3.4.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.0011

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
6	0.75	No	Generator Set	A/M32A-86D

B.3.4.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0

B.3.4.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)

AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.5. Aircraft (C-130H/N/P)

B.3.5.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: C-130H/N/P

- Activity Description:
0.002259 LTOs
0.05515 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.214320
SO_x	0.000021
NO_x	0.177647
CO	0.336687
PM 10	0.018492

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.016643
Pb	0.000000
NH_3	0.000000

B.3.5.2 Aircraft & Engines

B.3.5.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: C-130H
Engine Model: T56-A-15
Primary Function: Transport - Bomber
Number of Engines: 4

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

B.3.5.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	794.00	24.15	1.06	3.90	32.00	0.83	0.75	3252.46
Approach	1185.00	14.26	1.06	4.40	22.20	0.97	0.87	3252.46
Intermediate	1825.00	0.58	1.06	9.20	2.40	0.51	0.46	3252.46
Military	2302.00	0.46	1.06	9.30	2.10	0.50	0.45	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.5.3 Flight Operations

B.3.5.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 9
Number of Annual LTOs (Landing and Take-off) cycles: 0.0022594
Number of Annual TGOs (Touch-and-Go) cycles: 0.05515

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 9.2 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 1.2 (default)
Approach (mins): 5.1 (default)
Taxi/Idle In (mins): 6.7 (default)

- Trim Test

Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

B.3.5.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.5.4 Auxiliary Power Unit (APU)

B.3.5.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer
1	1	No	GTCP 85-180L	

B.3.5.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
GTCP 85-180L	272.6	0.493	0.289	1.216	3.759	0.131	0.037	910.8

B.3.5.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.5.5 Aircraft Engine Test Cell

B.3.5.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 36

- Default Settings Used: Yes

- Annual Run-ups / Test Durations
Annual Run-ups (Per Aircraft Engine): 1 (default)
Idle Duration (mins): 12 (default)
Approach Duration (mins): 27 (default)
Intermediate Duration (mins): 9 (default)
Military Duration (mins): 12 (default)
After Burner Duration (mins): 0 (default)

B.3.5.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.5.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)

NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.5.6 Aerospace Ground Equipment (AGE)

B.3.5.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.0022594

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
9	1	No	Air Compressor	MC-1A - 18.4hp
9	1	No	Air Conditioner	MA-3D - 120hp
9	11	No	Generator Set	A/M32A-86D
9	1	No	Heater	H1
9	3	No	Hydraulic Test Stand	MJ-2A
9	10	No	Light Cart	NF-2
9	0.25	No	Start Cart	A/M32A-60A

B.3.5.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.5.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs

EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.6. Aircraft (F-18A/C)

B.3.6.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: F-18A/C

- Activity Description:
0.004898 LTOs
0.1195595 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.012717
SO_x	0.000011
NO_x	0.374982
CO	0.371937
PM 10	0.053926

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.037024
Pb	0.000000
NH_3	0.000000

B.3.6.2 Aircraft & Engines

B.3.6.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: F/A-18A
Engine Model: F404-GE-400
Primary Function: Combat
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

B.3.6.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	685.00	3.39	1.06	1.70	110.18	4.47	3.10	3252.46
Approach	3111.00	0.04	1.06	7.86	2.02	1.46	0.87	3252.46
Intermediate	6464.00	0.07	1.06	17.03	1.54	1.57	0.90	3252.46
Military	7739.00	0.02	1.06	25.83	1.48	1.61	0.89	3252.46
After Burn	15851.00	1.85	1.06	5.43	50.31	3.57	3.21	3252.46

B.3.6.3 Flight Operations

B.3.6.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft: 6
Number of Annual LTOs (Landing and Take-off) cycles: 0.004898
Number of Annual TGOs (Touch-and-Go) cycles: 0.1195595

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins): 18.5 (default)
Takeoff (mins): 0.4 (default)
Climb Out (mins): 0.8 (default)
Approach (mins): 3.5 (default)
Taxi/Idle In (mins): 11.3 (default)

