FINAL

ENVIRONMENTAL ASSESSMENT (EA) FOR INSTALLATION DEVELOPMENT AT MOODY AIR FORCE BASE, GEORGIA

PREPARED FOR:

Department of the Air Force

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GLOSSARY OF ABBREVIATIONS AND ACRONYMS

820 BDG	820th Base Defense Group
ACAM	Air Conformity Applicability Model
AFB	Air Force Base
AFI	Air Force Instruction
Air Force	United States Air Force
APE	Area of Potential Effects
AT/FP	Anti-Terrorism/Force Protection
BGEPA	Bald and Golden Eagle Protection Act
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylenes
BX	Base Exchange
°C	degrees Celsius
CAA	Clean Air Act
CATM	Combat Arms Training and Maintenance
C&D	construction and demolition
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CWA	Clean Water Act
DCE	dichloroethene
DNR	(Georgia) Department of Natural Resources
DoD	Department of Defense
EA	Environmental Assessment
EIS	environmental impact statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
°F	degrees Fahrenheit
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FTX	Field Training Exercise
GBBL	Grand Bay-Banks Lake
GHG	greenhouse gas
GIS	geographic information system
gpd	gallons per day
GWP	global warming potential
HAP	hazardous air pollutant
HAZMART	Hazardous Material Pharmacy
HPD	(Georgia) Historic Preservation Division
HQ ACC	Headquarters Air Combat Command
HVAC	heating, ventilation, and air conditioning
IDP	Installation Development Plan
INRMP	Integrated Natural Resources Management Plan
IPCC	Intergovernmental Panel on Climate Change
JP-8	jet fuel
kcf	thousand cubic feet
kV	kilovolt
LBP	lead-based paint
LID	Low-Impact Development

MBTA	Migratory Bird Treaty Act
MGD	million gallons per day
MOGAS	motor gasoline
MOUT	military operations in urban terrain
MTBE	methyl tert butyl ether
MW	megawatt
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NESHAPs	National Emission Standards for Hazardous Air Pollutants
NHP	Natural Heritage Program
NHPA	National Historic Preservation Act
NOA	Notice of Availability
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
OSHA	Occupational Safety and Health Administration
PVC	polyvinyl chloride
PM_{10}	particulate matter with a diameter of less than or equal to 10 microns
RAPCON	radar approach control
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SFS	Security Forces Squadron
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SVOC	semivolatile organic compound
TCE	trichloroethene
TCP	traditional cultural property
TLF	Transient Lodging Facility
U.S.	United States
U.S.C.	United States Code
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VOC	volatile organic compound
VQ	Visitors' Quarters
WWTP	Waste Water Treatment Plant

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

The 23d Wing at Moody Air Force Base (AFB), Georgia, and Headquarters Air Combat Command (HQ ACC) have identified priorities for installation development projects and propose to implement them over the next four years (2018–2022). This installation development Environmental Assessment (EA) was prepared to evaluate the potential environmental impacts of these proposed projects in compliance with the National Environmental Policy Act of 1969 (NEPA) (42 United States Code [U.S.C.] § 4331 et seq.), the regulations of the President's Council on Environmental Quality (CEQ) that implement NEPA procedures (40 Code of Federal Regulations [C.F.R.] Parts 1500–1508), the United States Air Force's (Air Force's) environmental impact assessment process regulations at 32 C.F.R. Part 989, and Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process* (Secretary of the Air Force, 2003).

The intent of the ongoing process of installation development at Moody AFB is to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units. More than 50 projects were considered in this EA, of which 17 were identified as priorities for installation development in the Moody AFB Installation Development Plan (IDP) and the Moody AFB Facilities Board. These plans identify requirements for the improvement of the physical infrastructure and functionality of Moody AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use relationships. The 17 proposed projects identified as priorities have been carried forward for detailed analysis in this EA.

Moody AFB is located in the south-central portion of Georgia, 12 miles from Valdosta, and the main installation occupies 5,518 acres of land while the adjacent Grand Bay Range occupies 5,874 acres of land (Figure 1-1). It was established in 1941 and has hosted a variety of missions and aircraft types throughout its history. Moody AFB is home to the 23d Wing and the 93d Air-Ground Operations Wing. Currently, the A-10, HH-60, HC-130, and A-29 aircraft operate from Moody AFB.

The intent of the 23d Wing and HQ ACC is to streamline NEPA compliance and facilitate the installation development process by evaluating in one integrated document the potential impacts on the human environment of the Proposed Actions at Moody AFB. These projects are listed in Table 1-1.

The information presented in this document will serve as the basis for deciding whether the Proposed Action would result in a significant impact to the human environment, requiring the preparation of an environmental impact statement (EIS) or whether no significant impacts would occur, in which case a Finding of No Significant Impact (FONSI) would be appropriate. If the execution of any of the Proposed Action would involve "construction" in a wetland as defined in Executive Order (EO) 11990, *Protection of Wetlands*, or "action" in a floodplain under EO 11988, *Floodplain Management* as amended by EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*, a Finding of No Practicable Alternative (FONPA) would be prepared in conjunction with the FONSI.

Figure 1-1: Location of Moody AFB

1.2 PURPOSE OF INSTALLATION DEVELOPMENT

The IDP comprehensive planning process describes Moody AFB's past, present, and future physical state. Ideal development principles for maximizing the installation's long-term capabilities are identified in the Strategic Vision Alignment section of the IDP. The IDP's Planning Constraints, together with the Installation Capacity Opportunities, identify areas suitable for future development. Those combined with Sustainability Development Indicators direct the scale of development and how and where that development should occur to best meet the ongoing mission needs and the long-term IDP vision for Moody AFB, which is illustrated in the Future Development Planning section of the IDP. The Plan Implementation section of the IDP identifies short, mid-, and long-range projects, and correlates the project with the goals and objectives of the IDP. Planning activities must integrate the NEPA processes to ensure that planning and decisions reflect environmental values; to identify alternatives considered and document which alternatives would be carried forward for full analysis as well as the rationale for those dismissed; to avoid delays later in the process; and to head off potential conflicts (per AFI 32-7062, *Comprehensive Planning*).

1.3 NEED FOR INSTALLATION DEVELOPMENT

The need for installation development at Moody AFB is to provide and maintain facilities and infrastructure that are adequate to meet the needs of 23d Wing and its tenant units, and to do so in a manner that:

- Meets applicable Department of Defense (DoD) installation master planning criteria, consistent with Unified Facilities Criteria (UFC) 2-100-01, *Installation Master Planning*, AFI 32-7062, *Comprehensive Planning*, and Air Force Policy Directive 32-10, *Installations and Facilities*.
- Meets all applicable DoD, federal, state, and local laws and regulations, such as but not limited to, the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA) and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource specific laws and regulations are provided in the specific resource sections located in Chapter 3, Affected Environment.

1.4 PURPOSE OF AND NEED FOR INDIVIDUAL PROPOSED ACTIONS

Each of the proposed actions (or projects) included in the IDP EA has a specific purpose and need. For purposes of this EA, the purpose and need for each of the 17 priority projects considered for analysis is presented in Table 1-1.

Table 1-1: Purpose and Need for Each Proposed Action

Project ID	Project Name	Purpose of the Action	Need for the Action
Facility Construction Projects			
C01	Security Forces Complex	The purpose is to consolidate Security Forces Squadron functions into a single facility that provides adequate space for administration, equipment storage and maintenance, dispatch, training, and holding cells.	The project is needed to increase operational efficiency due to Security Forces Squadron functions currently being dispersed throughout the base in buildings 617, 743, and 1030. Also, there is no storage capacity at the current SFS operations facility, requiring equipment to be kept in outside storage containers at the CATM compound 3 miles away. Additionally, the Security

Table 1-1: Purpose and Need for Each Proposed Action, Continued

Project ID	Project Name	Purpose of the Action	Need for the Action
			Forces Squadron currently does not have capability for pre-trial confinement within the wing.
C02	Construct Fire/Crash Rescue Station	The purpose is to provide a modern facility that meets UFC requirements and will accommodate authorized crash, fire and rescue resources in one location with emergency response capability to both the flightline and cantonment area.	The project is needed because the existing facility, building 621, was constructed in 1969 and is beyond the expected useful service life, and is inadequate to house the number and size of modern crash, fire, and rescue vehicles. UFC 4-730-10 specifies the use of the Fire Station Space Program Tool to determine requirements for fire stations. The Moody AFB Fire Department authorized personnel and equipment require storage of 15 vehicles and a 38,000 square foot facility. The current facility is 23,151 square feet and only has 10 vehicle bays that cannot accommodate the assigned crash/fire/rescue vehicles.
C03	Construct Combative Arms Training Pit near Building 1540	The purpose is to provide a purpose-built combative arms training area to meet the 820 BDG's AFI 36-2225 training requirements.	This project is needed because currently combative arms training is conducted in the open bay of a former warehouse using matting on concrete floors and is not co-located with other training venues. A dedicated combative arms training area is required to develop the core proficiency of physical combat and apprehension techniques, required per AFI 36-2225.
C04	Construct Engine Test Support Facility	The purpose is to provide a modern administrative support facility that meets Air Force Manual 32-1084 facility requirement standards for the authorized and assigned engine test cell personnel and functions.	The project is needed because the current facility, building 4130, is in poor condition and is inadequately sized to support the assigned functions of the Moody AFB engine test cell function. The facility provides space for the administrative and support functions for the engine test cell function located in buildings 4127 and 4128. The existing support building 4130 was constructed in 1990 and is only a 1,056-square-foot pre-fabricated building that is too small to meet mission requirements. Air Force Manual 32-1084 standards for the number of assigned personnel and functions require a 1,800-square-foot facility.
C05	Construct Covered Mobility Equipment Storage Addition, Building 657	The purpose is to provide permanent protection from sun damage with a covered storage area for the 723d Aircraft Maintenance Squadron's 41st Helicopter Maintenance Unit mobility equipment.	The project is needed to maximize the service life of equipment currently stored in uncovered outdoor locations.

Table 1-1: Purpose and Need for Each Proposed Action, Continued

Project ID	Project Name	Purpose of the Action	Need for the Action
C06	Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201 and 203	The purpose is to provide a centralized tobacco use area protected from the elements for billeting patrons in TLF and VQ facilities 200, 201 and 203.	The need for this project is to enable billeting patrons to utilize tobacco products in accordance with AFI 40-102, *Tobacco Use in the Air Force*, which prohibits tobacco use on Air Force installations, except in Designated Tobacco Areas and housing units. Currently, the installation's TLF and VQ facilities do not have designated tobacco areas with shelters for protection from the elements.
C08	Construct Paintball Facility	The purpose is to relocate the installation's recreational paintball facility to a location with a planned compatible land use zoning as identified in the Installation Development Plan.	The project is needed because the existing paintball facility is currently located within an industrial land use area that is projected for change to aircraft operations and maintenance land use. Relocation would also enable the base to capitalize on an opportunity to increase Morale, Welfare and Recreation revenue by siting the facility in a location accessible to the public, in accordance with Air Force Guidance Memorandum 2 to AFI 34-101, *Air Force Morale, Welfare, and Recreation (MWR) Programs and Use Eligibility*.
C09	Construct 23 CES Field Training Exercise (FTX) site	The purpose is to move the existing 23d Civil Engineer Squadron FTX away from the base boundary in order to minimize potential impacts to off-base properties.	The project is needed because the existing site is against the base boundary next to a residential area, which has generated numerous complaints from the closest residents regarding noise, late night activity, and light pollution when the site is used.
Infrastructure Construction Projects			
N01	Addition/Repair Natural Gas Line, East of Airfield	The purpose is to close the loop on the installation's existing natural gas utility line. This would include extending the existing natural gas line around the north and south ends of the airfield to be able to provide natural gas to areas east and south of the flightline that do not currently have natural gas.	The project is needed to connect the installation's existing natural gas line utilities infrastructure to convert heating and hot water systems in current facilities located east and south of the flightline from total electric to natural gas. Existing facilities requiring service to convert from electric to natural gas heating and hot water systems include buildings in the 820 BDG compound, the Control Tower, the Radar Approach Control facility, the Fire Training Pit, Munitions Storage Area administration and control offices, Explosive Ordnance Disposal administration and storage facilities, and the CATM facilities.
N04	Construct Parking for the Control Tower and Radar Approach	The purpose is to provide adequate privately-owned and government-owned vehicle parking spaces that meet AT/FP standards for airfield control tower and RAPCON	The project is needed due to a shortage of parking spaces available during heightened force protection conditions. The total square footage of facilities 1300 and 1301 is approximately 13,985 square feet, and

Table 1-1: Purpose and Need for Each Proposed Action, Continued

Project ID	Project Name	Purpose of the Action	Need for the Action
	Control Facilities	operations in facilities 1300 and 1301.	requires a minimum of 47 parking spaces to meet mission needs. The existing parking lot currently comprises 68 total parking spaces; however, 45 of the existing spaces are within the AT/FP 25-meter (82 feet) minimum stand-off distance, leaving a deficit of 23 parking spaces when these spaces are blocked during heightened force protection conditions. Facilities 1300 and 1301 are located in a remote area of the base with no neighboring parking lots available for use during heightened force protection conditions.
N05	Construct Parking at CATM	The purpose is to provide adequate privately owned and government-owned vehicle parking spaces that meet AT/FP standards for the CATM area.	The project is needed due to a shortage of parking spaces available during heightened force protection conditions and when both training ranges are active at the same time. The CATM training facility contains five support and classroom buildings plus two enclosed shooting ranges. The total square footage of the CATM facilities is 12,860 square feet plus two shooting ranges with 27 lanes per facility for a capacity total of 54 shooters at one time. With instructors and support staff, 60 spaces are required. There are a total of 61 parking spaces; however, 33 of the existing spaces are within the AT/FP 25-meter (82 feet) minimum stand-off distance, leaving a deficit of 28 parking spaces when these spaces are blocked during heightened force protection conditions. The CATM complex is in a remote section of the base, and there are no other parking areas in the vicinity. During periods of heightened force protection conditions, parking is accomplished in the grass area to the west across the street. The entire CATM complex is located in the 100-year floodplain.
N07	Widen Stone Road	The purpose is to upgrade both the functional and visual quality of the base and create a corporate image streetscape for the Air Force in accordance with Moody AFB Architectural Compatibility Standards Sections 3.1.1, 3.1.2, 4.1.0, and 6.1.0, as well as eliminate safety concerns for drivers and joggers.	The project is needed because Stone Road was originally constructed as a two-lane secondary roadway and existed prior to construction of the installation's new main entrance gate. The jogging trail also was constructed prior to the new main entrance gate. With completion of the installation's new main entrance, Stone Road now makes up the core pathway to the installation cantonment area, and requires a functional and visual upgrade as it serves increased

Table 1-1: Purpose and Need for Each Proposed Action, Continued

Project ID	Project Name	Purpose of the Action	Need for the Action
			traffic flow and presents the most public-oriented area and first image of the base for assigned personnel, visitors, and Very Important Persons. The current configuration of the jogging trail requires joggers to cross the main thoroughfare at two locations, which presents safety issues for joggers and slows traffic.
N13	Widen and Pave Eisemann Road to Grand Bay Range	The purpose is to provide safe, all-weather, two-way access to and from Grand Bay Range from the Moody AFB main cantonment area.	The project is needed to eliminate recurring hazardous conditions caused by weather damage during frequent rain events common to the region. Currently, Eisemann Road is the installation's main arterial leading to the Grand Bay Range from an intersection at Perimeter Road on the northeast end of the airfield and is 12-foot wide and unpaved from the entrance of the installation's Recycling Center to the Grand Bay Range entrance gate. The roadway experiences recurring potholes, wash-boarding, and erosion during and after heavy rains, and presents an additional hazard to opposing two-way traffic due to the narrow roadway's soft shoulders.
N16	Construct Waste-Water Infrastructure, Grassy Pond Recreational Area	The purpose is to provide for upgraded, adequate sanitary sewer infrastructure with increased capacity at the Grassy Pond Recreational Area.	The project is needed to eliminate environmental impacts caused by the current system's failing infrastructure. The existing septic systems experience recurring leach field saturations during heavy rains common in the southeast region of the United States, and the recurring ground saturations result in leach field erosion leading to waste-water surfacing and migration into surrounding soils/waterways.
N17	Construct Photovoltaic Panel Arrays	The purpose is to support installation sustainability through production of renewable electric power for Moody AFB.	The project is needed to support installation sustainability and to facilitate the Air Force's implementation of EO 13693, *Planning for Federal Sustainability in the Next Decade*. EO 13693 establishes an overall Air Force agency target of utilizing not less than 30% of renewable electric energy by fiscal year 2025. Although the EO target is an agency goal, renewable electric energy generated by the proposed project could be credited toward the overall Air Force agency goal.
Renovation and Repair Projects			
R02	Construct Addition and Interior Repairs to the Kennel	The purpose is to provide a kennel facility for the 23d Security Forces Squadron that contains the capabilities and functions listed in	The project is needed because the current kennel is undersized and does not meet the guidelines in the *Design Guide for Military Working Dog Facilities*. Specifically, the

Table 1-1: Purpose and Need for Each Proposed Action, Continued

Project ID	Project Name	Purpose of the Action	Need for the Action
	Facility, Building 1708	the Design Guide for Military Working Dog Facilities.	current facility does not have adequate outdoor exercise and working dog break areas separate from the training area as specified in the design guide. Additionally, there is inadequate enclosed storage for portable kennels and training obstacles. Currently this equipment is kept outside.
Demolition Projects			
D01	Demolition of Building 757	The purpose is to reduce unnecessary installation operations and maintenance costs associated with sustaining facilities no longer required to support the base mission.	The project is needed to because the facility is no longer required to support the base mission. Building 757 is a 10,388-square-foot facility constructed in 1962 that was formerly utilized for Information Management operations. While the facility has been renovated several times, it is well beyond its expected life of 40 years and contains outdated and obsolete mechanical systems that are highly inefficient. The facility is currently only being utilized as swing space for other facility renovation projects until a demolition project is implemented.

23 CES = 23d Civil Engineer Squadron; 820 BDG = 820th Base Defense Group; AFB = Air Force Base; AFI = Air Force Instruction; AT/FP = Anti-Terrorism/Force Protection; CATM = Combat Arms Training and Maintenance; EO = Executive Order; FTX = Field Training Exercise; RAPCON = radar approach control; SFS = Security Forces Squadron; TLF = Transient Lodging Facility; UFC = Unified Facilities Criteria; VQ = Visitors' Quarters

1.5 INTERAGENCY/INTERGOVERNMENTAL COORDINATION AND CONSULTATIONS

1.5.1 Interagency Coordination and Consultations

Scoping is an early and open process for developing the breadth of issues to be addressed in the EA and for identifying significant concerns related to a proposed action. Per the requirements of the Intergovernmental Cooperation Act of 1968 (42 U.S.C. § 4231(a)) and EO 12372, federal, state, and local agencies with jurisdiction that could be affected by the proposed actions were notified during the development of this EA. The following agencies were contacted: U.S. Army Corps of Engineers (USACE); U.S. Fish and Wildlife Service (USFWS); Georgia Environmental Protection Division, Georgia Department of Community Affairs; Georgia Wildlife Resources Division; Georgia Historic Preservation Division (HPD); South Georgia Regional Planning Council; Lanier County Commission; and the Lowndes County Commission.

Appendix A, Public Involvement, contains copies of agency correspondence.

1.5.2 Government to Government Consultations

EO 13175, *Consultation and Coordination with Indian Tribal Governments*, directs federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. Consistent with that executive order, DoD Instruction 4710.02, *Interactions with Federally-Recognized Tribes*, and AFI 90-2002, *Air Force Interaction with Federally-recognized Tribes*, federally recognized tribes that are historically affiliated with the Moody AFB geographic region have been invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. The tribal consultation process is distinct from NEPA consultation or the interagency coordination process, and it requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of other consultations. The Moody AFB point-of-contact for Native American tribes is the Installation Commander.

The Native American tribal governments that have been coordinated or consulted with regarding these actions are listed in Appendix A, Public Involvement.

1.5.3 Other Agency Consultations

Per the requirements of Section 106 of the NHPA and implementing regulations (36 C.F.R. Part 800) and Section 7 of the ESA and implementing regulations, consultations were conducted with the Georgia State Historic Preservation Officer (SHPO) and the USFWS on findings of no effect and may affect but not likely to adversely affect, respectively.

The SHPO concurred on a finding of no adverse effect to cultural resources regarding potential impacts to archaeological and historic building resources on January 31, 2018. On June 26, 2017, concurrence indicating a finding of may affect but not likely to adversely affect ESA-listed species was received from the USFWS.

Correspondence regarding the findings and concurrence is included in Appendix A, Public Involvement.

1.6 PUBLIC AND AGENCY REVIEW OF EA

Because the Proposed Action area coincides with wetlands and/or floodplains, it is subject to the requirements and objectives of EO 11990, *Protection of Wetlands*, and EO 11988, *Floodplain Management*, as amended by EO 13690, *Establishing a Federal Flood Risk Management Standard and a Process for Further Soliciting and Considering Stakeholder Input*. The Air Force published early notice that the Proposed Action would occur in floodplains/wetlands in the newspapers of record (listed below) on March 17, 2017. The notice identified state and federal regulatory agencies with special expertise that had been contacted and solicited public comment on the Proposed Action and any practicable alternatives. The comment period for public and agency input on these projects ended on April 17, 2017.

A Notice of Availability (NOA) of the Draft EA and Draft FONSI/FONPA was published in the newspapers of record (listed below), announcing the availability of the EA for review on January 19, 2018. The NOA invited the public to review and comment on the Draft EA. The public and agency review period ended on February 19, 2018. No public comments were received on the EA. Only the USFWS provided correspondence regarding the EA, indicating that the agency concurred on the findings of the EA and that significant risks of adverse effects on protected species as a result of implementing the Proposed Action are not anticipated. The NOA and agency comments are provided in Appendix A, Public Involvement.

The NOA and early notice of project execution in wetlands/floodplains were published in the following newspaper: *Valdosta Daily Times*, Valdosta, Georgia.

Copies of the Draft EA and FONSI/FONPA were available for review at the following locations:

- South Georgia Regional Library: 300 Woodrow Wilson Drive, Valdosta, Georgia
- Moody AFB public website

1.7 DECISION TO BE MADE

The EA evaluates whether the proposed actions would result in significant impacts on the human environment. If significant impacts are identified, Moody AFB would undertake mitigation to reduce impacts to below the level of significance, undertake the preparation of an EIS addressing the respective proposed action, or abandon the respective proposed action.

This EA is a planning and decision-making tool that will be used to guide Moody AFB in implementing the proposed actions in a manner consistent with Air Force standards for environmental stewardship.

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

This EA evaluates the potential environmental impacts that may arise from the implementation of the 17 priority projects approved as installation development priorities for the next four years (2018–2022) at Moody AFB (a total of 17 projects) (see Table 1-1). This document treats each project as a discrete proposed action, and evaluates each project and its alternatives separately. These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition.

2.2 SELECTION STANDARDS FOR PROJECT ALTERNATIVES

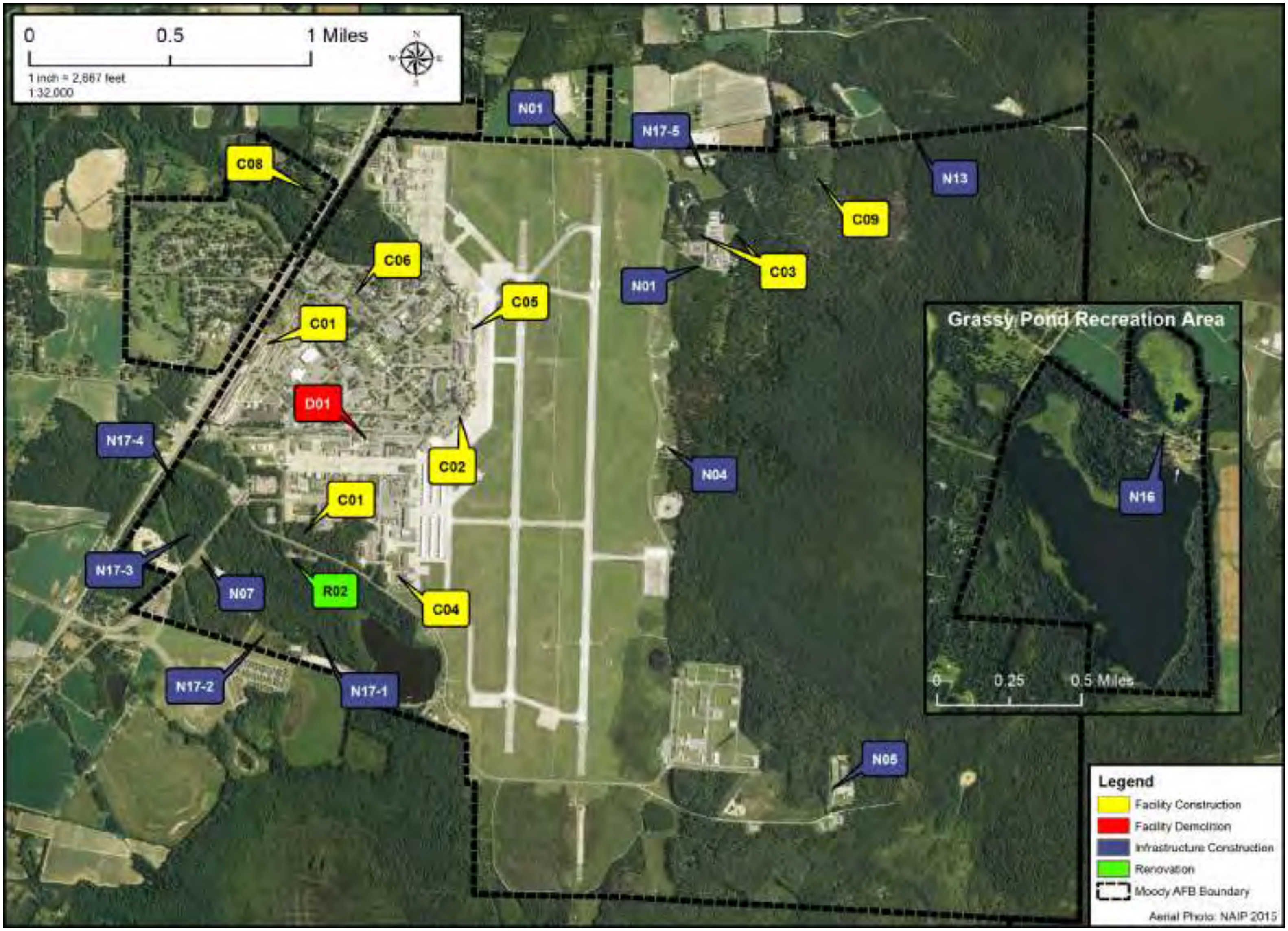
The scope and location of each proposed action and, where applicable, their alternatives, have undergone extensive review by 23d Civil Engineer Squadron personnel, local government agencies, and supporting installation and Air Force staff specialists (Figure 2-1). While there are 17 projects overall, each project may have several alternatives; as a result, there are multiple locations identified for several of the same projects in Figure 2-1.

Potential alternatives to the proposed actions were each evaluated based on three universal selection standards, which were applied to all alternatives. Each project description, beginning in Section 2.3, Proposed Actions and Alternatives, provides details regarding how these universal selection standards apply to specific project requirements.

Standard 1: *Planning Constraints (IDP Chapter 6)* – Planning constraints are man-made or natural elements that can create significant limitations to the operation or construction of buildings, roadways, utility systems, airfields, training ranges, and other facilities. These constraints, when considered collectively with the installation's capacity opportunities, inform the identification of potential areas for development, as well as those areas that can be redeveloped to support growth. This standard addresses compatibility with installation operational aspects, natural and built resources, and land use compatibility, and largely dictate the location/placement of a proposed facility.

- *Operational* – Operational constraints are generally related to flying and maintaining aircraft; storing fuel, munitions, and other potentially hazardous cargo; and operating training ranges or fulfilling similar operational requirements that can limit future development activity. Operational constraints include, but are not limited to, airfield clearance and safety zones, noise contours, explosive safety quantity distance zones, and antiterrorism force protection.
- *Natural* – Natural constraints include environmental and cultural resources. These provide positive aesthetic, social, cultural, and recreational attributes that substantially contribute to the overall quality of life on base.
- *Built* – Built constraints are related to the condition, functionality, or effectiveness of infrastructure systems, facilities, and other man-made improvements.
- *Land Use Compatibility* – Land use compatibility constraints are associated with land use designations (e.g., airfield, administrative, recreation) on the installation and with ensuring that planning considerations account for compatibility between proposed and existing uses (e.g., recreational use may not be compatible with the airfield).

Figure 2-1: Project Overview: Location of Projects Included in the Proposed Action



Standard 2: ***Installation Capacity Opportunities (IDP Chapter 7)*** – This refers to the capabilities of the installation's existing facilities/infrastructure to meet existing and future mission needs. This standard largely drives the scope of the facility/infrastructure development and/or improvement and requires that proposed facility/infrastructure development and improvements support the following aspects:

- Mission operations, mission support, built infrastructure, quality of life

Standard 3: ***Sustainability Development Indicators (IDP Chapter 8)*** **–** This refers to the ability to operate into the future without a decline in either the mission or the natural and man-made systems that support it, creating sustainable installations. Sustainability is a holistic approach to asset management that seeks to minimize the negative impacts of the Air Force's mission and operations on the environment. This standard also generally drives the scope of the facility/infrastructure development and/or improvement and supports sustainability of the installation through consideration of the following:

- Energy, water, waste water, air quality, facilities space optimization, encroachment, airfields, natural/cultural resources

2.3 PROPOSED ACTIONS AND ALTERNATIVES

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

The NEPA process is intended to support flexible, informed decision-making; the analysis provided by this EA and feedback from the public and other agencies will inform decisions made about whether, when, and how to execute the proposed actions. Among the alternatives evaluated for each project is a no action alternative. A no action alternative analysis identifies the environmental consequences of not undertaking a proposed action, does not simply conclude that there would be no impact, and serves to establish a comparative baseline for analysis.

The scope, location, and objectives of the proposed actions are described here, and grouped by project category. This section also presents reasonable and practicable alternatives, for projects where multiple viable courses of action exist. Those alternatives are assessed relative to the universal selection standards and project-specific selection standards, where applicable.

Figure 2-2 through Figure 2-6 show the location of the subject projects.

2.3.1 Facility Construction Projects

Project C01: Security Forces Complex

This proposed action is to consolidate Security Forces Squadron functions into a single facility. Alternatives for implementing the proposed action are described below.

Selection Standard Applicability:

The site must be adequate to support a facility large enough to consolidate functions, along with infrastructure such as parking for privately owned and government-owned vehicles (Selection Standards 1 and 2).

The site should be located along a main thoroughfare to provide rapid response to all major areas of the installation, including the main gate, flightline, and cantonment areas (Selection Standards 1 and 2). The site must be free of environmental constraints (e.g., wetlands) and comply with land use districts and restraints as designated in the IDP and UFC 3-260-01 Appendix B, Sections B18-4.1 and B18-4.2 (Standards 1 and 3).

Figure 2-2: Location of Proposed Projects (Northwest of Airfield)

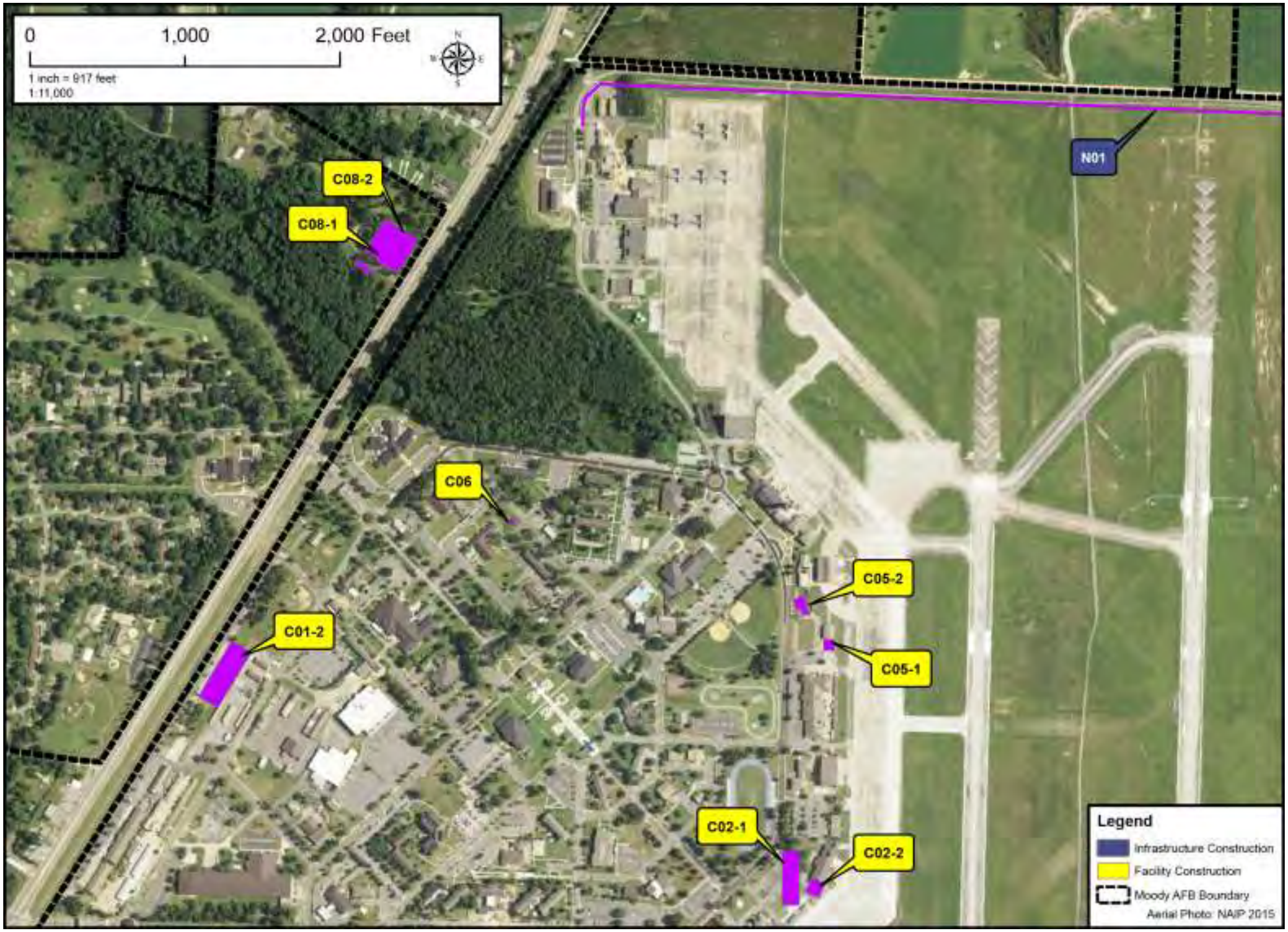


Figure 2-3: Location of Proposed Projects (Southwest of Airfield)

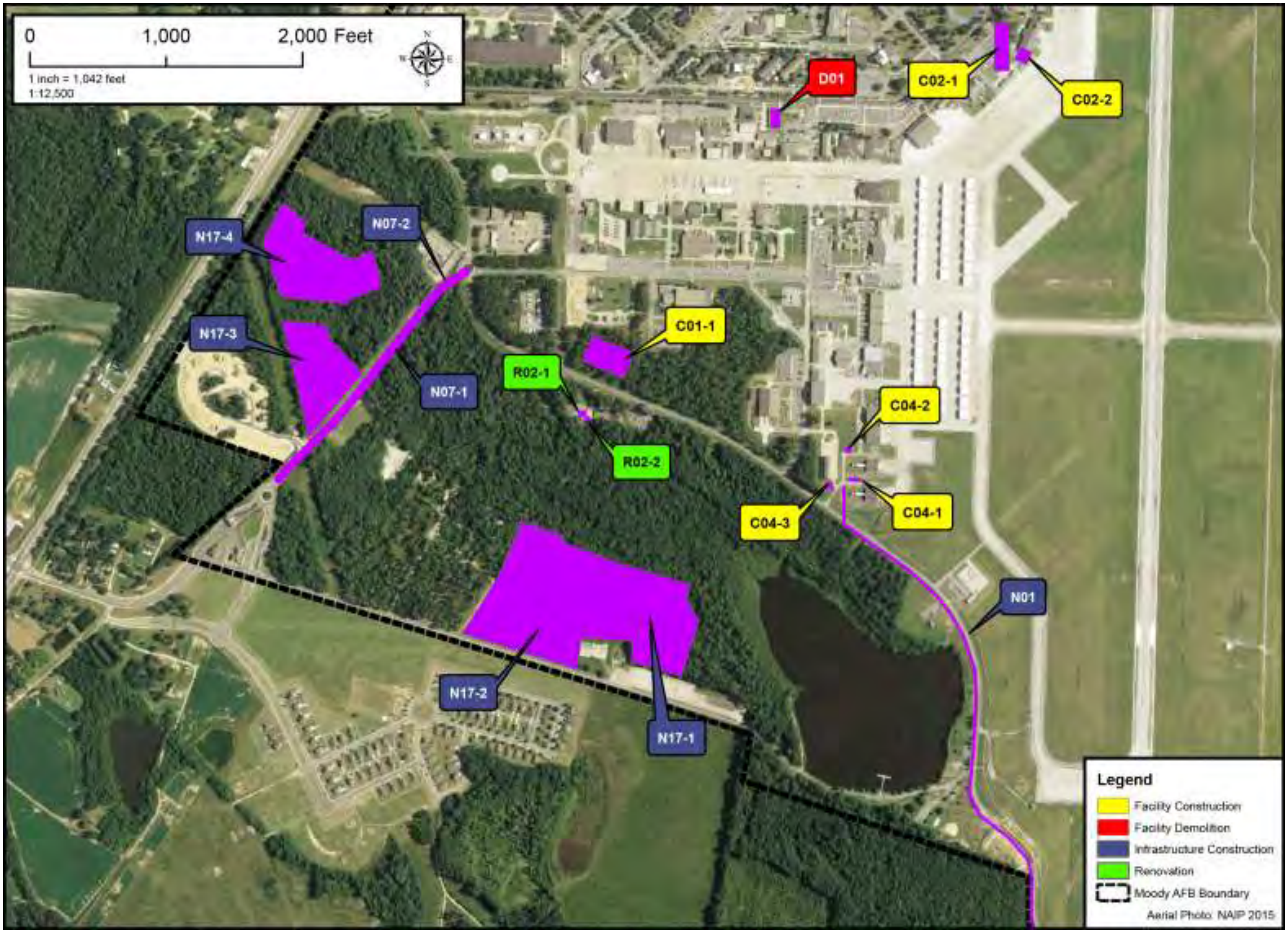


Figure 2-4: Location of Proposed Projects (Northeast of Airfield)

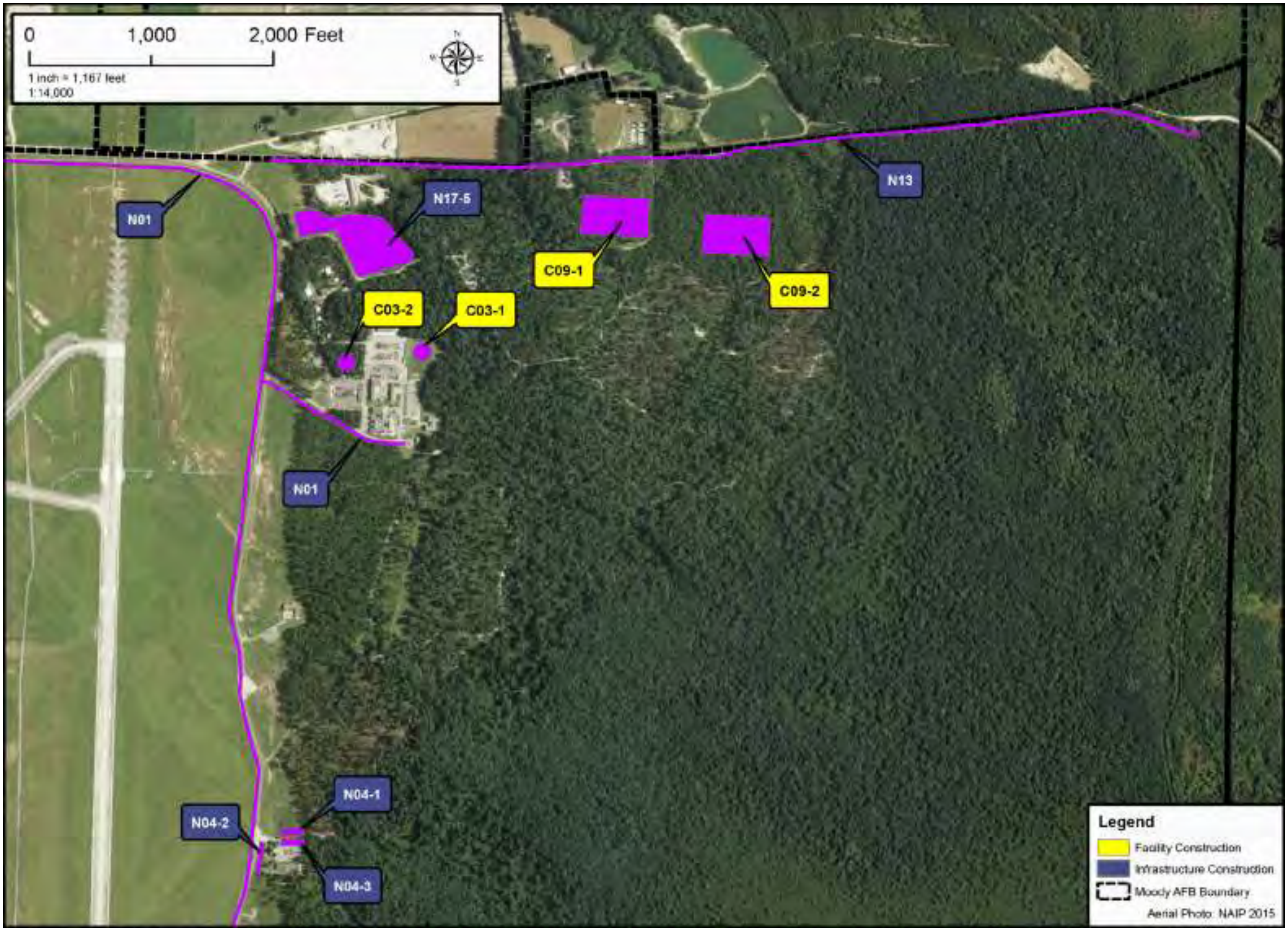
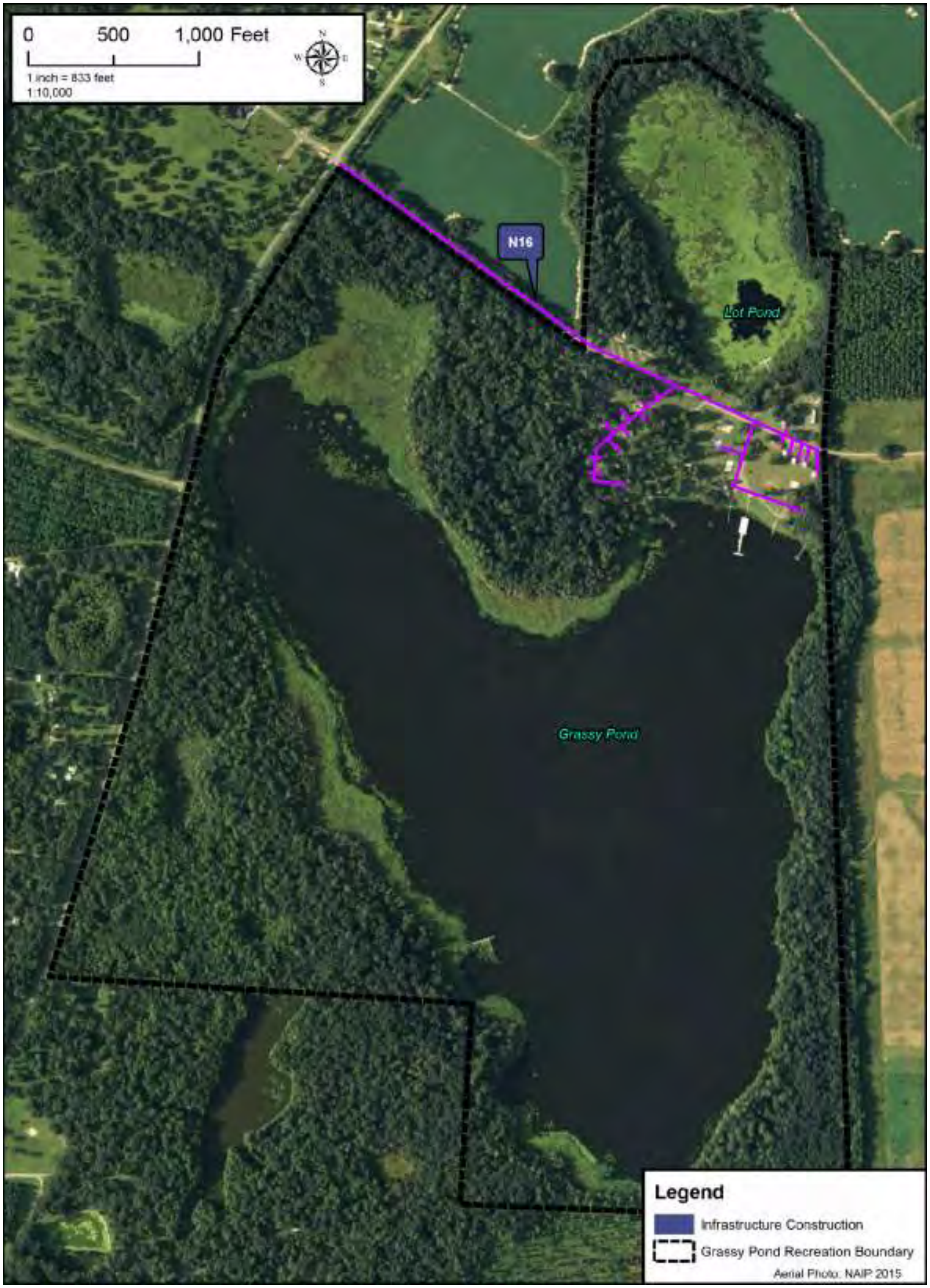


Figure 2-5: Location of Proposed Projects (Southeast of Airfield)

Figure 2-6: Location of Proposed Projects (Grassy Pond)



Alternatives Considered but Eliminated from Further Analysis*:* Sites for consolidating SFS functions into a single facility on base are limited by environmental and operational constraints (e.g., wetlands and existing/planned development) (Selection Standards 1 and 3). Consolidating functions without new construction by using existing space on base or leased space off base was eliminated early as there are no existing base facilities available, and locating operations off base would create unacceptable inefficiencies (Selection Standards 1, 2, and 3). Therefore, these alternatives were not analyzed further. An addition to the existing facility was also eliminated from further consideration as the facility is located within the Base Reduction Line (a lateral line 1,000 feet east of the Runway 36L/18R centerline), and UFC 3-260-01, Appendix B18-4.1 and B18-4.2 prohibits expansion of non-flightline specific functions within Base Reduction Lines (Selection Standard 1).