- Trim Test

Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 9 (default)
AfterBurn (mins): 3 (default)

B.3.6.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)

$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.6.4 Auxiliary Power Unit (APU)

B.3.6.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.6.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.6.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year

$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.6.5 Aircraft Engine Test Cell

B.3.6.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 12

- Default Settings Used: Yes

- Annual Run-ups / Test Durations
Annual Run-ups (Per Aircraft Engine): 1 (default)
Idle Duration (mins): 12 (default)
Approach Duration (mins): 27 (default)
Intermediate Duration (mins): 9 (default)
Military Duration (mins): 9 (default)
After Burner Duration (mins): 3 (default)

B.3.6.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.6.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)

$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)

2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.6.6 Aerospace Ground Equipment (AGE)

B.3.6.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.004898

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
6	2	No	Air Compressor	MC-11
6	1	No	Bomb Lift	MJ-1B
6	0.33	No	Generator Set	A/M32A-86D
6	0.5	No	Heater	H1
6	0.5	No	Hydraulic Test Stand	MJ-2/TTU-228 - 130hp
6	8	No	Light Cart	NF-2
6	0.33	No	Start Cart	A/M32A-60A

B.3.6.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-11	1.8	0.276	0.004	0.177	12.262	0.109	0.100	34.8
MJ-1B	0.0	3.040	0.219	4.780	3.040	0.800	0.776	141.2
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2/TTU-228 - 130hp	7.4	0.195	0.053	3.396	0.794	0.089	0.086	168.8
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.6.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.7. Aircraft (MV-22)

B.3.7.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: MV-22

- Activity Description:
0.002259418 LTOs
0.05515 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.000187
SO_x	0.000013
NO_x	0.074469
CO	0.012476
PM 10	0.009683

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.008704
Pb	0.000000
NH_3	0.000000

B.3.7.2 Aircraft & Engines

B.3.7.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: MV-22A
Engine Model: T406-AD-400
Primary Function: Transport - Bomber
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? No
Original Aircraft Name:
Original Engine Name:

B.3.7.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	362.00	0.10	1.06	4.15	8.35	1.58	1.42	3252.46
Approach	663.00	0.02	1.06	6.05	3.47	1.58	1.42	3252.46
Intermediate	948.00	0.02	1.06	7.87	1.82	1.58	1.42	3252.46
Military	2507.00	0.01	1.06	18.03	0.29	1.58	1.42	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.7.3 Flight Operations

B.3.7.3.1 Flight Operations Assumptions

- Flight Operations

Number of Aircraft:	6
Number of Annual LTOs (Landing and Take-off) cycles:	0.0022594
Number of Annual TGOs (Touch-and-Go) cycles:	0.05515

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)

Taxi/Idle Out (mins):	9.2 (default)
Takeoff (mins):	0.4 (default)
Climb Out (mins):	1.2 (default)
Approach (mins):	5.1 (default)
Taxi/Idle In (mins):	6.7 (default)

- Trim Test

Idle (mins):	12 (default)
Approach (mins):	27 (default)
Intermediate (mins):	9 (default)
Military (mins):	12 (default)
AfterBurn (mins):	0 (default)

B.3.7.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year

$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year

$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours

FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year

$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year

$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year

$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.7.4 Auxiliary Power Unit (APU)

B.3.7.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.7.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.7.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.7.5 Aircraft Engine Test Cell

B.3.7.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 12

- Default Settings Used: Yes

- Annual Run-ups / Test Durations

Annual Run-ups (Per Aircraft Engine):	1 (default)
Idle Duration (mins):	12 (default)
Approach Duration (mins):	27 (default)
Intermediate Duration (mins):	9 (default)
Military Duration (mins):	12 (default)
After Burner Duration (mins):	0 (default)

B.3.7.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.7.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)

$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.7.6 Aerospace Ground Equipment (AGE)