Alternatives Considered for this Project: After reviewing alternatives, one potential site that meets all selection standards was identified: a currently vacant lot along Burma Road, near the military working dog kennel; and one potential site that meets two of the three selection standards was identified: a site along Florida Road adjacent to the installation boundary where building 908 will be demolished.

Alternative C01-1 (Preferred Alternative): Under this alternative, a 34,740-square-foot site would be developed on a currently vacant, grassed site along Burma Road, across from the military working dog kennel (Figure 2-3). The site would be comprised of a two-story, 19,300-square-foot building with reinforced concrete foundation and floor slab, masonry exterior walls, structural steel framing, and associated site improvements, including a 13,440-square-foot (64-space) parking lot for privately owned and government-owned vehicles, an 800-square-foot outdoor pavilion, 1,200 square feet of sidewalks, and electric, natural gas, water, sewer, and stormwater utilities connected to existing utility lines in the area. The proposed location meets criteria of Selection Standards 1, 2, and 3. Under this alternative, facility 617 would be demolished after move-out and returned to greenspace for potential future flightline-specific development. SFS administration space in facility 743 would be reallocated to the facility's current primary user. SFS administration space in facility 1030 would be returned to its former use as a special event entrance control facility, and equipment storage containers in the Combat Arms Training and Maintenance (CATM) compound would be relocated to the newly constructed consolidated Security Forces operations facility.

Alternative C01-2: This alternative is similar to Alternative C01-1 with exception of location. Under this alternative, the facility would be built along Florida Road adjacent to the installation boundary where building 908 was previously located (Figure 2-2). The proposed location does not fully meet Selection Standard 2 because it is not located along a main thoroughfare. Therefore, this is not the preferred alternative.

No-Action Alternative C01: Under this no action alternative, a new SFS facility would not be constructed and functions would continue to operate inefficiently from multiple facilities throughout the base. Additionally, mobility equipment would continue to be stored outside in containers 3 miles away from the main operations facility. The installation would continue operating without a pre-trial confinement facility, requiring reimbursement to local municipalities for use of law enforcement confinement facilities. This is not supportive of the proposed action's purpose and need. The no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C02: Construct Fire/Crash Rescue Station

This proposed action is to develop a modern facility to accommodate authorized crash, fire, and rescue resources in one location with emergency response capability to both the flightline and cantonment area. Alternatives for implementing the proposed action are described below.

Selection Standard Applicability:

The site must be located along the flightline for immediate and unrestricted access to all parts of the airfield in order to provide proper crash rescue response to assigned and transient aircraft (Selection Standards 1 and 2).

The site should allow construction of vehicle bays to face both toward the airfield and toward the cantonment area to minimize response times for emergency vehicles on both the flightline and cantonment area (Selection Standards 2 and 3).

This is a critical facility and the selected alternative must permit continued use of the current station until construction is complete (Selection Standard 3).

The location must be centrally located to permit similar response times to all locations on the flightline and cantonment area (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: No practicable alternatives were eliminated from consideration.

Alternatives Considered for this Proposed Action:

Alternative C02-1 (Preferred Alternative): This alternative would construct a new fire/crash rescue station to support Moody AFB, to include crash/rescue for all assigned and transient flying missions, and facility response. The new station would be approximately 38,800 square feet and be located adjacent to the existing station (Figure 2-2). An existing parking lot would be modified to accommodate the facility, and entry ramps for vehicles would be constructed in front of each side of the vehicle bays. Vehicle entry ramps and sidewalks would be approximately 72,559 square feet. The current fire station (building 621) with entry ramps and sidewalks would be demolished after it is vacated upon completion of the new station. This alternative is the only centrally located flightline site available for a large facility that meets all proposed action Selection Standards; as a result this is the preferred alternative.

Alternative C02-2: This alternative would meet some of the needs of the fire department by constructing an addition to the existing facility and renovating the interiors (Figure 2-2). The addition would be approximately 4,000 square feet to accommodate four additional vehicles in a drive-through configuration and provide additional equipment storage space. The project would also construct a covered storage area of approximately 20 feet by 40 feet for low-speed vehicles and equipment trailers. Interior renovations would realign space to provide a clean room, enlarge the fitness center, and provide needed office space. Renovations would provide overall facility improvements, such as re-lighting with light-emitting diode lighting fixtures and upgrading the heating, ventilation, and air conditioning (HVAC) systems. Equipment that is currently stored in the Civil Engineering compound will require the addition of 8,000 square feet of storage space on the west side of the facility. Due to the layout of the existing structure, the existing vehicle bays cannot be modified for pull-through access on both sides of the facility. As a result, this alternative meets all of the project-specific selection standards except Selection Standard 2 because it does not allow construction of vehicle bays to face both toward the airfield and toward the cantonment area.

No-Action Alternative C02: Under this no action alternative, this project would not be executed. The fire department would continue to be housed in an outdated facility. High value crash/fire/rescue vehicles will continue to be stored outdoors because the existing facility cannot accommodate the authorized number or size of the newer crash/fire/rescue vehicles and equipment. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C03: Construct Combative Arms Training Pit near Building 1540

This proposed action is to construct a dedicated training combative arms training "pit" area consisting of a 150-foot-diameter covered facility with lighting, an elevated 14-square-foot demonstration platform, and ground fall protection. Ground protection would consist of 12 inches of sand with a layer of rubber padding and rubber mulch or Astroturf top surface. The facility currently used is not solely dedicated for combative arms and would continue to be used for existing 820th Base Defense Group (820 BDG) functions.

Selection Standard Applicability:

The site selected should be near current 820 BDG training venues on the eastern side of the installation. This would provide a synergistic siting of similar training tasks and avoid lost training time due to transit between training venues around the installation that are not co-located (Selection Standard 1).

Use of the combative arms training pit should not interfere with concurrent use of the other existing training venues, i.e., the military operations in urban terrain (MOUT) village, egress trainers, range operations, or airfield operations (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Utilization of the gym was considered as it is appropriately sized and affords protection from the climate; however, it is not located near other 820 BDG training venues. Additionally, it would also preclude the use of the gym for its intended purpose of providing a physical fitness training venue for all assigned personnel. As a result, this alternative does not meet the purpose and need for a dedicated training pit and, therefore, was not carried forward for further analysis.

Alternatives Considered for this Proposed Action:

Alternative C03-1 (Preferred Alternative): This alternative would construct a training pit in the grassy area southeast of building 1540, in a cleared area not currently developed (Figure 2-4). This location is within walking distance to the MOUT village and egress and is suitable for development with a 288-foot utility tie-in with existing utilities, which meets Selection Standard 1. Additionally, the location would complement and not interfere with the use of the MOUT village and egress trainers, which meets Selection Standard 2. Because this alternative meets both selection standards, this is the preferred alternative for this proposed action.

Alternative C03-2: This alternative would construct the training pit in the area south of the MOUT village (Figure 2-4). This alternative also meets Selection Standard 1. However, the site is less desirable for development as utilities for lighting are farther away (502 feet versus 288 feet) and the area is currently forested. In low-light situations, the light pollution from the training pit facility would interfere with MOUT village training because the vegetative cover around the MOUT village would be removed for construction of the training pit. As a result, this siting does not meet Selection Standard 2, as it would not allow concurrent use of the training pit and the MOUT village. Therefore, this alternative is not the preferred alternative.

No-Action Alternative C03: Under this no action alternative, a purpose built combative arms training pit would not be constructed. The 820 BDG would continue to use a warehouse with floor matting to conduct this training. Training time would be lost due to the transit time between the main base and the other 820 BDG training venues located on the other side of the flightline. This is not supportive of the proposed action's purpose and need for installation development. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C04: Construct Engine Test Support Facility

This proposed action is to provide a modern 1,800-square-foot administrative support facility for the administrative and support functions for the engine test cell function located in buildings 4127 and 4128. The existing building 4130 (1,056 square feet) would be demolished as part of this proposed action.

Selection Standard Applicability:

The facility must be within walking distance to the engine test cell that it supports to meet mission requirements (Selection Standard 1).

The site cannot interfere with existing roadways or parking areas (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Expanding and/or modifying the existing facility was considered; however, based on the age (greater than 20 years old) and poor condition of the existing prefabricated facility the existing structure could not be expanded or modified to meet Air Force Manual 32-1084 facility requirement standards. Therefore, this alternative was not carried forward for evaluation because it does not meet the project purpose or need.

Alternatives Considered for this Proposed Action:

Alternative C04-1 (Preferred Alternative): This alternative would construct a new facility at the location of the existing one (Figure 2-3). Existing utility connections, sidewalks, and parking areas would be used. This alternative meets Selection Standards 1 and 2 and is the preferred alternative for this proposed action based on proximity to the engine test cells.

Alternative C04-2: This alternative would construct the replacement facility northwest of the test cells in vacant area (Figure 2-3). This alternative requires 350 feet of new utility lines to connect to the facility in the new location. Existing parking areas would be used but access would require 80 square feet of additional sidewalk for building access. This alternative meets Selection Standards 1 and 2 but is farther away from the engine test cells.

Alternative C04-3: This alternative would construct the replacement facility in a currently vacant area south of the nearby fuel pod storage facility, building 724 (Figure 2-3). This alternative requires 150 feet of new utility lines to connect to the facility in the new location. Existing parking areas would be used but access would require 160 square feet of additional sidewalk for building access. This alternative meets Selection Standards 1 and 2, but is also further from existing parking and the work center it would support.

No-Action Alternative C04: Under this no action alternative, a modern administrative support facility that meets Air Force Manual 32-1084 facility requirement standards for the authorized and assigned engine test cell personnel and functions would not be constructed. Personnel would continue to operate from an inadequately sized facility that would require increased maintenance costs over time. This is not supportive of the purpose of and need for installation development, as discussed in Section 1.2, Purpose of Installation Development, and Section 1.3, Need for Installation Development, nor the purpose of and need for the action. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C05: Construct Covered Mobility Equipment Storage Addition, Building 657

This proposed action is to construct a covered storage area for the 723d Aircraft Maintenance Squadron's 41st Helicopter Maintenance Unit mobility equipment.

Selection Standard Applicability:

The covered storage must be in close proximity to the existing work center to support continuous flightline operations of aircraft supported (Selection Standard 1).

The covered storage must be of permanent construction (Selection Standard 2).

The site should minimize use of open land available for other potential future development (Selection Standard 3).

Alternatives Considered but Eliminated from Further Analysis: Temporary covers, such as fabric sunshades, were considered and eliminated from further analysis because temporary covers would not meet the purpose of providing a permanent solution that would eliminate periodic replacement of fabric at an approximate cost of $29,000 ($5.97 per square foot). An enclosed expansion of the facility vice a covered area was also considered and eliminated from further analysis as it would exceed the requirement, with significantly higher construction cost of $539,000 ($110 per square foot) versus $294,000 ($60 per square foot) for a steel frame, covered expansion.

Alternatives Considered for this Proposed Action:

Alternative C05-1 (Preferred Alternative): Under this alternative, a 70-by-70-foot covered storage area would be added to the south end of building 657 and tie into the existing roof to provide suitable height for storage of mobility equipment and other containerized equipment (Figure 2-2). The existing concrete would serve as the foundation, and a steel structure with standing seam metal roof, matching the existing building, would be constructed. The cover would include lighting to provide for night operations. This alternative meets all Selection Standards and is therefore the preferred alternative for this proposed action.

Alternative C05-2: Under this alternative, a 70-by-70-foot, standalone covered storage facility and approximately 50 feet by 40 feet of concrete paving would be constructed northwest of facility 657 (Figure 2-2). The facility would be constructed of an open steel structure with standing seam metal roof, and include lighting for night operations. This alternative meets Selection Standards 1 and 2; however, it does not meet Selection Standard 3 and is therefore not the preferred alternative.

No-Action Alternative C05: Under this no action alternative, a permanent covered storage area would not be constructed, and service life of 41st Helicopter Maintenance Unit mobility equipment would continue to be reduced. This is not supportive of the purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C06: Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201, and 203

This proposed action is to construct a centralized tobacco use area protected from the elements for billeting patrons in Transient Lodging Facility (TLF) and Visitors' Quarters (VQ) facilities 200, 201, and 203. The project would involve construction of an 8-by-10-foot shelter, consisting of a concrete foundation, steel structure, and standing seam metal roof.

Selection Standard Applicability:

The facility must be no closer than 50 feet from facility entry/egress points and no closer than 100 feet of playgrounds to meet AFI 40-102 requirements for use of tobacco products on Air Force installations (Selection Standard 1).

The facility's location should not detract from the overall appearance of the TLF/VQ or be a prominent feature from other vantage points of the installation (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: All practicable alternatives for siting the smoking area were considered based on siting requirements. Centralized locations convenient to buildings 200, 201, and 203 are limited and not substantively different from each other; therefore, one representative alternative was identified.

Alternatives Considered for this Proposed Action:

Alternative C06-1: This alternative would construct the area to the north of facility 200 (Figure 2-2). Work would include 65 linear feet of sidewalks to the TLF/VQ facilities, screening landscape as needed, and lighting for night use. The siting is close enough to support patron access while obscuring direct view of the main facility entrance. This alternative meets Selection Standards 1 and 2.

No-Action Alternative C01: Under this no action alternative, a designated tobacco area shelter would not be constructed and billeting patrons would not have an area suitable for tobacco use during inclement weather. This is not supportive of the purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C08: Construct Paintball Facility

This proposed action is to construct a new recreational paintball facility. Construction would incorporate a small 600-square-foot support facility and 3,150-square-foot (15-space) employee/patron parking lot, with 240 square feet of sidewalk. The site would replicate the existing paintball facility site in total size (approximately 52,900 square feet), subdivided into smaller areas for concurrent play. The site would also include appropriate netting and fencing to provide site security and stop paintball pellets from impacting outside the site boundary. The support facility would connect to utilities existing in the area and include administrative space for maintenance and issuance of equipment with restrooms for employees and patrons. The paintball guns would utilize compressed air as a propellant.

Selection Standard Applicability:

Site must be free of environmental constraints (e.g., wetlands) and comply with land use districts and restraints as designated in the IDP (Selection Standard 1).

The site should be visible and accessible to the public without entering through the installation's entrance gates (Selection Standard 1).

Alternatives Considered but Eliminated from Further Analysis: Further development of the current paintball site to provide a permanent support facility and patron parking lot was not carried forward for further evaluation as it does not meet Selection Standard 1, and does not meet the purpose and need to allow for public access.

Alternatives Considered for this Proposed Action:

Alternative C08-1 (Preferred Alternative): Under this alternative, the paintball facility would be constructed between Georgia State Highway 125 (Bemiss Road) and the installation's Waste Water Treatment Plant (WWTP) (Figure 2-2) north of the access road to the WWTP, while the support facility and parking area would be located on the south side of the WWTP access road. This alternative meets Selection Standard 1 and is on vacant land adjacent to an area designated as outdoor recreation per the IDP and would provide good visibility and access for the public from Bemiss Road without requiring entry through the installation's entrance gates.

Alternative C08-2: This alternative is similar to Alternative C08-1 with exception of the location of the support facility and patron parking (Figure 2-2). This alternative would construct the paintball area, support facility, and patron parking on the north side of the access road to the WWTP. This alternative meets Selection Standard 1 as it is on vacant land adjacent to an area designated as outdoor recreation per the IDP and is readily visible and accessible to the public from Bemiss Road without requiring entry through the installation's entrance gates. However, the site is less optimal than Alternative C08-1 as it places activities closer to off-base residences to the north. Therefore, this is not the preferred alternative.

No-Action Alternative C08: Under this no action alternative, the installation's existing paintball facility would not be relocated and would continue operating in a non-compatible land use area. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project C09: Construct 23 CES Field Training Exercise (FTX) Site

This proposed action is to construct a new 23d Civil Engineer Squadron FTX site away from the base boundary. This proposed action consists of a 4-acre clearing to support equipment, personnel tents, and an 800-square-foot bathroom/shower facility. The training site would have 16 concrete pads, varying in size from 120 square feet to 1,000 square feet, totaling 13,374 square feet, to support the deployment of tents and equipment. This proposed action would also include vehicle access and utility connections of electric, phone, water and sewer. The total new impervious surface for the training site would total 14,174 square feet. The new FTX site would be used by the battlefield Airmen of the 23d Civil Engineer Squadron to conduct bivouac and other training exercises. The new FTX site would also be available for use by other user groups (military and civilian).

Selection Standard Applicability:

The site must be separated from the cantonment area to better simulate austere field environments (Selection Standard 1).

The site must be outside the range boundary and weapons fans to allow simultaneous use of the range and the FTX site (Selection Standard 1).

Use of the site must not interfere with flying operations to maximize utility of the training area by allowing for simultaneous training at the FTX site during night flying operations (Selection Standard 2).

The new site must accommodate reuse of the existing FTX location for parking and staging (Selection Standard 3).

***Alternatives Considered but not Carried Forward for Detailed Analysis*:** An alternative was considered to construct the FTX site farther south, between the 820 BDG area (buildings 1505/1506/1530) and the control tower/radar approach/control area (buildings 1300/1301) (Figure 2-4). However, this location does not meet Selection Standard 3 because it does not allow the reuse of the existing FTX site for parking and staging, and would require an additional 14,000-square-foot area for vehicle parking. As a result, this site was not carried forward nor was any other location in this vicinity. Additionally, due to land use constraints associated with Environmental Restoration Program (ERP) sites, wetlands, and sensitive species, locations available on the east side of the airfield in close proximity to the existing FTX site are limited; therefore all practicable locations were considered for the new FTX site.

Alternatives Considered for this Proposed Action:

Alternative C09-1 (Preferred Alternative): This alternative would construct the FTX site approximately 1,200 feet south/southwest from the existing site (Figure 2-4), which is farther away (approximately 860 feet) than the existing site from the northern-most installation boundary. In addition to the project requirements, this location would include 15,600 square feet of vehicle access pavement and 650 linear feet of utility corridor. The concrete pads on the existing site would be removed and the area retained for use as parking/staging area. This site would put the activity farther from the installation perimeter than the current location, and it is compatible with established land use controls. This site meets all selection standards and is therefore the preferred alternative for this proposed action.

Alternative C09-2: This alternative would construct the FTX site approximately 1,500 feet south/southeast from the existing site (Figure 2-4), which is farther away (approximately 1,160 feet) than the existing site from the northern-most installation boundary. Construction components would be the same as described under Alternative C09-1. This alternative would place the FTX site farther away from the parking area and is therefore not the preferred alternative.

No-Action Alternative C09: Under this no action alternative, the proposed action would not be implemented. Required training would continue to be executed in the current location on the base boundary and will continue to disturb off base residents to the immediate north. This is not supportive of the purpose of and need for installation development, as discussed in Section 1.2, Purpose of Installation Development, and Section 1.3, Need for Installation Development, nor the purpose of and need for the action identified in Section 1.4, Purpose of and Need for Individual Proposed Actions. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

2.3.2 Infrastructure Construction Projects

Project N01: Addition/Repair Natural Gas Line, East of Airfield

This proposed action is to extend an existing natural gas line around the northern end of the flightline to areas east and south of the airfield in order to serve current and future development for the base. Existing facilities requiring service to convert from electric to natural gas heating and hot water systems include buildings in the 820 BDG compound the Control Tower, the Radar Approach Control facility, the Fire Training Pit, Munitions Storage Area administration and control offices, Explosive Ordnance Disposal administration and storage facilities, and the CATM facilities. Existing utility corridors would be used with lines buried in accordance with the International Fuel and Gas Code. No new boilers would be installed, and existing boilers that are currently only propane would be converted to natural gas, with no anticipated increase in use. Any generators already in place would continue to run on diesel from tanks in place.

Selection Standard Applicability:

The system should be compatible with the installation's existing natural gas distribution network (4-inch diameter, polyethylene pipe) (Selection Standard 1).

The system should minimize risk of service disruption during severe weather conditions (Selection Standard 3).

Alternatives Considered but Eliminated from Further Analysis: There were no additional alternatives for extending the installation's existing utilities infrastructure to convert heating and hot water systems from total electric to natural gas on the east side and south end of the airfield; therefore, there were no additional alternatives considered but eliminated.

Alternatives Considered for this Proposed Action:

Alternative N01-1(Preferred Alternative): This alternative would construct additional natural gas line around the north end of the airfield to serve existing facilities on the east side and south end of the airfield (Figure 2-3 through Figure 2-5). Work would require expansion of the existing natural gas line from the intersection of Sijan Street and North Perimeter Road near building 658 around the north end of the airfield to the 820 BDG compound as part of segment 1 on the map. Segment 2 would serve the area south of the 820 BDG to include facilities from the control tower to the munitions storage area, and segment 3 will finish the loop around the south end of the airfield as well as provide a spur to the CATM and Explosive Ordnance Disposal facilities. Segment 2 would run through some wetland areas along the east side of Perimeter Road within the roadside right-of-way. Segment 3 would run from a tie-in alongside Flying Tiger Road in the A-10 maintenance area near building 774, to the junction of Burma and Range Roads. The line would then run along the north side of Burma Road in the same easement as the forced-main waste water line. This would avoid disturbance of wetlands on the south side of Burma Road. The eastern spur of segment 3 would run along the south side of the roadway to avoid any disturbance to the archaeological site.

This alternative would meet the need of utilizing the installation's existing utilities infrastructure to convert heating and hot water systems in current facilities located east and south of the flightline from total electric to natural gas and would meet Selection Standard 1, because the line would be compatible with the installation's existing natural gas distribution network. This alternative would also meet Selection Standard 3 because the product is delivered via underground distribution lines that are much less susceptible to weather damage, and the installation has a back-up Propane/Air Mix Plant Reserve that replicates burn characteristics of natural gas. The Propane/Air Mix Plant Reserve is connected to the installation's natural gas distribution network and is capable of sustaining uninterrupted service for up to two weeks during regional product curtailments from the natural gas vendor.

No-Action Alternative N01: Under this no action alternative, the natural gas line would not be extended around the north end of the airfield to the east side and south end of the airfield, and buildings in these areas would remain on existing, less efficient total electric heating and hot water equipment. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N04: Construct Parking for the Control Tower and Radar Approach Control Facilities

This proposed action is to construct a 7,500-square-foot (25-space) parking lot for the Control Tower and Radar Approach facilities. Construction would include related infrastructure, including area lighting connected to existing utilities, and pavement marking. The location of the parking lot is alternative dependent.

Selection Standard Applicability:

Parking should meet *Architectural Compatibility Standards – Moody AFB* site design requirements (Selection Standard 1).

Parking should be no closer to the nearest facility than the Anti-Terrorism/Force Protection (AT/FP) 25-meter (82-foot) minimum standoff distance requirement (Selection Standard 1).

The parking area should be near existing paved right-of-way for access (Selection Standard 1).

Alternatives Considered but Not Carried Forward for Detailed Analysis: Wetland constraints to the east preclude development because there are other practicable alternatives to developing parking in wetlands.

Alternatives Considered for this Proposed Action:

Alternative N04-1(Preferred Alternative): This alternative would construct the parking lot to the north of the facility's existing parking lot, beyond an existing gazebo and existing exercise equipment (Figure 2-4). During periods of heightened force protection conditions, existing parking spaces that violate AT/FP minimum standoff distance criteria would be blocked. This alternative meets all aspects of Selection Standard 1 and is the preferred alternative for this proposed action because it is closest to the facility entrance.

Alternative N04-2: This alternative locates the new parking lot west of the airfield control tower, facility 1300 (Figure 2-4). This alternative meets the AT/FP requirements of Selection Standard 1, but does not meet *Architectural Compatibility Standard* site design requirements under Selection Standard 1 because it would locate the new parking between the facility and its main viewing street. Therefore, this alternative is not the preferred alternative.

Alternative N04-3: This alternative locates the new parking lot south of the airfield control tower, facility 1300 (Figure 2-4). This alternative meets the AT/FP requirements of Selection Standard 1. However, this alternative would require more land disturbance (approximately 1,000 square feet of impervious surface for access and sidewalks, etc.) than other alternatives; therefore, this alternative is not the preferred alternative.

No-Action Alternative N04: Under this no action alternative, additional parking would not be constructed for the airfield control tower and the radar approach control in facilities 1300 and 1301, and assigned personnel would continue parking in non-paved areas during heightened force protection conditions. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N05: Construct Parking at Combat Arms Training and Maintenance Area (CATM)

This proposed action is to construct 30 additional parking spaces (9,000 square feet) for privately owned vehicles of personnel attending training at the CATM facility. Construction would include related infrastructure, including area lighting connected to existing utilities and pavement marking. The entire CATM complex is located in the 100-year floodplain.

Selection Standard Applicability:

Parking should meet *Architectural Compatibility Standards – Moody AFB* site design requirements (Selection Standard 1).

Parking should be no closer to the nearest facility than the AT/FP 25-meter (82-feet) minimum standoff distance requirement (Selection Standard 1).

The parking area should be near existing paved right-of-way for access (Selection Standard 1).

Alternatives Considered but not Carried Forward for Detailed Analysis**:** Due to floodplain constraints and proximity requirements for parking, there are no practicable alternatives for constructing parking outside floodplains. Due to AT/FP requirements during heightened conditions, the only location that meets all selection standards is within the compound, but across the access road. Alternatives associated with permeable/non-permeable construction materials were considered.

Alternatives Considered for this Proposed Action:

Alternative N05-1 (Preferred Alternative): This alternative would construct additional parking using standard, non-permeable asphalt (Figure 2-5).

Alternative N05-2: Under this alternative the parking lot would be constructed of permeable asphalt (Figure 2-5). The top layer soil in this area is sandy and is also susceptible to surface water runoff and erosion during heavy rain events. The porous capacity and durability of permeable asphalt degrades when sand is introduced to the surface, thus requiring more frequent maintenance. While this alternative meets all selection standards, it is not preferred due to increased maintenance requirements.

No-Action Alternative N05: Under this no action alternative, additional parking would not be constructed for the CATM facilities, and assigned personnel and personnel conducting training would continue parking in a non-paved area during heightened force protection conditions. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N07: Widen Stone Road

This proposed action is to expand Stone Road into a boulevard-style gateway from the installation's main entrance to the main cantonment area and relocate a portion of the existing jogging trail.

Selection Standard Applicability:

The route should minimize travel distance from the installation's main entrance to the installation's main cantonment area (Selection Standard 1).

The route should minimize start/stop intersection turns between the installation's main entrance and main cantonment area to reduce complicated travel directions for visitors (Selection Standard 2).

Alternatives Considered but not Carried Forward for Detailed Analysis: Due to the existing layout of the installation's main gate and cantonment area, Stone Road is the only practicable route for accomplishing the proposed action's purpose and need. Stone Road is the existing roadway connected to the installation's new main entrance gate and is the shortest route to the installation's main cantonment area. Utilization of Stone Road presents two alternatives for widening the roadway to create a boulevard-style gateway from the installation's main entrance to the main cantonment area. Stone Road is bound on both sides by wetlands; therefore, there are no practicable alternatives that meet the purpose and need and do not disturb wetlands.

Alternatives Considered for this Proposed Action:

Alternative N07-1 (Preferred Alternative): Under this alternative, 0.37 mile of Stone Road would be widened by 15 feet (29,304 square feet) to the east, with approximately 4,100-linear-feet-long, 4-foot-wide (16,400 square feet) area consisting of shoulder, curb and gutter, landscaped medians, and turn lanes as needed (Figure 2-3). Design would utilize approximately 2,000 linear feet of existing 4-foot-wide concrete sidewalk on the west side of the roadway and add approximately 2,000 linear feet of a 5-foot-wide asphalt jogging trail surface on the east side of the roadway. The design would take into account location of existing support structures, such as street lighting and adjacent pathways, to minimize construction impact or need to relocate those existing utilities and structures. This alternative meets Selection Standard 1, although it would disturb approximately 232 square feet (0.005 acre) of wetlands. Depending upon final design, the active vehicle barriers along Stone Road may also require replacement.

Alternative N07-2: This alternative is similar to Alternative N07-1 with exception of the roadway being extended to the west versus the east (Figure 2-3). Design would relocate approximately 2,000 of linear feet of existing 4-foot-wide concrete sidewalk from the west side of the roadway to the east side, add approximately 2,000 linear feet of 5-foot-wide asphalt jogging trail surface on the east side of the roadway and would disturb a larger area of wetlands. This alternative meets Selection Standard 1 but would disturb approximately 383 square feet (0.008 acre) of wetlands versus disturbing only approximately 232 square feet (0.005 acre) of wetlands under Alternative N07-1; therefore, this alternative is not the preferred alternative.

No-Action Alternative N07: Under this no action alternative, Stone Road would not be expanded into a boulevard-style gateway from the installation's main entrance to the main cantonment area. This is not supportive of the purpose and need for the proposed action. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N13: Widen and Pave Eisemann Road to Grand Bay Range

This proposed action is to widen and pave 7,500 linear feet of the installation's Eisemann Road.

Selection Standard Applicability:

Alternatives must provide safe, all-weather access to and from Grand Bay Range (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Widening of Eisemann Road without paving was considered; however, this still would not provide reliable all-weather access, and, therefore, does not meet the purpose and need of this proposed action and was not carried forward for further consideration. Due to the existing layout of Grand Bay Range in relation to the Moody AFB main cantonment area, Eisemann Road is the only practicable route for accomplishing the proposed action's purpose and need. Eisemann Road is the only existing semi-improved roadway that directly connects the main installation to the Grand Bay Range control complex.

Alternatives Considered for this Proposed Action:

Alternative N13-1(Preferred Alternative): This alternative is to widen 7,500 linear feet of Eisemann Road (Figure 2-4) by 13 feet (to 24 feet for 97,500 square feet of additional road surface), add an 8-foot shoulder (60,000 square feet) and pave the surface, for a total of 157,500 square feet of ground disturbance. All road widening would occur along the south side of the road. Work would include site preparation, application and compaction of base materials, construction of associated structures such as storm water culverts, laying of asphalt pavement, and applying roadway markings.

No-Action Alternative N13: Under this no action alternative, the installation's Eisemann Road would not be widened and paved, and safe all-weather access to the Grand Bay Range would not be improved. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N16: Construct Waste-Water Infrastructure, Grassy Pond Recreational Area

This proposed action is to replace 20 individual septic tank systems at Grassy Pond Recreational Area with a single piping network and main lift station for connection to the Lowndes County wastewater collection system.

Selection Standard Applicability:

Alternatives must provide for upgraded, adequate sanitary sewer infrastructure (Selection Standard 1).

Alternatives must provide for increased capacity to accommodate increased recreational use at the area (Selection Standard 3).

***Alternatives Considered but Eliminated from Further Analysis*:** Repair and expansion of the existing individual septic tank systems was considered. However, Grassy Pond lies in the basin of hilly terrain, and existing soil conditions combined with the system's proximity to surface waters would continue to result in erosion during heavy rains with surfacing and migration into surrounding soils and waters of Grassy Pond. This alternative is not supportive of the purpose and need of the proposed action and does not meet either of the selection standards; therefore, it was not carried forward for analysis. As the purpose and need is to provide for upgraded, adequate sanitary sewer infrastructure with increased capacity, there are no other practicable alternatives other than to replace the existing utility system at the Grassy Pond Recreational Area.

Alternatives Considered for this Proposed Action:

Alternative N16-1(Preferred Alternative): This alternative would trench proposed sanitary sewer line routing and install necessary sewer manholes, lift-stations, and various-size sewer piping to a main lift-station, with final connection to the Lowndes County WWTP collection system (Figure 2-6). Technical specifications for the number and size of lift stations, pipelines, and final trench routing would be determined during detailed design. The existing septic systems would be abandoned in accordance with Georgia Department of Natural Resources (DNR) *Wastewater Treatment Facility Abandonment Guidelines*, including removing septic tank tops, pumping and properly disposing of contents, breaking out tank bottoms to allow drainage, placing 3 or more inches of lime in bottom of tanks, placing 6 or more inches of No. 57 stone on top of lime to allow drainage, filling tanks with compacted soil to surrounding ground elevation, grassing disturbed areas, and stabilizing ground surfaces from erosion.

No-Action Alternative N16: Under this no action alternative, the 20 individual septic tank systems at the Grassy Pond Recreational Area would not be replaced with a single piping network and main lift station for connection to the Lowndes County wastewater collection system, and recurring environmental impacts to surrounding soils and waters would continue. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

Project N17: Construct Photovoltaic Panel Arrays

This proposed action is to construct a photovoltaic panel array.

Selection Standard Applicability:

The site must be free of environmental constraints (e.g., wetlands) and comply with land use districts and restraints as designated in the IDP (Selection Standard 1).

The site location should be within 1 mile of the installation's primary electrical distribution substation to reduce cost of connecting to the installation's power grid (Selection Standard 1).

The site location should consist of a minimum of 5 acres to allow for multiple, co-located panels to reduce infrastructure requirements and increase power transmission efficiencies (Selection Standard 3).

Alternatives Considered but Eliminated from Further Analysis**:** There are limited areas on the installation comprising a minimum of 5 acres of contiguous land that are not already designated for other future development; are not impeded for development by environmental constraints such as former landfills, wetlands, or floodplains; or does not potentially encroach on threatened or endangered species habitats. The multiple areas within the installation that comprise less than 5 acres in size cannot be used in aggregate to produce the minimum desired power due to connection logistics. Therefore, sites of less than 5 acres were removed from further consideration.

An alternative was considered that would construct a photovoltaic array to the west of Stone Road, west-southwest of the installation's primary electrical distribution substation. The site is approximately 7.75 acres in size and capable of producing approximately 1.5 megawatt (MW) of power. However, while this alternative partially meets Selection Standard 1 because it is located approximately 0.1 mile from the installation's primary electrical distribution substation, and Selection Standard 3 because the size is over 5 acres, it is not free of environmental constraints because it is bound by wetlands and would require wetland disturbance during development and for access infrastructure. Because there are practicable alternatives to disturbing wetlands this alternative was not carried forward.

Alternatives Considered for this Proposed Action:

Alternative N17-1 (Preferred Alternative): This alternative would construct a photovoltaic array of approximately 4.6-MW capacity on approximately 23 acres of land over a former obstacle course along the north side of Stone Road, east of the base archery range and south of area wetlands (Figure 2-3). This alternative meets Selection Standards 2 and 3 because it is located 0.53 mile from the installation's primary electrical distribution substation, and is more than 5 acres in size.

Alternative N17-2: This alternative is in the same location as Alternative N17-1, with exception of reducing the overall size to approximately 9 acres to avoid the former obstacle course and constructing a photovoltaic array of approximately 1.8-MW capacity (Figure 2-3). This alternative meets Selection Standards 1 and 3. However, this alternative does not provide as great of a megawatt benefit as Alternative N17-1, and, therefore, is not the preferred alternative.

Alternative N17-3: This alternative would construct a photovoltaic array to the west of Stone Road, southwest of the installation's primary electrical distribution substation (Figure 2-3). The site is approximately 5 acres in size and capable of producing approximately 1 MW of power. This alternative meets Selection Standards 1 and 3 because it is located 0.25 mile from the installation's primary electrical distribution substation, is not currently identified for future development, is free of environmental constraints, and is more than 5 acres in size. However, this alternative does not provide as great of a megawatt benefit as Alternative N17-1, and, therefore, is not the preferred alternative.

Alternative N17-4: This alternative would construct a photovoltaic array to the west of Stone Road, north of the power substation and northwest of the site identified in N17-3. The site is approximately 7.75 acres in size and capable of producing 1.5 to 2 MW of power, depending upon the array's orientation and construction. This alternative meets Selection Standards 1 and 3 because it is located 0.25 mile from the installation's primary electrical distribution substation, is not currently identified for future development, is free of environmental constraints, and is more than 5 acres in size. However, this alternative does not provide as great of a megawatt benefit as Alternative N17-1, and, therefore, is not the preferred alternative.

Alternative N17-5: This alternative would construct a photovoltaic array over a closed and capped landfill located east of Perimeter Road and south of the installation's recycling center (Figure 2-4). The site is approximately 5.75 acres in size and capable of producing approximately 1.15 MW of power. This alternative meets Selection Standard 3 as it meets the desired minimum size, is not currently identified for future development, and could be constructed on the former landfill. However, this alternative does not meet Selection Standard 2, as the location is approximately 2.0 miles from the installation's primary electrical substation. This alternative also does not provide as great of a megawatt benefit as Alternative N17-1. Therefore, this alternative is not the preferred alternative.

No-Action Alternative N17: Under this no action alternative, a photovoltaic panel array for the production of renewable electric power for Moody AFB would not be constructed, and utility costs would not be lowered from renewable electrical energy supplementing the installation's power grid. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

2.3.3 Renovation/Repair Projects

Project R02: Construct Addition and Interior Repairs to the Kennel Facility, Building 1708

This proposed action is to construct an addition and conduct interior repairs to the existing kennel facility.

Selection Standard Applicability:

Alternatives must maximize use of existing facilities and/or infrastructure (Selection Standard 1).

The upgraded facility must be in compliance with the *Design Guide for Military Working Dog Facilities* (Selection Standard 2).

Alternatives Considered but Eliminated from Further Analysis: Alternatives that entail relocating the entire kennel facility to a newly constructed facility were not carried forward because they do not meet

Selection Standard 1. No other existing facilities met the purpose and need of the proposed action. A standalone storage, break, and exercise area was considered but not carried forward because the design guide specifies that these amenities should be near the kennel facility and kept separate from the training area. Due to the constrained area, the only separate location would be across the street, which would not meet the purpose and need or Selection Standard 2 for the location of the exercise area and dog break area being located near the kennel.

Due to the proximity of other facilities, parking and the military working dog training area, as well as wetland constraints, alternatives for expanding the kennel facility were limited.

***Alternatives Considered for this Proposed Action*:**

Alternative R02-1 (Preferred Alternative): Under this alternative, an addition would be added to the existing kennel (building 1708) to the west to create 1,050 square feet of additional space for a break area for personnel and food preparation area for the military working dogs (Figure 2-3). Also, two fenced/secured outdoor areas consisting of a 10-by-20-foot dog break area and a 20-by-40-foot exercise area would be constructed immediately west of the new addition. This alternative allows for ready access from the facility and between the facility and nearby training area or parked vehicles and meets all selection standards. This alternative is preferred because the addition and dog break areas would be contiguous.

Alternative R02-2: Under this alternative, the 1,050-square-foot storage facility would be located on existing pavement to the south and the 10-by-20-foot dog break and 20-by-40-foot exercise area would be located to the west of the facility (Figure 2-3). This alternative allows for ready access from the facility, as well as between the facility and nearby training areas or parked vehicles, and meets all selection standards. This alternative is not preferred because the addition and dog break areas would not be contiguous.

No-Action Alternative R02: Under this no action alternative, the additional space for the military working dog facility would not be constructed. Items will continue to be stored outdoors, and the dogs will continue to be walked or moved to the training area for breaks and non-training exercise. The kennel facility will continue to not meet the guidelines in the *Design Guide for Military Working Dog Facilities*. This is not supportive of the purpose and need for installation development, as discussed in Section 1.2, Purpose of Installation Development, and Section 1.3, Need for Installation Development, nor the purpose of and need for the action identified in Section 1.4, Purpose of and Need for Individual Proposed Actions. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

2.3.4 Facility Demolition Projects

Project D01: Demolition of Building 757

This proposed action is to demolish building 757, a 10,388-square-foot facility constructed in 1962.

Selection Standard Applicability:

Final disposition of the facility must not interfere with military law enforcement operations within the confines of Moody AFB (Selection Standard 1).

Final disposition of the facility must alleviate expenditure of Air Force operations and maintenance funding for continued sustainment of the facility (Selection Standard 3).

***Alternatives Considered but not Carried Forward for Detailed Analysis*:** Renovating and leasing unneeded facilities on Moody AFB to non-DoD entities was considered but would not be feasible for force protection requirements because secured, active military installations cannot accommodate non-military functions. Therefore, this alternative was dismissed from consideration early in the scoping process because it does not meet Selection Standard 1. Mothballing or "pickling" unneeded and obsolete facilities was also considered, but would also be infeasible because, without maintaining operational climate control systems, facilities would rapidly deteriorate due to dry-rotting and mold/mildew formations in southern Georgia's hot and humid climate. This alternative does not meet Selection Standard 3 and was removed from consideration due to incurring costs of maintaining facilities no longer needed to support the mission. There are no other practicable alternatives that meet the purpose and need of the proposed action.

Alternatives Considered for this Proposed Action:

Alternative D01-1 (Preferred Alternative): Under this alternative, building 757 would be demolished and abated of hazardous materials, including asbestos building products and lead-based paint (LBP); salvageable materials would be recycled; and unsalvageable materials would be properly disposed of. Utility lines would be cut and capped, and the building site would be stabilized, leveled, and returned to open green space until needed for future development (Figure 2-3).

No-Action Alternative D01: Under this no action alternative, building 757 at Moody AFB would not be demolished, requiring continued expenditure of Air Force operations and maintenance funds to sustain the facility. This is not supportive of the proposed action's purpose and need. This no action alternative will be carried forward for further analysis, consistent with CEQ regulations, to provide a baseline against which the impacts of the action alternative can be assessed.

3.0 AFFECTED ENVIRONMENT

Introduction

Because of the geographic scope of the IDP and projects evaluated in the EA, the Affected Environment section focuses on describing the resources present on the installation from a holistic perspective rather than discrete affected environments for each project. In Chapter 4, Environmental Consequences, analysis will focus on the discrete environmental details associated with each project location and the respective impacts.

In accordance with 40 C.F.R. § 1501.7(3) (Scoping), this section identifies the potential interactions between projects and resource/issue areas to determine which resource areas and respective issues are to be carried forward for detailed analysis within this EA. Depending on the scope of the project and the respective location, some resources are either likely or unlikely to be impacted. As an example, construction projects within developed locations of the cantonment area would have minimal to no impact on biological resources because there would be no sensitive biological resources in these areas. Similarly, such projects are unlikely to have an impact on land use because there would be no administrative changes. However, all projects would involve air emissions to some degree; therefore air emissions calculations would be developed to address air quality impacts associated with all proposed projects.

Resources that may have project interactions resulting in potential adverse impacts are then described under subsequent Chapter 3 Affected Environment sections, and these resource areas are then carried forward for further, location-specific or general analyses detailed in Chapter 4, Environmental Consequences.

Resource areas and respective issues that are not significant or that have been covered by prior environmental review (§ 1506.3) are discussed briefly here, addressing why they would not significantly affect the human environment and/or where they have been covered under other environmental studies (if applicable). This is typically found in Chapter 2 under "issues eliminated from detailed analysis," but, for this EA, is included in this chapter, in the "Resource Areas/Issues not Carried Forward for Detailed Analysis" section that follows Table 3-1.

Utilizing this approach ensures that resources and impacts are discussed in proportion to their significance, with only brief discussion of issues deemed not significant (40 C.F.R. § 1502.2 [b] [Implementation]).

Table 3-1 identifies the potential for interaction between each project and the resource areas, using a graphic to represent the nature of an interaction. The + symbol represents a potential positive interaction; the - symbol is a potential adverse interaction; and 0 represents a neutral or no potential interaction.

Table 3-1: Identified Interactions Between Each Project and the Resource Areas

Project ID	Potential Resource Interaction											
	Airspace	Noise	HHS	Air Quality	Earth Resources	Water*	Bio	Cultural	Land Use	Socio/ EJ	Haz/ Solid Waste	Infra.
Facility Construction Projects												
C01	0	0	0	-	-	0	-	0	-/0	+	-	0
C02	0	0	+	-	-	0	0	0	0	+	-	0/+
C03	0	0	0	-	-	0	-	0	0	+	-	0
C04	0	0	0	-	-	0	0	0	0	+	-	0
C05	0	0	0	-	-	0	0	0	0	+	-	0
C06	0	0	0	-	-	0	0	0	0	+	-	0
C08	0	0	0	-	-	0	-	0	+	+	-	0

Table 3-1: Identified Interactions Between Each Project and the Resource Areas, Continued

Project ID	Potential Resource Interaction											
	Airspace	Noise	HHS	Air Quality	Earth Resources	Water*	Bio	Cultural	Land Use	Socio/ EJ	Haz/ Solid Waste	Infra.
C09	0	0	0	-	-	0	-	0	+	+	-	-/0
Infrastructure Construction Projects												
N01	0	0	0	-	-	-	-	0	0	+	-	+
N04	0	0	0	-	-	0	-	0	0	+	-	0
N05	0	0	0	-	-	-	0	0	0	+	-	0
N07	0	0	+	-	-	-	-	0	0	+	-	-/+
N13	0	0	+	-	-	-	-	0	0	+	-	-/+
N16	0	0	0	-	-	-/+	-	0	0	+	-	+
N17	0	0	0	-	-	-	-	0	-	+	-	+
Renovation Projects												
R02	0	0	0	-	-	0	0	0	0	+	-	0
Demolition Projects												
D01	0	0	0	-	-	0	0	0	+	+	-	+

+ = potential positive interaction; - = potential adverse interaction; 0 = no/neutral potential interaction
Bio = Biological Resources; EJ = Environmental Justice; Haz = Hazardous; HHS = Human Health and Safety; Infra. = Infrastructure; Socio = Socioeconomics
* This column refers to direct interactions specifically with wetlands, floodplains, and or surface water bodies. All projects have potential indirect stormwater interactions and are addressed accordingly.

Resource Areas/Issues not Carried Forward for Detailed Analysis

Airspace – There would be no interactions between airspace and the projects proposed under the IDP. None of the proposed projects involve changes to, or use of, airspace. Therefore, airspace is an issue that is not carried forward for detailed analysis in this EA. As part of the design process for the solar arrays, a glare analysis would be required to prevent/minimize solar glare issues associated with aircraft operations. Detailed plans are not available at this time, which would be required in order to conduct the analysis; as a result, this analysis would need to be conducted during the design phase and prior to construction/implementation.

Noise – Within the context of this EA, noise would result from construction and demolition activities, which would result in temporary localized increases in noise levels that could be disruptive and annoying. However, the installation and surrounding area is exposed to frequent loud aircraft operations noise as well as ground vehicle traffic noise under baseline conditions. Additionally, demolition and construction activities would typically be conducted during normal business hours. Noise generated from construction activities at Grassy Pond may also be disruptive or annoying to persons utilizing the recreation area; however, this annoyance would typically occur during normal business hours, not on weekends when most users are present, and construction noise would only be temporary while the project is underway. In this context, the temporary and localized noise generated by construction and demolition activities on the installation could be disruptive and annoying but would not be significant. As a result, this issue is not carried forward for more detailed analysis in this EA.

Human Health and Safety – Within the context of this EA, safety issues are associated with potential impacts affecting the safety of installation personnel and the public. Worker safety associated with construction/demolition activities is covered by Occupational Safety and Health Administration (OSHA) regulations and all applicable installation safety requirements; typical construction/demolition activities do not pose a safety issue to workers provided all applicable OSHA and Air Force safety requirements are implemented. Three of the projects may provide an increased safety benefit to the public and installation personnel – increased fire/crash response associated with Project C02, increased safety for joggers associated with Project N07, and increased safety to drivers on Eisemann Road during inclement weather conditions associated with Project N13. The “amount” of increased safety is relatively subjective and not quantifiable; however, these three projects would provide for an improved safety environment on the installation. No further analysis is warranted given the scope of remaining projects and lack of safety issues outside those normally associated with construction/demolition activities covered by OSHA and other safety requirements/regulations.

Socioeconomics – Construction activities and expenditures associated with the Proposed Action would create direct, indirect, and induced employment and earnings in the local area surrounding Moody AFB. However, these beneficial impacts would be insignificant considering the overall scope of the Proposed Action as compared to normal economic activity within the region. Therefore, this issue area was not carried forward for further impact analysis.

Environmental Justice – The scope of the Proposed Action is limited to Moody AFB and Grassy Pond Recreational Area. Based on other resource area analyses, the Proposed Action would not result in off-base impacts to low-income or minority populations and environmental justice. Therefore, this issue area was not carried forward for further impact analysis.

3.1 Air Quality

3.1.1 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 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 microns, ozone, and lead (see Table B-1. Summary of National Ambient Air Quality Standards in Appendix B, Air Quality).

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.

3.1.2 Existing Conditions

Moody AFB/Grassy Pond

Although Moody AFB and Grassy Pond Recreational Area are not immediately co-located, they both lie within the same Air Quality Control Region and both are in Lowndes and/or Lanier Counties. Moody AFB extends into both Lowndes and Lanier Counties, and Grassy Pond is entirely within Lowndes County. Therefore, Lowndes and Lanier Counties constitute the region of influence (ROI) for air quality. These areas were analyzed together, as regional air quality impacts would include both areas.

Climate

Moody AFB is located approximately 9 miles northeast of Valdosta, Georgia. The Valdosta climate is characterized by relatively high temperatures and evenly distributed precipitation throughout the year. The average temperature for the year in Valdosta is 67.0 degrees Fahrenheit °F (19.4 degrees Celsius [°C]). The warmest month, on average, is July with an average temperature of 81.3°F (27.4°C). The coolest month on average is January, with an average temperature of 50.4°F (10.2°C). The highest recorded temperature in Valdosta is 105.0°F (40.6°C), which was recorded in June. The lowest recorded temperature in Valdosta is 4.0°F (-15.6°C), which was recorded in January.

The average amount of precipitation for the year in Valdosta is 54.2 inches (137.67 centimeters). The month with the most precipitation on average is June, with 8.0 inches (20.32 centimeters) of precipitation. The month with the least precipitation on average is May, with an average of 2.7 inches (6.86 centimeters). In terms of liquid precipitation, there is an average of 104.0 days of rain, with the most rain occurring in July, with 13.0 days of rain, and the least rain occurring in October, with 5.0 days of rain. In Valdosta, there is an average of 0.1 inch of snow (0 centimeters). The month with the most snow is February, with 0.1 inch of snow (0.3 centimeter) (Weatherbase, 2017).

Air Quality

Moody AFB is located in Lowndes and Lanier Counties. According to USEPA, both counties are in attainment for all criteria pollutants (USEPA, 2016a), and a conformity determination is not required. The proposed IDP 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 2014 National Emissions Inventory (NEI). NEI data are the latest available; these are presented in Table 3-2. The county data include emission 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, 2016b).

Table 3-2: Current Criteria Pollutant Emissions Inventory for Lowndes and Lanier Counties, Georgia

County	Criteria Pollutants (tons/year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_x	VOCs
Lowndes	41,916	6,320	10,577	2,865	750	22,223
Lanier	7,022	458	2,629	742	19	10,296
ROI Total	**48,938**	**6,778**	**13,206**	**3,607**	**769**	**32,519**

Source: (USEPA, 2016c)
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_x = sulfur oxides; VOC = volatile organic compound

GHG Emissions

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 the Earth's temperature. Human influence on the climate system is clear, and recent anthropogenic emissions of GHGs are the highest in history. Recent climate changes have had widespread impacts on human and natural systems (IPCC, 2014).

Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in NEPA Reviews was issued August 1, 2016, by the CEQ. This guidance provides a framework for agencies to consider both the effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the effects of climate change on a proposed action in their NEPA reviews. The guidance recommends that agencies consider both the potential effects of a proposed action on climate change, as indicated by its estimated GHG emissions, and the implications of climate change for the environmental effects of a proposed action. The guidance also emphasizes that agency analyses should be commensurate with projected GHG emissions and climate impacts and should employ appropriate quantitative or qualitative analytical methods to ensure useful information is available to inform the public and the decision-making process in distinguishing between alternatives and mitigations.

The six primary GHGs, defined in Section 202(a) of the CAA, are carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Section 16(e) of EO 13693, released in March 2015, also includes nitrogen triflouride. 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 2014 NEI, are summarized in Table 3-3.

Table 3-3: 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	1,000,336	31	113	1,012,286
Lanier	53,125	2	10	53,922
ROI Total	1,053,460	32	123	1,066,207

Source: (USEPA, 2016c)
CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide

3.2 Earth Resources

3.2.1 Definition of the Resource

This section discusses the soil, underlying geology, and potential for geologic hazards and erosion located within the ROI of the Proposed Action. The term "soil" refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability of the ground to support man-made structures and facilities, provide a landscaped environment, and control the transport of eroded soils into nearby drainages. In undeveloped areas, the quality and productivity of soil are critical components of agricultural production.

The term "geologic hazard" refers to geologic conditions with the potential to cause damage to persons or property. The ROI for earth resources includes the boundary for proposed actions discussed in the IDP and, more specifically, the 17 projects discussed in Chapter 2, Description of the Proposed Action and Alternatives.

3.2.2 Existing Conditions

Moody AFB

The geology of Lowndes and Lanier Counties consists of the Hawthorn Formation that overlies the Tampa Formation. The Hawthorn Formation averages 150 feet in thickness and is phosphatic in composition (Stevens, 1973; Stevens, 1979; USGS, 2014). The underlying Tampa Formation is composed of limestone that can be seen in outcrops along the Withlacoochee River (Stevens, 1979; USGS, 2014). Additionally, Lowndes and Lanier Counties are within a karst region, having abundant sinkholes and sinkhole lakes that have formed where the aquifer crops out and the overlying confining unit has been removed by erosion (Krause, 1979; Leeth, Clarke, Craig, & Wipperfurth, 2001). These are a result of groundwater dissolving the high calcium carbonate content of the underlying limestone formations.

A portion of the IDP area (including projects D01, N01, N04, N05, N13, N17-1, N17-5, C02-C05, and C09) are in an area considered hazardous for aquifer vulnerability and sinkhole formation because of the moderately shallow depth to groundwater and moderately high recharge movement and low containment rate (Krause, 1979; Leeth, Clarke, Craig, & Wipperfurth, 2001) (Figure 3-1). The western side of the base (including projects N07, N17-2, N17-3, N17-4, C01, C06, and C08) is within an area considered average risk for aquifer vulnerability and sinkhole formation. Several projects (N01, N04, N05, N13, N16, N17-5, C03, and C09) are also located within a groundwater recharge area. These groundwater recharge areas are locations where the surface water may directly infiltrate underground aquifers. Such locations are inherently sensitive to stormwater or agricultural runoff that may contain pollutants that, if introduced, could affect the regional water supply. In developed areas such as Moody AFB, stormwater systems assist in preventing runoff from directly entering underground aquifers.

The Moody AFB project areas are located within the Tifton Upland District of the Lower Coastal Plain physiographic province (Clark & Zisa, 1976). The soils on uplands in this region were formed in deep sedimentary sands and clays. Alluvial soils near streams and tributaries generally originated from material eroded from the uplands (Stevens, 1973; Stevens, 1979). Twelve soil series are located within the various IDP project areas on Moody AFB (Table 3-4 and Figure 3-2): Clarendon loamy sand, Johnston-Osier-Bibb association, Mascotte sand, Istokpoga complex, Olustee sand, Alapaha loamy sand, Dasher muck, Leefield loamy sand, Pelham loamy sand, Stilson loamy sand, Tifton-Urban land complex, and Tifton loamy sand. Among these soil types; Tifton Loamy 0-2 percent slopes (TqA), Tifton Loamy 2-5 percent slopes (TqB) and Clarendon Loamy (Cn) are considered prime farmland. Additional farmland of state importance includes; Fuquay loamy soil (FsB), Leefield loamy soil (LsA), Mascotte (Mn), Olustee sand (Oa), Stilson loamy sand 0-4 percent slopes (SeB), Stilson loamy sand (Se), Leefield loamy sand (Le). However, none of these areas are utilized for agricultural purposes, and most of these soils are within developed portions of the installation.

Figure 3-1: Groundwater Recharge and Karst Areas Within the Moody AFB IDP Project Areas Including Grassy Pond

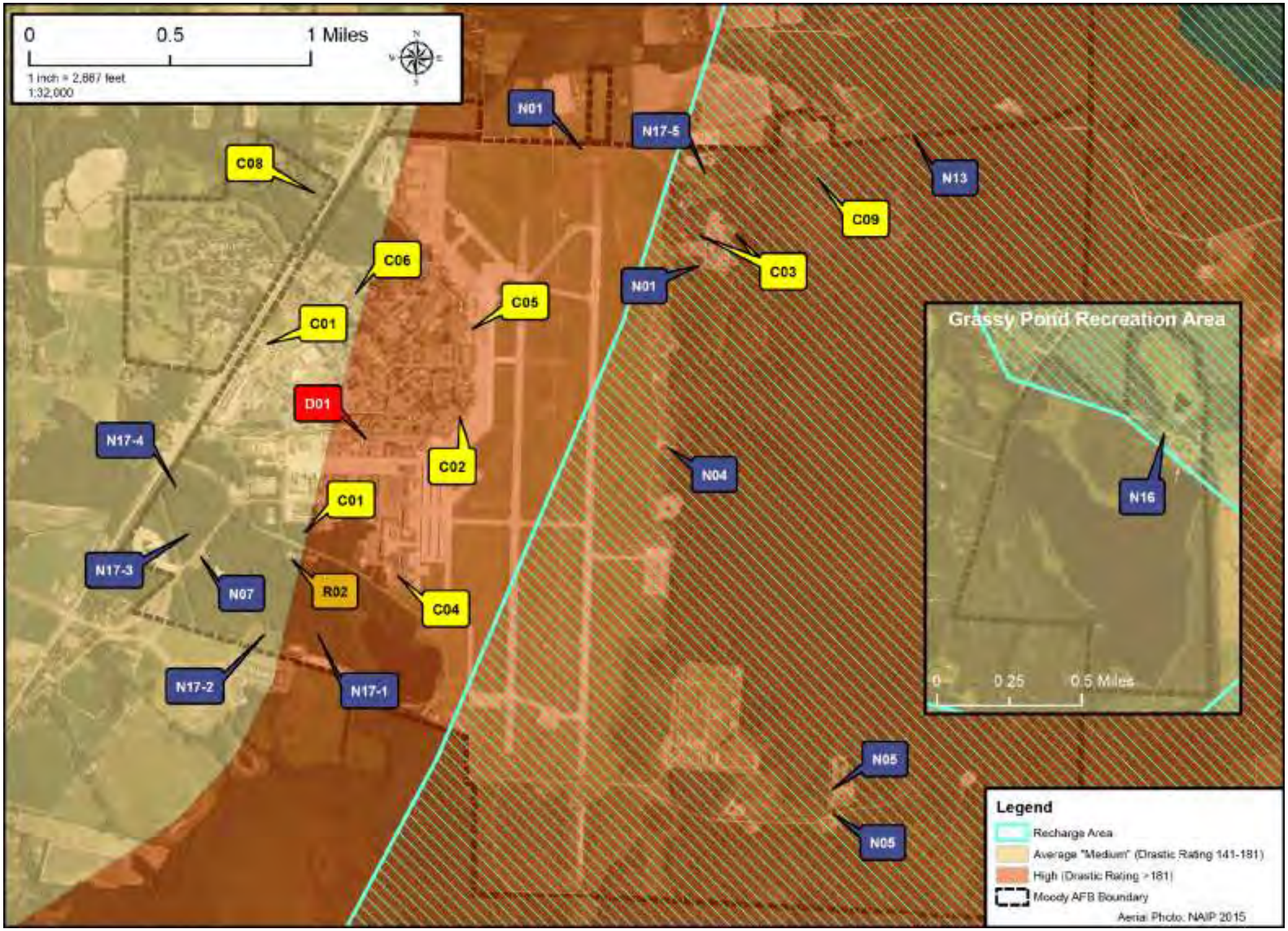
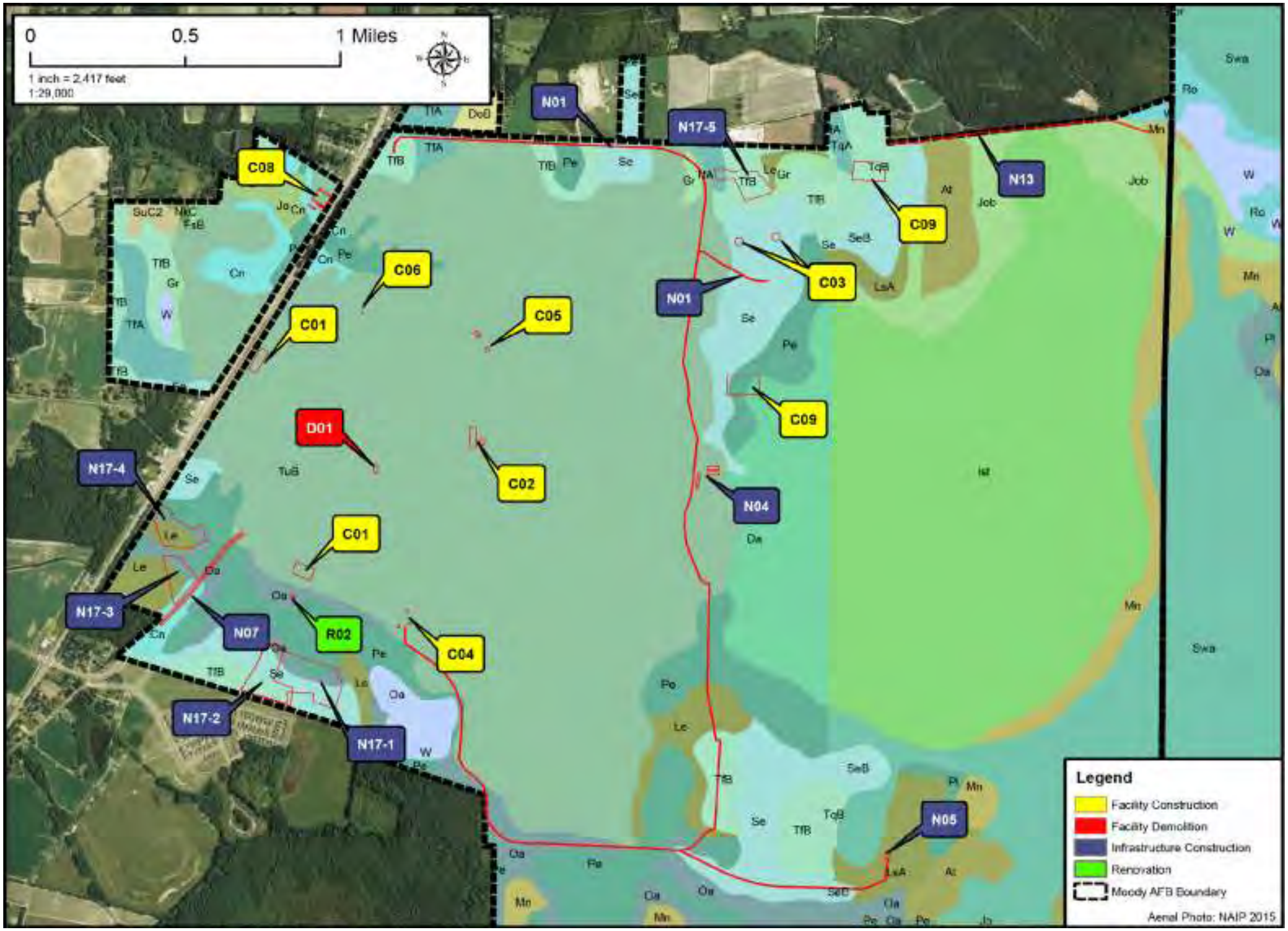


Table 3-4: Soil Types Within the Moody AFB IDP Project Areas

Project	Soil Name	Square Feet
C01	Tifton-Urban land complex	126,679
C02	Tifton-Urban land complex	47,593
C03	Stilson loamy sand	33,181
C04	Tifton-Urban land complex	5,229
C05	Tifton-Urban land complex	12,175
C06	Tifton-Urban land complex	1,264
C08-1	Clarendon loamy sand	7,488
	Tifton-Urban land complex	51,034
C08-2	Clarendon loamy sand	876
	Tifton-Urban land complex	57,646
C09	Tifton-Urban land complex	175,686
	Stilson loamy sand	13,884
	Pehlam loamy sand	110,787
	Dasher muck	51,015
D01	Tifton-Urban land complex	10,068
N04	Tifton-Urban land complex	21,011
N05	Leefield loamy sand	12,278
N07	Tifton-Urban land complex	12,495
	Pehlam loamy sand	27,901
	Olustee sand	25,077
	Clarendon loamy sand	60,861
N13	Alapaha loamy sand	6,646
	Johnston-Osier-Bibb association	65,608
	Mascotte sand	1,988
	Istokpoga complex	12,611
	Tifton loamy sand	4,065
	Stilson loamy sand	5,762
N17-1	Olustee sand	231,124
	Pehlam loamy sand	118,462
	Stilson loamy sand	520,485
	Tifton loamy sand	207,227
N17-2	Olustee sand	37,449
	Stilson loamy sand	209,469
	Tifton loamy sand	223,068
N17-3	Clarendon loamy sand	46,383
	Leefield loamy sand	120,904
	Olustee sand	92,455
N17-4	Leefield loamy sand	120,904
	Olustee sand	92,455
	Clarendon loamy sand	46,383
N17-5	Tifton loamy sand	270,986
	Leefield loamy sand	142
R02-1	Olustee sand	2,203
R02-2	Olustee sand	2,203

(Stevens, 1973; Stevens, 1979)

Figure 3-2: Soil Types Within the Moody AFB IDP Project Areas



Grassy Pond

The Grassy Pond project area (N16) is also located in the Lower Coastal Plain. The soils on uplands in this region were formed in deep sedimentary sands and clays. Alluvial soils near streams and tributaries generally originated from material eroded from the uplands (Stevens, 1973; Stevens, 1979). Two soil series, Lowndes loamy sand (5 to 12 percent slopes) and Valdosta loamy sand (0 to 5 percent slopes), are located at the N16 project area (Figure 3-3). Lowndes loamy sand is well drained, with moderate permeability and low water capacity. As is the case with this location, Lowndes loamy sand is often interspersed with Valdosta loamy sand, which shares similar characteristics. Both soils have a slight erosion hazard, with Lowndes loamy sand only moderately suited for septic field percolation and drainage. IDP area N16 is within an area considered average risk for aquifer vulnerability and sinkhole formation. Project area N16 is also located within a groundwater recharge area. This groundwater recharge area is a location where the surface water may directly infiltrate underground aquifers.

3.3 Water Resources

3.3.1 Definition of the Resource

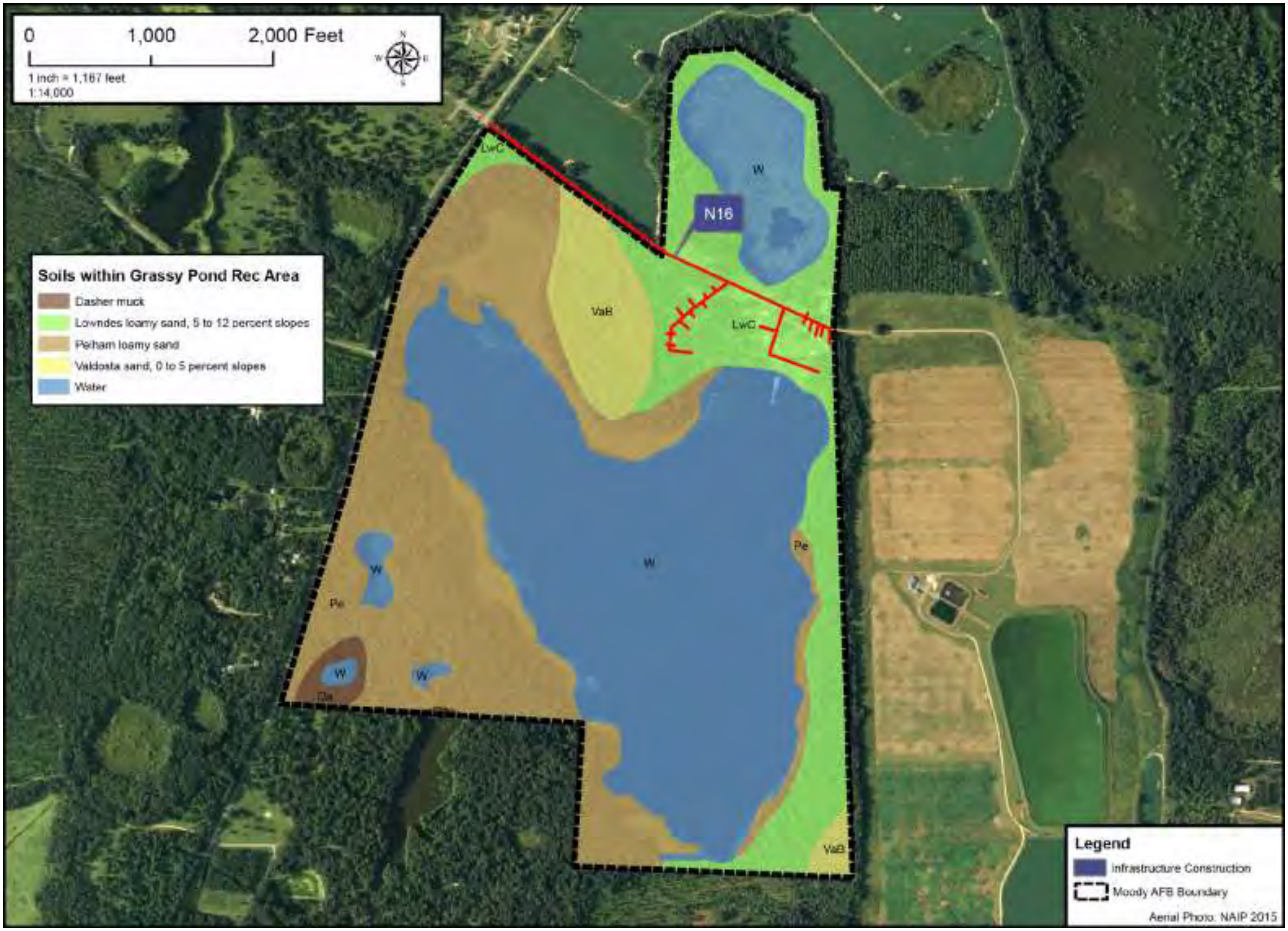
Water resources include surface water, wetlands, floodplains, and groundwater. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health factors. Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water (Mitsch & Gosselink, 2000). Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, rivers, oceans), where flooding events periodically cover areas with water. Floodplains provide value by serving as natural flood and erosion control, maintaining surface water quality by filtering nutrients and impurities, increasing biological productivity, and providing societal benefits such as open space for recreational opportunities and enhanced agricultural lands. Groundwater resources include all water reserves contained in soil and geologic deposits below the ground surface. These resources are important for a variety of reasons, including drinking water, irrigation, power generation, recreation, food control, and human health.

The CWA was established to ensure the “restoration and maintenance of the chemical, physical, and biological integrity of the Nation’s waters” (Section 402). Under the act, it is illegal to discharge pollutants from a “point source” into any surface water without a National Pollutant Discharge Elimination System (NPDES) permit. Furthermore, any applicant for a federal license or permit to conduct activities that may result in the discharge of a pollutant into Waters of the United States must also obtain certification from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate.

Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with the CWA. The USEPA sets standards for the quality of wastewater discharges. For projects at Moody AFB, the state of Georgia implements and enforces the provisions of the CWA, while the USEPA retains oversight responsibilities.

The Energy Independence and Security Act of 2007 Section 438 (42 USC §17094) and UFC 3-210-10, Low-Impact Development (LID) (as amended, 2016) include requirements for the management of stormwater on federal facilities. Any development project involving a federal facility with a footprint that exceeds 5,000 square feet is required to use site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of flow.

Figure 3-3: Soil Types Within the Grassy Pond IDP Project Areas



Water resources in Georgia are afforded protection under Georgia DNR Environmental Protection Division. These programs are administered in accordance with the state's stormwater management program and the state's erosion and sedimentation control program (Georgia DNR, 2016; Georgia Soil and Water Commission, 2016) under the auspices of the Environmental Protection Division's Watershed Protection Branch. Potential impacts to surface waters may result if a proposed action triggers permitting requirements under a Section 401 Certification Program (40 C.F.R. § 230.10(b)). The Environmental Protection Division requires a minimum 25-foot buffer on all state waters (intermittent or perennial streams) regardless of whether or not CWA Sections 404 or 401 are applicable.

Wetlands generally include marshes, bogs, and similar areas (40 C.F.R. § 230.3(t)). Wetlands provide a variety of functions, including groundwater recharge and discharge, flood flow attenuation, sediment stabilization, sediment and toxicant retention, nutrient removal and transformation, aquatic and terrestrial diversity and abundance, and uniqueness. Three criteria are necessary to define wetlands: vegetation (hydrophytes), soils (hydric), and hydrology (frequency of flooding or soil saturation). Section 404 of the CWA established a program to regulate the discharge of dredged and fill material into Waters of the United States, including wetlands. The USACE, the lead agency in protecting wetland resources, maintains jurisdiction over federal wetlands (33 C.F.R. § 328.3) under Section 404 of the CWA (30 C.F.R. Parts 320–330) and Section 10 of the Rivers and Harbors Act (30 C.F.R. Part 329).

Furthermore, EO 11990, *Protection of Wetlands*, 1977 (42 *Federal Register* 26961), requires federal agencies to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies must avoid, to the extent possible, destruction or modification of wetlands wherever there is a practicable alternative. Consequently, before an action adversely impacting wetlands may proceed, EO 11990 requires the head of the responsible federal agency to find that there is no practicable alternative to conducting the action in wetlands. If, however, no practicable alternative exists to the proposed action, mitigation must be taken to minimize direct and indirect impacts in or adjacent to wetlands.

Floodplains are defined by EO 11988, Floodplain Management, as "the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, the area subject to a 1 percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Recent federal guidance (EO 13690) refers to the 500-year flood. The 500-year flood is a flood that has a 0.2 percent chance of occurring in any given year. Floodplains and riparian habitat are biologically unique and highly diverse ecosystems providing a rich diversity of aquatic and terrestrial species, as well as promoting stream bank stability and regulating water temperatures. Similar to wetlands, EO 11988 requires federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative.

Groundwater includes the subsurface hydrologic resources of the physical environment and is, by and large, a safe and reliable source of fresh water for the general population and is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater plays an important role in the overall hydrologic cycle. Its properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

3.3.2 Existing Conditions

Surface Water

Moody AFB

Moody AFB is located within the Suwannee River Basin. Major drainages in this basin that affect Moody AFB include the Withlacoochee River to the west and the Alapaha River to the east. A major feature of this basin is the Grand Bay/Banks Lake wetland complex, which is partially located within the political boundaries of Moody AFB.

The topography at Moody AFB is extremely flat and storm water runoff is handled through a network of drop inlets, underground storm sewers, and some above-ground ditches and swales. This system directs surface flow at Moody AFB to three relatively large water bodies: Mission Lake, Grand Bay/Banks Lake wetland complex, and Beatty Creek.

Mission Lake is a man-made lake inside the Base that drains surface water flow on the south end of the active area of the Base. This area includes aircraft parking and maintenance buildings. Drainage from the lake flows to the Grand Bay Watershed.

The Grand Bay Watershed drains surface flow from areas of the installation located to the east of the main runway.

Beatty Creek drains surface water flow inside the north/northeast Perimeter Road, flowing underneath Highway 125 and continuing past the installation’s WWTP, golf course, and residences in that area. Beatty Creek eventually flows to Cat Creek, which then flows to the Withlacoochee River to the west.

Grassy Pond

Surface water features at the Grassy Pond Recreational Area include the 217-acre Grassy Pond and the smaller 44-acre Lot Pond.

Wetlands

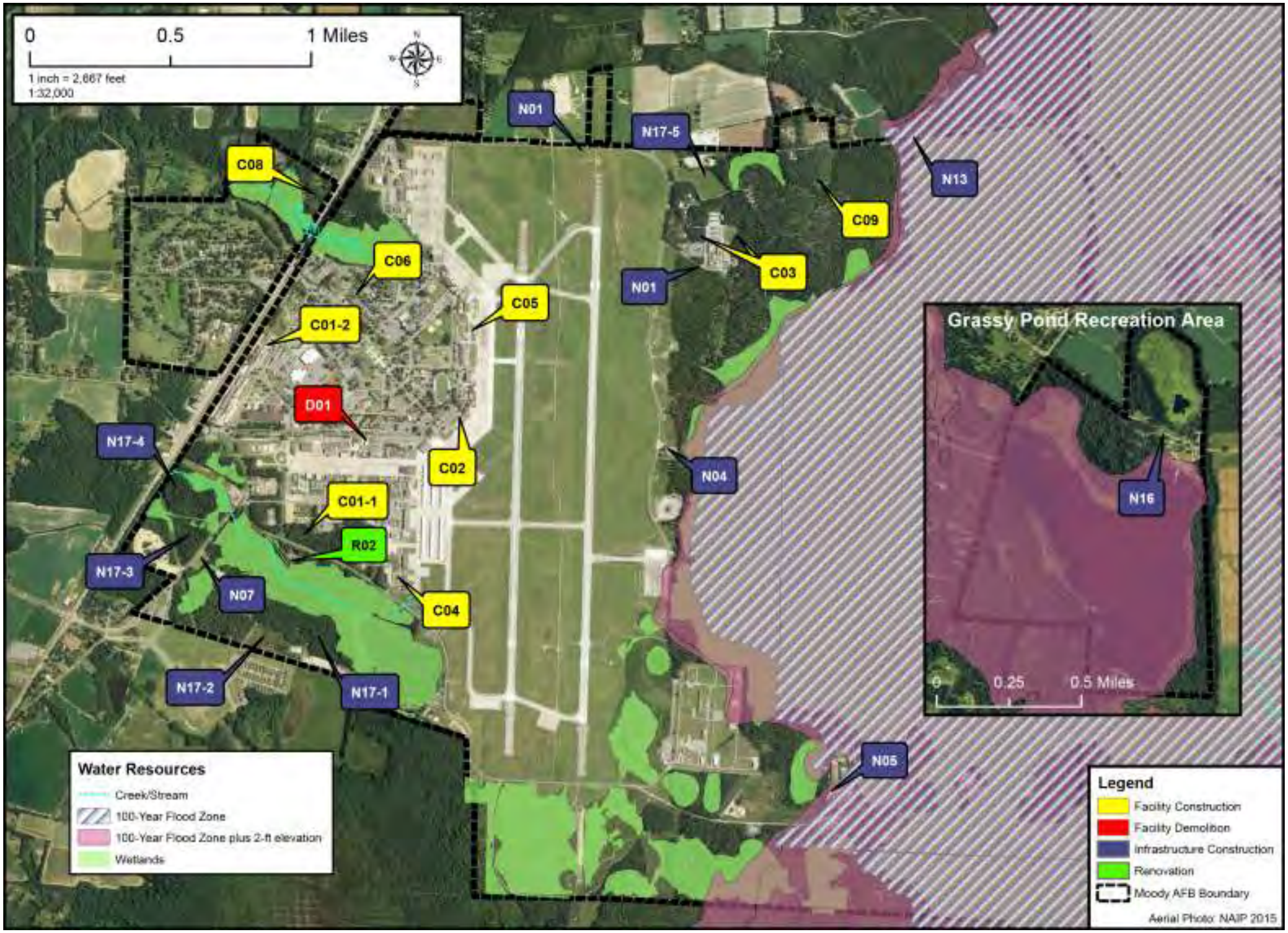
Moody AFB

Overall, there are about 5,500 acres of wetlands located within the boundary of Moody AFB, with the majority of these wetlands belonging to the Grand Bay wetland complex (Moody AFB, 2013). Moody AFB conducted a wetland delineation for the proposed action to identify wetlands associated with project sites; the USACE concurred on the wetland delineation on June 7, 2017 (correspondence provided in Appendix A, Public Involvement). Wetlands in the vicinity of the proposed projects are shown in Figure 3-4. Only five projects would potentially interact directly with wetlands (see Table 3-1): Projects N01, N07-1, N07-2, N13, and N17-3 (see Section 4.3, Water Resources).

Grassy Pond

National Wetland Inventory maps for the Grassy Pond Recreational Area identified three wetland complexes in the southwest corner of the property. These complexes consist of three types of freshwater, non-tidal (palustrine) wetlands and include palustrine, forested, broad-leaved deciduous/needle-leaved evergreen, temporarily flooded (PFO1/4A); palustrine, emergent, persistent, semi-permanently flooded (PEM1F), and palustrine forested, deciduous, semi-permanently flooded (PFO6F) wetlands. No projects would interact with wetlands at the Grassy Pond Recreational Area.

Figure 3-4: Surface Water Features, including Floodplains at Moody AFB



Floodplains

Moody AFB

The majority of the installation within Grand Bay to the east of the airfield and south of the north perimeter road is located with the Federal Emergency Management Agency (FEMA)-mapped 100-year floodplain (Figure 3-4). FEMA has not mapped the 500-year floodplain in the vicinity of Moody AFB. An estimated 500-year floodplain was derived by adding a 2-foot elevation increase to the 100-year floodplain, and the results of that estimate are shown in Figure 3-4. In general, the 100-year plus 2-foot elevation floodplain is a narrow fringe along the boundary of the 100-year floodplain.

One project, Project N05, is located solely within the 100-year floodplain. Two projects, Projects N01 and N13, are located within the 100-year plus 2-foot elevation (i.e., 500-year floodplain) and the 100-year floodplain (see Section 4.3, Water Resources).

Grassy Pond

An estimated 500-year floodplain is located throughout the majority of the Grassy Pond Recreation Area (Figure 3-4). A portion Project N16 is located within the 100-year plus 2-foot elevation floodplain at the Grassy Pond Recreational Area (see Section 4.3, Water Resources).

Groundwater

Moody AFB and Grassy Pond

Groundwater at Moody AFB and in the vicinity of Grassy Pond occurs in two major aquifers, the surficial and Floridan aquifer systems. The surficial aquifer system is located 10 to 20 feet below ground surface and in the area near Moody AFB and Grassy Pond is confined by a layer of impermeable or semi-permeable materials.

The Floridan aquifer is the primary source of usable groundwater water in the vicinity of Moody AFB and Grassy Pond. The aquifer is confined and is located approximately 150 feet below ground surface.

3.4 Biological Resources

3.4.1 Definition of the Resource

Biological resources refer to the plant and animal species occurring near the proposed installation development project areas. Vegetation communities provide habitat for numerous wildlife species. Due to the location of potential projects in multiple areas of the installation, a general description of biological resources found on Moody AFB and the Grassy Pond area is provided in this section, and site-specific information is provided in Section 4.4, Biological Resources, as applicable. This section focuses on plant and animal species and natural community types that typify or are important to the function of ecosystems in the region or that are protected by federal or state law or statute. Species with regulatory protection, or that are 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, MBTA, the Bald and Golden Eagle Protection Act (BGEPA), EO 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 endangered in the foreseeable future. The ESA also requires critical habitat to be identified for listed species, which is defined as the physical and biological features essential for a species' conservation (e.g., food, water, shelter). However, designated critical habitat is not present on Moody AFB or the Grassy Pond Recreational Area. 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.

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 globally
- 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 in state
- S5: demonstrably secure in 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. Military readiness activities include training and testing actions related to combat but do not include activities such as construction projects. In 2014, the DoD and USFWS entered into a Memorandum of Understanding regarding migratory bird conservation during activities other than military readiness and airfield operations (construction, demolition, and facility renovation, etc.) (DoD and USFWS, 2014). In general, the Memorandum of Understanding identifies discretionary actions a DoD proponent may undertake, to the extent practicable and consistent with the military mission, for projects that are likely to have a measurable negative effect on migratory bird populations. Such actions include avoiding or minimizing exposure of birds and their habitats to avian stressors that may result in take.

Migratory birds are further addressed in EO 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* (USFWS, 2015), (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 eagles (*Haliaeetus leucocephalus*) or golden eagles (*Aquila chrysaetos*). "Take" is defined as "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb." "Disturb" is defined as taking actions that result in or are likely to result in injury, decreased productivity, or nest abandonment.

3.4.2 Existing Conditions

Vegetation communities, wildlife, and sensitive species are described for Moody AFB and Grassy Pond in the following subsections.

Moody AFB

Vegetation and Habitats

Descriptions of vegetation and plant community associations on Moody AFB are provided in the base's Integrated Natural Resources Management Plan (INRMP) (Moody AFB, 2013). Moody AFB is located in the lower coastal plain physiographic region of the Outer Coastal Plain Mixed Forest province, within the U.S. lowland ecoregion, as described by Bailey (1995). Representative trees of this province include various pines, oaks, laurels, and magnolias. Forests of longleaf pine (*Pinus palustris*), loblolly pine (*P. taeda*), and slash pine (*P. elliottii*) dominate large areas of sandy upland habitat, while gum-bay swamps (dominated by cypress trees) and scrub-shrub wetlands occur extensively throughout the region.

The historical vegetative composition of Moody AFB was likely dominated by mesic (moderately wet) and wet-mesic longleaf pine forest. This composition has been altered by land management, construction, and other human activities. The unimproved areas on base currently consist primarily of longleaf/slash pine forest, pine flatwoods, pine plantations, mixed hardwood areas (including hardwood hammocks), and extensive areas of various wetland community types. Moody AFB lies within the Grand Bay-Banks Lake (GBBL) system (a large, approximately 13,000-acre wetland complex), and wetlands cover about 46 percent of the installation. Wetlands in the GBBL complex primarily consist of broad Carolina bays and shallow lakes connected by cypress-black gum (*Nyssa sylvatica*) swamps. In addition to unimproved areas, developed areas, landscaped/maintained areas, and open fields occur on the installation.

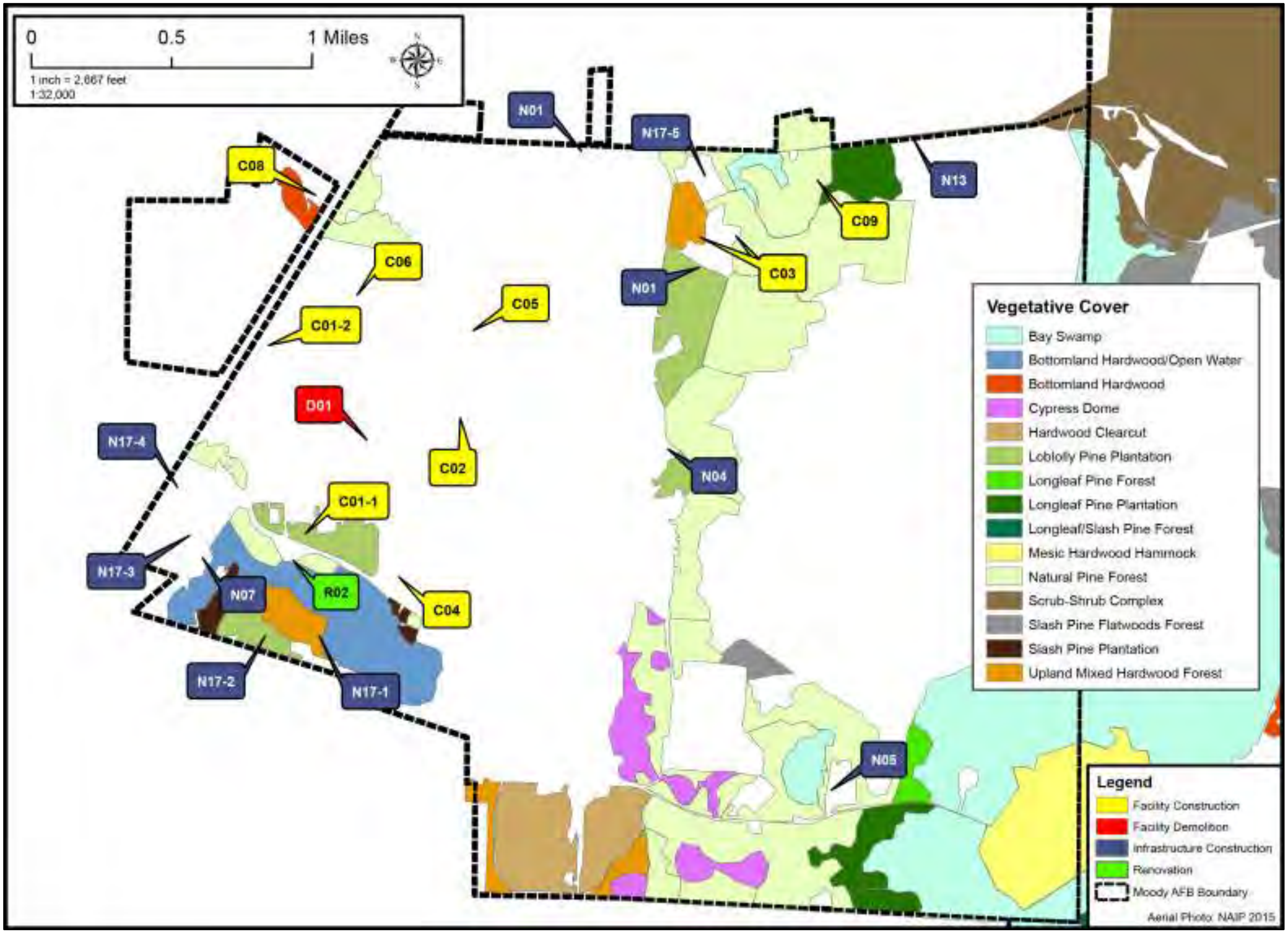
Vegetation community types found on the base are shown on Figure 3-5. Descriptions of the major unimproved habitat types are provided in the following paragraphs.