B.3.7.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.0022594

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
6	10	No	Air Compressor	MC-1A - 18.4hp
6	1	No	Air Conditioner	MA-3D - 120hp
6	11	No	Generator Set	A/M32A-86D
6	1	No	Heater	H1
6	3	No	Hydraulic Test Stand	MJ-2A
6	10	No	Light Cart	NF-2
6	0.25	No	Start Cart	A/M32A-60A

B.3.7.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.7.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.8. Aircraft (UH-1N)

B.3.8.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes

Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: UH-1N

- Activity Description:
0.0044528 LTOs
0.10869 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.007398
SO_x	0.000025
NO_x	0.008402
CO	0.030754
PM 10	0.000704

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.000639
Pb	0.000000
NH_3	0.000000

B.3.8.2 Aircraft & Engines

B.3.8.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: U-28A
Engine Model: PT6A-67B
Primary Function: General - Turboprop
Number of Engines: 1

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? Yes
Original Aircraft Name: UH-1N
Original Engine Name: PT6T-3/T400

B.3.8.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	142.87	61.52	1.06	1.83	183.80	1.38	1.24	3252.46
Approach	364.17	3.24	1.06	4.59	20.96	0.72	0.65	3252.46
Intermediate	618.87	0.61	1.06	6.59	6.12	0.32	0.29	3252.46
Military	681.14	0.45	1.06	6.98	5.73	0.25	0.23	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.8.3 Flight Operations

B.3.8.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 6

Number of Annual LTOs (Landing and Take-off) cycles: 0.004452868
Number of Annual TGOs (Touch-and-Go) cycles: 0.10869

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 19 (default)
Takeoff (mins): 0.5 (default)
Climb Out (mins): 2.5 (default)
Approach (mins): 4.5 (default)
Taxi/Idle In (mins): 7 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

B.3.8.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles

2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.8.4 Auxiliary Power Unit (APU)

B.3.8.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.8.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.8.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)

LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.8.5 Aircraft Engine Test Cell

B.3.8.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 6

- Default Settings Used: Yes

- Annual Run-ups / Test Durations

Annual Run-ups (Per Aircraft Engine):	1 (default)
Idle Duration (mins):	12 (default)
Approach Duration (mins):	27 (default)
Intermediate Duration (mins):	9 (default)
Military Duration (mins):	12 (default)
After Burner Duration (mins):	0 (default)

B.3.8.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.8.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.8.6 Aerospace Ground Equipment (AGE)

B.3.8.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.004452868

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
6	10	No	Air Compressor	MC-1A - 18.4hp
6	1	No	Air Conditioner	MA-3D - 120hp
6	11	No	Generator Set	A/M32A-86D
6	1	No	Heater	H1
6	3	No	Hydraulic Test Stand	MJ-2A
6	10	No	Light Cart	NF-2
6	0.25	No	Start Cart	A/M32A-60A

B.3.8.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.8.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year
$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.9. Aircraft (SH-60B)

B.3.9.1 General Information & Timeline Assumptions

- Add or Remove Activity from Baseline? Add

- Activity Location
County: Lanier; Lowndes
Regulatory Area(s): NOT IN A REGULATORY AREA

- Activity Title: SH-60B

- Activity Description:
0.1437 LTOs
3.49469 TGOs

- Activity Start Date
Start Month: 1
Start Year: 2016

- Activity End Date
Indefinite: Yes
End Month: N/A
End Year: N/A

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.006211
SO_x	0.001600
NO_x	0.258643
CO	0.051396
PM 10	0.027754

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.025068
Pb	0.000000
NH_3	0.000000

B.3.9.2 Aircraft & Engines

B.3.9.2.1 Aircraft & Engines Assumptions

- Aircraft & Engine
Aircraft Designation: SV-22A
Engine Model: T406-AD-400
Primary Function: Transport - Bomber
Number of Engines: 2

- Aircraft & Engine Surrogate
Is Aircraft & Engine a Surrogate? Yes
Original Aircraft Name: SH-60B
Original Engine Name: General Electric T700