Longleaf pine forest is typically associated with sandhills that also support live oak species such as turkey oak (*Quercus laevis*) and post oak (*Q. stellata*). However, sandhill habitat is not present on Moody AFB, and longleaf pine communities typically occur as monotypic (one species) stands with a moderately dense midstory and sparse herbaceous understory consisting of wiregrasses (*Aristida* species) and saw palmetto (*Serenoa repens*). These forests are maintained by periodic fire. Without fire, the areas would likely succeed to a mixed hardwood/pine forest.

Longleaf/slash pine flatwood forests are typically flat, low-lying woodlands occurring between wetlands and upland forest communities. Soil conditions inhibit subsurface water penetration, resulting in moist soils with water at or near the surface. Representative understory vegetation includes saw palmetto, gallberry (*Ilex glabra*), wiregrasses, and blueberries (*Vaccinium* species). These forests are maintained by fire, without which they would likely succeed to either a mixed upland or wetland hardwood/pine forest.

Pine plantation consists of areas that have been artificially planted, usually for the purpose of timber sales. Pine planation on Moody AFB consists mostly of loblolly pine, although small areas of slash and longleaf pine may be present. Most pine plantation on the installation is a result of artificial regeneration conducted before 1990. In the absence of fire or intentional thinning, plantations may develop a very dense canopy and understory that are of reduced value as wildlife habitat.

Figure 3-5: Vegetation Communities of Moody AFB



Hardwood forest stands on Moody AFB are characteristically mingled with pine species. The overstory typically consists of upland hardwoods such as water oak (*Q. nigra*), sweetgum (*Liquidambar styraciflua*), black cherry (*Prunus serotina*), and live oak (*Q. virginiana*). The understory tends to be open and may consist of woody shrubs, blueberries, bracken fern (*Pteridium aquilinum*), broomsedge (*Andropogon virginucus*), and other grasses where the canopy has not been closed. Little herbaceous growth occurs on areas where the canopy has closed

Hardwood hammocks are elevated areas within surrounding swamp habitat. Two hardwood hammocks occur on Moody AFB. Typically, southern magnolia (*Magnolia grandiflora*) and spruce pine (*P. glabra*) are indicators of this habitat type, with other primary overstory vegetation consisting of live oak, white oak (*Q. alba*), swamp chestnut oak (*Q. michauxii*), and pignut hickory (*Carya glabra*). However, much of this characteristic vegetation has been lost on the installation due to past activities.

Various types of wetlands associated with the Carolina bay swamp complex occur on Moody AFB, including open water, scrub-shrub, bay swamp, cypress dome, shallow pond, and wetland depressions. Scrub-shrub wetlands occur in transition areas between open water areas and drier bay swamps, and intergrade with forested wetlands, nonforested emergent wetlands, and open water. These nonforested areas are dominated by woody shrubs, seedlings, and saplings. Representative species include sweetbay (*Magnolia virginiana*), white titi (*Cyrilla racemiflora*), fetterbush (*Lyonia lucida*), and red maple (*Acer rubrum*). A dense understory is often present.

Bay swamp wetlands typically occur around the margins of Carolina bays. Bay swamp habitat is typically dominated by black gum and cypress, with significant amounts of red maple, tupelos, and sweetbay. The understory is typically moderate to dense and is composed of species such as heaths, redbay (*Persea borbonia*), wax myrtle (*Myrica cerifera*), and greenbrier (*Smilax* spp.). Many of the bay swamps on Moody AFB are transitioning to denser and less diverse shrub vegetation due to land management practices.

Cypress domes are characterized as shallow, forested depressions that present a domed profile because taller trees grow in the deeper water of the interior. Cypress, swamp tupelo (*Nyssa biflora*), and slash pine are representative of these areas. Ponds and wetland depressions typically occur within pine flatwoods and usually contain a mixture of wetland and upland species. Characteristic overstory species include black gum, red maple, pond pine, and cypress. These areas may have a well-developed shrub layer or may contain mostly grassy vegetation. Ponds and depressions may dry out periodically, making them suitable breeding areas for amphibians that do not breed in wetlands containing predatory fish.

Wildlife

Many wildlife species occur on Moody AFB, and the species composition at any particular site is influenced by the habitat type present. Species typically associated with various habitats are listed in the INRMP (Moody AFB, 2013). Based primarily on this information, species considered representative of wetland and upland habitats are listed in Table 3-5. The table does not present an exhaustive list of wildlife potentially present on Moody AFB (see Appendix 4 of the INRMP for a more complete list), and not all species listed necessarily occur near the project areas. However, these species are typical of wildlife found on the installation. Wildlife occurrence in the developed portions of the base is likely limited, consisting mostly of species found in urban areas and tolerant of human presence and activity (e.g., rodents and other small mammals, lizards, some bird species).

Table 3-5: Representative Wildlife Species in Wetland and Forest Habitats on Moody AFB

Common Name	Scientific Name	Potential Occurrence	
		Wetlands	Pine/Hardwood Forest
Mammals			
Opossum	*Didelphis virginiana*	•	•
Raccoon	*Procyon lotor*	•	•
Striped skunk	*Mephitis mephitis*		•
Gray fox	*Urocyon cinereoargenteus*	•	•
Fox squirrel	*Sciurus niger*		•
Gray squirrel	*Sciurus carolinensis*	•	•
Eastern cottontail rabbit	*Sylvilagus floridanus*	•	•
White-tailed deer	*Odocoileus virginianus*	•	•
North American beaver	*Castor canadensis*	•	
Little brown bat	*Myotis lucifugus*	•	
Seminole bat	*Lasiurus seminolus*	•	•
Eastern pipistrelle bat	*Pipistrellus subflavus*	•	
Red bat	*Lasiurus borealis*		•
Evening bat	*Nycticeius humeralis*	•	•
Northern yellow bat	*Lasiurus intermedius*	•	•
Southeastern bat	*Myotis austroriparius*	•	•
Birds			
Red-shouldered hawk	*Buteo lineatus*	•	•
Northern bobwhite quail	*Colinus virginianus*		•
Pileated woodpecker	*Dryocopus pileatus*	•	•
Downy woodpecker	*Picoides pubescens*	•	•
Red-bellied woodpecker	*Melanerpes carolinus*	•	•
Northern flicker	*Colaptes auratus*	•	•
Yellow-billed cuckoo	*Coccyzus americanus*		•
Ruby-throated hummingbird	*Archilochus colubris*		•
American crow	*Corvus brachyrhynchos*		•
Yellow-bellied sapsucker	*Sphyrapicus varius*	•	•
Carolina chickadee	*Poecile carolinensis*	•	•
Tufted titmouse	*Baeolophus bicolor*	•	•
Brown-headed nuthatch	*Sitta pusilla*		•
Carolina wren	*Thryothorus ludovicianus*	•	•
Blue-gray gnatcatcher	*Polioptila caerulea*	•	•
Great crested flycatcher	*Myiarchus crinitus*	•	•
Ruby-crowned kinglet	*Regulus calendula*	•	•
Wild turkey	*Meleagris gallopavo*		•
Eastern kingbird	*Tyrannus*	•	
White-eyed vireo	*Vireo griseus*	•	•
Red-eyed vireo	*Vireo olivaceus*	•	•
Northern parula	*Setophaga americana*	•	•
Common grackle	*Quiscalus quiscula*	•	•
Summer tanager	*Piranga rubra*		•
Eastern towhee	*Pipilo erythrophthalmus*		•
White-throated sparrow	*Zonotrichia albicollis*		•
Blue jay	*Cyanocitta cristata*	•	
Brown thrasher	*Toxostoma rufum*	•	•
Gray catbird	*Dumetella carolinensis*	•	
Northern cardinal	*Cardinalis cardinalis*	•	•

Table 3-5: Representative Wildlife Species in Wetland and Forest Habitats on Moody AFB, Continued

Common Name	Scientific Name	Potential Occurrence	
		Wetlands	Pine/Hardwood Forest
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*	•	
Reptiles			
Eastern box turtle	*Terrapene carolina carolina*	•	•
Common snapping turtle	*Chelydra serpentina*	•	
Eastern cottonmouth	*Agkistrodon piscivorus*	•	•
Southern water snake	*Nerodia fasciata*	•	
Eastern mud snake	*Farancia abacura abacura*	•	
Five-lined skink	*Plestiodon inexpectatus*		•
Timber rattlesnake	*Crotalus horridus*		•
Black racer	*Coluber constrictor*		•
Amphibians			
Spotted salamander	*Ambystoma maculatum*	•	
Tiger salamander	*Ambystoma tigrinum*	•	
Green tree frog	*Hyla cinerea*	•	
Eastern spadefoot toad	*Scaphiopus holbrookii*	•	
Southern toad	*Bufo terrestris*	•	
Little grass frog	*Pseudacris ocularis*		•
Squirrel tree frog	*Hyla squirella*		•
Eastern spadefoot toad	*Scaphiopus holbrookii*		•

Source: (BHE Environmental, Inc., 2001; Moody AFB, 2013)

Sensitive Species

The Moody AFB INRMP identifies 18 threatened, endangered, or rare species (having a federal, state, or NHP status) with known current or historic occurrence on the base (Moody AFB, 2013). In addition, the Georgia DNR has previously provided information on sensitive species with potential occurrence near the base. The resulting list of sensitive species is included in Table 3-6. Of these species, seven are either protected by federal laws (ESA, BGEPA, or MBTA) or are listed as candidate species under the ESA. The frosted flatwoods salamander (*Ambystoma cingulatum*) and striped newt (*Notophthalmus perstriatus*), listed as threatened and candidate species under the ESA, respectively, occur in the region of Moody AFB. However, these species have not been observed on the base, even though species-specific surveys have been conducted, and habitat conditions are generally considered marginal (Palis, 2005). Therefore, occurrence in the project areas is unlikely. The American alligator (*Alligator mississippiensis*) is listed under the ESA based only on similarity of appearance to the threatened American crocodile (*Crocodylus acutus*). The remaining four species with federal status are described in the following paragraphs. Descriptions of the other species listed in Table 3-6 can be found in the base's INRMP, the U.S. Fish and Wildlife Service's Endangered Species web page, and the Georgia DNR's Rare Species Profiles web page.

In addition to the species described above, migratory birds occur on and near Moody AFB at various times of the year. Increased migratory bird activity typically occurs in September/October and in April/May. Blackbirds and songbird species are particularly active around sunrise and sunset during winter. Migratory waterfowl are prevalent in wet areas. Although migratory birds may occur in some the project areas, bird habitat of greater quantity and quality occurs throughout the nearby large undeveloped wetland and forest areas of the Grand Bay Weapons Range, GBBL, and Banks Lake National Wildlife Refuge.

Table 3-6: 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
Birds				
Wood stork[1]	*Mycteria americana*	T	E	G4/S2
Southern bald eagle[1]	*Haliaeetus l. leucocephalus*	BGEPA	T	G5/S2
Bachman's sparrow[1]	*Aimophila aestivalis*	None	R	G3/S2
Southeastern American kestrel[1]	*Falco sparverius paulus*	None	R	G5/S2
American bittern[1]	*Botaurus lentiginosus*	None	None	G4/S3?
Little blue heron[1]	*Egretta caerulea*	None	None	G5/S3?
Yellow-crowned night heron[1]	*Nyctanassa violacea*	None	None	G5/S3S4
Black-crowned night heron[1]	*Nycticorax nycticorax*	None	None	G5/S4
Florida sandhill crane[1]	*Grus canadensis pratensis*	None	None	G5/S1
Greater sandhill crane[1]	*Grus canadensis tabida*	None	None	G5/S2
Loggerhead shrike[1]	*Lanius ludovicianus migrans*	None	None	G4/S3
Mammals				
Round-tailed muskrat[1]	*Neofiber alleni*	None	T	G3/S3
Florida black bear[1]	*Ursus americanus floridanus*	None	None	G5T2/S2
Northern yellow bat[1]	*Lasiurus intermedius*	None	None	G4G5/S2S3
Southeastern myotis bat[1]	*Myotis austroriparius*	None	None	G3G4/S3
Reptiles				
Eastern indigo snake[1]	*Drymarchon corais couperi*	T	T	G3/S3
American alligator[1]	*Alligator mississippiensis*	T (S/A)	None	G5/S4
Gopher tortoise[1]	*Gopherus polyphemus*	Candidate	T	G3/S2
Southern hognose snake[1]	*Heterodon simus*	None	T	G2/S2
Alligator snapping turtle[1]	*Macrochelys temminckii*	None	T	G3G4/S3
Spotted turtle	*Clemmys guttata*	None	U	G5/S3
Striped crayfish snake[1]	*Regina alleni*	None	None	G5/S2
Eastern coral snake[1]	*Micrurus fulvius*	None	None	G5/S3
Striped mud turtle[1]	*Kinosternon baurii*	None	None	G5/S3
Plants				
Green-fly orchid[1]	*Epidendrum conopseum*	None	U	G4/S3
Hooded pitcher plant[1]	*Sarracenia minor*	None	U	G4/S4
Yellow flytrap	*Sarracenia flava*	None	U	G5?/S3S4
Blue maidencane[1]	*Amphicarpum muehlenbergianum*	None	None	G4/S3?
Climbing heath[1]	*Pieris phillyreifolia*	None	None	G3/S3
Needle palm[1]	*Rhapidophyllum hystrix*	None	None	G4/S3S2
Three-birds orchid[1]	*Triphora trianthophora*	None	None	G3G4/S2?
Savanna cowbane	*Oxypolis ternata*	None	None	G3/S2
Bluff white oak	*Quercus austrina*	None	None	G4?/S3?

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 in the 2013 *Integrated Natural Resources Management Plan* as having known past or present occurrence on Moody AFB (Moody AFB, 2013).

Wood Stork

The wood stork U.S. breeding population is listed as threatened. Wood storks nest in large colonies, using medium to large trees (with a preference for large cypress, black gum, and willow trees) located in wetlands or on islands surrounded by standing water. The presence of standing water helps to prevent predation of the nests by raccoons and other predators. In Georgia, the nesting period generally begins in late winter or early spring and concludes by late summer. Some nesting storks may move south during winter. 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 permanent wood stork rookeries on Moody AFB. The species occurs sporadically during breeding season when suitable foraging conditions exist. Sightings have occurred at Shiner Pond (located along the central-northern boundary of the base), Dudley's Hammock (located in the south-central portion of the base), and Grand Bay Creek (the major wetland drainage that flows off the base to the southeast). However, wood storks typically do not use the GBBL watershed extensively for foraging.

Bald Eagle

The bald eagle, protected under the BGEPA and MBTA, occurs throughout Georgia. Nesting activity was previously concentrated in coastal areas. However, in recent decades, the breeding range has spread throughout 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. There is an active bald eagle nest located at Grassy Pond just inside the boundary fence on the southwestern side of Grassy Pond (Figure 3-6). No other active bald eagle nests are known on Moody AFB. Bald 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.

Gopher Tortoise

The eastern population of the gopher tortoise (occurring east of Alabama) is a candidate species under the ESA. The USFWS published a *Federal Register* notice in 2011 indicating that listing of the species in the eastern portion of its range as threatened under the ESA is warranted. However, at the time of publication of this EA, such listing had been precluded by higher priority actions.

The gopher tortoise is found primarily within pine sandhills or flatwoods, where it excavates a tunnel-like burrow for shelter from temperature extremes and refuge from predators (USFWS, 1990). The burrows may be used by many other species, making the gopher tortoise a principal component of the ecosystem in which it occurs. The primary features of preferred tortoise habitat are sandy soils, an open forest canopy with plenty of sunlight, and abundant forbs and grasses in the understory. Natural or prescribed fire helps maintain desirable understory conditions. Nesting occurs during May and June, and hatching occurs from August through September.

Gopher tortoise populations are well established on portions of Moody AFB, with six colonies identified on the installation in 2012 (Moody AFB, 2013). However, despite intensive habitat management activities, including prescribed burning, timber thinning, and hardwood midstory removal, gopher tortoise populations have declined on the installation over the last 15 years. While there is no known definitive cause, installation staff attribute the decline to habitat fragmentation and habitat succession effects (canopy closure in pine plantations), population senescence, and lack of adequate reproduction, recruitment, and immigration. Gopher tortoise burrows identified during recent surveys in the proposed project area, along with the corresponding potential tortoise habitat, are shown on Figure 3-7. However, burrow locations may change over time, as illustrated by the fact that several burrows identified southwest of the airfield in 2012 are no longer present. Therefore, although the general habitat area shown is applicable to analysis in this document, individual burrow locations are likely different. The species is actively managed on Moody AFB through prescribed burning and timber management.

Figure 3-6: Bald Eagle Nesting Area at Grassy Pond

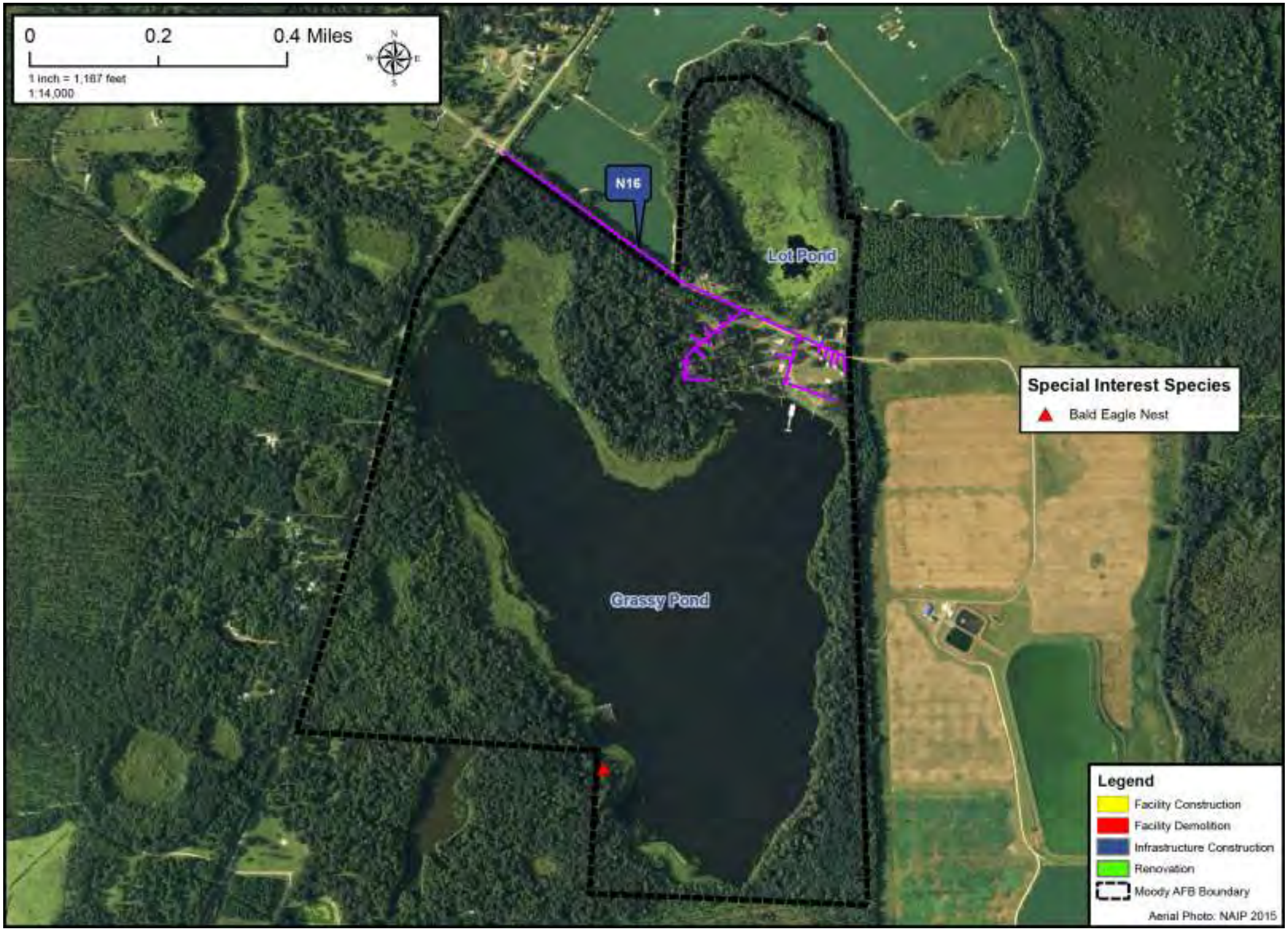
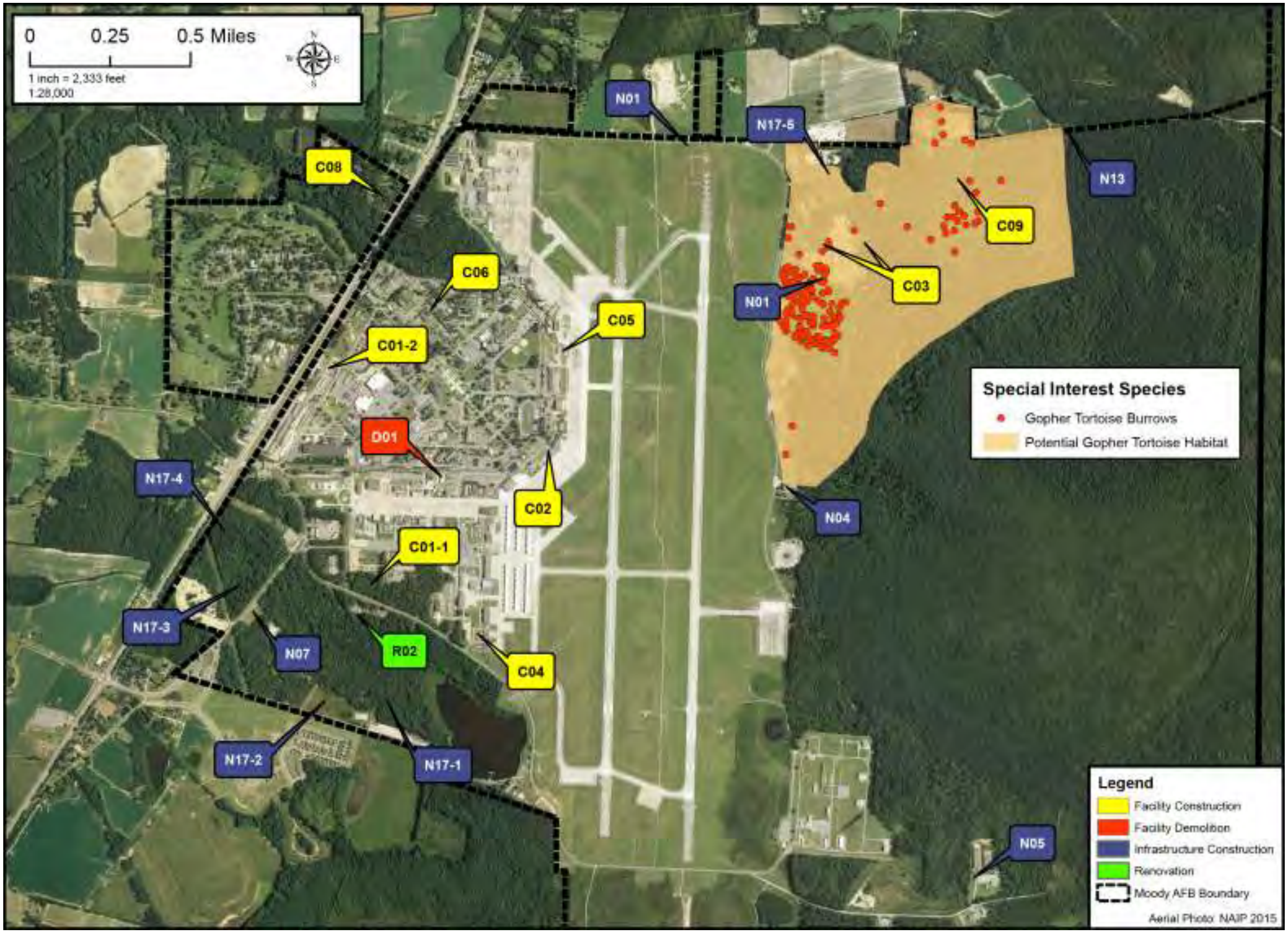


Figure 3-7: Gopher Tortoise Burrows and Potential Habitat near the Project Areas



Eastern Indigo Snake

The eastern indigo snake, listed as threatened under the ESA, is a wide-ranging snake found in a variety of habitats including pine flatwoods, scrubby flatwoods, high pine, dry prairie, tropical hardwood hammocks, freshwater marsh edge, agricultural fields, coastal dunes, and human-altered habitats (USFWS, 2008). The species may move seasonally between upland and wetland habitats. The average home range of the indigo snake varies by season, with individuals typically using much larger areas during warm months. Indigo snakes frequently utilize gopher tortoise burrows as refugia from cold temperatures in winter, for egg laying, and for protection during shedding when they are more vulnerable to predation. Occurrence in xeric (dry) sandhill habitat in Georgia is attributed primarily to the availability of gopher tortoise burrows during winter.

Indigo snakes were documented on the southeastern portion of Moody AFB in the early to mid-1990s, and at least three individuals were released at Grand Bay Weapons Range in 1993 and 1995 (Moody AFB, 2008; Moody AFB, 2013). One adult and one juvenile indigo snake were sighted in 1996 on Grand Bay Weapons Range. Indigo snakes have not been sighted since this time, despite monitoring efforts and species-specific surveys. The species may presently occur on the installation, but a self-sustaining population is considered unlikely due to the fragmented, marginal habitat. Because of the close association of this snake with gopher tortoise burrows, potential habitat is considered to coincide with tortoise habitat.

Grassy Pond

Vegetation and Habitats

Grassy Pond Recreational Area is a 489-acre area, over half of which is covered by two lakes: Grassy Pond and Lot Pond (Moody AFB, 2013). In the upland portion of the site, vegetation consists mostly of hardwood forest. Primary overstory species include live oaks, water oak, magnolias, and pines. Mature pine forest with no understory occurs at the northern shore of Grassy Pond. Improved grounds account for only about 4 percent of the entire area. Wetlands occur only at the margins of each pond.

Wildlife

Grassy Pond is used seasonally by migrating waterfowl, primarily American coots (*Fulica americana*) (Moody AFB, 2013). Diving ducks are also seen in smaller numbers during the winter. Other common bird species include great blue herons (*Ardea herodias*), great egrets (*Ardea alba*), and ospreys (*Pandion haliaetus*). Mammals associated with Grassy Pond include raccoon (*Procyon lotor*) and Virginia opossum (*Didelphis virginiana*). Three bat species have been captured at the site, including Seminole bat (*Lasiurus seminolus*), evening bat (*Nycticeius humeralis*), and northern yellow bat (*Lasiurus intermedius*) (BHE Environmental, Inc., 2001). A wide variety of amphibians and reptiles are found at Grassy Pond, including the American alligator. Wood storks are occasionally observed at the area, but neither foraging nor roosting have been reported. A pair of bald eagles has nested in the forest near the southwest shore of Grassy Pond in numerous years since the late 1990s (Figure 3-6). In addition, wintering and transient bald eagles regularly use the area for foraging. The American alligator, wood stork, and bald eagle are the only federally protected species known to occur at Grassy Pond Recreational Area.

3.5 Cultural Resources

3.5.1 Definition of the Resource

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, and American Indian sacred sites and traditional cultural properties (TCPs). Historic properties (as defined in 36 C.F.R. § 60.4) are considered for potential adverse impacts from an action. Historic properties are significant archaeological, architectural, or traditional resources that are either eligible for listing or listed in the NHPA of 1966, as amended. Under Section 106 of the NHPA, Moody AFB is required to consider the effects of its undertakings on historic properties listed or eligible for listing on the National Register of Historic Places (NRHP). The regulatory NHPA Section 106 compliance process consists of four primary stages. These include: initiation of the Section 106 process (36 C.F.R. § 800.3); identification of historic properties (36 C.F.R. § 800.4), which includes identifying historic properties potentially affected by undertakings; assessment of adverse effects (36 C.F.R. § 800.5), which determines whether the undertaking will affect historic properties and if effects to those properties might be adverse; and resolution of adverse effects (36 C.F.R. § 800.6) between affected and consulting parties.

Moody AFB coordinates NEPA compliance with their NHPA responsibilities to ensure that historic properties are given adequate consideration during the preparation of environmental documents such as this EA. As per AFI 32-7065 Sections 3.3.1 and 3.3.2 and 36 C.F.R. § 800.8, Moody AFB incorporates NHPA Section 106 review into the NEPA process or substitutes the NEPA process for a separate NHPA Section 106 review of alternatives.

3.5.2 Existing Conditions

Moody AFB

As defined under 36 C.F.R. § 800.16(d), "the Area of Potential Effects 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 (APE) is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking." The Air Force has defined the APE for direct effects to historic properties as the specific footprint areas impacted by the 17 distinct projects described within the Moody AFB IDP (as shown in Figure 2-2 through Figure 2-6). The APE for indirect effects is defined as a 1,000-foot buffer around the individual project areas. Given the auditory and visual environment of a developed cantonment area located on an active Air Force base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Multiple archaeological surveys have been conducted on Moody AFB and associated properties over the years. In 1985 an archaeological survey of 350 acres of the Grand Bay Range focused on areas of high probability and four sites (Wright, 1985). The National Park Service conducted archaeological investigations over the entirety of Moody AFB (including the Grassy Pond area) in 1986 and recorded one site (National Park Service, 1986). A cultural resources survey of the Grand Bay Ordnance Range at Moody AFB in 1995 surveyed 5,981 acres; 21 sites and 39 isolated finds were recorded (Blick, 1995). In 1998 a Phase I survey of 49.5 acres was located south of the base's south gate, east of Bemiss Road; two sites were recorded during this survey (Morgan, 1998). Archaeological investigations at Moody AFB to date have located 27 archaeological sites and 39 isolated finds (U.S. Air Force, 2012).

Moody AFB initiated government-to-government consultation regarding the Proposed Action with Native American tribes on May 1, 2017.   On May 1, 2017, letters were sent to the Muscogee (Creek) Nation, the Muscogee Nation of Florida, the Poarch Band of Creeks, the Seminole Nation of Oklahoma, the Thlopthlocco Tribal Town, the Kialagee Tribal Town, and the Coushatta Tribe of Louisiana. These seven tribes were also invited to comment on potential impacts to cultural resources as a result of the Proposed Action. Follow-up letters were mailed out on June 7, 2017, and additional follow-up e-mails and phone calls were conducted in January 2018 and February 2018. None of the tribes have expressed any concerns related to the IDP project (see Appendix A, Public Involvement).

Based on the location of IDP project sites, the aforementioned previous archaeological survey records, and lack of issues raised by tribes, the Air Force has determined that the proposed individual IDP project APEs contain no identified archaeological sites eligible for listing on the NRHP, historic districts, cemeteries, sacred sites, TCPs, or other tribal resources. The nearest recorded archaeological resources eligible for listing on the NRHP are site 9L W71, located approximately 50 feet east and on the opposite side of the road as project NOl and 9LW63, located 80 feet north of the same gas line project.

Moody AFB completed an historic structure survey in August 2017 of the installation’s remaining Cold War facilities and unevaluated facilities that have reached 50 years of age to determine eligibility for listing in the NRHP, individually or as a district (Moody AFB, 2017). This architectural survey and evaluation encompassed 210 buildings and structures. The survey identified one structure, the Base Chapel (Building 110), as eligible for listing on the NRHP. Previous to this study, Moody AFB had conducted five historic surveys on installation facilities. The first study was completed in 1999 and reviewed all 234 buildings and structures 50 years of age or older or those that hold a significant Cold War association (Messick, 1999). As a result of this effort, only one structure was considered eligible for the NRHP, the Base Water Tower (building 618). Another study completed in 2011 inventoried 42 buildings and structures constructed between 1941 and 1965. Twenty-six of the buildings and structures were 50 years of age or older, while the remaining 16 resources were less than 50 years of age and, therefore, evaluated under Criteria Consideration G. None of the buildings and structures under consideration was recommended as eligible for the NRHP (Hersch, 2011). As part of Moody AFB’s ongoing Section 110 compliance efforts, a third study was completed in 2016 of eight structures that were determined to not be eligible for NRHP listing due to a lack of integrity. Also completed in 2016, was a cultural resource study of two buildings, both determined to be not eligible to the NRHP (Moody AFB, 2017). See Appendix A, Public Involvement, for correspondence regarding these surveys.

In January 2017, a Section 106 cultural resource study concluded that seven additional structures were not eligible for listing in the NRHP. The Georgia HPD concurrence was received on these determinations (Appendix A, Public Involvement). With the completion of these studies, all base facilities constructed during the World War II era, the Cold War era, and all base facilities that have reached 50 years of age to date have been evaluated. The Base Chapel and the Base Water Tower are the only two structures on Moody AFB that have been determined eligible for inclusion on the NRHP.

There are five structures impacted by IDP projects. The first is building 757, originally constructed as a flight training simulator in 1962. This structure would be demolished under project D01. Project C05 would potentially involve an addition to building 657. Project R02 is a renovation to building 1708, a K-9 kennel constructed in 1986. Building 621, a fire station constructed in 1969 would be demolished under C02-1 and renovated under C02-2. Facility 4130, a pre-fabricated building constructed in 1990 would potentially be demolished as part of project C04. Building 757 and 621 were evaluated and considered as not eligible for listing on the NRHP with SHPO concurrence (U.S. Air Force, 2012; Moody AFB, 2017). The remaining structures (buildings 657, 1708, and 4130) were evaluated as part of an historic structure survey of the installation's remaining Cold War facilities and unevaluated facilities that have reached 50 years of age to determine eligibility for listing in the NRHP, individually or as a district. This study determined that buildings 657, 1708, and 4130 are not eligible for listing in the NRHP with SHPO concurrence received on November 6, 2017 (see Appendix A, Public Involvement, for correspondence regarding this determination). Additional information was provided at the request of the SHPO regarding previous evaluations of Moody AFB's main cantonment, flight line, munitions storage, CATM/Explosive Ordnance Disposal, 820 BDG, and Grassy Pond military recreation areas as districts. All Moody AFB facilities constructed during the Cold War era had previously been surveyed and determined not significant for association, the Cold War era period of significance is not a contributing factor for evaluation of historical districts on Moody AFB. Therefore, significance for evaluation of districts on Moody AFB focuses primarily on the World War II period of significance and Criteria A – D for facilities that have reached 50 years of age to date.

In a letter dated November 6, 2017 (Appendix A, Public Involvement), the HPD concurred that, based on a recently completed historic structure study, the Chapel (building 110) and the Water Tower (building 618) are the only structures eligible for listing in the NRHP. Additionally, HPD concurs that Moody AFB does not appear to currently contain NRHP-eligible historic districts. The nearest NRHP-eligible structure is the Water Tower (Facility No. 618), which dates to the World War II era and is located approximately 250 feet to the southwest of the C02 project area. The closest NRHP-listed resources are located several miles away from Moody AFB in Valdosta, Georgia.

Grassy Pond

The proposed N16 project area within the Grassy Pond Recreation Area was surveyed for archaeological resources in 1986 (National Park Service, 1986). The results of this survey and an historic structure survey in 2011 and 2017 (Hersch, 2011; Moody AFB, 2017) determined that the APE contains no archaeological sites, historic structures, historic districts, or cemeteries eligible for listing on the NRHP. In addition, no sacred sites, TCPs, or other tribal resources have been identified to date (Georgia Natural Historic Resources GIS, 2017; U.S. Air Force, 2012) (see Appendix A, Public Involvement, for tribal correspondence). The Moody AFB Integrated Cultural Resources Management Plan lists several Cold War-era improvements of the property made by the Air Force (U.S. Air Force, 2012). In 1958, the Air Force built a storm drainage system and installed sidewalks and security fencing. In 1963, waterfront improvements were added, and pavilions were constructed in 1965. These resources were evaluated in 2011 and determined to not be eligible for the NRHP (U.S. Air Force, 2012; Hersch, 2011). The nearest historic structure is located outside of the Grassy Pond Recreation Area to the southwest on Lock Laurel Road. This craftsman-style dwelling was constructed in 1930. The closest NRHP-listed resources are located over 3 miles northeast from the project area in Lake Park, Georgia (Georgia Natural Historic Resources GIS, 2017; National Park Service, 2017).

3.6 Land Use

3.6.1 Definition of the Resource

Land use generally refers to the management and use of land by people. The attributes of land use include general land use patterns, land ownership, land management plans, and special use areas. General land use patterns characterize the types of uses within a particular area. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. Management plans, policies, ordinances, and regulations determine the types of uses that protect specially designated or environmentally sensitive uses.

3.6.2 Existing Conditions

Moody AFB

In the 2015 IDP, land use for Moody AFB is divided into 12 categories (Moody AFB, 2015). Table 3-7 lists each of the categories and describes the typical facility types found in each land use category.

Table 3-7: Land Use Categories and Typical Facilities/Features

Land Use Category	Typical Facilities/Features
Administrative	Headquarters, security operations, office
Airfield pavements	Runways, taxiways, aprons, overruns
Airfield operations and maintenance	Hangars, aircraft maintenance units, squadron operations, tower, fire station
Community commercial	Commissary, base exchange, club, dining facility
Community service	Commissary, exchange, gym/recreation center, theater
Housing – accompanied	Family housing (privatized)
Housing – unaccompanied	Airmen housing, visitor housing – visitor quarters, temporary lodging facilities
Industrial	Base engineering, maintenance shops, warehousing
Medical/dental	Clinic, pharmacy
Open space	Conservation area, buffer space
Outdoor recreation	Outdoor courts, athletic fields, golf course, ranges
Training	Simulators, high-bay technical training, classrooms

As part of the Vision Workshop conducted during the development of the Moody IDP, six planning districts were created. Each planning district was created based on established land use patterns and relationships to the existing transportation network and geographic features. In these planning districts, future planning areas are defined, where appropriate, to focus future analyses or development studies. The six planning districts are: airfield operations, community support, base support, housing, open space, and operations and training. Table 9.3 in the IDP identifies permitted facilities or land uses in each planning district and future planning area that allow development flexibility while maintaining land use compatibility.

The proposed projects selected from the 2015 IDP that are subject to this analysis are located within 7 of the 12 existing installation land use categories: aircraft operations and maintenance, industrial, open space, outdoor recreation, community-service, housing, and administration. These seven land use categories fit within the base support, community support, open space, airfield operations, operations and training, and open space planning districts on Moody AFB. The location of each proposed project on Moody AFB and the current land use for the affected areas are shown on Figure 3-8 through Figure 3-11. No GIS data coverage is available for land use classification of Grassy Pond; therefore, no figure for corresponding land use is provided. However, Grassy Pond would be classified as “outdoor recreation.” Additional details on the land use for each specific project are discussed in Section 4.6.1, Land Use, Proposed Actions/Alternatives.

Grassy Pond

The Grassy Pond Recreation Area is an approximately 500-acre recreation area with a 275-acre pond and includes cabins, RV/tent sites, group shelters, picnic areas, playgrounds, ball fields, nature trails, fishing docks, and boat launch area. The area is located 25 miles southwest of Moody AFB and 3 miles north of the Florida/Georgia state line near Lake Park, Georgia. Grassy Pond is within the outdoor recreation land use category and the open space planning district.

Figure 3-8: Current On-Base Land Use (Northwest) and Proposed IDP Project Locations

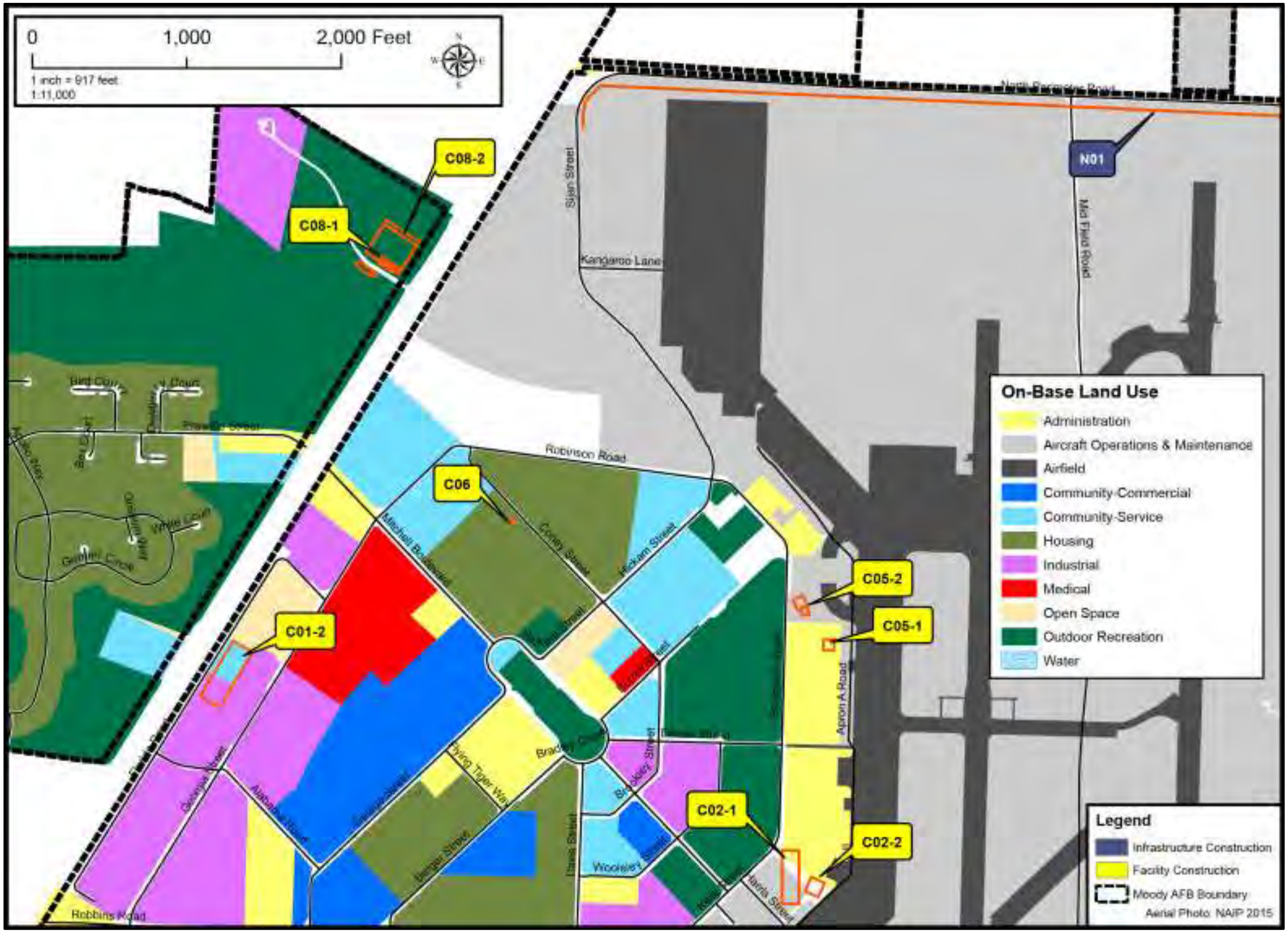


Figure 3-9: Current On-Base Land Use (Southwest) and Proposed IDP Project Locations

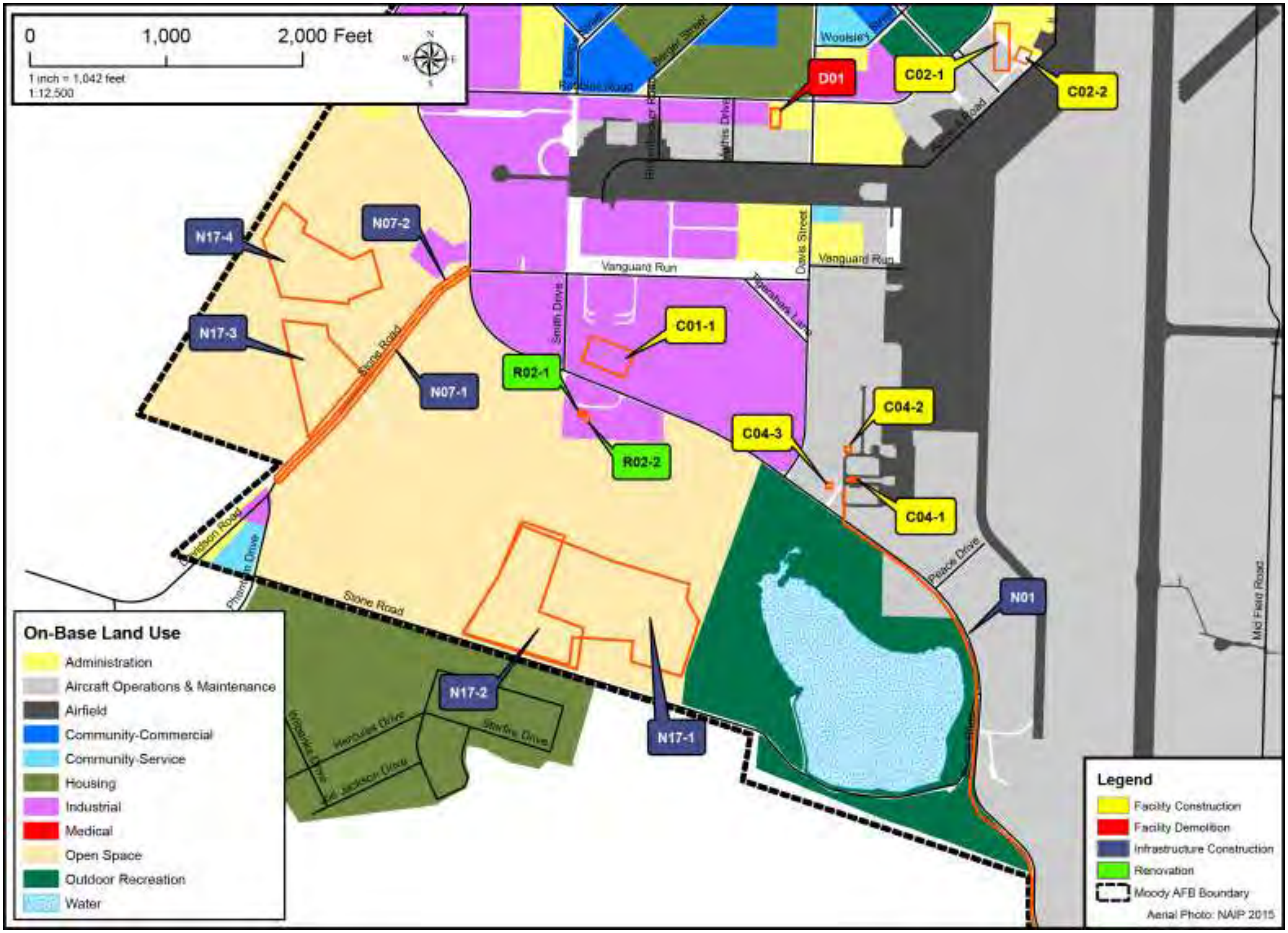


Figure 3-10: Current On-Base Land Use (Northeast) and Proposed IDP Project Locations

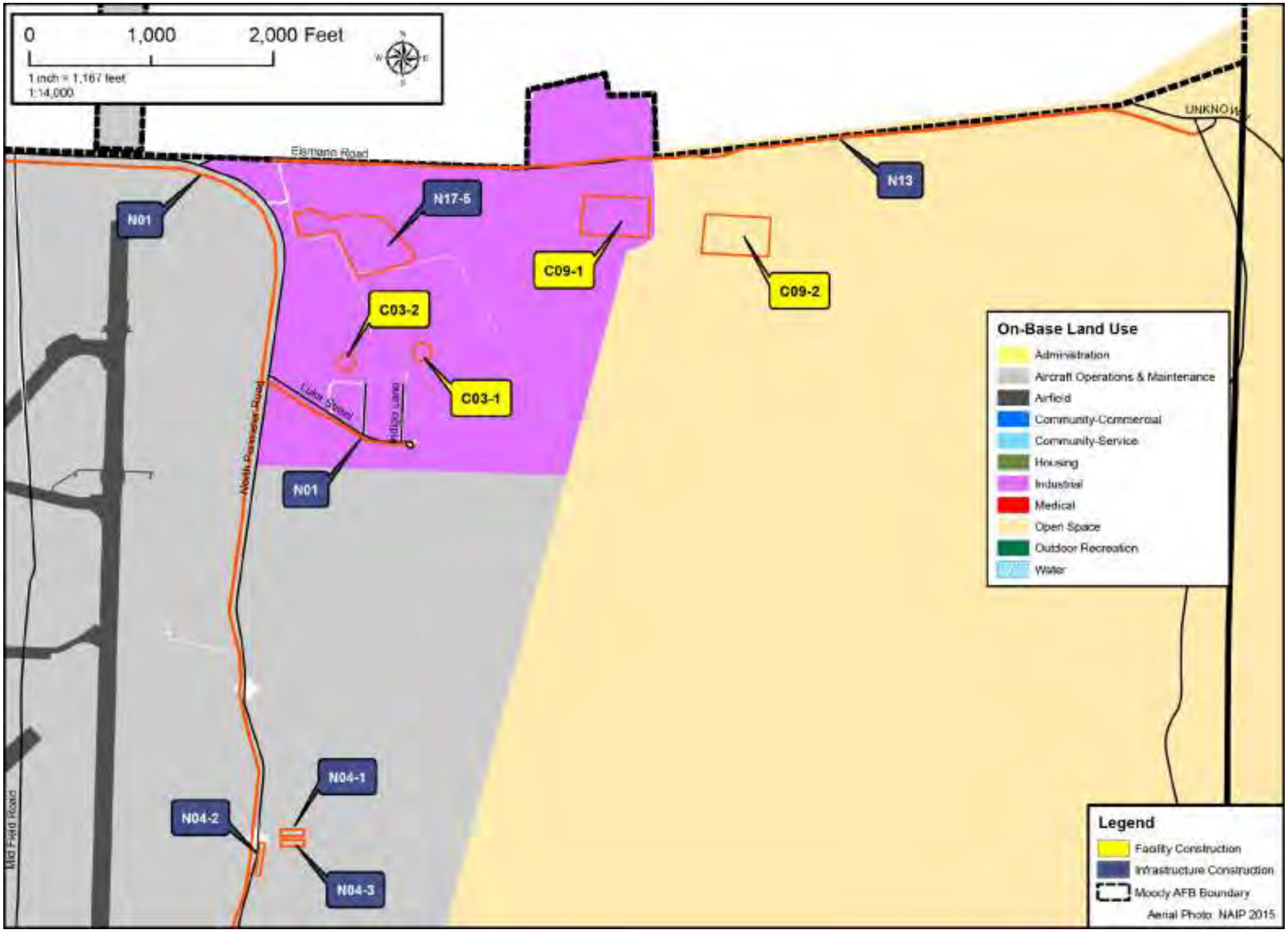
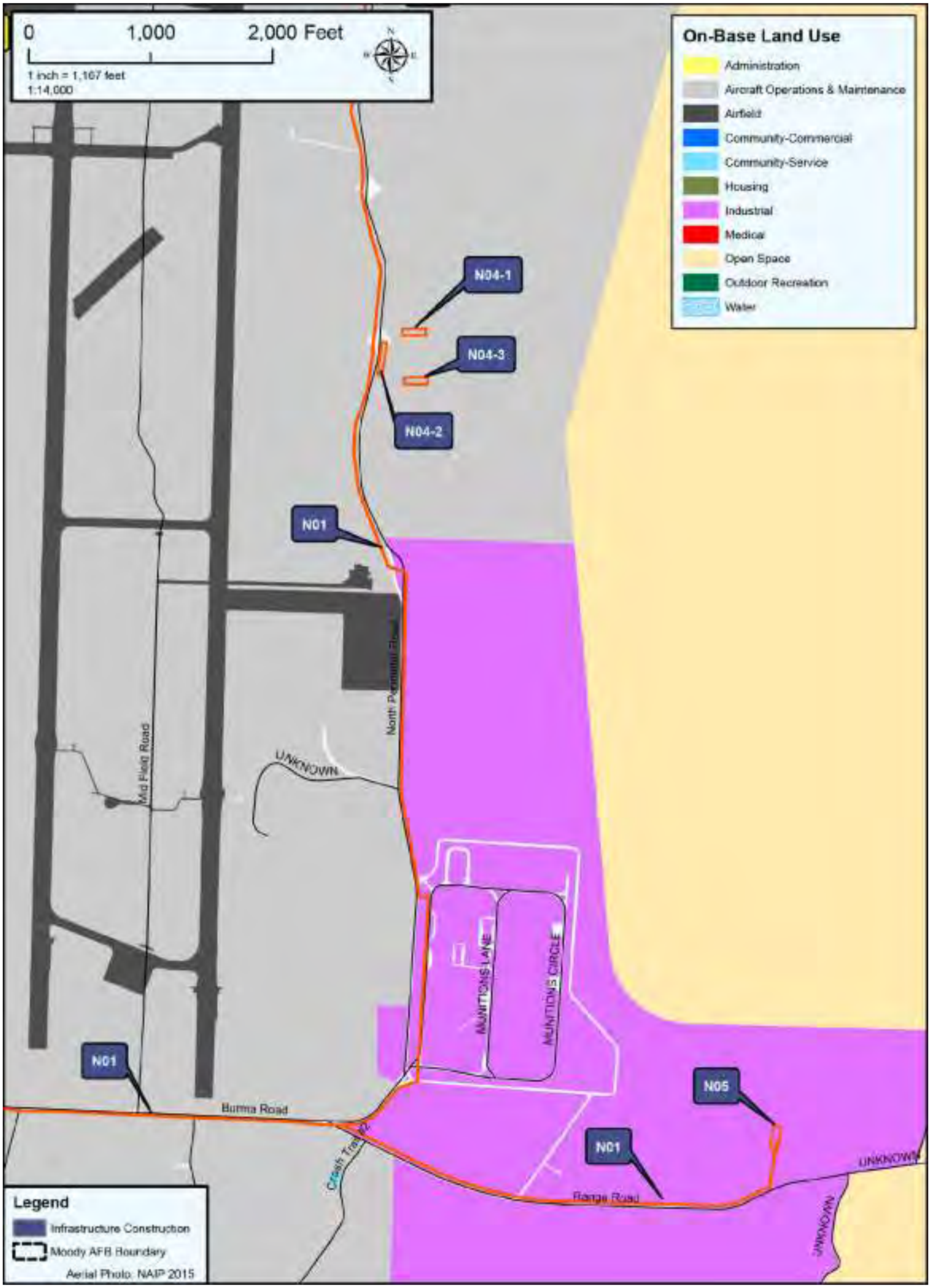


Figure 3-11: Current On-Base Land Use (Northeast) and Proposed IDP Project Locations



3.7 Hazardous Materials and Waste

3.7.1 Definition of the Resource

Hazardous materials refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act or the Solid Waste Disposal Act. In general, hazardous materials include substances that, because of their quantity concentration or physical, chemical, or infectious characteristics may present substantial danger to public health or the environment when released into the environment.

Hazardous wastes are regulated under the RCRA and are defined as any solid, liquid, contained gaseous, or semisolid waste or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity or are listed as a hazardous waste under 40 C.F.R. Part 261. The State of Georgia has adopted federal regulations for any solid waste that has been defined as a hazardous waste. These regulations are promulgated by the Board of Natural Resources in Chapter 391-3 -11 of the Rules and Regulations of the State of Georgia.

Solid wastes are defined by Georgia regulations (Chapter-391-3-4) as garbage, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, municipal, commercial, mining, and agricultural operations and from community and institutional activities. The rules establish requirements for the collection, transport, storage, separation, processing, recycling, and disposal of solid wastes.

Moody AFB ERP sites may also be affected by proposed activities. The ERP is used by the Air Force to identify, characterize, clean up, and restore sites contaminated with toxic and hazardous substances, low-level radioactive materials, petroleum products, or other pollutants and contaminants. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites.

Finally, proposed activities may affect asbestos and LBP in existing structures. Asbestos is a naturally occurring mineral that is a very effective heat and sound insulator. Consequently, it was used in many buildings as a fire and noise retardant. Friable (brittle) asbestos becomes hazardous when fibers become airborne and are inhaled. Asbestos has been linked to several diseases, including lung cancer, and has not been used in construction materials since 1987. Lead was used as an additive and pigment in paints for many years prior to 1978; therefore, older structures on the base that have multiple layers of older paint are potential sources of lead. Exposure to lead is usually through inhalation during renovation and demolition activities or through ingestion of paint chips or lead-contaminated drinking water. Lead has been associated with central nervous system disorders, particularly among children and other sensitive populations.

The ROI for solid debris and hazardous materials and wastes is defined as on- and off-base areas where hazardous materials would be utilized and hazardous wastes would be generated, as well as affected off-base areas, such as landfills were wastes would be disposed of.

3.7.2 Existing Conditions

Moody AFB

Hazardous Materials Management – A variety of products containing hazardous materials are used by the base as part of day-to-day operations. To administer these materials, Moody AFB has implemented a comprehensive hazardous material management process, including the use of a Hazardous Material Pharmacy (HAZMART). The HAZMART encompasses both a storage facility and an established set of procedures designed to control the acquisition, storage, issue, and disposition of serviceable hazardous materials. Working in coordination with the Environmental Management, Bio-environmental, and Safety Offices, the HAZMART ensures that only approved products are purchased and stored and that they are only issued to authorized users. Contractors conducting operations on the base are required to supply information to the base regarding any hazardous material utilized.

Hazardous Waste Management – The base is regulated as a large-quantity generator of hazardous wastes and maintains USEPA identification number GA0570024109. Hazardous wastes are generated by aircraft, vehicle, and equipment maintenance activities. Types of hazardous and petroleum (nonhazardous) waste generated include used oil and filters, used antifreeze, used solvent, used sealants, reclaimed JP-8, waste diesel and motor gasoline (MOGAS), fuel filters, paint waste, spent hydraulic fluid, waste corrosives, sludge from parts washers and oil/water separators, and lamps/batteries (both managed as universal waste) (Moody AFB, 2013a).

Hazardous wastes are initially stored at satellite accumulation points at work locations. No more than 55 gallons of hazardous waste or 1 quart of acute hazardous waste can be accumulated at these points. Once the storage limit is reached, the waste is transferred to the central accumulation point (building 932-B) and stored until an approved contractor removes the waste for disposal. The waste is then transported to an approved off-base treatment, storage, or disposal facility where it is managed in accordance with all applicable local, state, federal, and DoD regulations (Moody AFB, 2013a).

Moody has implemented a Hazardous Waste Management Plan that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of these wastes (Moody AFB, 2013b).

Asbestos and LBP –Several buildings would be renovated/demolished as part of proposed activities, including buildings 617, 621, 757, and 4130. There is a potential that renovation/demolition activities would disturb asbestos or LBP (if any) in these buildings. Historical asbestos survey data provide the following information on buildings 617 and 757.

Building 617 serves as the headquarters for the security and police forces at Moody AFB. The building was constructed by the U.S. military in 1941 but has been extensively remodeled and modernized. A survey in November 2009 involved collecting a total of 25 samples from seven different material types. Sampled materials included gypsum board with finishing compound, floor tiles and mastics, vinyl cove moldings and mastics, ceiling tiles, sink bottom insulation and duct insulation mastic. Of the materials sampled at building 617, none were found to contain asbestos.

Building 757 is an office and communications support facility at Moody AFB. The building was constructed by the U.S. military in 1962. A total of 44 samples were collected from 12 different material types during a survey in October 2009. Sampled materials included gypsum board and finishing compound, ceiling tiles, vinyl floor tiles and mastics, pipe insulation, vinyl cove moldings and mastics, fabric and sheet vinyl wall coverings, stucco and window glazing. Positive results for the presence of asbestos were found in gypsum board finishing compound, 9- by 9-inch black floor tiles and black floor tile mastic, and in 12- by 12-inch black floor tiles and black floor tile mastic

No asbestos sampling data are available for buildings 621 and 4130. Additionally, no sampling for LBP has been conducted at any of the buildings. Moody AFB manages asbestos and LBP in place where possible, removing it only when there is a threat to human health or the environment or when it may be impacted by construction or demolition. Georgia Environmental Protection Division regulations require facility owners and/or operators involved in demolition and renovation activities to inspect the affected facility before attempting to remove any asbestos, to file proper notification, and to handle and dispose of asbestos properly. Removal and disposal of asbestos and LBP are stipulated in project designs and are carried out in strict compliance with all applicable federal, state, and local laws, rules, regulations, and standards.

ERP Sites – The proposed location of several projects would overlap, or be located near, existing ERP sites at Moody AFB (Figure 3-12 through Figure 3-15). Table 3-8 lists these sites, as well as the affected projects. The table also summarizes the primary contaminants of concern associated with these sites. Risks are associated with potential disturbance of existing site infrastructure elements, such as groundwater monitoring wells, remediation wells, and treatment system utility lines. These ERP sites are further discussed below.

Table 3-8: ERP Sites Potentially Impacted by Proposed Projects

Site ID	Proposed Projects	Groundwater Contaminants	Soil Contaminants
FT-07, Former Fire Department Training Area	N01	VOCs, SVOCs	None
LF-03, Southwest Landfill	N17-1, N17-2	VOCs, SVOCs, metals	VOCs, SVOCs, metals
LF-04, Northeast Landfill	N17-5, C03	VOCs	VOCs (Landfill area only; 8 acres)
SS-24, Industrial Area	C01, D01, R02-1, R02-2	VOCs	None
SS-38, Flightline Area (Apron A/B) *(Includes Site SD-16)*	C02, C04, C05, N01	VOCs	None
SS-39, Flightline Area	C08-1	TCEs	None

SVOC = semivolatile organic compound; TCE = trichloroethene; VOC = volatile organic compound
Source: (Burnam, 2017)

FT-07, Former Fire Training Area – This site covers approximately 10 acres north of the munitions storage area, in the eastern portion of Moody AFB, between the runway and Grand Bay Swamp. FT-07 groundwater is divided into two areas, designated as Areas 1 and 2. Area 2 includes two treatment locations, A and B. The primary contaminants in Area 1 are benzene and trichloroethene (TCE), and the primary contaminants in Area 2 are TCE, 1,1-dichloroethene (DCE), and associated biodegradation products. Groundwater monitoring at the site is ongoing. Groundwater monitoring and remediation activities are ongoing at this site.

LF-03, Southwest Landfill – Site LF-03 is located in the southwest portion of Moody AFB. The site comprises a rectangular area of approximately 35 acres. The primary contaminants in groundwater are VOCs, primarily DCE. Groundwater monitoring and remediation activities are ongoing at this site.

LF-04, Northeast Landfill – Site LF-04 encompasses approximately 108 acres in the northeast quarter of the developed portion of Moody AFB. The site includes a former landfill, which occupies approximately 8 acres within the northwest corner of the site. The remaining 100 acres encompass the groundwater contaminant plume. Investigations have identified VOCs, primarily TCE and associated biodegradation products in groundwater. Groundwater monitoring and remediation activities are ongoing at this site.

SD-16, Flightline Storm Drain Outfall and Mission Lake – Site SD-16 is located south of an aircraft parking area and north of the Mission Lake Recreational Area on the south side of Burma Road. SD-16 encompasses the Flightline Storm Drain Outfall, Mission Lake, and the Hush House area. The SD-16 area is associated with storm drains that conduct surface water runoff from the flightline. Investigations have identified VOCs, primarily TCE and associated biodegradation products in groundwater. Groundwater monitoring and remediation activities are ongoing at this site.

SS-24, Engine Maintenance Shop (Building 785) (Industrial Area) – The Industrial Area is composed of 11 individual sites in the southwest portion of the base and is collectively referred to as the SS-24 site.

Figure 3-12: ERP Sites on Northeast Quadrant of Moody AFB

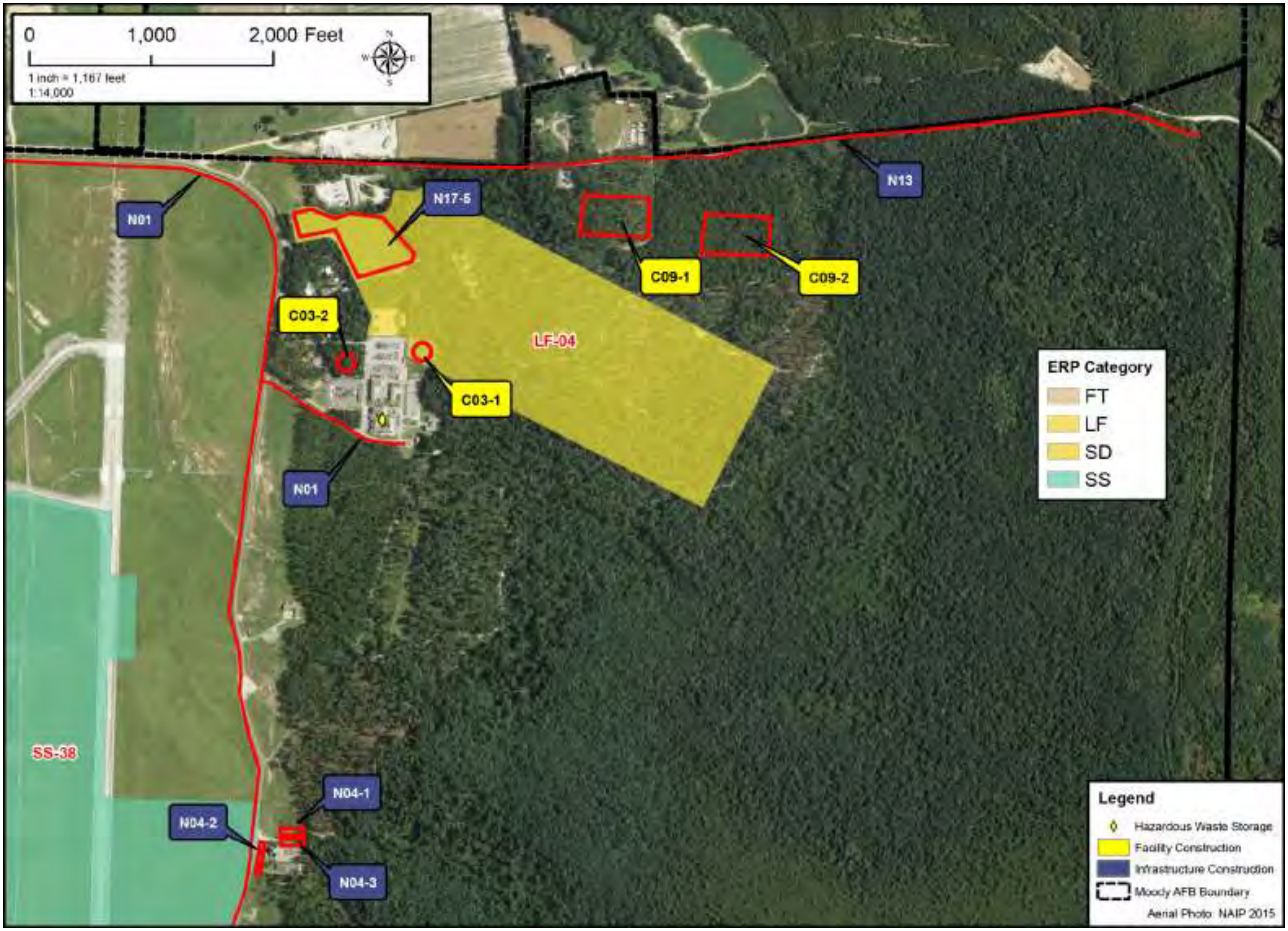


Figure 3-13: ERP Sites on Southeast Quadrant of Moody AFB

Figure 3-14: ERP Sites on Northwest Quadrant of Moody AFB

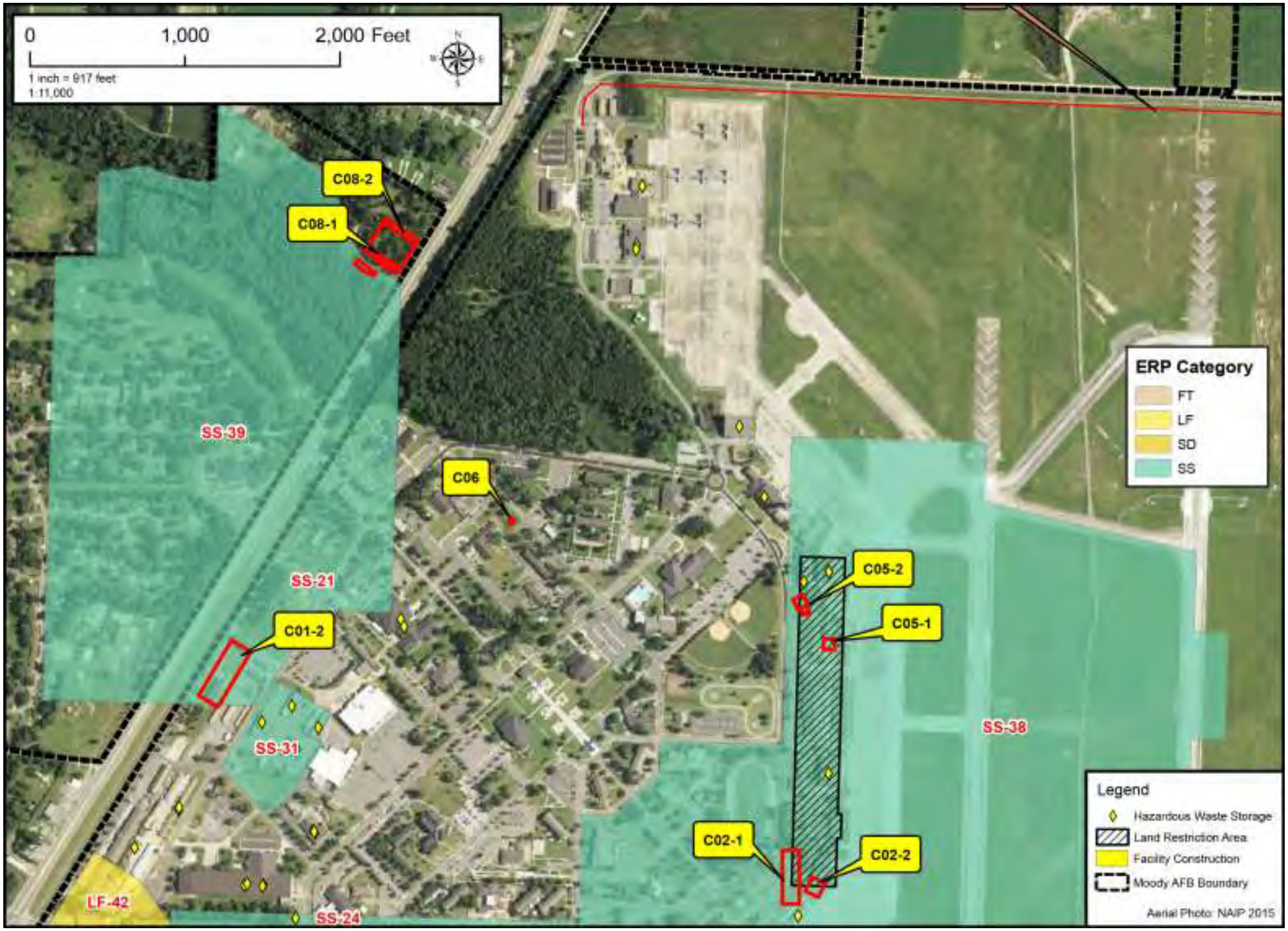
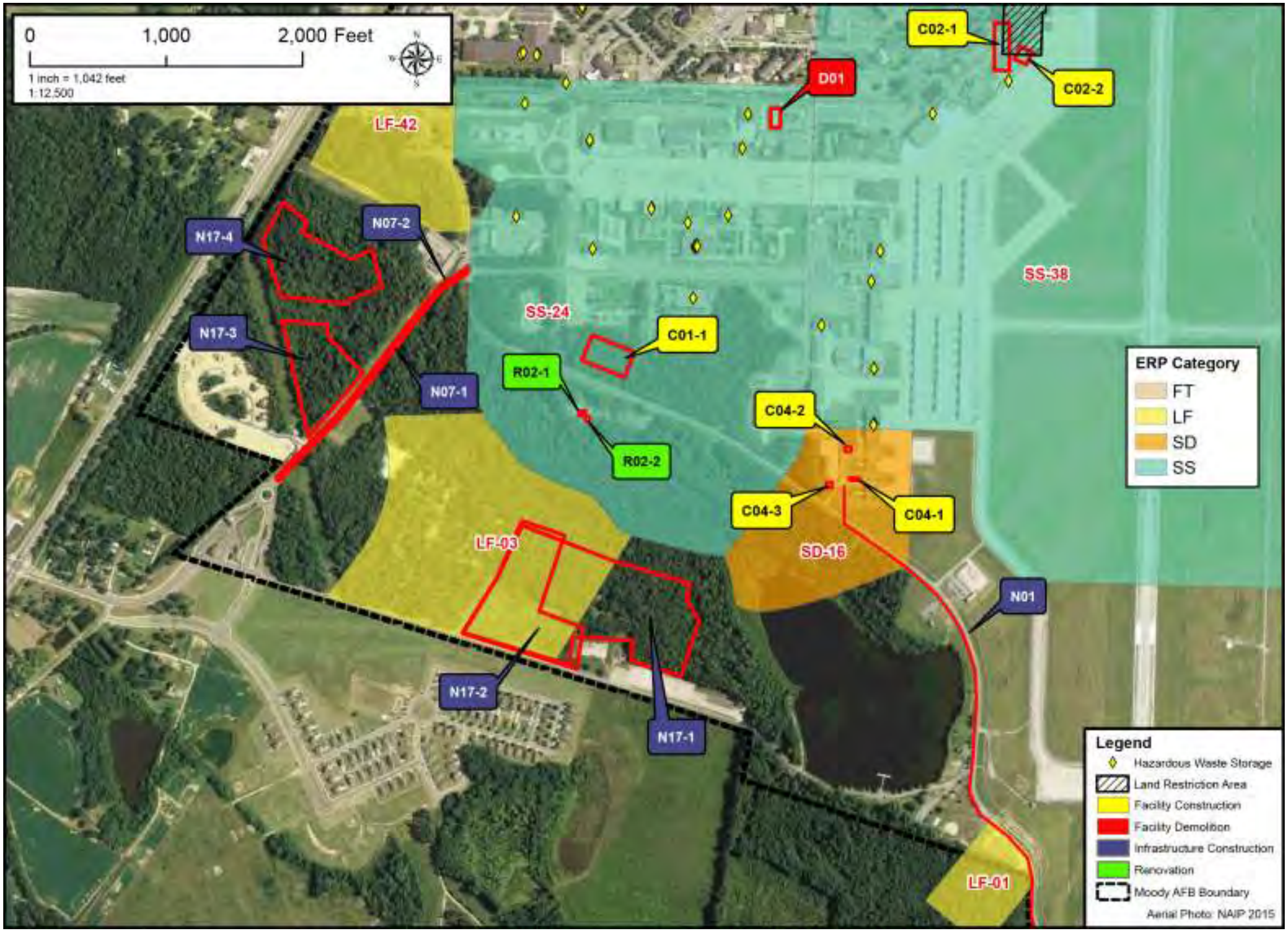


Figure 3-15: ERP Sites on Southwest Quadrant of Moody AFB



The primary contaminants in groundwater are VOCs. Groundwater monitoring and remediation activities are ongoing at this site.

SS-38, Flightline Area (Apron A/B) – Site SS-38 is centrally located at Moody AFB and covers approximately 155 acres. The west end of SS-38 overlaps the eastern portion of the group of sites referred to as the Industrial Area and extends east toward the runway. SS-38 is bounded to the north by Taxiway E and to the south by Taxiway B. The primary contaminant in groundwater is TCE. Groundwater monitoring and remediation activities are ongoing at this site.

– Site SS-39 is located on the northwest side of Parker Greene Highway, west of the north entrance to Moody AFB. The site extends north to Beatty Mill Creek and south to Alabama Road. The primary contaminant in groundwater is TCE. Groundwater monitoring and remediation activities are ongoing at this site.

Solid Wastes – All municipal solid waste at Moody AFB is disposed of in a permitted secure off-base landfill. Additionally, construction and demolition (C&D) debris is occasionally generated from various projects. The generation of C&D debris has the potential to greatly impact Moody AFB's overall solid waste generation rate and Moody AFB's attainment of solid waste goals because of the relatively large mass of material involved. Typical C&D debris includes lumber, timber, reinforcing steel, piping, wiring, brick, plaster, masonry, metal, wall board, roofing, insulation materials, concrete, asphalt, and packing/packaging materials. Contractors are urged to recycle those materials that may be recycled (typically asphalt, concrete, and occasionally—and at the request of Moody AFB personnel—metal products). No contractual language currently exists stating that contractors must recycle C&D debris, and it is at the contractor's discretion how to manage C&D debris.

The Veolia E.S. Evergreen Municipal Solid Waste Landfill, located in Lowndes County, is utilized by Moody AFB for disposal of municipal solid waste, which includes household refuse, as well as C&D debris. This landfill receives an average daily tonnage of 1,500 tons/day and has capacity until 2036 under current tonnage (Georgia Department of Community Affairs, 2015). In addition, there are two landfills in the region that are permitted to accept C&D debris: the Atkinson County Landfill and the Fitzgerald Landfill located in Ben Hill County, Georgia. These landfills also accept tree trimmings and wood debris, as may be generated by proposed land-clearing activities. The average daily tonnage and life expectancy for Atkinson County Landfill and Fitzgerald Landfill is 105 tons/day for 19 years and 13 tons/day for 10 years, respectively (Georgia Department of Community Affairs, 2015).

Grassy Pond

No industrial-type hazardous materials are used or stored at the Grassy Pond Recreation Area, and no hazardous wastes are generated. ERP sites are also not located within the Grassy Pond Recreation Area. Routine municipal solid wastes are generated from camping and other recreational activities. These wastes are collected by a contractor and disposed at one of the landfills discussed above.

3.8 Infrastructure

3.8.1 Definition of the Resource

Infrastructure, within the context of this EA, is associated with utilities and transportation. The utilities described and analyzed for potential impacts from the implementation of the Proposed Action and alternatives include potable water, wastewater, electricity, and natural gas. The description of each utility focuses on existing infrastructure (e.g., wells), current utility use, and any predefined capacity or limitations as set forth in permits or regulations. Transportation is defined as the potentially affected roadways on the main base, base gates, and adjacent public roadways. The ROI for infrastructure includes Moody AFB and the Grassy Pond Recreation Area located in south Lowndes County.

3.8.2 Existing Conditions

Moody AFB

Potable Water

The water supply aquifer is currently accessed via three main wells operating at less than 50 percent capacity (estimated) and six secondary wells located throughout the base. The three main wells located on the main base provide potable water after being treated at the nanofiltration plant. This water is sent to a 500,000-gallon underground storage tank and a 250,000-gallon elevated storage tank. Water is delivered by the main distribution system through 25 miles of 10- and 12-inch cast iron and polyvinyl chloride (PVC) pipes. The six remaining wells located throughout the base provide water for fire protection, air conditioning, recreation, and personnel support in isolated areas.

Moody AFB can currently supply a maximum of approximately 750,000 gallons per day (gpd) from the aquifer to meet peak demands. The estimated peak demand is approximately 230,000 gpd and average demand is 200,000 gpd. Nonpotable water byproducts of the filtration process are utilized for site irrigation, lowering the site's demand for potable water (Moody AFB, 2015).

Wastewater

Domestic and industrial wastewater at Moody AFB is discharged to an on-base wastewater treatment facility located adjacent to the Base Golf Course. The treatment facility is installation-owned and contractor-operated. It consists of a conventional biological treatment facility with trickle filters, clarifiers, and ultraviolet disinfection before discharging to Beatty Creek. The plant operates under an NPDES permit, which allows effluent discharge at an average rate of 0.75 million gallons per day (MGD) with a maximum of 1.125 MGD; this is equivalent to the capacity of the plant. The sludge generated from treatment is anaerobically digested, dewatered, and disposed of in a local landfill.

There are 27 lift stations in the system and approximately 131,500 linear feet of sanitary sewer lines composed of asbestos cement, cast iron, PVC, terra cotta, reinforced concrete, steel, and ductile iron. Additionally, there are three septic systems in use around the installation.

Electricity

Electricity to Moody AFB is provided by two 115-kilovolt (kV) feeders from two separate Georgia Transmission-owned substations located off-base. A single, three-phase, 12-megavolt ampere transformer steps the voltage down from 115 kV to 12.47 kV for distribution throughout the base via five primary circuits. The system is approximately 98 percent underground and 2 percent overhead. All overhead distribution is located on the main base. All power on the runway side of the base is underground. Generators provide backup and emergency power to several of the base facilities.

Natural Gas

Atlanta Gas Light and Commerce Energy are the main natural gas service and infrastructure suppliers for Lowndes County, which is provided to Moody AFB through a contract managed by the Defense Energy Support Center. Natural gas is distributed throughout the main base and base housing areas. The main base consumes approximately 27,160,000 thousand cubic feet (kcf) annually, based on average consumption for fiscal years 2012 and 2013. Peak average consumption of approximately 7,982,000 kcf per month occurs in December, January, and February, and the average base gas demand of approximately 2,233,000 kcf per month occurs in June through September (Moody AFB, 2015).

Transportation

The 39 miles of road system on Moody AFB are laid out in the standard "wagon wheel" pattern, with the hub of the wheel being Bradley Circle. Streets are classified as arterials or collectors. Mitchell Boulevard, Robbins Road, and Robinson Road are considered the arterial streets that carry the majority of traffic. Nine streets are considered collector streets: Berger, Burrell, Davis, Dexter, George, Georgia, and Hickam Streets; Darque Boulevard; and Robinson Road. These streets support distribution of traffic from the arterials to local streets or directly to intended destinations. Eisemann Road provides base access to the Recycling Center, 23d Civil Engineer Squadron FTX site, and the back access road to Grand Bay Range.

Moody AFB has three functional public entry control facilities, but only two are currently in operation. The main access point to the main base is the Davidson Road Gate, which is located at the south end of the base, is accessible by Davidson Road from Bemiss Road, and is used by base personnel, visitors, and trucks. The visitor center is located at this gate, along with truck and automobile inspection areas. This gate also receives the majority of the privately owned vehicle traffic, as most personnel live south of the base (Moody AFB, 2015). The secondary public point of entry is the Mitchell Boulevard Gate, located to the north at the intersection of Mitchell Boulevard and Bemiss Road. The inbound peak traffic for the main base is between 7 am and 8:30 am, and the peak outbound traffic occurs between 4 pm and 5:30 pm (U.S. Air Force, 2010). Three other gates (South, Contractor, and Cemetery) are only used periodically. Contractor Gate is located in the northeast corner of the base and connects Eisemann Road and Hightower Road. It is only opened during certain construction projects generally using the concrete factory.

Moody AFB is bordered by two public roads. State Route 125 (Bemiss Road) is located to the west, and Hightower Road borders the base to the north. Hightower Road also bisects the base boundary within the northern parcel of property.

Grassy Pond

Electricity to the Grassy Pond Recreation Area is supplied by Georgia Power and distributed to the site by Colquitt Electric Membership Corporation. Water is supplied by Lowndes County Utilities, but a backup water supply well, owned by Moody AFB is also located at the site. Atlanta Gas Light Company and Commerce Energy are the local service providers for natural gas infrastructure and supply.

Wastewater is handled at the Grassy Pond Recreation Area via 20 individual septic tank systems. The existing septic systems experience recurring leach field saturations during heavy rains, and these ground saturations result in leach field erosion leading to wastewater surfacing and migration into surrounding soils and waterways.

Transportation to Grassy Pond from Valdosta is via I-75 South to the Lake Park/Lakes Boulevard exit. From the exit, vehicles travel west on Lakes Boulevard and turn south onto Loch Laurel Road until reaching Grassy Pond Road, which provides access to the recreation area.

4.0 ENVIRONMENTAL CONSEQUENCES

Introduction

Potential impacts to resources identified in Chapter 3, Affected Environment, 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 a proposed action and relative to the severity of the impact.

In the context of this EA, the Proposed Action consists of the preferred alternative for each of the 17 projects identified in Section 2.3, Proposed Actions and Alternatives. All projects have a no action alternative, while only some projects have action alternatives. In most cases the action alternatives presented for these projects do not substantively differ from the preferred alternative, as they mainly differ in minor respects with regard to size and/or location to the preferred alternative. Overall, the preferred alternative and any related action alternatives are analyzed together and any substantive differences in alternatives (e.g., size, location, etc.) are addressed accordingly through analysis.

The following table (Table 4-1) provides a summary of the facility and infrastructure construction, renovation, and infrastructure project details under consideration in this EA.

Table 4-1: Summary of Proposed Action/Alternative Project Details

Project ID	Approximate Square Footage/Acres	Facility Composition	Building Age	Improved Site	Planned Activity Year
Facility Construction					
C01-1	34,740	Concrete/masonry/steel	N/A	No	2020
C01-2				Yes	
C02-1	11,359			Yes	2018
C02-2	12,000			Yes	
C03-1	17,662	N/A – Pit		Yes	2019
C03-2				No	
C04-1	1,800	Concrete/masonry/steel		Yes	2019
C04-2					
C04-3					
C05-1	4,900	Covered pad		Yes	2019
C05-2	6,900				
C06-1	80	Covered pad		Yes	2018
C08-1	52,900 (course) 600 (facility) 3,150 (parking)	Concrete/masonry/steel		Semi	2021
C08-2					
C09-1	14,174	Concrete/masonry/steel/wood		No	2018
C09-2					
Infrastructure Construction					
N01	30,100 Lf	4-inch pipe	N/A	Yes – along existing roads	2019
N04-1	7,500	Pavement		No	2018
N04-2				Partial	
N04-3	8,500				
N05-1	9,000	Asphalt		Yes	2018
N05-2		Permeable asphalt			
N07-1	45,704	Asphalt/Concrete		Partial	2019

Table 4-1: Summary of Proposed Action/Alternative Project Details, Continued

Project ID	Approximate Square Footage/Acres	Facility Composition	Building Age	Improved Site	Planned Activity Year
N07-2					
N13	157,500	Asphalt		Semi – existing gravel road	2021
N16	5,700 LF	Concrete/metal/piping		Semi	2019
N17-1	23 Acres	Concrete/metal/photovoltaic panels		No	2020
N17-2	9 acres				
N17-3	5 acres				
N17-4	8 acres				
N17-5	6 acres				
Demolition					
D01	10,388	Masonry /metal	1962	N/A	2020
Renovation					
R02-1	2,050	Concrete/masonry/metal	1986	Yes	2020

4.1 Air Quality

Analysis Methodology

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 2014 NEI data. Air emissions would be generated primarily through the combustion of fossil fuels (e.g., gasoline and diesel) by construction equipment and machinery as well as by personal vehicles of workers commuting to and from the site. Some criteria pollutants, chiefly VOCs, are also generated through off-gassing associated with paving roads and parking lots and with architectural coatings (i.e., paint) applied to renovated or newly constructed facilities. 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 5.0.7 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 emissions from construction, demolition, renovation, and worker commutes. The ACAM air analysis was run with the assumption that all construction activities take place in one year, which allows for scheduling flexibility since all the construction activities occurring in one year presents a conservative scenario for air emissions. If there are no exceedances of indicators for the conservative air scenario, logically there would be no exceedances for any other schedule. Equations and emissions factors can be found in Appendix B, Air Quality.

GHGs were included in the analysis. The primary source of carbon dioxide emissions would be fuel combustion from equipment and worker vehicles during construction, demolition, and renovation activities. Air quality calculations are provided in Appendix B, Air Quality.

4.1.1 Proposed Actions/Alternatives

While some proposed projects have alternatives, these alternatives are not appreciably different from an air emissions standpoint, as the differences between alternatives may only be the location of ground disturbance, or a few hundred square feet of disturbance. In each instance, the difference in air emissions would either be zero or negligible. Consequently, although air emissions were calculated for all alternatives and are presented in Appendix B, Air Quality, this section presents the impacts from the Preferred Alternative for each project (as identified in Section 2.3, Proposed Actions and Alternatives) and the combined emissions impacts if all of the preferred actions were implemented. Emissions associated with the Proposed Action and associated Preferred Alternatives were calculated and are summarized in Table 4-2. Impacts from construction, demolition, and infrastructure improvement projects would amount to 1.38 percent or less of each of the criteria pollutants. GHG emissions would be less than 1.05 percent of annual ROI emissions. Further, these emissions would be short term, lasting only for the duration of construction activities.

Table 4-2: Proposed Action Air Emissions Compared with Lowndes and Lanier County Emissions (tons per year)

Project Number	Annual Emissions (tons/year)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs	CO_2e
C01	4.62	5.20	5.15	0.28	0.01	1.05	911
C02	5.75	6.63	8.33	0.36	0.01	1.50	1,124
C03	4.10	4.81	0.88	0.22	0.01	0.73	974
C04	1.85	2.10	0.21	0.10	0.00	0.34	408
C05	2.04	2.50	0.46	0.11	0.00	0.43	481
C06	0.71	0.78	0.04	0.04	0.00	0.13	139
C08	3.00	3.40	0.46	0.18	0.01	0.55	597
C09	3.99	4.54	2.43	0.24	0.01	0.73	789
N01	2.06	2.30	15.86	0.11	0.01	0.36	490
N04	2.47	2.85	0.69	0.15	0.00	0.45	481
N05	2.47	2.85	0.79	0.15	0.00	0.45	481
N07	2.94	3.43	2.29	0.19	0.01	0.54	556
N13	4.55	5.78	22.86	0.30	0.01	0.88	940
N16	3.27	3.48	1.79	0.17	0.01	0.54	699
N17	6.50	9.72	120.02	0.42	0.02	1.36	1,698
R02	1.02	1.25	0.09	0.06	0.00	0.20	239
D01	1.21	1.19	0.12	0.07	0.00	0.19	212
TOTAL	**52.56**	**62.81**	**182.49**	**3.13**	**0.11**	**10.42**	**11,217**
ROI Baseline[1]	**48,938**	**6,778**	**13,206**	**3,607**	**769**	**32,519**	**1,066,207**
Percentage of Baseline	***0.11%***	***0.93%***	***1.38%***	***0.09%***	***0.01%***	***0.03%***	***1.05%***

Source: (USEPA, 2016c)
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_2 = sulfur dioxide; VOC = volatile organic compound
1. Includes Lanier and Lowndes Counties, Georgia.