B.3.9.2.2 Aircraft & Engines Emission Factor(s)

- Aircraft & Engine Emissions Factors (lb/1000lb fuel)

	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
Idle	362.00	0.10	1.06	4.15	8.35	1.58	1.42	3252.46
Approach	663.00	0.02	1.06	6.05	3.47	1.58	1.42	3252.46
Intermediate	948.00	0.02	1.06	7.87	1.82	1.58	1.42	3252.46
Military	2507.00	0.01	1.06	18.03	0.29	1.58	1.42	3252.46
After Burn	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3252.46

B.3.9.3 Flight Operations

B.3.9.3.1 Flight Operations Assumptions

- Flight Operations
Number of Aircraft: 12
Number of Annual LTOs (Landing and Take-off) cycles: 0.14317
Number of Annual TGOs (Touch-and-Go) cycles: 3.49469

- Default Settings Used: Yes

- Flight Operations TIMs (Time In Mode)
Taxi/Idle Out (mins): 9.2 (default)
Takeoff (mins): 0.4 (default)

Climb Out (mins): 1.2 (default)
Approach (mins): 5.1 (default)
Taxi/Idle In (mins): 6.7 (default)

- Trim Test
Idle (mins): 12 (default)
Approach (mins): 27 (default)
Intermediate (mins): 9 (default)
Military (mins): 12 (default)
AfterBurn (mins): 0 (default)

B.3.9.3.2 Flight Operations Formula(s)

- Aircraft Emissions per Mode for LTOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * LTO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
LTO: Number of Landing and Take-off Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for LTOs per Year
$AE_{LTO} = AEM_{IDLE_IN} + AEM_{IDLE_OUT} + AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{LTO}: Aircraft Emissions (TONs)
AEM_{IDLE_IN}: Aircraft Emissions for Idle-In Mode (TONs)
AEM_{IDLE_OUT}: Aircraft Emissions for Idle-Out Mode (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)
$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for TGOs per Year
$AEM_{POL} = (TIM / 60) * (FC / 1000) * EF * NE * NA * TGO / 2000$

AEM_{POL}: Aircraft Emissions per Pollutant & Mode (TONs)
TIM: Time in Mode (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
TGO: Number of Touch-and-Go Cycles
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for TGOs per Year
$AE_{TGO} = AEM_{APPROACH} + AEM_{CLIMBOUT} + AEM_{TAKEOFF}$

AE_{TGO}: Aircraft Emissions (TONs)
$AEM_{APPROACH}$: Aircraft Emissions for Approach Mode (TONs)
$AEM_{CLIMBOUT}$: Aircraft Emissions for Climb-Out Mode (TONs)

$AEM_{TAKEOFF}$: Aircraft Emissions for Take-Off Mode (TONs)

- Aircraft Emissions per Mode for Trim per Year
$AEPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * NA * NTT / 2000$

$AEPS_{POL}$: Aircraft Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Number of Engines
NA: Number of Aircraft
NTT: Number of Trim Test
2000: Conversion Factor pounds to TONs

- Aircraft Emissions for Trim per Year
$AE_{TRIM} = AEPS_{IDLE} + AEPS_{APPROACH} + AEPS_{INTERMEDIATE} + AEPS_{MILITARY} + AEPS_{AFTERBURN}$

AE_{TRIM}: Aircraft Emissions (TONs)
$AEPS_{IDLE}$: Aircraft Emissions for Idle Power Setting (TONs)
$AEPS_{APPROACH}$: Aircraft Emissions for Approach Power Setting (TONs)
$AEPS_{INTERMEDIATE}$: Aircraft Emissions for Intermediate Power Setting (TONs)
$AEPS_{MILITARY}$: Aircraft Emissions for Military Power Setting (TONs)
$AEPS_{AFTERBURN}$: Aircraft Emissions for After Burner Power Setting (TONs)

B.3.9.4 Auxiliary Power Unit (APU)