While it is not possible at this time to determine the increase in end-state emissions from all facilities with complete accuracy, ACAM was used to calculate the potential increase in annual emissions from comfort heating based on the heat energy requirement of the total square footage of new facilities. As shown in Table 4-3 below, the potential emissions from heating would be insignificant at less than one-quarter ton annually and less than 0.01 percent of the ROI annual emissions for each criteria pollutant. GHG emissions would only represent 0.03 percent of GHG emissions in the ROI. The conversion of some facilities from electric to natural gas associated with Project N01 could also potentially lead to increased annual emissions overall. However, both Lowndes and Lanier Counties are in attainment for all pollutants, and any increase in criteria or GHG emissions is likely to be nominal in the context of the entire installation, which consumes over 27 million kcf of natural gas annually on average, and even more so in the regional context. Further, natural gas is a relatively clean burning fuel, and this conversion would offset the demand for electricity, which may be generated by means that produce higher rates of pollutants (e.g., coal). As discussed in Chapter 2, Description of the Proposed Action and Alternatives, no new boilers would be installed, and existing boilers that are currently only propane would be converted to natural gas, with no anticipated increase in use. Any generators already in place would continue to run on diesel from tanks in place.

Table 4-3: End-State Annual Comfort Heating Emissions for New Facilities

Activity	Annual Emissions (tons/year)						
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs	CO_2e
End-State Annual Facility Heating	0.20	0.24	0.02	0.02	0.00	0.01	290
ROI Baseline[1]	**48,938**	**6,778**	**13,206**	**3,607**	**769**	**32,519**	**1,066,207**
Percentage of Baseline	***0.00%***	***0.00%***	***0.00%***	***0.00%***	***0.00%***	***0.00%***	***0.03%***

Source: (USEPA, 2016c)

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_2 = sulfur dioxide; VOC = volatile organic compound

1. Includes Lanier and Lowndes Counties, Georgia.

Based on air emissions modeling and analysis, the Proposed Action, under any alternative combination, would not be expected to result in any significant increase in criteria pollutant air emissions, and no adverse impacts would occur. The nominal amount of GHG emissions would not likely contribute to climate change to any discernible extent.

4.1.2 No Action

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.

4.2 Earth Resources

This section discusses potential impacts to earth resources located within the IDP project areas.

Exposure to potential geologic hazards and potential for soil erosion and soil limitations were considered when evaluating impacts to soils and geology. Generally, impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering designs are incorporated into project development. Analysis of impacts to soils and geology examined the suitability of locations for proposed activities.

Impacts to soils can result from disturbances, such as grading during construction activities that exposes soil to wind or water erosion. Impacts resulting from geologic hazards can occur where the potential for harm to persons, property or the environment is high due to existing hazards.

4.2.1 Proposed Actions/Alternatives

With the implementation of best management practices (BMPs), the Air Force has identified no significant adverse impacts under the Proposed Action. Because ground-disturbing activities would exceed 1 acre as part of an overall development plan, an NPDES permit would be required. Under the permit, Moody AFB would be required to implement BMPs as part of the Erosion, Sedimentation, and Pollution Control Plan requirements. These BMPs would serve to mitigate any potential impacts to soils or subsequent impacts to wetlands, surface waters, and groundwater. With application of BMPs as required and adherence to permit stipulations, potential impacts to soil resources and groundwater recharge areas would not be anticipated.

Several projects (N01, N04, N05, N13, N16, N17-5, C03, and C09) are located within a groundwater recharge area in which the surface water may directly infiltrate underground aquifers. With adequate stormwater control and conveyance, no site restrictions are expected to the proposed development. With the implementation of BMPs as part of the Erosion, Sedimentation, and Pollution Control Plan requirements, impacts to groundwater as a result of the proposed projects would not be anticipated. Project N16 would result in a long-term beneficial impact to earth resources and groundwater. With the current septic system usage, erosion currently carries soils and any associated contaminants to Grassy Pond. It is expected that with the implementation of a sanitary sewer line, there would be reduced erosion and groundwater infiltration of gray water in that localized area.

Much of the activity associated with the preferred action and alternatives would primarily occur on Stilson loamy sand (N17-1, N17-2, N01, N05, C03) and Tifton-Urban land (C01, C02, C04, C05, C06, C08, N04, D01). With flood control and proper drainage measures, there are no major limitations that would preclude these soil types from development. Tifton soils and Stilson soils are both suitable for development, as they have only a slight erosion hazard and small risk of flooding. Five projects (C09, N13, N17-1, N17-2, and N17-5) are located in part on Tifton loamy sand while three projects (C08, N07, and N17-3) are located on Clarendon loamy sand. Clarendon loamy sand and Tifton loamy sands in particular are considered to be suitable farmland soil and would be disturbed during paving and grading activities. The disturbance footprint would negligibly impact the utility of this soil type, because it is not currently used for agricultural purposes, nor are there future plans to utilize the land for agriculture.

Under project N05-1, the use of nonpermeable asphalt would result in no negative impacts to earth resources. This material is fairly durable and, when supported by adequate stormwater conveyances, is not likely to increase the risk of erosion. However, project N05-2, which would involve the use of permeable asphalt for the parking lot, would likely result in a minor additional risk of erosion due to the relatively less durable nature of this material. During all other projects, ground disturbance due to grading, road construction, and facility construction activities could result in soil erosion within the project area. The use of permit-required BMPs would reduce any potential impacts from erosion during these activities.

4.2.2 No Action

Under the No Action Alternative, the proposed actions would not be implemented and, as a result, would not result in any additional impacts to earth resources within most of the individual IDP project areas. If the No Action Alternative is selected for project N16, there would continue to be potential negative impacts to earth resources. With the current septic system usage, erosion currently carries soils and any associated contaminants to Grassy Pond or contaminants percolate through the soil. Without the construction of a sewer line to replace the current septic systems, this erosion and soil infiltration would continue unabated.

4.3 Water Resources

Potential impacts to water resources were 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. Criteria for evaluating impacts related to water resources are water availability, water quality, loss of a particular resource and/or its functions, and adherence to applicable regulations. Impacts are measured by the potential to (1) reduce water availability or supply to existing users, (2) endanger public health or safety by causing decreased surface water or groundwater quality, or (3) violate laws or regulations adopted to protect or manage water resources. Impacts are also measured by evaluating whether there would be a temporary or permanent loss of water resources or a loss or reduction in their ability to perform their unique functions.

An impact to water resources would be significant if it would (1) adversely affect water quality or endanger public health by contributing pollutants to surface water or groundwater, (2) threaten or damage hydrologic characteristics, (3) cause the permanent loss of wetland or floodplains, or (4) violate established laws or regulations that have been adopted to protect or manage water resources of the area.

Based on the analysis presented below, implementation of any of the projects or associated alternatives under the Proposed Action would not reduce water availability or supply to existing users, endanger public health or safety by causing decreased surface water or groundwater quality, or violate laws or regulations adopted to protect or manage water resources. Additionally, none of the projects would adversely affect water quality or endanger public health by contributing pollutants to surface water or groundwater, threaten or damage hydrologic characteristics, cause the permanent loss of wetland or floodplains, or violate established laws or regulations that have been adopted to protect or manage water resources of the area. As a result, the Air Force has not identified any significant adverse impacts to water resources under the Proposed Action or alternatives.

4.3.1 Proposed Actions/Alternatives

Surface Water

Project N01 is the only project with potential direct interaction to surface water features. The installation of the natural gas pipeline would cross an unnamed tributary to Mission Lake. However, the pipeline would be constructed within the existing utility right of way and would avoid direct impacts to the tributary.

Potential indirect impacts from proposed construction activities could result in additional sediment loads being transported to surface waters in the vicinity of proposed construction. During construction, a Stormwater Pollution Prevention Plan and sediment and erosion control plan would be prepared in compliance with Georgia NPDES requirements and Georgia's Erosion and Sedimentation Act of 1975. The Stormwater Pollution Prevention Plan and sediment and erosion control plan would implement the use of management practices to prevent erosion and sedimentation. The addition of impervious surface resulting from new construction would result in increased stormwater loads throughout the installation. However, no new point discharge sources would be developed, and while the current stormwater system on the installation is expected to be sufficient to handle any increased stormwater load the need for any post-construction stormwater handling system improvements would be evaluated and identified during design phase. All applicable projects would comply with the Energy Independence and Security Act of 2007, Section 438, which requires additional stormwater retention for projects over 5,000 square feet.

Implementation of these management practices would minimize indirect impacts and no significant adverse impacts to surface waters would be anticipated.

Potential indirect positive impacts may result from implementation of Project N16. Improvement to the septic systems at Grassy Pond Recreational Area will reduce the chance for erosion and waste-water surfacing and migrating into surrounding waterways.

To minimize the potential of waste-water contamination during the removal of the system, the existing septic systems would be abandoned in accordance with Georgia DNR *Wastewater Treatment Facility Abandonment Guidelines*, including removing septic tank tops, pumping and properly disposing of contents, breaking out tank bottoms to allow drainage, placing 3 or more inches of lime in bottom of tanks, placing 6 or more inches of No. 57 stone on top of lime to allow drainage, filling tanks with compacted soil to surrounding ground elevation, grassing disturbed areas, and stabilizing ground surfaces from erosion.

Wetlands

The Moody AFB INRMP (Moody AFB, 2013), USGS 7.5-minute quadrangle maps (1:24,000 scale), U.S. Department of Agriculture soil survey data, and an aquatic resources identification study conducted in support of the proposed actions and alternatives were examined to identify the resources on the base. The USACE concurred on the aquatic resources identification study on June 5, 2017 (USACE, 2017); correspondence is provided in Appendix A, Public Involvement. Areas where the project area overlapped with water resources were identified and evaluated for the potential for impacts.

Only five projects would potentially interact directly with wetlands (Table 3-1): Projects N01, N07-1, N07-2, N13, and N17-3. Figure 4-1 through Figure 4-5 show the project interactions with wetland resources, while Table 4-4 provides, by project, the amount of wetlands potentially impacted, the type of wetland potentially impacted, and the number of wetland credits likely required based on the USACE 12-to-1 ratio as described below.

Table 4-4: Wetlands Impacted by Type, by Project

Project ID & Name	Wetlands Impacted by Type (Acres)*	
	Palustrine	12 to 1 Mitigation Acres
N01 - Addition/Repair Natural Gas Line, East of Airfield	**	0
N17 - Construct Photovoltaic Panel Arrays		
Alternative N17-3***	0.053	0.636
N13 - Widen and Pave Eisemann Road to Grand Bay Range	0.314	3.77
N07 - Widen Stone Road		
Alternative N07-1	0.005	0.06
Alternative N07-2	0.008	0.096
Total	**0.38**	**4.56**

*Estimate only; subject to change based on USACE permit requirements.
** No direct impacts to wetlands are expected from the construction of N01 as there is sufficient ROW within the existing utility corridor to install the pipeline outside of wetland boundaries. The installation of the pipeline will be within the 25 foot buffer recommended by Lowndes County Development requirements.
*** An additional 3,000 feet along the western project end is subject to jurisdictional wetland requirements. A wetland delineation is currently ongoing at this location and will assist in determining additional impacts. It is estimated based on historical wetland data that an additional 0.25 acre of wetland could be impacted.

Figure 4-1: Potential Surface Water and Floodplain Impacts (Southwest)

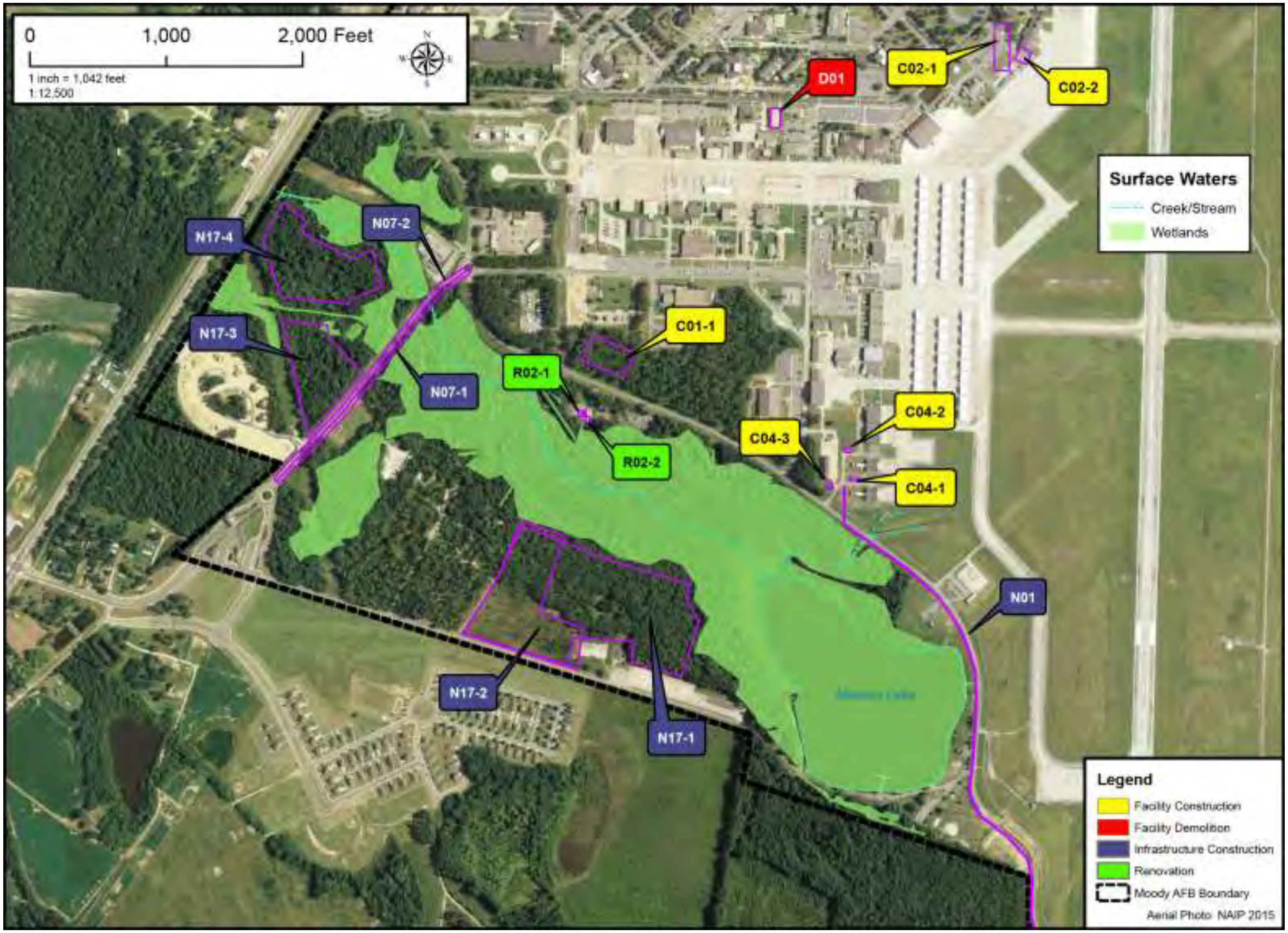


Figure 4-2: Potential Surface Water and Floodplain Impacts (Southeast)

Figure 4-3: Potential Surface Water and Floodplain Impacts (Northwest)

Figure 4-4: Potential Surface Water and Floodplain Impacts (Northeast)

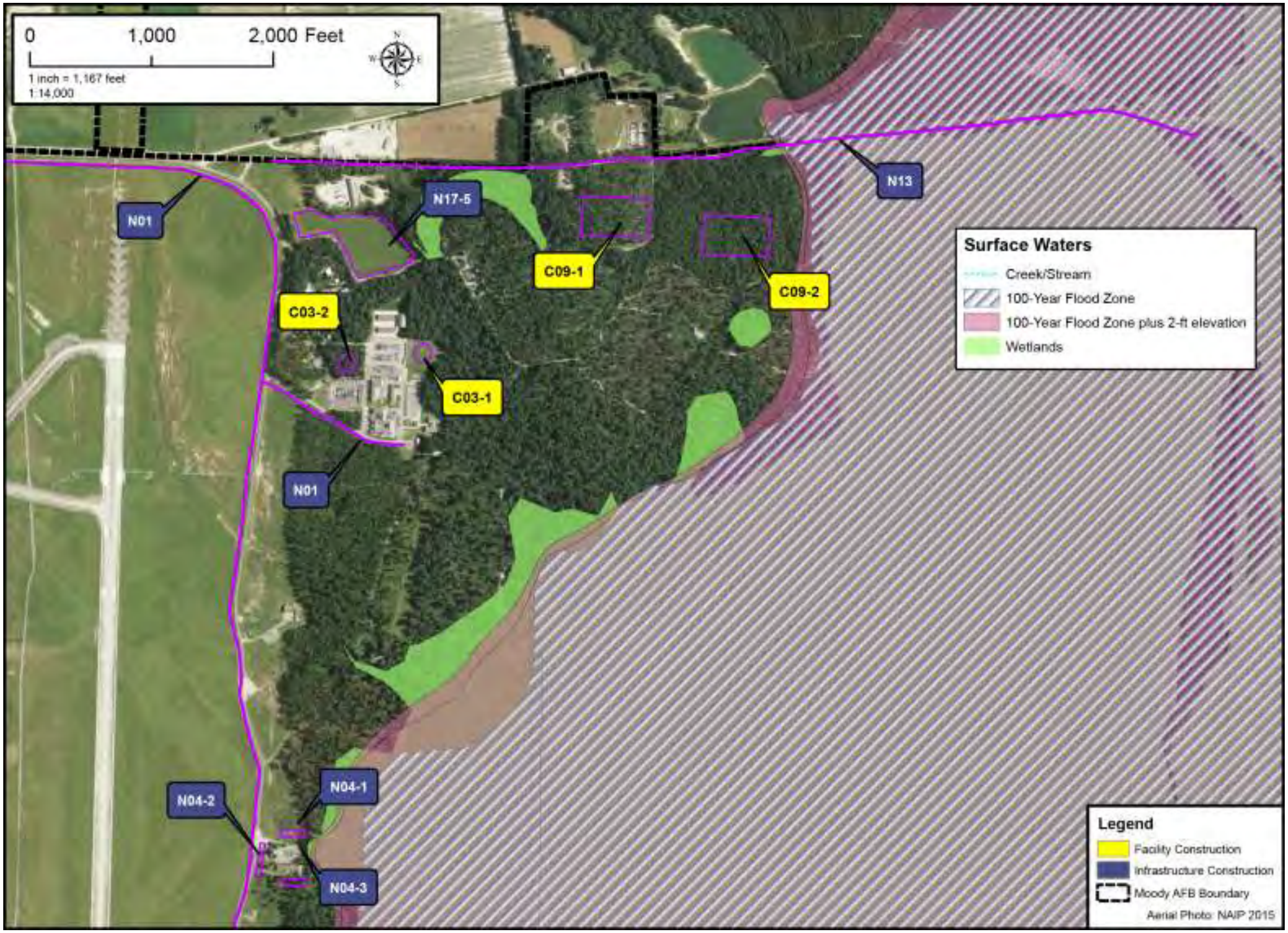


Figure 4-5: Potential Surface Water and Floodplain Impacts (Grassy Pond)

As part of the permitting process, the Air Force would be required to mitigate for the unavoidable loss of jurisdictional wetlands. The Section 404 permitting process would most likely require the purchase of wetland banking credits at a USACE-approved wetland bank in the service area where Moody AFB is located. Generally, in Georgia, the USACE requires that permit applicants mitigate for impacted wetlands at a 12-to-1 ratio. The exact number of wetland bank credits would be determined by the USACE when the final permit is issued for the proposed project. The cost for those credits is currently unknown. Currently, there are two wetland banks in the service area, but only one of these has stream banking credits for sale. Impacts across these proposed actions and alternatives would primarily be the same, with the exception of the amount and type of wetland impacted. These impacts would consist of mechanically clearing vegetation and depositing fill material within jurisdictional wetlands, resulting in the loss of wetland acreage and the associated functions (i.e., flood storage, sediment retention, wildlife habitat, and organic carbon transport). The USACE may allow an action proponent to utilize jurisdictional wetlands through the CWA Section 404 permitting process, which would require measures to minimize potential impacts. The State of Georgia has no requirements for use of these wetlands. Accordingly, the Air Force would obtain a CWA Section 404 Individual Permit (also known as a Department of the Army permit) prior to depositing fill material or initiating construction operations within jurisdictional wetlands or Waters of the United States. Given the requirements identified in Section 2.3, Proposed Actions and Alternatives, and the selection standards as described in Section 2.2, Selection Standards for Project Alternatives, there are no practicable alternatives to impacting the wetland areas. As discussed in Section 1.1, Introduction, because the execution of any of the alternatives would unavoidably occur in a wetland, a FONPA is required in conjunction with the FONSI, pursuant to the requirements of EO 11990, Protection of Wetlands (refer to the discussion in Section 2.3.1, Facility Construction Projects).

For the remaining wetlands in the project area that would not be filled, Georgia DNR recommends an undisturbed 100-foot buffer around streams or wetlands, while Lowndes County development guidelines only require a minimum of a 25-foot buffer zone around streams and jurisdictional wetland complexes that are not permitted for disturbance through the CWA Section 404 permitting process.

Indirect effects to wetlands from erosion and sedimentation during construction would be controlled using BMPs as part of the NPDES permit for stormwater runoff and a project-specific stormwater pollution prevention plan. Indirect operational impacts would be mitigated through site design that precludes stormwater discharges to wetland areas.

Provided all the requirements described above are met, impacts to wetlands would be mitigated to a level that is less than significant regardless of action or alternative.

Floodplains

The Moody AFB INRMP (Moody AFB, 2013) and FEMA Flood Insurance Rate maps (FIRM) were examined to identify floodplains on base. No FEMA FIRM analysis has occurred for the 500-year floodplain at Moody AFB. A geographic information system (GIS) analysis was performed using the FEMA FIRM 100-year base floodplain elevations for the installation. An additional 2 feet was added to those elevations to identify the locations of areas that have an elevation of 2 feet above the 100-year floodplain. These locations were then plotted using a digital elevation model to identify areas near the existing 100-year floodplain that were greater than the 100-year floodplain base elevations and less than or equal to the 100-year plus 2 feet elevation. The results are shown on Figure 4-5.

One project, Project N05, is located solely within the 100-year floodplain. Two projects, Projects N01 and N13, are located within the 100-year plus 2 feet elevation (i.e., 500-year floodplain) and the 100-year floodplain. Project N16 is located within the 500-year floodplain at the Grass Pond Recreational Area. Figure 4-1 through Figure 4-5 show the project interactions with floodplains.

EO 11988, Floodplain Management, as amended by EO 13690, Establishing a Federal Flood Risk Management Standard and Process for Further Soliciting and Considering Stakeholder Input, requires the Air Force to avoid, to the extent practicable, any possible long-and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development when there is a practicable alternative.

The segment of Project N01 located along the eastern portion of the airfield would interact with the estimated 500-year floodplain and the 100-year floodplain. No impacts to floodplains are anticipated from this project as the construction of a natural gas pipeline would not alter or add additional fill material to a floodplain. No other practicable alternatives for placement of the pipeline were available.

Project N05 is located within the 100-year floodplain. Due to the requirements of the parking lot to be near the CATM area, which is within the 100-year floodplain, no viable alternatives for construction of this parking lot where available. No major impacts to floodplains are anticipated as a result of constructing the parking lot as this construction would not reduce the flood storage capacity of the floodplain.

Project N13 would require the placement of fill material into the 100 and 500-year floodplains located to the south of the existing roadway. The floodplain is present on both the north and south side of the road and no other alternatives would meet the access requirements to the Grand Bay Range.

A portion of Project N16 would require the placement of approximately 450 linear feet of sewer pipe in the 500-year floodplain. No impacts to floodplains are anticipated from this project as the construction of sewer pipelines would not alter or add additional fill material to the floodplain. No other practicable alternatives were available.

Groundwater

No significant impacts to groundwater resources are anticipated for construction projects at Moody AFB or the Grassy Pond Recreational Area. Construction activities are not anticipated to require significant amounts of groundwater. Other potential impacts to groundwater during construction include contamination from spills or leaks associated with construction vehicles and machinery. Fuels and other petroleum products would be stored and transferred on-site during construction activities. Spill prevention plans would be in place to minimize the potential for spills and to quickly clean up any spills that would occur. The confined nature and depths of the aquifers in the vicinity of the project site limits the potential for spills to migrate into aquifers used for drinking water. Project N16 would result in a long-term beneficial impact to groundwater. It is expected that with the implementation of a sanitary sewer line there would be reduced erosion and groundwater infiltration of septic-related gray water in that localized area.

To minimize the chance of contamination during the sewer system replacement, the existing septic systems would be abandoned in accordance with Georgia DNR *Wastewater Treatment Facility Abandonment Guidelines*.

Project N16 would result in a long-term beneficial impact to groundwater. With the current septic system usage, erosion currently carries soils and any associated contaminants to Grassy Pond. Improvement to the septic systems at the Grassy Pond Recreational Area will reduce the chance of erosion and wastewater surfacing and migrating into surrounding waterways. Additionally, with the implementation of BMPs as part of Erosion, Sedimentation, and Pollution Control Plan requirements, adverse impacts to groundwater as a result of the proposed projects would not be anticipated.

4.3.2 No Action

Surface Water

With the exception of Project N16, implementation of the no action alternatives would have no interaction with surface waters, and, therefore, no adverse impacts to surface waters. Existing surface water resources would be maintained in their current state, and no special mitigation measures would be required.

Project N16 has the potential to positively impact surface water quality in the vicinity of the Grassy Pond Recreational Area, as it would replace aging sanitary sewer infrastructure that has a greater chance of failure. Therefore, implementation of the no action alternative for Project N16 has the potential for adverse impacts to surface water resources.

Wetlands

Under the no action alternative for each project, there would be no interaction with wetlands, and, therefore, no adverse impacts to wetlands. Existing wetland resources would be maintained in their current state, and no special mitigation measures would be required.

Floodplains

Under the no action alternative for each project, there would be no interaction with floodplains, and, therefore, no adverse impacts to floodplains. Existing floodplains would be maintained in their current state, and no special mitigation measures would be required.

Groundwater

With the exception of Project N16, implementation of the no action alternative for each project would have no interaction with groundwater, and, therefore, no adverse impacts to groundwater. Existing groundwater resources would be maintained in their current state, and no special mitigation measures would be required.

Project N16 has the potential to positively impact groundwater quality in the vicinity of the Grassy Pond Recreational Area, as it would replace aging sanitary sewer infrastructure that has a greater chance of failure. Therefore, implementation of the no action alternative for Project N16 has the potential for adverse impacts to groundwater resources.

4.4 Biological Resources

Impacts to biological resources may occur due to various aspects of the proposed projects, including direct physical impacts, habitat alteration/loss (including some land clearing), and short-term disturbance during construction or demolition activities.

Analysis of biological resources considered potential impacts to vegetation communities and wildlife, including sensitive species. The plant and animal resources potentially affected are identified based on habitat type and previously documented occurrence. Projected conditions were compared with baseline conditions within the context of regional habitat availability and species populations, and a determination was made as to whether impacts would be adverse. An *adverse* impact would degrade habitat quality or 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.

Based on analysis presented below, some minor adverse impacts to general wildlife species have been identified due to habitat loss associated with land-clearing activities. However, none of the proposed projects are likely to jeopardize the continued existence of a species or result in an overall decrease in population diversity, abundance, or fitness. Consequently, the Air Force has not identified any significant adverse impacts to biological species.

4.4.1 Proposed Actions/Alternatives

Vegetation

Some of the projects or alternatives within the proposed actions would occur in developed, improved, or maintained areas. Examples of these types of areas include existing facilities and associated parking lots, landscaped or mowed parcels, and roadside shoulders. Although a relatively small number of wildlife species may occur in such areas (generally those tolerant of human presence and activity), the limited habitat value substantially decreases the biological importance of these sites. Therefore, impacts to vegetation and the associated wildlife resulting from projects located within developed or maintained areas are generally considered minor and are not analyzed further in this document. These projects/alternatives include C01 (alternative 2), C02, C03 (alternative 1), C04, C05, C06, C08, N04, N05, N07, N13, N17 (alternatives 3, 4, and 5), R02, and D01. The remaining projects or alternatives would affect forested or wetland habitat and, therefore, would have a greater potential to impact biological resources. The exception is potential gopher tortoise habitat that is present within or directly adjacent to some maintained areas (e.g., roadside shoulders, maintained areas near some facilities) of the installation Figure 3-7. Potential impacts to gopher tortoises are discussed separately below. Project sites that would occur within forest habitat (pine or mixed hardwood), pine plantation, wetlands, or potential gopher tortoise habitat are shown in Table 4-5.

Table 4-5: Habitat Type Affected, by Project

Project ID & Name	Pine Forest (acres)	Mixed Hardwood Forest (acres)	Pine Plantation (acres)	Potential Wetlands Disturbance	Potential Gopher Tortoise Habitat
C01 – Security Forces Complex					
Alternative C01-1	0	0	0.8[1]		
C03 – Construct Combative Arms Training Pit near B1540					
Alternative C03-1	0	0	0		•
Alternative C03-2	0	0.4[1]	0		•
C09 – Construct 23 CES Field Training Exercise (FTX) Site					
Alternative C09-1	4.3[1]	0	0		•
Alternative C09-2	4.3[1]	0	0		•
N01 – Addition/Repair Natural Gas Line, East of Airfield					
Alternative N01-1	0	0	0	•	•
N04 – Construct Parking for the Control Tower and Radar Approach Control Facilities					
Alternative N04-1	0	0	0		•
N07 – Widen Stone Road					
Alternative N07-1	0	0	0	•	
Alternative N07-2	0	0	0	•	
N13 – Widen and Pave Eisemann Road to Grand Bay Range					
Alternative N13-1	0	0	0	•	•
N16 – Construct Waste-Water Infrastructure, Grassy Pond Recreational Area					
Alternative N16-1	0	Approximately 1.5	0		
N17 – Construct Photovoltaic Panel Arrays					
Alternative N17-1	0	23[1]	0		
Alternative N17-2	0	0	9[1]		
Alternative N17-5	0	0	0	0	•
Maximum Total	4.3	24.9	9.8		

1. Site would be partially or totally cleared.

Wildlife

Construction activities within or adjacent to pine and mixed hardwood forest, pine plantation, and wetland areas could potentially result in injury, mortality, or disturbance to wildlife species (see Table 3-5 for a list of representative species). The potential for injury or mortality would result from direct strike by vehicles or construction equipment. Mobile species, such adult birds, would not be as susceptible to physical strikes, while others, such as smaller and/or less mobile species, would have greater potential to be impacted. It is not expected that substantial numbers of wildlife would be physically impacted. In addition, most of the wildlife species expected in the project areas are locally and regionally common, and mortality or injury to a small number of individuals would not result in an overall decrease in population diversity, abundance, or fitness of any species.

Wildlife in the project areas could also be temporarily disturbed or displaced due to increased noise and human activity associated with construction or demolition. It is expected that these effects would be short term and would affect only animals in the immediate project areas. Affected individuals would generally be able to return to the area after completion of activities. While some individuals might avoid project sites long term, the affected areas are small compared with other, similar available habitat nearby.

In addition to temporary wildlife disturbance and the potential for physical impacts during construction activities, vegetation removal would represent long-term habitat loss. Some projects would result in only minor vegetation removal (e.g., paintball facility), while other projects would involve site clearance (e.g., FTX site). Among the project alternatives, a maximum of about 4 acres of pine forest, 25 acres of mixed hardwood forest, and 10 acres of pine plantation would be affected. Trees and other vegetation may support foraging, nesting, and other behaviors for mammals, birds (including migratory birds), reptiles, and amphibians. While any habitat loss could adversely affect individuals, the amount of impacted forest habitat is relatively small compared with similar habitat available in the vicinity, and several of the affected sites occur in areas near current human activity. Overall, population-level effects to any species are not expected. To the extent practicable, Moody AFB would schedule tree removal to occur outside of times of increased migratory bird activity. Increased activity typically occurs in September/October and April/May.

Reduced habitat would also occur as a result of any wetlands fill. For example, wading bird foraging area and amphibian habitat could be decreased. However, the total area of wetland habitat affected would be minor (see Section 4.3, Water Resources). Natural gas line installation/repair, road widening/paving, and photovoltaic array placement would occur along the margins of wetlands and, therefore, would directly impact a small total area, particularly within the context of approximately 5,500 acres of other wetland habitat on the installation and over 13,000 acres in the nearby GBBL complex (Moody AFB, 2013). Any wetland loss could adversely affect individuals, but population-level effects are unlikely based on the size and regional context of the affected area. Soil disturbance and changes to stormwater flow could result in discharge of sediments and pollutants into the surrounding wetlands, reducing water quality and value as wildlife habitat on the installation and in downstream areas. However, BMPs identified in Section 4.3, Water Resources, would minimize erosion and sedimentation potential. For example, a 25-foot vegetation buffer would be maintained around streams to the extent practical.

Sensitive Species

Potential effects of the proposed actions on species protected under the ESA and BGEPA are discussed below. Moody AFB has completed informal Section 7 consultation with the USFWS for the gopher tortoise and eastern indigo snake, which concurred on a may affect, but not likely to adversely affect, determination (see Appendix A, Public Involvement, Section A.5).

Wood Stork

Wood storks are only occasionally sighted in wetland areas of Moody AFB, and individuals in flight have been sighted over open water at Grassy Pond Recreational Area (Grassy Pond and Lot Pond). Nesting is not known to occur on the installation or at Grassy Pond. The proposed projects would result in disturbance only near the margin of wetland areas on the main base and would not occur near areas of previous sightings of this species. Therefore, it is unlikely that wood storks would be affected by any of the activities. If any foraging individuals were present near the edge of a wetland or at Grassy Pond when construction activities were initiated, potential impacts would be limited to temporary disturbance, and it is expected that affected individuals would resume normal activities within a short time.

Bald Eagle

On Moody AFB, bald eagles are occasionally sighted foraging in wetlands, primarily north of Grand Bay Weapons Range. Wetlands in this area would not be affected by any proposed projects. Bald eagles could occur in other areas of the base, and wetlands located near projects N01, N07, N13, N17, and R02 are considered potential eagle habitat (Moody AFB, 2013). In addition, bald eagles forage regularly in the vicinity of Grassy Pond. Any construction-related disturbance to foraging eagles would be minor and temporary and would not be expected to affect the overall foraging success or associated health of any individuals. Any eagles affected by disturbance would likely resume normal activities in a short time. Tree removal would reduce the amount of habitat that may be used for activities such as foraging, but as discussed above, the amount of impacted forest habitat is relatively small compared to similar habitat available nearby. Bald eagle nesting occurs near the southwest shoreline of Grassy Pond. Wastewater infrastructure construction would occur to the north of the pond, at a minimum distance of approximately 0.6 mile (3,168 feet) from the nesting site (maximum distance of about 1 mile). This distance would be well outside the recommended separation distance of 330 feet for similar activities (USFWS, 2007). In addition, forest habitat located between the nest site and construction area would provide a visual buffer zone, which would further diminish the potential for disturbance.

Gopher Tortoise

All or certain alternatives of projects C03, C09, N01, N04, N13, and N17 would occur in or near potential gopher tortoise habitat, based on the results of recent burrow surveys. Vehicles or other equipment associated with construction activities have the potential to strike individual tortoises or to collapse burrows. Tortoises could also be displaced or alter their activities, such as feeding, due to disturbance. For example, tortoises may retreat to their burrows when vehicles or personnel are nearby. Although this reaction would interrupt any behaviors in which the tortoise was engaged, it would also reduce the potential for direct strikes. Surveys for tortoise burrows would be conducted prior to the activities, and protection controls would be implemented as appropriate. These controls could include a combination of flagging burrows, installing temporary protective covers, relocating individual tortoises, and providing contractor education regarding protection measures. Also, heavy equipment should be staged in areas free of tortoise burrows. After activities were completed, tortoises could still use most of the affected areas. Tortoises are known to reexcavate burrows after they have been disturbed. Exceptions could possibly include sites where ground slope is altered due to relatively large areas of ground clearance and construction, such as photovoltaic panel array sites. Specific mitigation and management practices that would be implemented to protect gopher tortoises are listed in Section 6.3, Water Resources.

Eastern Indigo Snake

The eastern indigo snake could theoretically occur in most natural areas of the installation, but the probability of encountering this species during project activities is low based on the low number of historical sightings. Because of the typically close association between indigo snakes and gopher tortoise burrows, the potential for occurrence is considered greater in the tortoise habitat areas. Potential impacts include direct impact by vehicles or other equipment, displacement, and disturbance. Indigo snakes could also be affected if gopher tortoise burrows were damaged or collapsed. Therefore, the gopher tortoise protection measures described above would also provide protection for indigo snakes. In addition, construction personnel would receive education regarding indigo snake identification. If an indigo snake were sighted, construction personnel would halt activities and contact base environmental personnel.

All installation personnel are informed at the Right Start Newcomers briefing and through other established outreach efforts regarding the presence of and requirement to protect listed species, and this procedure would continue. Any additional training and monitoring activities for potential impacts to listed species would be conducted by the Moody AFB Natural Resources Office, as applicable. Given the low potential for protected species occurrence in the project areas and ongoing management efforts, the Air Force concludes that (1) there would be no significant impacts to species listed by the State of Georgia or NHP, (2) the actions would not have a measurable negative effect on migratory bird populations, (3) there would be no take of bald eagles, and (4) activities are not likely to adversely affect species listed under the ESA.

4.4.2 No Action

Under the No Action Alternative, there would be no interaction with biological resources and, therefore, no adverse impacts to vegetation or wildlife. Existing habitats and wildlife species distribution would be maintained in their current states, and no special mitigation measures would be required.

4.5 Cultural Resources

This section discusses potential impacts to cultural resources, including any traditional, historic, and prehistoric resources located within and adjacent to the 17 individual IDP-identified project areas.

Analysis Methodology

Analysis focused on assessing the potential for impacts to culturally sensitive areas, such as archaeological sites and historic structures from ground clearance, road/infrastructure construction, and facility construction/demolition/renovation activities, and 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. Adverse effects occur when these activities intersect with identified NRHP-eligible resources within the APE.

4.5.1 Proposed Actions/Alternatives

The proposed Grassy Pond Recreation Area project (N16) has been surveyed for archaeological and structural resources with SHPO concurrence and does not contain any archaeological sites, historic structures, historic districts, cemeteries, sacred sites, TCPs, or other resources identified as eligible for listing on the NRHP (U.S. Air Force, 2012). The remaining proposed project area footprints (C01, C02, C03, C04, C05, C06, C08, C09, R02, D01, N01, N04, N05, N07, N13, N17) have also been surveyed for archaeological resources with SHPO concurrence and does not contain any archaeological sites, historic districts, cemeteries, sacred sites, TCPs, or other resources identified as eligible for listing on the NRHP.

The two archaeological historic properties (9LW71 and 9LW63) located outside of the direct impact APE and within the indirect impact APE are subsurface archaeological sites, and neither site would be directly impacted by the gas line repair/addition or indirectly affected by the proposed action.

Buildings 621 would be demolished under C02-1 and renovated under alternative C02-2. Building 4130 would be demolished under project C04-1, as would building 757 under project D01-1. Project R02-1 would involve the renovation of building 1708, and C05-1 would result in the addition of storage space to building 657. Structure 757 and 621 are considered not eligible for listing in the NRHP and, as such, planned renovation and demolition activities of the structures would not result in adverse effects to cultural resources. Buildings 657 and 4130 are modern structures built in the 1990s and are less than 50 years in age, while building 1708 was constructed in the 1980s, which falls within the Cold War era. The remaining three structures (buildings 657, 1708, and 4130; associated with projects C05-1, R02-1, and C04-1, respectively) were recently evaluated as part of a base-wide historic structure evaluation effort and were determined to be not eligible for the NRHP.

The Chapel (building 110) and the Water Tower (building 618) are the only structures on Moody AFB eligible for listing in the NRHP. Neither building falls within the direct impact APE for this project. When the 1,000-foot buffer is applied to projects in consideration of indirect impacts to historic properties, two project footprints (C02-l and C02-2) are located approximately 250 feet from the Water Tower. These footprints are the proposed and alternative locations for the construction of a Fire/Crash Rescue Station adjacent to the airfield. In the November 30, 2017 letter to the HPD, in consideration of the presence of historic districts on Moody AFB, it was determined that both the Water Tower and Chapel have lost integrity of setting due to the installation's constant pace of repair, demolition, and new construction. This history of development has changed both resources' relationships with surrounding facilities and features. The Base Water Tower viewshed has been significantly altered by renovations of surrounding facilities as well as construction and demolition within the immediate area, and the base Chapel viewshed has been significantly altered since the time of construction by elimination of the adjacent Austin Ellipse roadway and major reconfigurations of Bradley Circle and Hickam Street, facility demolitions within the former Austin Ellipse, and construction of the installation's new Air Park, 23d Wing Headquarters facility and 93d Air Ground Operations Wing/23d Mission Support Group Headquarters facility adjacent to the Chapel. Given the previous loss of integrity of setting, and that these locations are adjacent to an active flight line, it is unlikely that any visual, atmospheric, or audible effects would be introduced that would further "diminish the integrity of the property's significant historic features (36 CFR § 800.5(a)(2)(v))." The land use setting of the historic property would also remain consistent with its intended use on a military facility.

On November 30, 2017, Moody AFB initiated consultation with the Georgia HPD as required under Section 106 of the NHPA of 1966. On January 31, 2018, the SHPO concurred on a finding of no adverse effect to cultural resources regarding potential impacts to archaeological and historic building resources under Section 106 of the NHPA. Additionally, Moody AFB initiated government to government consultation regarding the Proposed Action with Native American tribes on May 1, 2017. On May 1, 2017, letters were sent to the Muscogee (Creek) Nation, the Muscogee Nation of Florida, the Poarch Band of Creeks, the Seminole Nation of Oklahoma, the Thlopthlocco Tribal Town, the Kialagee Tribal Town, and the Coushatta Tribe of Louisiana. These seven tribes were also invited to comment on potential impacts to cultural resources as a result of the Proposed Action. Follow-up letters were mailed out on June 7, 2017, and additional follow-up e-mails and phone calls were conducted in January 2018 and February 2018. None of the tribes have expressed any concerns related to the IDP project. All correspondence associated with the HPD consultation and communications with the tribes are provided in Appendix A, Public Involvement, of this document.

In the case of inadvertent discovery of cultural resources, work on-site would cease and the discovery immediately reported to the cultural resources manager, who would initiate the Section 106 process. Additionally, the archaeological site must be treated as potentially eligible for listing on the NRHP until the Georgia SHPO has concurred that the site is not eligible and Air Force activity can then resume (U.S. Air Force, 2012).

4.5.2 No Action

Under the No Action Alternative, the various elements of the IDP would not be implemented and, as a result, impacts to cultural resources would not be anticipated.

4.6 Land Use

Potential impacts to land use are evaluated with respect to the extent, context, and intensity of the impact in relation to relevant regulations, guidelines, and scientific documentation. The methodology to assess impacts on individual land uses requires identifying those uses and determining the degree to which they would be affected by each alternative. Significance of potential land use impacts is based on the level of land use sensitivity in affected areas. In general, land use impacts would be significant if they were to:

- Be inconsistent or in noncompliance with applicable land use plans or policies.
- Preclude the viability of existing land use.
- Preclude continued use or occupation of an area.
- Be incompatible with adjacent or land uses in the vicinity to the extent that public health or safety is threatened.
- Conflict with airfield planning criteria established to ensure the safety and protection of human life and property.

Based on analysis presented below, the Air Force has not identified any significant adverse land use impacts from any of the proposed projects. None of the project alternatives considered for the Proposed Action would result in any substantive land use changes or significant impacts based on the criteria listed above. The majority of the proposed projects would have no impact on land use, because there would be no change to the existing land use designation for the potentially affected area or because the change would be negligible and the new land use would be compatible with the adjacent land uses. These projects would also not be prohibited or have any specific restrictions within the applicable planning districts and future planning areas as defined in the IDP.

4.6.1 Proposed Actions/Alternatives

One of the facility construction projects (Project C01-1: Security Forces Complex) and one infrastructure construction project (N17: Construct Photovoltaic Panel Arrays) would have a minor adverse impact on the existing land use for the potentially affected areas. The proposed location for Project C01-1 is presently an undisturbed area. The proposed project impacts approximately 1 acre, and the land use designation would change from open space to administration. The proposed location for Project N17-1 and N17-2 is a relatively undisturbed area that was a former obstacle course. Project N17-1 would disturb approximately 23 acres, and Project N17-2 would disturb approximately 9 acres. The land use designation would change from open space to industrial. Project N17-3 would impact approximately 5 acres of undisturbed forest area with the land use designation also changing from open space to industrial.

Two of the facility construction projects (Project C0-8: Construct Paintball Facility) and the one facility demolition project (Project D01: Demolition of Building 757) would have positive land use effects. Project C0-8 would remove the present facility from an industrial use area that is projected for a change to aircraft operations and maintenance and relocate it to an area that already has an outdoor recreation land use designation. Demolition of Building 757 (Project D01) would change the existing land use designation from administration to open space until the area is needed for future development.

4.6.2 No Action

Under the No Action Alternative, there would be no additional land use impacts beyond the scope of normal conditions and influences within the land use ROI. None of the proposed facility and infrastructure construction projects, renovation/repair projects, or facility demolition projects would be implemented, and the existing land use designations at Moody AFB and the Grassy Pond Recreation Area would remain unchanged.

4.7 Hazardous/Solid Waste

The analysis focused on how and to what degree the alternatives would affect hazardous materials usage and hazardous/solid waste generation and management, as well as how alternatives would impact ERP sites:

A significant impact would occur if:

- Implementation of the alternatives resulted in the use of hazardous materials that are highly toxic or have a potential to cause severe environmental damage (e.g., extremely hazardous substances as listed in the Superfund Amendments and Reauthorization Act Title III).
- Proposed activities generated hazardous/solid waste types or quantities that could not be accommodated by the current management system.
- A disturbance to an ERP site resulted in potential release of hazardous constituents or would pose an elevated safety risk to workers due to exposure to these constituents.

Based on the analysis presented below and the resultant impacts as compared to the criteria presented above, the Air Force has not identified any significant adverse impacts associated with solid or hazardous materials and waste.

4.7.1 Proposed Actions/Alternatives

Hazardous Materials Management – New buildings and renovations would be constructed utilizing normal construction methods, which would limit, to the extent possible, the use of hazardous materials. Petroleum products and other hazardous materials (e.g., paints and solvents) would be used during construction and renovation activities. These materials would be stored in proper containers, employing secondary containment as necessary to prevent and limit accidental spills. All spills and accidental discharges of petroleum products, hazardous materials, or hazardous wastes would be reported and mitigated. The base has emergency response procedures and site-specific contingency plans for all hazardous material locations.

Emergency generators with integral fuel storage tanks may be required at buildings proposed for construction. Management of these would be in accordance with existing oil and hazardous substances spill prevention and response plans.

Because the proposed actions/alternatives do not involve a change in the type or scope of ongoing maintenance activities, this section does not address hazardous materials or hazardous wastes used or generated from maintenance activities. No new materials would be used, and no change in the type or quantity of waste generated are expected. Moody AFB would continue to apply established procedures for the management of these materials/wastes.

Hazardous Waste Management – Hazardous and petroleum wastes would be generated in small quantities during construction and would include empty containers, spent solvents, waste paint and solvents, used oil, spill cleanup materials, and lead-acid batteries from construction equipment. These wastes would be stored in appropriate containers in accordance with applicable federal and State of Georgia regulations. Wastes that cannot be recycled would be disposed of by the contractor at licensed facilities in a manner approved by the USEPA. No change to permits, hazardous waste generator status, or management would be required, and no significant environmental impacts from implementation of the proposed actions/alternatives are anticipated.

Asbestos and LBP – As discussed in Section 3.7, Hazardous Materials and Waste, the presence of asbestos has been documented in building 757, which would be demolished under Project D01; however, no asbestos sampling data are available for other buildings that would be renovated or demolished under proposed activities (i.e., buildings 621 [demolished under Project C02-1], and building 4130 [demolished under Project C04]).

In all cases, an asbestos survey would be conducted prior to any renovation or demolition, and if present, asbestos would be abated. Disposal of asbestos wastes would be conducted as directed by the National Emission Standards for Hazardous Air Pollutants (NESHAPs). The Georgia Environmental Protection Division would be notified prior to removal actions, and only Georgia-licensed contractors would be allowed to perform the work. Contractor personnel would have to be trained and certified. Transport and disposal documentation records, including signed manifests, would also be required.

Buildings proposed for demolition may also have a potential for containing LBP. Prior to demolition, an LBP survey would also be conducted. Demolition of structures known to contain LBP would be conducted in accordance with applicable regulations. Proper disposal of any resulting lead-containing wastes would also be conducted in accordance with federal regulations, including the Toxic Substances Control Act and the Occupational Safety and Health Act. Further, these wastes would be accompanied by a waste manifest and disposed of at an approved facility.

Implementation of these waste management requirements would mitigate any adverse impacts resulting from asbestos or LBP, and neither of these materials would be employed in new construction. Consequently, there would be beneficial impacts from the removal of existing asbestos/LBP.

ERP Sites – As shown in Table 4-6 the proposed locations of several projects would overlap, or be located near, several existing ERP sites at Moody AFB. All of these sites have some form of land use controls that restrict land disturbance and prohibit groundwater use.

Impacts would be eliminated at these sites by not disturbing contaminated soils and by avoiding existing site infrastructure elements, such as groundwater monitoring wells, remediation wells, and treatment system utility lines. Specifically:

- Project N01 would be designed to avoid land disturbance at Site FT-07, as well as avoid remediation wells for Site SD-16.
- Project C01 would be sited to avoid existing ERP groundwater remediation system utilities and wells.

- Project C01 would be sited to avoid existing ERP wells and treatment system utilities.
- Project C04 would be sited to avoid damage to existing ERP wells.

Table 4-6: ERP Sites Associated with the Proposed Action/Alternatives

Site ID	Proposed Projects	Existing Land Use Controls[1]
FT-07, Former Fire Department Training Area	N01	Land disturbance is restricted and groundwater use is prohibited. This site has shallow groundwater contamination at 5 feet below ground surface.
LF-03, Southwest Landfill	N17-1, N17-2	Land disturbance is restricted and groundwater use prohibited.
LF-04, Northeast Landfill	C03	Land disturbance is restricted and groundwater use is prohibited. Landfill cover must not be disturbed; digging is prohibited.
SS-24, Industrial Area	C01-1, D01, R02-1, R02-2	Groundwater use is prohibited.
SS-38, Flightline Area (Includes Site SD-16)	C02, C04, C05, N01	Groundwater use is prohibited.
SS-39, Flightline Area	C08-1	Groundwater use is prohibited.

Source: (Burnam, 2017)

With appropriate use of personal protective equipment, exposure to soil or groundwater at these sites would be unlikely to result in adverse human health effects.

However, prior to the disturbance of any potentially affected soils, requirements for notifying the Georgia Environmental Protection Division would have to be met. This may involve generating a construction waiver by the Moody AFB ERP Office, which would coordinate with the Georgia Environmental Protection Division regarding the project and potential impacts. Also, before any work could commence, the potential presence of hazardous constituents would be communicated to workers. Site safety briefings that include distribution of material safety data sheets and discussion of safe work practices, including the use of personal protective equipment, would be conducted to protect worker health. Should soils need to be removed, transported, treated, and/or disposed, RCRA regulations would apply to the characterization, transportation, and disposal of this material.

With implementation of the procedures described above, no significant impacts to ERP sites would occur.

Solid Wastes – Construction activities associated with the proposed actions/alternatives would result in the generation of C&D debris, including concrete and asphalt rubble and scrap materials, such as wood, drywall, plastic, masonry, etc. Using conventional construction methods, approximately 4.34 pounds of C&D debris would be generated for every square foot of building space, while approximately 157 pounds per square foot would be generated from demolitions (USEPA, 2003). The resulting quantities of C&D debris associated with proposed activities are shown in Table 4-7.

As shown in Table 4-7, the Preferred Alternative for each of the listed projects would generate the highest quantity of C&D debris (i.e., approximately 3,900 tons). C&D debris would be disposed of at the Lowndes County Evergreen Landfill, Atkinson County Landfill, or the Fitzgerald Landfill. As discussed in Section 3.7, Hazardous Materials and Waste, the Lowndes County Evergreen Landfill alone accepts an average of 1,500 tons per day of debris five days per week, which equates to approximately 390,000 tons per year of capacity. Construction activities would occur over multiple years, further limiting the quantity of debris generated at any one time. Additionally, appropriate management of construction debris, including recycling and reuse when possible, would further limit any potential adverse impacts.

C&D debris would also be generated during reconstruction of paved surfaces (roads, buildings slabs, sidewalks, etc.). Building materials, such as asphalt and concrete, would not be expected to generate significant waste, since they are produced in the needed quantities and can be recycled in the event that the material or its placement does not meet specifications. In the case of paved surfaces, C&D debris would likely consist mostly of wooden forms that could be recycled.

Table 4-7: C&D Debris from Implementation of Proposed Actions/Alternatives

Project #[1]	Alterative 1 (Preferred)[2]			Alternative 2				Alternative 3[2]		
	Bld	Pav	Dem	Bld	Pav	Ren.	Dem	Bld	Pav	Dem
	Square Feet									
C01	20,100	34,740	12,325	21,100	34,740	-	12,325	-	-	-
C02	38,800	72,559	23,151	12,000	12,000	23,151	-	-	-	-
C04	1,800	-	1,056	1,800	80	-	1,056	1,800	160	1,056
C05	4,900	-	-	4,900	2,000	-	-	-	-	-
C06	80	80	-	-	-	-	-	-	-	-
C08	600	3,390	-	600	3,390	-	-	-	-	-
C09	800	29,774	-	800	29,774	-	-	-	-	-
N04	-	7,500	-	-	7,500	-			7,500	-
N05	-	9,000	-	-	9,000	-	-	-	-	-
N07	-	29,304	-	-	29,304	-	-	-	-	-
N13	-	157,500	-	-	-	-	-	-	-	-
R02	1,050	-	-	1,050	-	-	-	-	-	-
D01	-	-	10,388	-	-	-	-	-	-	-
Total SF	**68,130**	**343,847**	**46,920**	**42,250**	**127,788**	**23,151**	**13,381**	**1,800**	**7,660**	**1,056**
SW factor[3, 4]	4.34	0.434	158	4.34	0.434	4.34	158	4.34	0.434	158
Tons	148	75	3,707	92	28	50	1057	4	2	83
Total Tons			**3,929**				**1,227**			**89**

Bld = building, Dem = demolition, Pav = pavements, Ren = renovation, SF = square feet, SW = solid waste
1. Table only lists projects/alternatives that would result in the generation of construction-related solid wastes.
2. There are no renovations associated with Alternative 1 or Alternative 3 projects.
3. Source: (USEPA, 2003)
4. SW factors in units of pounds per square foot.

Any soils excavated during construction activities would be stockpiled for construction and landscaping uses, while woody debris from land-clearing activities could also be chipped or mulched on-site and used for landscaping. Other nonhazardous waste generated would be the result of construction site operations (e.g., food waste, office waste, packaging materials). The quantity of this type of waste would be minor when compared to the C&D debris generated. Under the proposed actions/alternatives, there would be no change in personnel or other activities that would result in a change in the quantity of municipal solid waste over that currently generated.

AFI 32-7042, Waste Management, requires that installations make every practical effort to maximize nonhazardous solid waste and construction debris diversion from landfills through reuse, composting and mulching, or other waste diversion activities. Furthermore, under Moody AFB's Affirmative

Procurement Program, contractors are encouraged to recycle materials discarded as waste from construction activities.

Based on the estimated quantity of solid waste associated with the proposed actions/alternatives, no significant impacts are expected, as sufficient landfill capacity exists to accommodate the additional solid waste generated from construction, demolition, and operational and activities.

As discussed in Section 3.7, Hazardous Materials and Waste, no hazardous materials are used, no hazardous wastes are generated, and no ERP sites are located at the Grassy Pond Recreation Area. Additionally, proposed construction activities would not generate C&D debris; consequently, no significant impacts would occur.

4.7.2 No Action

Under the No Action Alternative, the proposed projects as described in the IDP would not be implemented. Baseline conditions for hazardous materials, hazardous wastes, asbestos and LBP, ERP sites, and solid wastes, as described in Section 3.7, Hazardous Materials and Waste, would remain unchanged. Therefore, no significant impacts would occur under the No Action Alternative.

4.8 Infrastructure

Utilities analysis focused on assessing the existing utility capacity to accommodate increases or decreases in usage, identifying potential problems related to connecting to existing utilities, and identifying coordinating and procedural requirements associated with establishing new utility infrastructure.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, sets numerous federal energy requirements and goals that should be considered in the design, construction, and operation of any facility construction or renovation/repair projects with utility requirements. These include increasing alternative and renewable energy use, pursuing cost-effective, innovative strategies to minimize consumption of energy, water, and materials within existing building systems, and identifying alternatives to renovation that reduce existing asset deferred maintenance costs.

Potential impacts to transportation were assessed with respect to the potential for disruption or improvement of existing levels of service and changes in existing levels of transportation safety. Impacts may arise from physical changes to circulation, construction activities, and introduction of construction-related traffic. Adverse impacts on roadway capacities would be significant if roads with no history of capacity exceedance had to operate at or above their full design capacity as a result of an action. Transportation effects may arise from changes in traffic circulation, delays due to construction activity, or changes in traffic volumes.

Based on analysis presented below, implementation of any of the proposed facility and infrastructure construction projects, renovation/repair projects, or facility demolition projects would not have any significant impacts on utility or transportation. Some projects would require changes to the existing utility infrastructure at Moody AFB and the Grassy Pond Recreation Area. However, existing supply and capacities for all utilities are adequate to service the development of all proposed projects, and certain projects serve to improve utility infrastructure and energy efficiency on the installation at Grassy Pond. Regarding transportation, there would be minor adverse impacts to transportation associated with increased construction traffic; however, these impacts would be temporary and short term only during project activities. Additionally, some road improvement projects would serve to improve the transportation infrastructure at Moody AFB and result in beneficial impacts.

4.8.1 Proposed Actions/Alternatives

Moody AFB

Utilities

All of the proposed facility construction projects and two of the infrastructure projects (Project N04 and N05) would require some combination of new utility lines. For example, Projects C01, C02, C04, C08, and C09 could require some combination of new utility lines for water, sanitary sewer, electrical, natural gas, and communications. Other projects like C03, C05, C06, N04, and N05 would only require a tie-in with existing electrical lines to provide lighting for night operations. The projects would connect to existing tie-in points wherever possible. Where surface disturbance to install new utility lines would not be required, the existing utility infrastructure would be maintained. For Project D01, existing utilities connected to building 757 would be cut and capped.

Utility usage along with wastewater generation would not add to the demand on the existing systems and would not exceed permitted water or wastewater capacity ceilings, because no new permanent personnel would be added to the base population. Measures that would be incorporated into the design for the facility construction projects and any facility renovations (e.g., Project C02-2) to help meet the goals of EO 13514 include high-efficiency lighting upgrades, HVAC efficiency improvements, building automation and controls, water-efficient and low-flow fixtures, weather sealing, and replacement of windows and doors.

Project N01, Addition/Repair Natural Gas Line, East of Airfield, would have a positive effect on the existing utility infrastructure and usage. The project would enable several existing facilities to convert from electric to natural gas heating and hot water systems, which would improve energy efficiency. These facilities include buildings in the 820 BDG compound, Control Tower, Radar Approach Control facility, Fire Training Pit, Munitions Storage Area administration and control offices, Explosive Ordnance Disposal administration and storage facilities, and the CATM. The project would be compatible with the installation's existing natural gas distribution network, utilize existing utility corridors to the extent practicable, and bury lines in accordance with the International Fuel and Gas Code.

Project N17, Construct Photovoltaic Panel Arrays, would also have a positive utility impact supporting installation sustainability and to facilitate the Air Force's implementation of EO 13693 *Planning for Federal Sustainability in the Next Decade*. Renewable electricity generated by the proposed project could be credited toward the overall Air Force goal.

Project N16, Construct Wastewater Infrastructure, Grassy Pond Recreational Area, would provide for upgraded, adequate sanitary sewer infrastructure with increased capacity to accommodate increased recreational use at the area. The proposed project would also eliminate recurring leach field saturations that result in erosion and wastewater surfacing that migrates into surrounding soils and surface waters. The project would involve trenching for the sanitary sewer line routing and installation of sewer manholes, lift stations, and piping to a main lift station, with final connection to the Lowndes County wastewater treatment plant collection system. The existing septic tank systems would be abandoned in accordance with Georgia DNR guidelines.

Transportation

Adverse impacts to transportation would be limited to the existing transportation network in the project areas. Some use of public roadways would be needed to transport equipment and materials during the construction period, but they would be minimal and temporary. Projects N07, Widen Stone Road, and N13, Widen and Pave Eisemann Road to Grand Bay Range, would involve roadway improvements. Project N07 would help to increase traffic flow and improve safety issues for pedestrians and joggers. Project N13 would help to eliminate roadway deficiencies such as potholes, washboarding, and erosion and eliminate two-way traffic hazards by eliminating the narrow roadway's soft shoulders. Details of each project are provided in Section 2.3.2, Infrastructure Construction Projects. As part of the Proposed Action, the Moody AFB Transportation Plan would also need to be updated.

Because no personnel would be added to the installation under any of the proposed projects, no increase in vehicle traffic would be anticipated. Demolition and construction activities would require the delivery of materials to and removal of construction-related debris from demolition, renovation, and new construction sites. Trucks associated with these activities, along with construction crews, would likely travel Bemiss Road (Highway 125) and access the base via the Davidson Road Gate or Mitchell Boulevard Gate. Construction-related traffic would make up only a small portion of the total existing traffic volume in the area and at the base. For Project N17, construction related truck traffic would likely utilize Hightower Road from Bemiss Road and access Eisemann Road via the contractor gate located near the concrete plant.

Additionally, intermittent traffic delays, detours, and temporary road closures would result in the immediate vicinity of the facility and infrastructure construction project sites. Potential congestion impacts could be avoided or minimized by scheduling truck deliveries outside of the peak inbound traffic time and by using different access gates. Also, many of the heavy construction vehicles would be driven to the site and kept on-base for the duration of the C&D activities, resulting in relatively few additional trips. Traffic delays would be temporary in nature, ending once construction activities have ceased. As a result, no long-term or significant impacts on transportation infrastructure are anticipated.

4.8.2 No Action

The No Action Alternative would not result in any additional utility or transportation impacts beyond the scope of normal conditions and influences within the ROI.

4.9 Other NEPA Considerations

4.9.1 Unavoidable Adverse Effects

This EA identifies any unavoidable adverse impacts that would be required to implement the Proposed Action and the significance of the potential impacts to resources and issues. Title 40 of the C.F.R. §1508.27 specifies that a determination of significance requires consideration of context and intensity. Construction of new facilities and infrastructure improvements would impact the local project area at Moody AFB. The severity of potential impacts would be limited by regulatory compliance for the protection of the human and natural environment.

Unavoidable short-term adverse impacts associated with implementing the Proposed Action would include: temporary erosion and sedimentation from soils disturbance, a temporary increase in fugitive dust and air emissions during construction, intermittent noise, and minor alterations to local traffic. However, these effects are considered minor and would be confined to the immediate area. Use of environmental controls and implementing controls required in permits and approvals obtained would minimize these potential impacts. Unavoidable, long-term, adverse impacts would occur in up to 0.38 acre of wetlands depending on the project(s) initiated (see Section 4.3.1, Proposed Actions/Alternatives, Wetlands).

For the Proposed Action to be accomplished, these impacts would occur. The action is required to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units.

4.9.2 Relationship of Short-Term Uses and Long-Term Productivity

The relationship between short-term uses and enhancement of long-term productivity from implementation of the Proposed Action is evaluated from the standpoint of short-term effects and long-term effects. Short-term effects would be those associated with the demolition and construction activities for buildings and infrastructure. The long-term enhancement of productivity would be those effects associated with new and improved facilities and infrastructure after implementation of the Proposed Action.

The Proposed Action represents an enhancement of long-term productivity for personnel and operations at Moody AFB. The negative effects of short-term operational changes during construction activities would be minor compared to the positive benefits from improved facilities and infrastructure. Immediate and long-term benefits would be realized for transportation, energy efficiency, and safety after completion of the Proposed Action.

4.9.3 Irreversible and Irretrievable Commitments of Resources

This EA identifies any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action if implemented. An irreversible effect results from the use or destruction of resources (e.g., energy) that cannot be replaced within a reasonable time. An irretrievable effect results from loss of resources (e.g., endangered species) that cannot be restored as a result of the Proposed Action. The short-term irreversible commitments of resources that would occur would include planning and engineering costs, building materials and supplies and their cost, use of energy resources during construction, labor, generation of fugitive dust emissions, and creation of temporary construction noise. Replacement of impacted wetland areas through wetland mitigation credits would be required to obtain authorization under Section 404 and 401 of the CWA. No other long-term irretrievable commitments of resources would result.

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5.0 CUMULATIVE EFFECTS

This EA also considers the effects of cumulative impacts as required in 40 C.F.R. § 1508.7 and concurrent actions as required in 40 C.F.R. § 1508.25[1]. A cumulative impact, as defined by the CEQ (40 C.F.R. § 1508.7) is the "…impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

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 Actions

Within the context of this EA and the scope of the Proposed Action, past, ongoing, and future projects relevant to cumulative impacts analyses include those involving demolition, site preparation, facility/infrastructure construction, and noise generating activities within or near Moody AFB because those actions may have an incremental impact on the resources analyzed within this EA.

Past activities relevant to this cumulative impact analysis include past training activities occurring in the area east of the flightline associated with the proposed FTX site (discussed in Chapter 3, Affected Environment, as part of the baseline), as well as airfield improvements, construction activities on base including reconfiguration of the base access gate near the north end of the base, and various cantonment and transportation development projects (e.g., facility demolition and construction and infrastructure upgrades, such as proposed future Perimeter Road reroute in Fiscal Year 2018).

Current/ongoing development projects within or near the installation, as well as ongoing training/flight activities do contribute to the existing noise environment, which have been accounted for in baseline discussions presented in Chapter 3, Affected Environment. No specific past, present, or reasonably foreseeable future projects have been identified for the Grassy Pond recreational area.

Moody AFB

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, such as the Personnel Recovery Campus and Southwest Land Purchase. Identified within the Moody AFB IDP, more than 50 potential development projects have been identified for upcoming fiscal years (1 to 5 years out, 6 to 10 years out, and more than 11 years out) (Moody AFB, 2015). In addition to IDP-specific projects, the following projects have also been identified as reasonably foreseeable at Moody AFB. These projects are presented in Table 5-1 below:

Table 5-1: Actions Announced for the Region of Influence (Moody AFB IDP)

Project ID	Project Name	Purpose of the Action	Implementation Year
Facility Construction Projects			
C07	Construct Covered Physical Training Exercise Pads, and Cover Existing Pads	Project is to provide additional venues for group physical fitness training that are adequate for use even during times of high heat and humidity, by constructing three additional exercise pads with covers and constructing covers for the existing three pads.	2019
Infrastructure Construction Projects			
N02	Construct Parking at A-10 Area, Main Base	Project is to provide parking for privately owned vehicles that will meet antiterrorism/force protection standoff requirements of Unified Facilities Criteria (UFC) 4-101-01, *DoD Minimum Antiterrorism Standards for Buildings*, for maintenance and support personnel in the A-10 area.	2021
N03	Construct Additional Parking at Golf Course	Project is to provide needed additional parking for the golf course patrons, including patrons of the golf course, pro shop or snack bar.	2021
N06	Construct Anti-Terrorism Barriers at the Mitchell Gate	Project is to provide adequate security for installation personnel by constructing a purpose-built series of vehicle barriers that meet all Air Force requirements.	2017
N08	Pave Airfield Access Road	Project is to provide all weather access from Perimeter Road to airfield navigational aids and prevent foreign object damage potential from the current gravel roadbed.	2019
N09	Construct Access Road at C-130 Ramp area	Project is to provide government vehicle access along the HC-130 parking apron that will reduce the inherent hazards associated with vehicles on the flightline, such as foreign object damage, and deconflict vehicle movement with aircraft movements.	2020
N10	Construct Sidewalks in Multiple Locations	Project is to provide purpose-built sidewalks to meet the needs of assigned personnel and visitors, to include all-weather access and access for persons with impaired mobility.	2018 + (would anticipate small projects over time)
N11	Construct New Lift Station Building 1500	Project is to provide adequate waste water support to building 1500. The facility is currently on a standalone septic system, which has reached the end of its expected life.	2019
N12	Construct Jogging Trail along Stone Road, Davidson Gate/Stone Road intersection to Burma Road traffic circle	Project is to construct a trail along the east side of Stone Road to reduce the number of traffic crossings and improve user safety.	2021
N14	Construct Tracking Photovoltaic Panel Array	Project is to construct standard arrays to enhance the energy security posture and energy resilience of the installation and meet the "clean source" goals of EO 13693, *Planning for Federal Sustainability in the Next Decade*, which establishes a 10% goal for Fiscal Year 2016 that increases to 25% by Fiscal Year 2025.	2021
N15	Construct Photovoltaic Covered Car Ports	Project is to construct solar car ports to enhance the energy security posture and energy resilience of the installation and meet the "clean source" goals of EO 13693, *Planning for Federal Sustainability in the Next Decade*, which establishes a 10% goal for Fiscal Year 2016 that increases to 25% by Fiscal Year 2025.	2020
Renovation and Repair Projects			
R01	Construct an Addition and Repair Interiors of 820th BDG Training Facility, Building 1532	Project is to consolidate the 820 BDG training activities into a common area and efficiently utilize base real property. Currently their main training area is on the east side of the runway, while an indoor weapons simulator is in the main cantonment area, on the west side of the base, in building 783.	2021
R03	Construct Addition and Make Interior Repairs to the Composite	Project is to improve blast booth facilities, buildings 799 and 751, to provide a purpose-built locker/shower room and all other required work to ensure all OSHA and other safety standards are met.	2017

Table 5-1: Actions Announced for the Region of Influence (Moody AFB IDP), Continued

Project ID	Project Name	Purpose of the Action	Implementation Year
	Repair Facility, Building 717		
R04	Construct Addition and Make Interior Repairs to Base Education Office, Building 328	Project is to provide a suitably sized education support office for assigned staff and sufficient storage and classroom space to meet installation needs.	2021
R05	Provide Solar Panels on Existing Roofs, Multiple Facilities	Project is to construct photovoltaic solar arrays on existing facility roofs to enhance the energy security posture and energy resilience of the installation and meet the "clean source" goals of EO 13693, *Planning for Federal Sustainability in the Next Decade*, which establishes a 10% goal for Fiscal Year 2016 that increases to 25% by Fiscal Year 2025.	2020
Demolition Projects			
D02	Demolish Building 617	Project is to demolish building 617 to minimize maintenance and repair costs.	2022
D03	Demolish Building 621	Project is to demolish building 621 to eliminate maintenance and repair costs associated with an obsolete and unneeded facility.	2022
D04	Demolish Building Paintball Facility	Project is to demolish the existing paintball facility to eliminate maintenance and repair costs associated with an obsolete and unneeded facility that is not well-sited to meet its need and purpose.	2021
D05	Demolish Buildings 751 and 799	Project is to demolish buildings 751 and 799 to eliminate maintenance and repair costs associated with an obsolete and unneeded facility.	2018
D06	Demolish Building 4130	Project is to demolish building 4130 to eliminate maintenance and repair costs associated with an obsolete and unneeded facility and allow for construction of a facility that will meet the mission requirements of the occupant.	2019

Outside Moody AFB

No specific actions for the ROI outside of Moody AFB have been identified that could occur during the same time period as the proposed action. Typical actions that may occur over time throughout the region that are relative to the Proposed Action/Alternatives are facility and infrastructure demolition, renovation, and construction projects. However, no specific information is available on potential future projects near Moody AFB or Grassy Pond. As a result, potential interactions of the Proposed Action/Alternatives with potential future facility and infrastructure demolition, renovation, and construction projects are discussed from a qualitative perspective.

5.2 Cumulative Impact Analysis

5.2.1 Air Quality

Air quality impacts and emissions associated with the proposed construction and demolition 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, if any of the aforementioned projects were to occur over the same time period, 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 or otherwise adversely affect regional air quality.

5.2.2 Earth Resources

Whether individually or incrementally with projects associated with the Proposed Action, facility and infrastructure construction projects described in Table 5-1 have the potential to impact earth resources through increased erosion during construction. All projects discussed (past, present, and future) would be required to comply with Georgia DNR NPDES and Lanier and Lowndes County Land Disturbance Permit requirements. Under these permits, Moody AFB would be required to implement BMPs as part of the *Erosion, Sedimentation & Pollution Control Plan*. Implementation of these BMPs would minimize the potential for incremental impacts associated with soil erosion. Since the proposed projects involving activities such as construction, road building and grading activities are small to moderate in size and localized, any potential impacts would be short term. It is not anticipated that demolition projects proposed at Moody AFB (Table 5-1, Projects D02–D06) as well as renovation and repair projects (R01, R03–R05) would impact earth resources as they do not involve significant ground disturbance. Since some of these areas are located within a groundwater recharge zone, there is always a concern for groundwater contamination issues. However the proposed activities would follow proscribed BMPs for soil erosion and are unlikely to introduce contaminants that could enter the groundwater. With the implementation of BMPs and compliance with permitting requirements, the Air Force has not identified any cumulative impacts to earth resources from past, present, and future actions.

5.2.3 Water Resources

The cumulative impacts on water resources should take into account all surface-altering actions that have occurred or are likely to occur within or adjacent to Moody AFB. The most frequent effect of surface disturbance in this region is accelerated erosion and sediment deposition, which may affect water resources by contributing sediment, introducing contaminants, or increased flooding. The primary cumulative impacts on surface water and wetlands would result from any increase in the acreage of earth-moving activities and accelerated erosion that have the potential to increase sediment delivery and surface water runoff downstream or introduction of chemical contaminants into surface water bodies and wetlands. Cumulative impacts associated with groundwater would result from activities and projects that alter groundwater supply and demand or affect groundwater quality.

All proposed activities in this EA would comply with all Federal, state, or local regulations. In addition, Air Force environmental management regulations and policy would require use of BMPs to prevent soil erosion and sedimentation in streams and wetlands and use of spill prevention measures to prevent contamination in surface waters, aquifers, or wetlands from hazardous material spills. The proposed projects would disturb up to approximately 0.38 acres of wetlands depending on project alternative selected, which is negligible given the amount of wetland area associated with Moody AFB. It is expected that the Air Force would be required to purchase wetland banking credits, as specified by USACE.

Adherence to all environmental management requirements would help to ensure that there would be minimal impacts to any water resources as a result of the proposed activities. Therefore, the Air Force does not expect any of the proposed development activities to incrementally contribute to other impacts to water resources at or near Moody AFB.

5.2.4 Biological Resources

Potential cumulative impacts to biological resources would be associated with actions undertaken by Moody AFB that could affect similar forested and wetland habitats and the wildlife species associated with them. Multiple small, incremental effects can become pronounced if they reach some threshold of significance. For example, multiple actions that individually cause a small amount of habitat fragmentation could eventually result in an area becoming essentially unusable for wide-ranging species.

Such effects could be magnified by the consequences of similar activities conducted by other entities outside the installation.

Among the project alternatives, up to about 4 acres of pine forest, 25 acres of mixed hardwood forest, 10 acres of pine plantation, as well as a small amount of peripheral wetland habitat, would be impacted by the proposed actions (depending on alternative selected), and wildlife species relying on these habitats would be affected to some degree. However, it is not anticipated that the overall health or viability of wildlife populations, including sensitive species, would be substantively impacted. Substantial areas of similar habitat occur in the vicinity, including on-base property, although future incremental habitat eradication or alteration could remove some of this habitat.

The types of biological resources affected by the proposed actions are also affected by other ongoing and possible future activities on and near Moody AFB. Many of the remaining IDP projects, if implemented, would occur in existing developed or disturbed areas of the base and would have little effect on habitats or wildlife species. These types of projects would probably include most of the remaining renovation, repair, and demolition projects identified in Table 5-1, which generally consist of alteration of existing structures. Although the specific layout of many of the facility and infrastructure construction projects in Table 5-1 is uncertain at this time, there is potential for impacts to some vegetated areas that could function as wildlife habitat. Future IDP projects that occur in forested or wetland habitats would generally result in removal or disturbance to relatively small areas. Vegetated upland and wetland habitats have occasionally been altered and may be further altered in the future, due to other Air Force construction and ground training activities. Future training could also include aircraft operations and other noise-producing activities, resulting in increased disturbance to wildlife. Similar effects are also possible from off-base actions such as civilian aircraft operation, residential and commercial construction, and recreational activities, although it would be difficult to determine whether the same wildlife individuals would be affected. Additional future habitat removal and wildlife disturbance on the base and in the region is likely, but there are currently no known projects that would cumulatively jeopardize the continued existence of a species or result in an overall significant decrease in population diversity, abundance, or fitness for any species. Moody AFB manages and conserves forest and wetland resources on the installation, as described in the INRMP. Examples include wetland delineation, stormwater controls, wetland mitigation bank maintenance, selective tree removal and thinning, and prescribed burning, among others.

5.2.5 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 damage to historic properties may incrementally impact cultural resources in the region.

In regard to past, present, or future actions, any project discussed in Table 5-1 or included as part of the Proposed Action would require implementation and completion of the Section 106 process. No impacts to cultural resources are anticipated from the IDP Proposed Action in this document. If adverse effects are anticipated to occur to resources on Moody AFB, adherence to the Section 106 process in the NHPA, and standard operating procedures set forth in the Moody AFB *Integrated Cultural Resources Management Plan* would be followed. Similarly, if adverse effects are anticipated to occur to resources outside of Moody AFB, and the project is considered a federal undertaking, compliance with the Section 106 process in the NHPA would also be required. Any future development involving undertakings or future actions presented in Table 5-1 would require adherence to Section 106 of the NHPA. If the Section 106 process is followed during the implementation of the individual projects described in this document, any effects would be resolved and, as a result, no adverse effects to cultural resources would be anticipated. With the implementation of the Section 106 process and as there are no identified impacts to cultural resources and no cumulative impacts are expected for this resource area under this action in conjunction with other past, present, or future proposed actions.

5.2.6 Land Use

Implementation of the Proposed Action would convert a small amount of existing open space to other land uses, and other potential future activities may result in land use changes throughout the installation. However, no substantial or significant cumulative impacts resulting in land use incompatibility have been identified, given that these land use conversions occur within the installation and would be consistent with current uses on Moody AFB.

5.2.7 Hazardous/Solid Waste

Proposed activities involve demolition of existing structures and construction of new buildings and pavements, resulting in the generation of C&D debris. However, the estimated quantity of generated debris, when compared to regional landfill capacity, would not represent a significant impact to the life expectancy of the landfills. Consequently, significant cumulative impacts are not anticipated.

5.2.8 Infrastructure

The Proposed Action would have a negligible impact on utilities, and a few projects would improve the existing utility infrastructure and capacity for Moody AFB and the Grassy Pond Recreation Area. Minor, short-term transportation impacts would occur during construction, but the widening of Stone Road and the widening and resurfacing of Eisemann Road would improve the existing transportation infrastructure. Other development projects occurring during the same timeframe may also contribute to minor, short-term transportation impacts during construction activities, while other transportation improvement projects and utility upgrades throughout the installation would serve to improve installation transportation and utility infrastructure over the long term. There would likely be beneficial cumulative impacts to transportation and utility infrastructure from these types of improvements, while any adverse cumulative impacts would be minor and short term.

6.0 MITIGATIONS AND BEST MANAGEMENT PRACTICES

No significant adverse impacts have been identified in this EA that would require mitigation measures. However, there are special requirements such as permits that have been identified that would be required to implement the Proposed Action/Alternatives, many of which may include standard BMPs. This chapter identifies special requirements such as permits, as well as standard operating procedures (those that are already part of standard management activities or other operations at Moody AFB), recommended operating procedures/BMPs (not currently part of Moody AFB operations but recommended to further minimize adverse impacts), and special operating requirements (adjustments to proposed activities that would serve to further minimize any identified adverse impacts).

No special requirements or operating procedures have been identified for the following resource areas: air quality, land use, cultural resources, and infrastructure.

6.1 Air Quality

Mitigation measures that would be implemented and control devices that will be used to minimize air emissions would include application of water or dust-controlled agents during clearing and grading and on unpaved traffic areas in order to implement dust control measures. Exhaust emissions from diesel-fueled construction equipment and vehicle engines may be controlled by minimizing idling and complying with USEPA mobile and non-road regulations.

6.2 Earth Resources

An NPDES General Permit issued by the Georgia DNR Environmental Protection Division would be required for ground-disturbing activities associated with the proposed construction activities. Furthermore, a Lowndes County Land Disturbance Permit would be required in accordance with the Georgia Erosion and Sediment Control Act, the authority of which is delegated to Lowndes County. Under these permits, Moody AFB would be required to implement BMPs as part of the *Erosion, Sedimentation & Pollution Control Plan* requirements.

6.3 Water Resources

Grading and excavation activities associated with construction have the potential to increase runoff, erosion, and sedimentation in wetlands. Any potential impacts to surface water and groundwater would be prevented or minimized by implementing permit-related erosion BMPs during and after construction. Separate Georgia NPDES Construction Stormwater General Permit and land disturbance activity permits from Lowndes County would be required. Permit conditions would specify BMPs and mitigation measures required to prevent fugitive soil, sediment, and other potential contaminants from entering water bodies and wetlands. Such conditions could include minimization of earth-moving activities during wet weather/conditions, covering soil stockpiles, installation of silt fencing and sediment traps, and revegetation of disturbed areas with native plants as soon as possible to contain and prevent any off-site migration of sediment or eroded soils from the project areas.

In accordance with UFC 3-210-10, LID (as amended, 2016) and the Energy Independence and Security Act Section 438 (42 USC §17094), any increase in surface water runoff as a result of proposed construction would be attenuated through the use of temporary and/or permanent drainage management features. The integration of LID design concepts incorporates site design and stormwater management to maintain the site's pre-development runoff rates and volumes to further minimize potential adverse impacts associated with increases in impervious surface area. Site planning design, construction, and maintenance strategies will be implemented to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of any property where the project exceeds 5,000 square feet.

These strategies will focus on restoration of the predevelopment hydrology for temperature, rate, and volume and duration of flow.

Site drainage plans for development areas should provide effective engineering controls and adequate naturally vegetated buffers around unused wetlands to prevent any soil, sediment, or other potential contaminants resulting from stormwater runoff from impervious surfaces (e.g., roads and roofs) from entering these sensitive natural resources. Following construction, disturbed areas not covered with impervious surfaces would be reestablished with appropriate vegetation and native seed mixtures and managed to minimize future erosion potential.

A USACE Section 404 CWA Permit will be required for disturbance of the wetland areas, with wetland mitigation required (the extent of which to be determined during permitting). In addition to USACE requirements, the Lowndes County development guidelines require a minimum of a 25-foot buffer zone around streams and jurisdictional wetland complexes that are not permitted for disturbance through the CWA Section 404 permitting process.

The Georgia DNR Watershed Protection Branch has made the following recommendations in regard to similar projects:

- Machinery be kept out of streams during construction and use of stringent erosion controls.
    - Machinery will be excluded from streams to the extent practicable; any NPDES or USACE Section 404 permitting requirements will be adhered to.
- Maintain a 100-foot vegetation buffer (at least shrubs and ground vegetation) around streams
    - A vegetative buffer will be maintained around streams to the extent that project design allows.

Changes to the Proposed Action (e.g., additional buildings or construction activities beyond the scope of the projects as defined in Chapter 2, Description of the Proposed Action and Alternatives) may require new stormwater management analyses.

6.4 Biological Resources

The following standard operating procedures would be implemented as part of normal natural resource management requirements on Moody AFB as outlined in the Moody INRMP.

- Provide education to all installation personnel, through the Right Start Newcomers briefing and other established outreach efforts, on the presence of and the requirement to protect listed species.
- Before construction activities begin, conduct site-specific surveys for gopher tortoise burrows in upland portions of the site. Stage heavy equipment away from any burrow locations. If burrows are found in the project sites, implement protection measures as directed by the Moody AFB Natural Resources Manager. Protection measures that would be implemented if tortoises were observed in the affected area are expected to include:
    - Remove tortoises from potentially impacted burrows using accepted protocols.
    - Destroy the burrows of captured tortoises to prevent recolonization.
    - Mark (if necessary) and relocate captured tortoises to the 71st Colony east of the airfield, and retain the tortoises in a temporary enclosure to increase site fidelity.
- In order to reduce the potential for impacts to bird nesting activity and the risk of harm to migratory birds, conduct tree-clearing activities between September 1 and March 31 to the extent practicable.

6.5 Hazardous/Solid Waste

Disposal of any asbestos wastes would be conducted as directed by the NESHAPs. The Georgia Environmental Protection Division would be notified prior to removal actions, and only Georgia-licensed contractors would be allowed to perform the work. Contractor personnel would have to be trained and certified. Transport and disposal documentation records, including signed manifests, would also be required. Also, prior to demolition, an LBP survey would be conducted. Demolition of structures known to contain LBP would be conducted in accordance with applicable regulations. Proper disposal of any resulting lead-containing wastes would also be conducted in accordance with federal regulations, including the Toxic Substances Control Act and the Occupational Safety and Health Act. Further, these wastes would be accompanied by a waste manifest and disposed of at an approved facility.

Prior to construction activities on or near ERP sites, requirements to notify the Georgia Environmental Protection Division would be met. Also, should soils need to be removed from these sites, RCRA regulations regarding the characterization, transportation, and disposal of this material would be followed. Prior to disturbing these soils, the potential presence of hazardous constituents would be communicated to workers. Site safety briefings that include distribution of material safety data sheets and discussion of safe work practices would be conducted to protect worker health.

Impacts would be eliminated at the following sites by not disturbing contaminated soils and by avoiding existing site infrastructure elements, such as groundwater monitoring wells, remediation wells, and treatment system utility lines. Specifically:

- Project N01 would be designed to avoid land disturbance at Site FT-07, as well as avoid remediation wells for Site SD-16.
- Project C01 would be sited to avoid existing ERP groundwater remediation system utilities and wells.
- Project C01 would be sited to avoid existing ERP wells and treatment system utilities.
- Project C04 would be sited to avoid damage to existing ERP wells.

Project designs will consider measures to avoid disturbance of existing ERP site infrastructure elements, such as groundwater monitoring wells, remediation wells, and treatment system utility lines.

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7.0 PERSONS AND AGENCIES CONTACTED

Name	Title / Responsibility
Hank Santicola	Moody AFB Environmental Planner/NEPA Program Manager
Gregory Lee	Moody AFB Environmental Element Chief
U.S. Army Corps of Engineers	
U.S. Fish and Wildlife Service	
Georgia Environmental Protection Division	
Georgia Department of Community Affairs	
Georgia Wildlife Resources Division	
Georgia Historic Preservation Division	
Georgia Department of Transportation	
South Georgia Regional Planning Council	
Lanier County Commission	
Lowndes County Commission	
Muscogee (Creek) Nation	
Muscogee Nation of Florida	
Poarch Band of Creeks	
Seminole Nation of Oklahoma	
Thlopthlocco Tribal Town	
Kialagee Tribal Town	
Coushatta Tribe of Louisiana	

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9.0 LIST OF PREPARERS

Kevin Akstulewicz, *Project Manager*
18 years, environmental science
B.S., Environmental Science & Policy

Brad Boykin, *Air Quality*
12 years, environmental science
M.S., Biotechnology
B.S., Biomedical Science

Rick Combs, *Biological Resources*
15 years, environmental science
M.S., Biology
B.S., Biology
B.S., Business Administration

Mike Deacon, *Land Use, Infrastructure*
24 years, environmental science
B.S., Environmental Studies
B.S., Environmental Health

Luis Diaz, *Hazardous/Solid Wastes*
21 years, environmental engineering
M.S., Environmental Engineering

Jason Koralewski, *Cultural Resources, Earth Resources*
21 years, environmental science
M.A., Anthropology
B.A., Anthropology

Mike Nation, *GIS Analysis and Figures*
15 years, GIS specialist
B.S., Environmental Science

Brian Tutterow, *Water Resources*
20 years, wetland scientist
B.A., Biology

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APPENDIX A

PUBLIC INVOLVEMENT

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Appendix A

A.1 PUBLIC NOTIFICATION

NOTICE OF INTENT

Faith & Family

Friday, March 17, 2017

7A

PUBLIC NOTICE

POTENTIAL TO IMPACT
WETLANDS / FLOODPLAINS

MOODY AIR FORCE BASE, GEORGIA

The Air Force is preparing an Environmental Assessment (EA) to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general individual projects are needed to improve the physical infrastructure and functionality of Moody AFB to meet current and future mission and facility requirements.

Construction and improvement activities are subject to Executive Order 11990, Protection of Wetlands, and Executive Order 11988, Floodplain Management, requirements and objectives because up to approximately 0.38 acres of wetlands and two acres of floodplain, depending on the projects initiated, may be potentially impacted. The Air Force requests advance public comment to determine if there are any public concerns regarding the projects' potential to impact wetlands and floodplains. The Air Force would also like to solicit public input or comments on potential project alternatives. The proposed projects will be analyzed in a forthcoming EA and the public will have the opportunity to comment on the draft EA when it is released.

The public comment period ends on April 17, 2017. Please submit comments or requests for more information to Mr. Hank Sardoski, Environmental Planner, by standard mail to:
23 CES/CEIEA, 3485 Georgia St, Moody AFB, GA 31699
or by calling (229) 257-2386.

Celebrating Community • Reporting Facts • Demanding Accountability

Appendix A

NOTICE OF AVAILABILITY OF DRAFT ENVIRONMENTAL ASSESSMENT (EA)

Calendar & Events

9A

COMMUNITY CALENDAR

FRIDAY

SATURDAY

SUNDAY

MONDAY

TUESDAY

UPCOMING

NOTICE OF AVAILABILITY OF AN ENVIRONMENTAL ASSESSMENT

Appendix A

DISTRIBUTION LETTER FOR DRAFT EA

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

JANUARY 18, 2018

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

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

SUBJECT: Proposed Installation Development Plan (IDP), Moody AFB GA

1. Enclosed please find a copy of the Draft Environmental Assessment (EA) the U.S. Air Force has prepared for proposed development projects at Moody AFB, Georgia.