B.3.9.4.1 Auxiliary Power Unit (APU) Assumptions

- Default Settings Used: Yes

- Auxiliary Power Unit (APU) (default)

Number of APU per Aircraft	Operation Hours for Each LTO	Exempt Source?	Designation	Manufacturer

B.3.9.4.2 Auxiliary Power Unit (APU) Emission Factor(s)

- Auxiliary Power Unit (APU) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e

B.3.9.4.3 Auxiliary Power Unit (APU) Formula(s)

- Auxiliary Power Unit (APU) Emissions per Year
$APU_{POL} = APU * OH * LTO * NA * EF_{POL} / 2000$

APU_{POL}: Auxiliary Power Unit (APU) Emissions per Pollutant (TONs)
APU: Number of Auxiliary Power Units
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
NA: Number of Aircraft
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.3.9.5 Aircraft Engine Test Cell

B.3.9.5.1 Aircraft Engine Test Cell Assumptions

- Engine Test Cell
Total Number of Aircraft Engines Tested Annually: 24

- Default Settings Used: Yes

- Annual Run-ups / Test Durations

Annual Run-ups (Per Aircraft Engine):	1 (default)
Idle Duration (mins):	12 (default)
Approach Duration (mins):	27 (default)
Intermediate Duration (mins):	9 (default)
Military Duration (mins):	12 (default)
After Burner Duration (mins):	0 (default)

B.3.9.5.2 Aircraft Engine Test Cell Emission Factor(s)

- See Aircraft & Engines Emission Factor(s)

B.3.9.5.3 Aircraft Engine Test Cell Formula(s)

- Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
$TestCellPS_{POL} = (TD / 60) * (FC / 1000) * EF * NE * ARU / 2000$

$TestCellPS_{POL}$: Aircraft Engine Test Cell Emissions per Pollutant & Power Setting (TONs)
TD: Test Duration (min)
60: Conversion Factor minutes to hours
FC: Fuel Flow Rate (lb/hr)
1000: Conversion Factor pounds to 1000pounds
EF: Emission Factor (lb/1000lb fuel)
NE: Total Number of Engines
ARU: Annual Run-ups (Per Aircraft Engine)
2000: Conversion Factor pounds to TONs

- Aircraft Engine Test Cell Emissions per Year
$TestCell = TestCellPS_{IDLE} + TestCellPS_{APPROACH} + TestCellPS_{INTERMEDIATE} + TestCellPS_{MILITARY} + TestCellPS_{AFTERBURN}$

TestCell: Aircraft Engine Test Cell Emissions (TONs)
$TestCellPS_{IDLE}$: Aircraft Engine Test Cell Emissions for Idle Power Setting (TONs)
$TestCellPS_{APPROACH}$: Aircraft Engine Test Cell Emissions for Approach Power Setting (TONs)
$TestCellPS_{INTERMEDIATE}$: Aircraft Engine Test Cell Emissions for Intermediate Power Setting (TONs)
$TestCellPS_{MILITARY}$: Aircraft Engine Test Cell Emissions for Military Power Setting (TONs)
$TestCellPS_{AFTERBURN}$: Aircraft Engine Test Cell Emissions for After Burner Power Setting (TONs)

B.3.9.6 Aerospace Ground Equipment (AGE)

B.3.9.6.1 Aerospace Ground Equipment (AGE) Assumptions

- Default Settings Used: Yes

- AGE Usage
Number of Annual LTO (Landing and Take-off) cycles for AGE: 0.14317

- Aerospace Ground Equipment (AGE) (default)

Total Number of AGE	Operation Hours for Each LTO	Exempt Source?	AGE Type	Designation
12	10	No	Air Compressor	MC-1A - 18.4hp
12	1	No	Air Conditioner	MA-3D - 120hp
12	11	No	Generator Set	A/M32A-86D
12	1	No	Heater	H1
12	3	No	Hydraulic Test Stand	MJ-2A
12	10	No	Light Cart	NF-2
12	0.25	No	Start Cart	A/M32A-60A

B.3.9.6.2 Aerospace Ground Equipment (AGE) Emission Factor(s)

- Aerospace Ground Equipment (AGE) Emission Factor (lb/hr)

Designation	Fuel Flow	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CO_2e
MC-1A - 18.4hp	1.1	0.267	0.008	0.419	0.267	0.071	0.068	24.8
MA-3D - 120hp	7.1	0.053	0.050	4.167	0.317	0.109	0.105	161.7
A/M32A-86D	6.5	0.294	0.046	6.102	0.457	0.091	0.089	147.0
H1	0.4	0.100	0.011	0.160	0.180	0.006	0.006	8.9
MJ-2A	0.0	0.190	0.238	3.850	2.460	0.083	0.076	172.0
NF-2	0.0	0.010	0.043	0.110	0.080	0.010	0.010	22.1
A/M32A-60A	0.0	0.270	0.306	1.820	5.480	0.211	0.205	221.1

B.3.9.6.3 Aerospace Ground Equipment (AGE) Formula(s)

- Aerospace Ground Equipment (AGE) Emissions per Year

$AGE_{POL} = AGE * OH * LTO * EF_{POL} / 2000$

AGE_{POL}: Aerospace Ground Equipment (AGE) Emissions per Pollutant (TONs)
AGE: Total Number of Aerospace Ground Equipment
OH: Operation Hours for Each LTO (hour)
LTO: Number of LTOs
EF_{POL}: Emission Factor for Pollutant (lb/hr)
2000: Conversion Factor pounds to tons

B.4 NATIONAL EMISSIONS INVENTORY

The NEI is operated under the USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, tribes, and industries. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country on a yearly basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual point or major sources (facilities), as well as county-level estimates for area, mobile, and other sources, are currently available for years 2008 and 2011 for criteria pollutants and HAPs.

Criteria air pollutants are those for which the USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database:

- Carbon monoxide
- Nitrogen oxides
- Sulfur dioxide
- Particulate matter (with a diameter less than or equal to 10 and 2.5 microns)

The NEI also includes emissions of volatile organic compounds (VOCs), which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with nitrogen oxides in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources:

- **Point sources.** Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A "major" source emits a threshold amount (or more) of at least one criteria pollutant and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- **Area sources.** Small point sources such as a home or office building or a diffuse stationary source such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example; for instance, a single dry cleaner within an inventory area typically will not qualify as a point source, but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and, therefore, must be included in the inventory.
- **Mobile sources.** Any kind of vehicle or equipment with a gasoline or diesel engine (such as an airplane or ship).

The following are the main sources of criteria pollutant emissions data for the NEI:

- For electric generating units—USEPA's Emission Tracking System/Continuous Emissions Monitoring Data and Department of Energy fuel use data.
- For other large stationary sources—state data and older inventories where state data were not submitted.

- For on-road mobile sources—the Federal Highway Administration's estimate of vehicle miles traveled and emission factors from USEPA's MOBILE Model.
- For nonroad mobile sources—USEPA's NONROAD Model.
- For stationary area sources—state data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data were not submitted.
- State and local environmental agencies supply most of the point source data.

USEPA's Clean Air Market program supplies emissions data for electric power plants.

B.5 REFERENCES

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APPENDIX C

NOISE MODELING INPUTS

NOISE MODELING INPUTS

Noise modeling reflected the fact that the Proposed Action did not include changes to flight procedures. Representative flight paths and altitude/power setting/airspeed profiles remained the same as under the current conditions scenario. The current conditions scenario reflects the same procedures included in recent approved National Environmental Policy Act (NEPA)-required noise analyses, which include full-strength unit operations of A-29 aircraft.

The Proposed Action would decrease the number of flying hours lost due to inclement weather per year by about 250, equating to approximately 12.5 percent improved availability of Grand Bay Range. The total number of sorties flown by Moody Air Force Base (AFB)-based units would not be expected to change, and so the availability recouped at Grand Bay Range would be roughly equal to decreased operations in other areas. For aircraft based at Moody AFB, operations on tracks leading from Moody AFB to places other than Grand Bay Range was decreased collectively by 12.5 percent while operations on tracks headed to Grand Bay Range from Moody AFB were increased collectively by 12.5 percent. Similar adjustments were made to operations tempo on tracks returning to Moody AFB from Grand Bay Range. Transient aircraft operations would be expected to increase with increased availability of the range, and any concurrent decreases elsewhere are outside of the region of influence for this action. Table C-1 lists the total arrival and departure flight operations flown per average annual day by various aircraft types under the current conditions scenario and the Proposed Action. The operations of aircraft that do not regularly use Grand Bay Range (e.g., C-17) are not affected by the Proposed Action.

Table C-1. Arrival and Departure Operations Flown Per Average Annual Day by Various Aircraft Types

Aircraft Type	Total Current Arrivals	Total Current Departures	Total Proposed Arrivals	Total Proposed Departures
A-10A	39.5233	39.5233	39.5233	39.5233
A-29	8.5781	8.5781	8.5781	8.5781
C-12	0.1637	0.1637	0.1704	0.1704
C-130H (transient)	0.0822	0.0822	0.0908	0.0908
C-130J	1.6438	1.6438	1.6438	1.6438
C-17	0.1370	0.1370	0.1370	0.1370
C-5A	0.0110	0.0110	0.0110	0.0110
F-16C	0.0356	0.0356	0.0356	0.0356
F-18A/C	0.0594	0.0594	0.0668	0.0668
F-22	0.0329	0.0329	0.0329	0.0329
Variable pitch propeller-driven	0.0849	0.0849	0.0918	0.0918

Table C-1. Arrival and Departure Operations Flown Per Average Annual Day by Various Aircraft Types, Cont'd

Aircraft Type	Total Current Arrivals	Total Current Departures	Total Proposed Arrivals	Total Proposed Departures
KC-10A	0.0466	0.0466	0.0466	0.0466
MV22	0.0356	0.0356	0.0390	0.0390
T-38C	0.0301	0.0301	0.0301	0.0301
H-1N	0.1636	0.1636	0.1703	0.1703
H-60	4.3828	4.3828	4.3828	4.3828
Total	**55.0105**	**55.0106**	**55.0503**	**55.0503**

Table C-2 lists the number of operations per Average Annual Day that take place only on tracks that lead to Grand Bay Range, from Grand Bay Range, or that make multiple approaches to Grand Bay Range targets. These operations increase by approximately 12.5 percent.

Table C-2. Arrival and Departure Operations Flown Per Average Annual Day by Various Aircraft Types

Aircraft Type	Current Arrivals	Current Departures	Current 2nd Approach	Proposed Arrivals	Proposed Departures	Proposed 2nd Approach
A-10A	15.0383	15.0383	139.0290	16.9180	16.9181	156.4077
A-29	0.9781	0.8575	43.6333	1.1003	0.9647	49.0875
C-12	0.0541	0.0541	0.0411	0.0609	0.0609	0.0462
C-130H (transient)	0.0685	0.0685	0.6951	0.0771	0.0771	0.7820
C-130J	0.4932	0.0822	1.5068	0.5548	0.0925	1.6952
C-17	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
C-5A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
F-16C	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
F-18A/C	0.0594	0.0594	0.7680	0.0668	0.0668	0.8640
F-22	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Variable pitch propeller-driven	0.0548	0.0548	0.0548	0.0616	0.0616	0.0616
KC-10A	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
MV22	0.0274	0.0274	0.0410	0.0308	0.0308	0.0461
T-38C	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
H-1N	0.0540	0.0540	1.4720	0.0608	0.0608	1.6560
H-60	0.6020	1.7362	111.1331	0.6773	1.9533	125.0248
Total	**17.4297**	**18.0325**	**298.3743**	**19.6084**	**20.2865**	**335.6711**