2. The Air Force proposes to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units at Moody AFB, Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general individual projects are needed to improve the physical infrastructure and functionality of Moody AFB to meet current and future mission and facility requirements. Depending on projects selected and implemented site preparation to allow for demolition, new construction and infrastructure improvements would affect up to approximately 32 acres throughout the installation and Grassy Pond, and would include up to approximately 0.375 acres of wetland disturbance on Moody AFB.

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, GS-14, DAF
Deputy Base Civil Engineer

Attachment:
Draft Environmental Assessment for Installation Development at Moody AFB, Georgia

Global Power for America

A.2 AGENCY CORRESPONDENCE

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 Installation Development 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 36 installation development projects. Moody AFB is located in south central Georgia, north of the city of Valdosta on federal property in Lanier and Lowndes Counties (Attachment 1). The proposed projects are located throughout the base within the installation boundary (Attachment 2).

2. The purpose of the assessment is to evaluate the potential environmental impacts that may arise from the implementation of the 36 projects selected from the Moody AFB Installation Development Plan and approved as installation development priorities for the next five years (2017-2022). The 36 projects include initiatives for facility construction, infrastructure construction, repairs and renovations, and demolition.

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 in the study.

5. If you have any specific items of interest about the proposal, please contact the EA Project Manager, Mr. Hank Santicola at 23d Civil Engineer Squadron, 3485 Georgia Street, Moody AFB GA 31699, via e-mail at henry.santicola.2@us.af.mil, or by phone at (229) 257-2396 within 30 days of receipt of this letter.

John L. Eunice, III

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

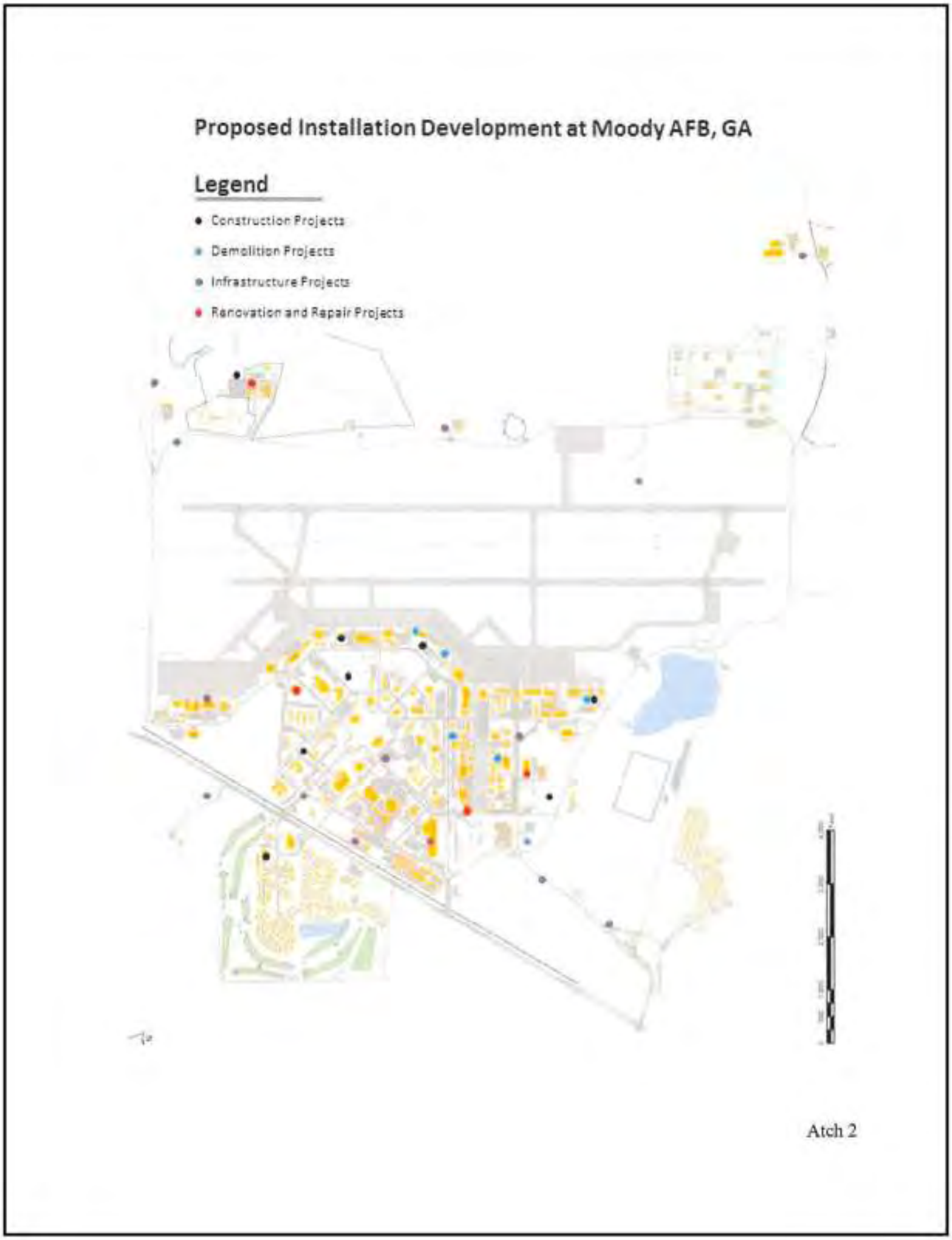
2 Attachments:
1. Location of Moody AFB, Georgia
2. Location of Proposed Development Projects

Global Power for America

Appendix A

Atch 1

Appendix A


Proposed Installation Development at Moody AFB, GA
Legend
Construction Projects
Demolition Projects
Infrastructure Projects
Renovation and Repair Projects
Atch 2

Georgia Department of Natural Resources

Environmental Protection Division • Watershed Protection Branch
2 Martin Luther King Jr. Drive • Suite 1152 East • Atlanta • Georgia 30334
(404) 463-1511; Fax (404) 656-2453
Judson H. Turner, Director

April 6, 2016

TO: Mr. Hank Santicola, Project Manager
23 Civil Engineer Squadron
3485 Georgia Street
Moody AFB, GA 31699

FROM: Jennifer Jones JJ
Environmental Engineer
Wastewater Regulatory Program

RE: Moody Air Force Base (AFB)
Proposed Installation Development
Intergovernmental Review
EPD Project #2016-068
Lowndes County

Project Summary: This project consists of 36 installation development projects. The proposed projects are located throughout the base within the installation boundary. The 36 projects include initiatives for facility construction, infrastructure construction, repairs and renovations, and demolition.

- [x] This project is considered to be consistent with those state acts and/or rules and regulations with which this organization is concerned.

- [ ] This project is not consistent with:

    - [ ] The goals, plans, policies, or fiscal resources with which this organization is concerned.

    - [ ] The criteria for developments of regional impact, federal executive orders, acts and/or rules and regulations administered by your agency. Negative environmental impacts or provision for protection of the environment should be pointed out.

- [ ] This project does not impact upon the activities of the organization.

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

April 14, 2016

Lieutenant Colonel Oscar F. Portillo
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attention: Mr. Hank Santicola

Re: USFWS 2016-0430

Dear Colonel Portillo:

Thank you for your letter of notification for the upcoming Environmental Assessment (EA) to assess the potential environmental consequences associated with 36 installation development projects at Moody Air Force Base (AFB), Lowndes County, Georgia. The 36 projects were selected from the Moody AFB Installation Development Plan and involve facility construction, infrastructure construction, repair and renovations and demolition. 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.*), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), and 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.

Five federally listed species were identified as potentially affected by proposed action. These species are: frosted flatwoods salamander *(Ambystoma cingulatum)*, eastern indigo snake (*Drymarchon couperi*), gopher tortoise (*Gopherus polyphemus*), wood stork (*Mycteria americana*), and American alligator *(Alligator mississippiensis)* (alligator). Additionally, the bald eagle (*Haliaeetus leucocephalus*), is protected under the BGEPA and MBTA. The alligator is only protected where it occurs with the American crocodile (*Crocodylus acutus*).

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

Sincerely,

Strant Colwell

Strant Colwell
Coastal Georgia Supervisor

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SAVANNAH DISTRICT
1104 NORTH WESTOVER BOULEVARD, UNIT 9
ALBANY, GEORGIA 31707

JUNE 05 2017

Regulatory Branch
SAS-2017-00015

Mr. Gregory W. Lee
Moody Air Force Base
23 CES/CEIE
3485 Georgia Street
Moody Air Force Base, Georgia 31699-1707

Dear Mr. Lee:

I refer to a letter dated December 20, 2016, submitted on your behalf by Leidos, requesting a delineation of aquatic resources for your site located on Moody Air Force Base, in Lowndes County, Georgia (Latitude 30.9687, Longitude -83.1930). This project has been assigned number SAS-2017-00015 and it is important that you refer to this number in all communication concerning this matter.

The enclosed exhibit entitled, "Surface Waters", dated March 3, 2017, identifies the delineation limits of all aquatic resources within the review area. The wetlands were delineated in accordance with criteria contained in the 1987 "Corps of Engineers Wetland Delineation Manual," as amended by the most recent regional supplements to the manual. This delineation will remain valid for a period of 5-years unless new information warrants revision prior to that date.

Please be advised, aquatic resources that are under the jurisdiction of Section 404 of the Clean Water Act (33 United States Code § 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) may require a permit for the placement of dredged or fill material or mechanized land clearing of those aquatic resources may require prior Department of the Army authorization pursuant to Section 404.

If you intend to sell property that is part of a project that requires Department of the Army Authorization, it may be subject to the Interstate Land Sales Full Disclosure Act. The Property Report required by Housing and Urban Development Regulation must state whether, or not a permit for the development has been applied for, issued or denied by the U.S. Army Corps of Engineers (Part 320.3(h) of Title 33 of the Code of Federal Regulations).

2

This communication does not convey any property rights, either in real estate or material, or any exclusive privileges. It does not authorize any injury to property, invasion of rights, or any infringement of federal, state or local laws, or regulations. It does not obviate your requirement to obtain state or local assent required by law for the development of this property. If the information you have submitted, and on which the U.S. Army Corps of Engineers has based its determination is later found to be in error, this decision may be revoked.

A copy of this letter is being provided to the following parties: Mr. Brian Tutterow, Leidos, 13397 Lakefront Drive, Earth City, MO 63045.

Thank you in advance for completing our on-line Customer Survey Form located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey. We value your comments and appreciate your taking the time to complete a survey each time you have interaction with our office.

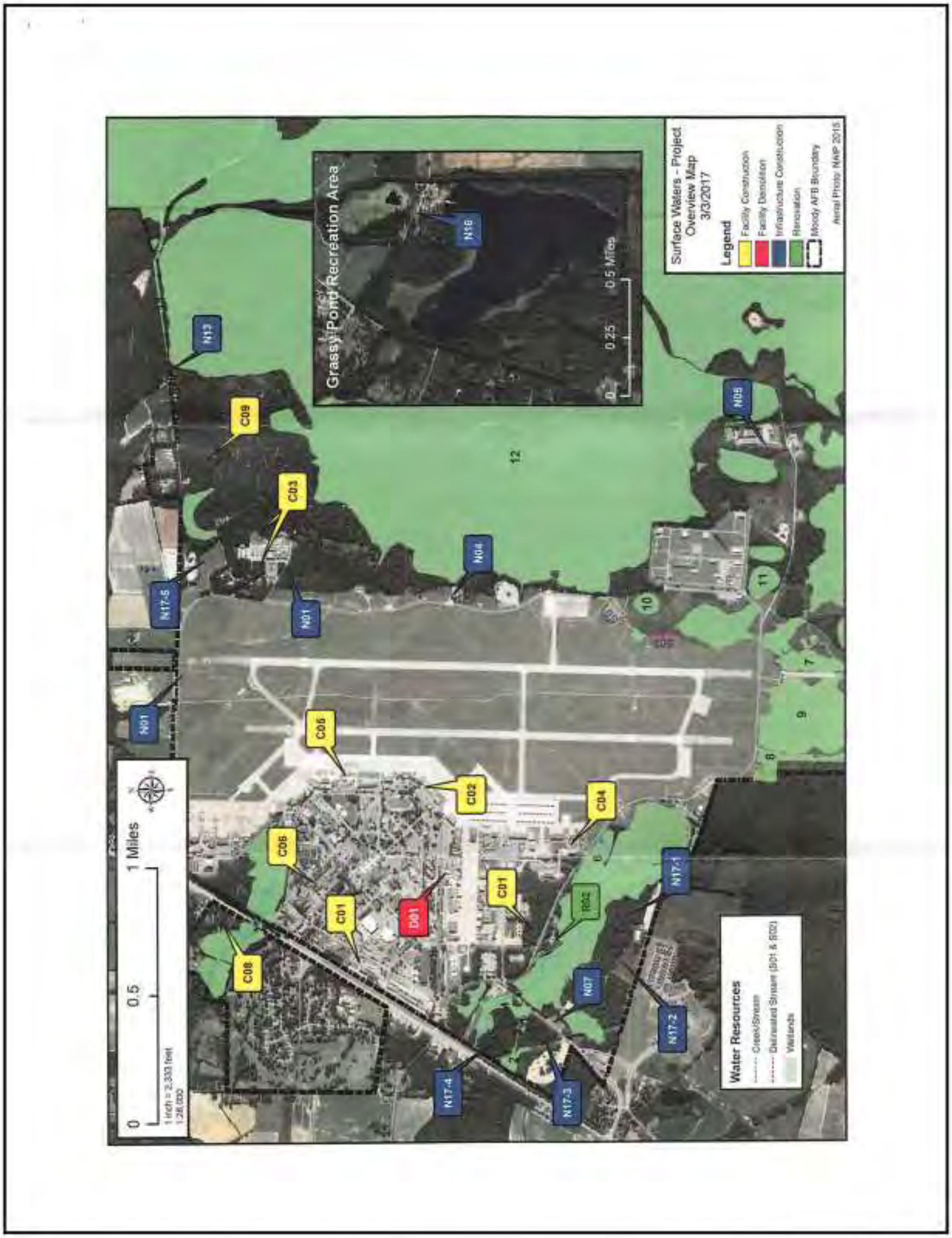
If you have any questions, please call me, at (229) 430-8567.

Sincerely,

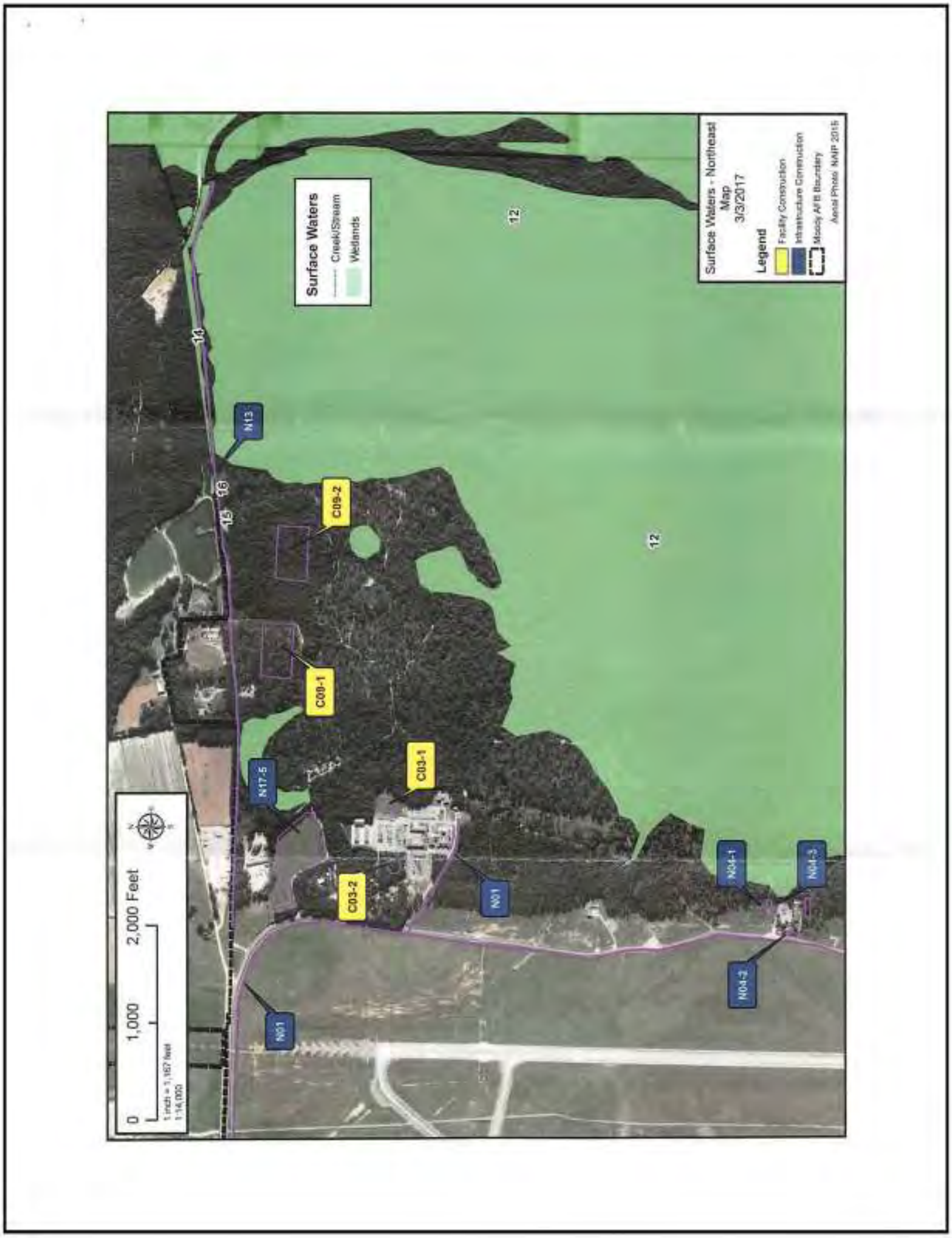
Terry C. Kobs
Project Manager, Coastal Plains Field Office

Enclosures

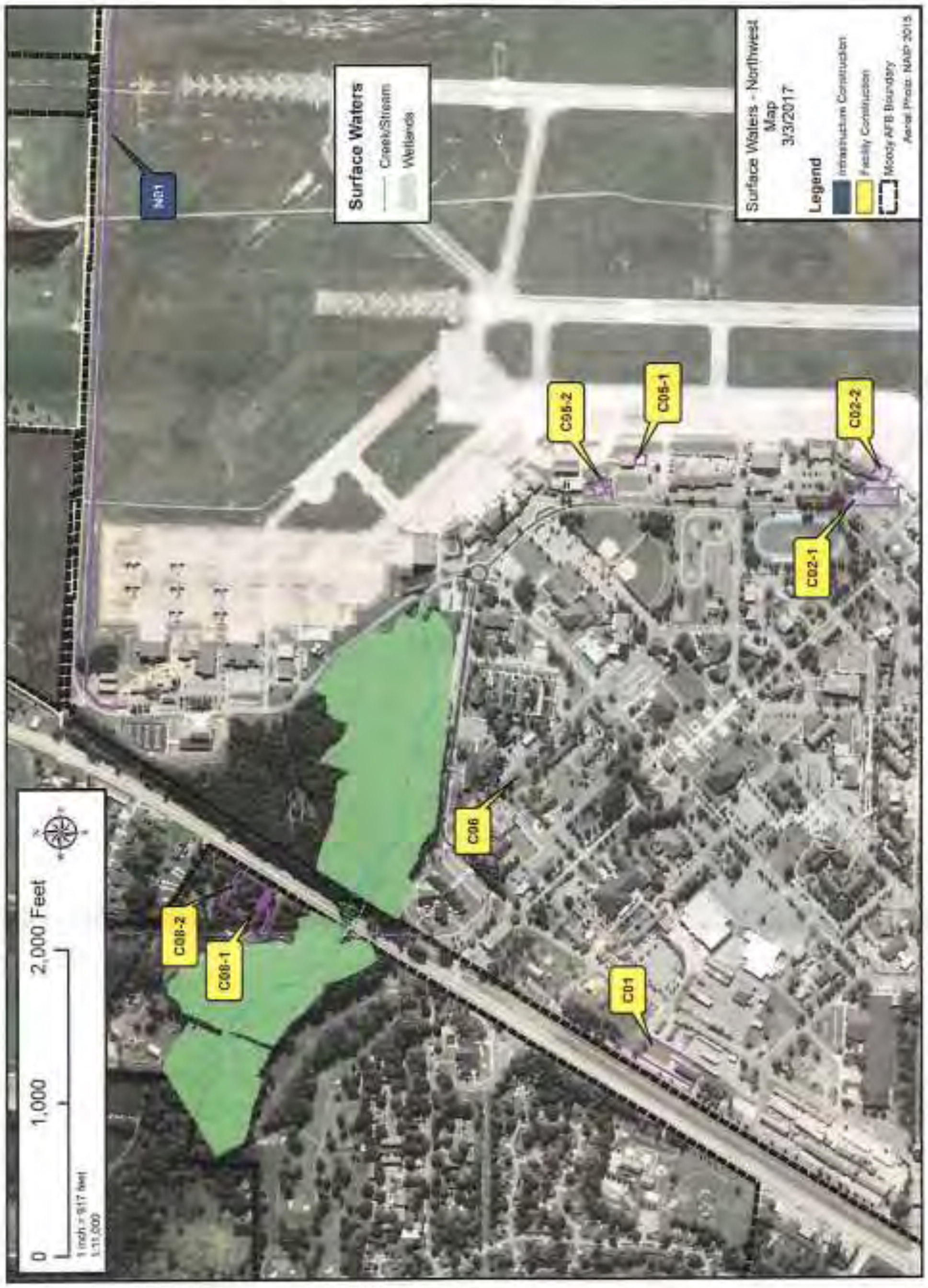
Appendix A


Surface Waters - Project Overview Map
3/3/2017
Legend
Facility Construction
Facility Demolition
Infrastructure Construction
Renovation
Moody AFB Boundary
Aerial Photo: NAIP 2015
Grassy Pond Recreation Area
0
0.25
0.5 Miles
0
0.5
1 Miles
Water Resources
Creek/Stream
Wetlands
N16
N13
C09
C03
N05
N04
N17-5
N01
C05
C02
C04
C06
C01
D01
R02
C08
N07
N17-1
N17-2
N17-3
N17-4

Appendix A


Surface Waters - Northeast Map
3/3/2017
Legend
Facility Construction
Infrastructure Construction
Moody AFB Boundary
Aerial Photo: NAIP 2015
Surface Waters
Creek/Stream
Wetlands
0 1,000 2,000 Feet
N13
C09-2
C08-1
C03-1
N17-5
C03-2
N01
N04-1
N04-3
N04-2
12
14
15
16

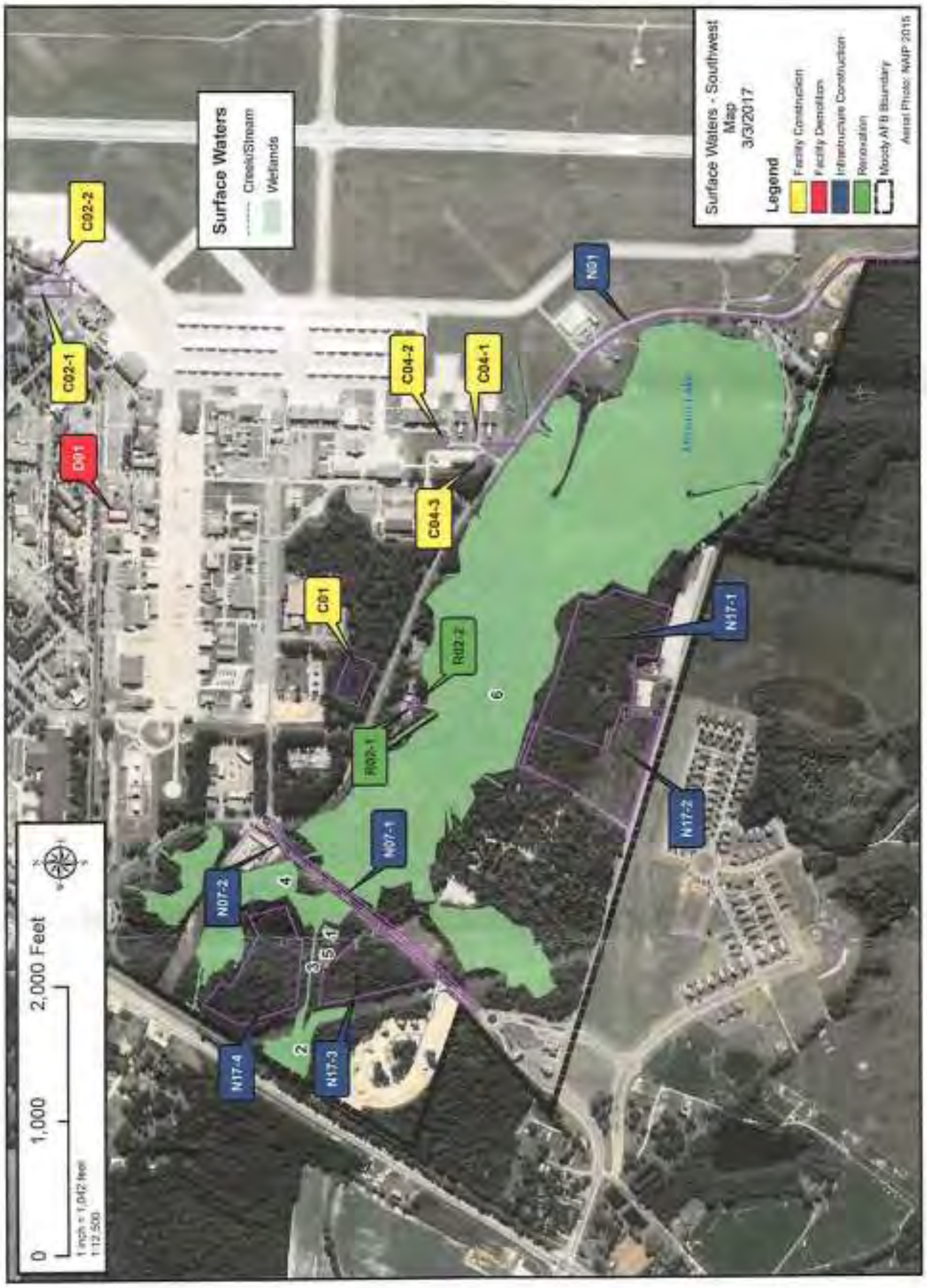
Appendix A


Surface Waters
Creek/Stream
Wetlands
Surface Waters - Northwest
Map
3/3/2017
Legend
Infrastructure Construction
Facility Construction
Moody AFB Boundary
N01
C05-2
C05-1
C02-2
C02-1
C06
C08-2
C08-1
C01
0
1,000
2,000 Feet

Appendix A


0
1,000
2,000 Feet
1 inch = 1,167 feet
1:14,000
Surface Waters - Southeast Map
3/3/2017
Legend
Infrastructure Construction
Moody AFB Boundary
Aerial Photo: NAIP 2015
Surface Waters
Creek/Stream
Delineated Stream (S01 & S02)
Wetlands
N04-1
N04-2
N04-3
N01
N01
N01
N05
12
10
11
9
7
7
8

Appendix A


Surface Waters - Southwest Map
3/3/2017
Legend
Facility Construction
Facility Demolition
Infrastructure Construction
Renovation
Moody AFB Boundary
Aerial Photo: NAIP 2015
Surface Waters
Creek/Stream
Wetlands
C02-2
C02-1
D01
C04-2
C04-1
C04-3
C01
R02-2
R02-1
N01
N17-1
N17-2
N07-1
N07-2
N17-4
N17-3
0
1,000
2,000 Feet
1 inch = 1,042 feet
1:12,500

-----Original Message-----
From: Martinez, Gail [mailto:gail_martinez@fws.gov]
Sent: Wednesday, January 31, 2018 4:16 PM
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Subject: [Non-DoD Source] Draft EA for Proposed Installation Development Plan, Moody AFB

Lieutenant Colonel Oscar F. Portillo
Department of the Air Force
23rd Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699

Attention: Mr. Hank Santicola

Re: USFWS 2016-0430

Dear Colonel Portillo:

Thank you for the opportunity to provide comments on the January 2018 draft Environmental Assessment (EA) for the proposed development projects at Moody Air Force Base (AFB) in Lowndes County, Georgia. The 17 projects were selected from the Moody AFB Installation Development Plan and involve construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. 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.), the Bald and Golden Eagle Protection Act of 1940 (BGEPA), and 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.

Five federally listed species were identified as potentially affected by proposed action. These species are; frosted flatwoods salamander (Ambystoma cingulatum), eastern indigo snake (Drymarchon couperi), gopher tortoise (Gopherus polyphemus), wood stork (Mycteria americana), and American alligator (Alligator mississippiensis) (alligator). Additionally, the bald eagle (Haliaeetus leucocephalus), is protected under the BGEPA and MBTA. The alligator is only protected where it occurs with the American crocodile (Crocodylus acutus).

Based on the January 2018 draft Environmental Analysis document for the proposed action, we concur with your determination that the proposed action "may effect, not likely to adversely affect" federally protected species. 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.

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

Sincerely,
Gail Martinez (for)
Donald Imm
Project Leader
Gail Martinez
Fish and Wildlife Biologist
Georgia Ecological Services
U.S. Fish and Wildlife Service
4980 Wildlife Drive, NE
Townsend, GA 31331
(912) 832 8739 ext. 7

1

A.3 TRIBAL CORRESPONDENCE

Name/Title/Organization	Comments
James Floyd, Principal Chief The Muscogee (Creek) Nation	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 4 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 12 June 17
David J. Proctor Muscogee (Creek) Nation THPO	2 Jan 18 – Phone Call, left message 2 Jan 18 – Sent cultural information via e-mail 3 Jan 18 – Received response, request to notify the tribe and stop work for any inadvertent discoveries and to make contractors aware of this requirement.
Stephanie Bryan Tribal Chair Poarch Band of Creek Indians	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 8 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 9 June 17
Carolyn White THPO Poarch Band of Creeks	2 Jan 18 – Phone Call, contacted Chris at ext. 2293 (previous THPO extension) he referred me back to the switchboard. The Switchboard confirmed the new THPO is Carolyn White and connected me to her number at ext 2532. Ms White's voice was on the machine and a message with contact info was left. 4 Jan – Called, left message with contact information. 8 Jan – Called, left message with contact information. 10 Jan – Called, left message with contact information 12 Jan – M~ade contact with Ms White. She recently assumed THPO duties and is catching up on past material. She has not reviewed the previous material. Moody will send the cultural assessment and previous consultation material and she will review and get back to the base. 12 Jan – Additional cultural assessment sent to Ms White. 16 Jan – Called and confirmed receipt. 16 Feb – Called left message that we will be moving forward with the environmental assessment, but to contact me if there are any items of interest to the tribe regarding these projects, the consultation, or the additional cultural material that was sent.
Ryan Morrow Town King Thlopthlocco Tribal Town	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 4 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 12 June 17
Terry Clouthier Thlopthlocco Tribal Town	2 Jan 18 – Phone Call, left message 2 Jan 18 – Sent cultural information via e-mail 8 Jan – Received e-mail. The tribe will prepare a response. 9 Jan – Received a letter response via e-mail. The Thlopthlocco Tribal Town, and other tribes that attended a National Guard conference in Little Rock AK in 2017 recommend updating the 20 year old archaeological survey. This will be the only time the TTT agree with the use of a 1999 survey. The Thlopthlocco Tribe is not aware of any TCP or significant sites that affect the IDP projects. 8 Feb – Called and left message regarding future consultations and to initiate resolution for future consultations regarding tribal concerns about the Moody base wide archaeological survey being old.
Lenard M. Harjo Principal Chief Seminole Nation of Oklahoma	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 5 May 17
Theodore Isham Seminole Nation of Oklahoma Historic Preservation Officer	E-mail exchange 6-9 June 17

Name/Title/Organization	Comments
Jeremiah Hobia Chief Kialegee Tribal Town	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 4 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 12 June 17
David Cook Cultural Preservation Officer Kialegee Tribal Town	2 Jan 18 – Phone Call, left message 4 Jan 18 – Phone call, spoke to office member who confirmed David is the Cultural Preservation Officer but he was not in. My contact information would be passed to him tomorrow. 8 Jan 18 – Contacted David Cook, we discussed additional information regarding the projects. 8 Jan 18 – Sent cultural assessment information via e-mail 10 Jan – Spoke with Mr Cook, tribal leadership has been out, they are still reviewing the proposal, check back on Friday 12 Jan. 12 Jan – Tribal leadership has not had the opportunity to review. Please contact Mr Cook on Tuesday 16 Jan. 16 Jan – Called and left message with contact information. 1 Feb – Left message to contact me if the tribe believes the proposed action would affect any traditional cultural properties or cultural items of concern to the tribe.
Lovelin Poncho Chairman Coushatta Tribe of Louisiana	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 8 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 27 June 17
Linda Langley Coushatta Tribe of Louisiana	2 Jan 18 – Phone call, left message 2 Jan 18 – Sent cultural information via e-mail 3 Jan 18 – Received e-mail response. No issues but please stop work and notify the tribe if cultural material is inadvertently discovered.
Ann Denson Tucker Chairwoman Muscogee Nation of Florida	Government-to-Government letters sent to tribal leaders 1 May Return receipt received dated 3 May 17 30 day follow-up letter sent to tribal leader 7 June Return receipt received dated 9 June 17 2 Jan – Phone Call, left message 4 Jan – Phone call left message. Office closed for cold weather until 8 January. 8 Jan – Phone call left message. Message regarding weather is still on answering machine. 9 Jan – Phone call left message. Message states the office will open on Wednesday Jan 8th, Jan 8th is a Monday. Will try again on Wednesday Jan 10th. 10 Jan – Called several times throughout the day, number was busy. Called at 4pm and got the recording regarding the office being closed for weather. Left message with contact information. 11 Jan – Phone rang, no answering machine. 12 Jan – Made contact with Carol. She has spoken with the leadership and there were no known concerns. Thank you for following up.

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

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

Principal Chief James Floyd
The Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

Dear Chief Floyd

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

I have included two attachments with this correspondence. Attachment 1 is a map depicting the location of Moody AFB. Attachment 2 shows the location on the installation where projects will occur.

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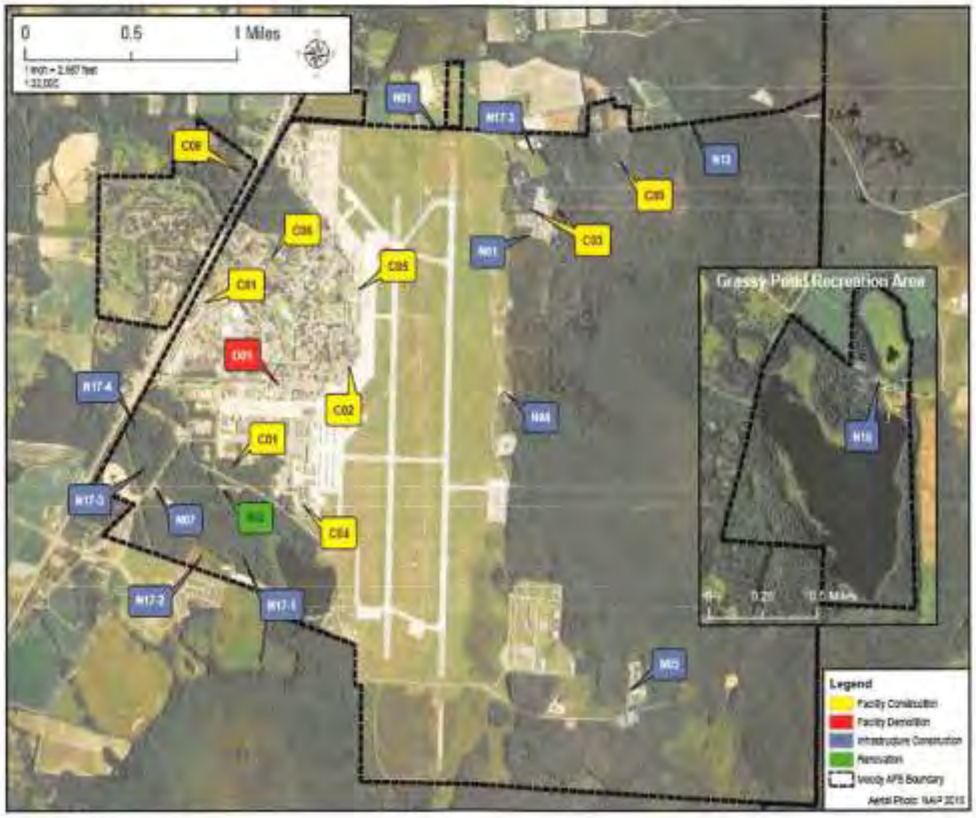
Sincerely

THOMAS E. KUNKEL, Colonel, USAF
Commander

2 Attachments:
1. Location of Moody AFB
2. Location of Proposed Projects

Attachment 1



Attachment 2

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

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

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

Dear Chairwoman Denson Tucker

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

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THOMAS E. KUNKEL, Colonel, USAF
Commander

2 Attachments:
1. Location of Moody AFB
2. Location of Proposed Projects

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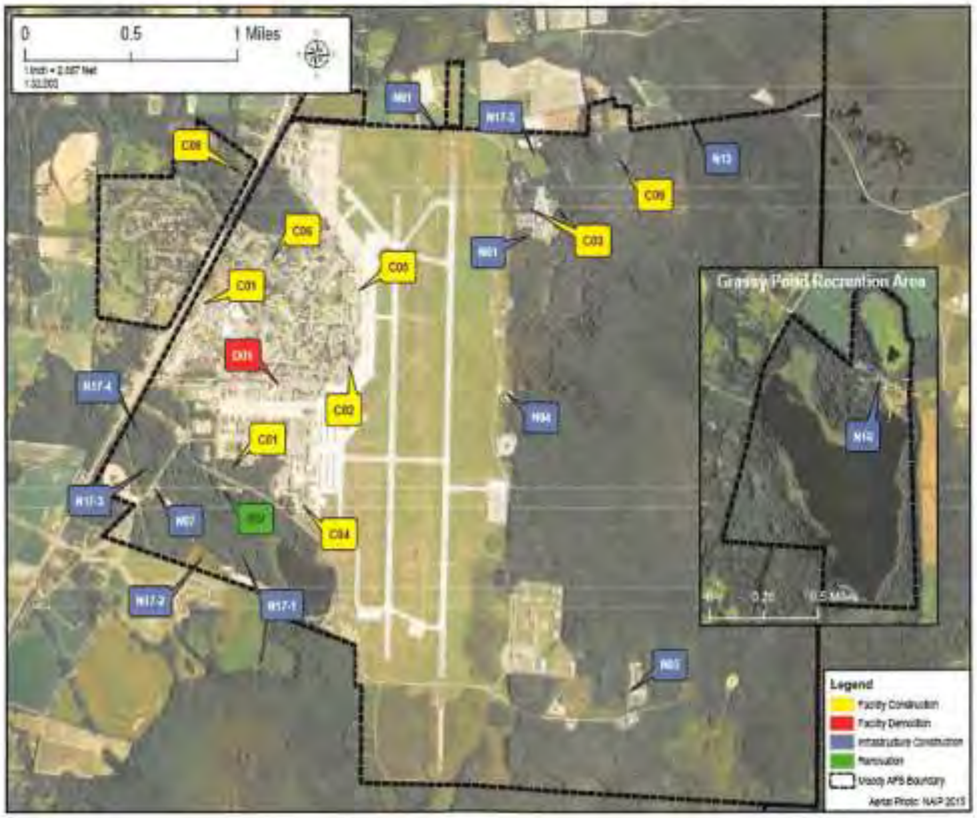

Attachment 2

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

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

Chairwoman Stephanie Bryan
Poarch Band of Creeks
5811 Jack Springs Road
Atmore, AL 36502

Dear Chairwoman Bryan

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

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Commander

2 Attachments:
1. Location of Moody AFB
2. Location of Proposed Projects

Appendix A

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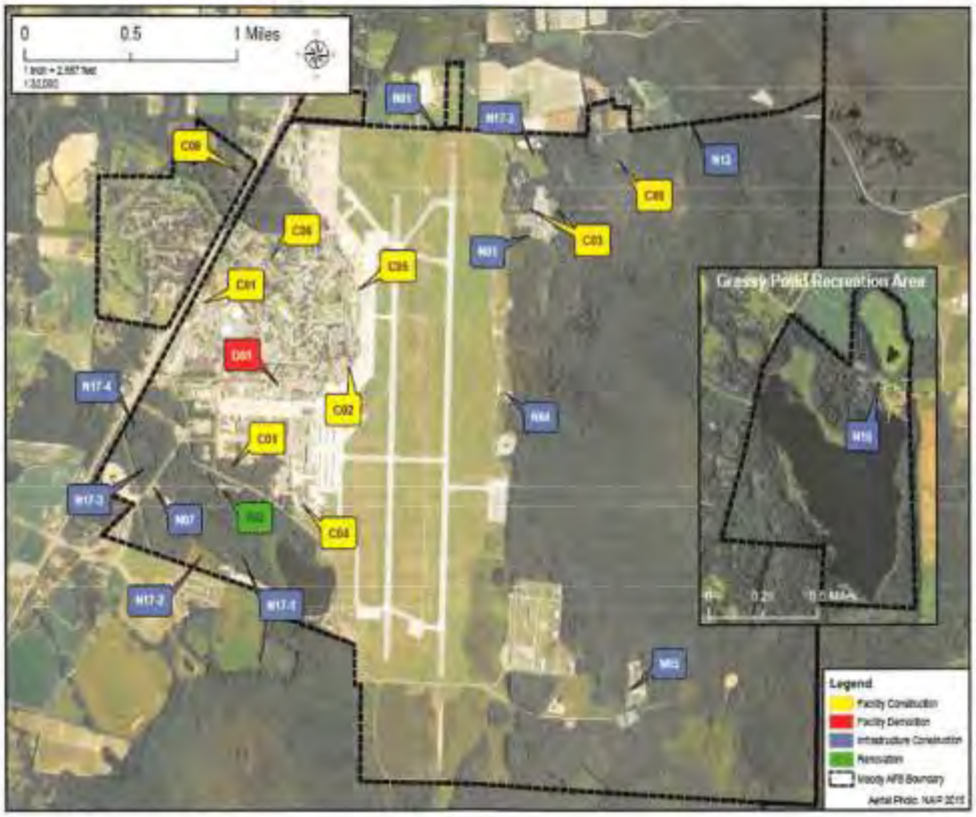

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

Principal Chief Leonard M. Harjo
The Seminole Nation of Oklahoma
P.O. Box 1498
Wewoka, OK 74884

Dear Chief Harjo

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

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2. Location of Proposed Projects

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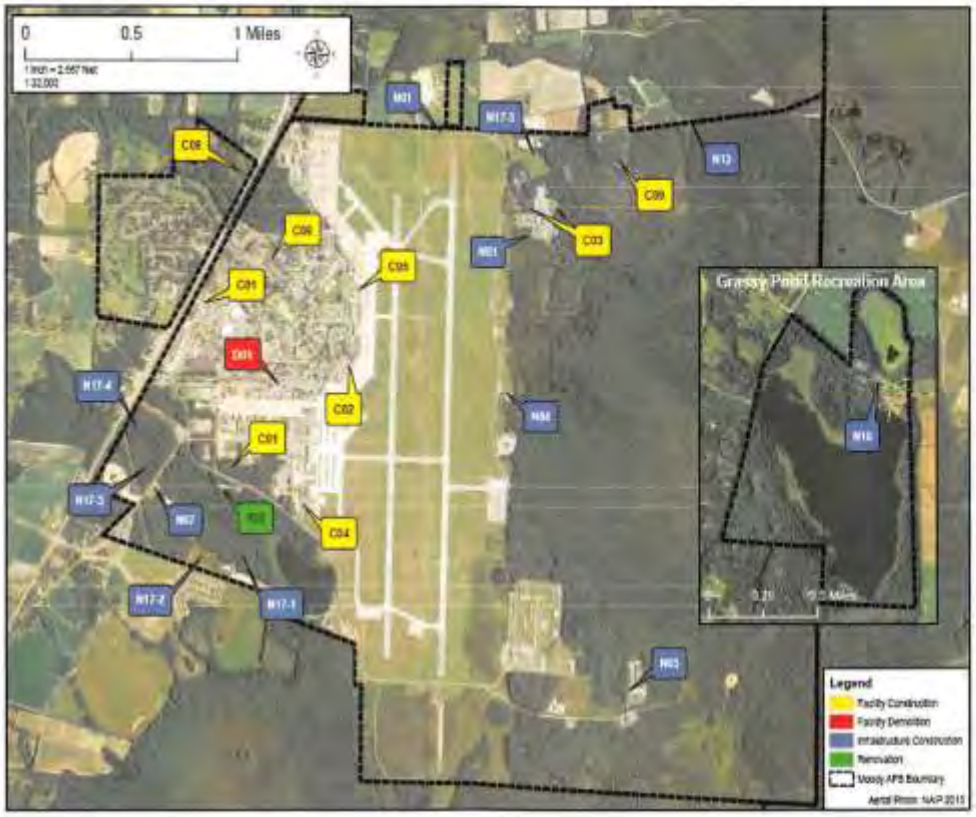

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

Town King Ryan Morrow
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Town King Morrow

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

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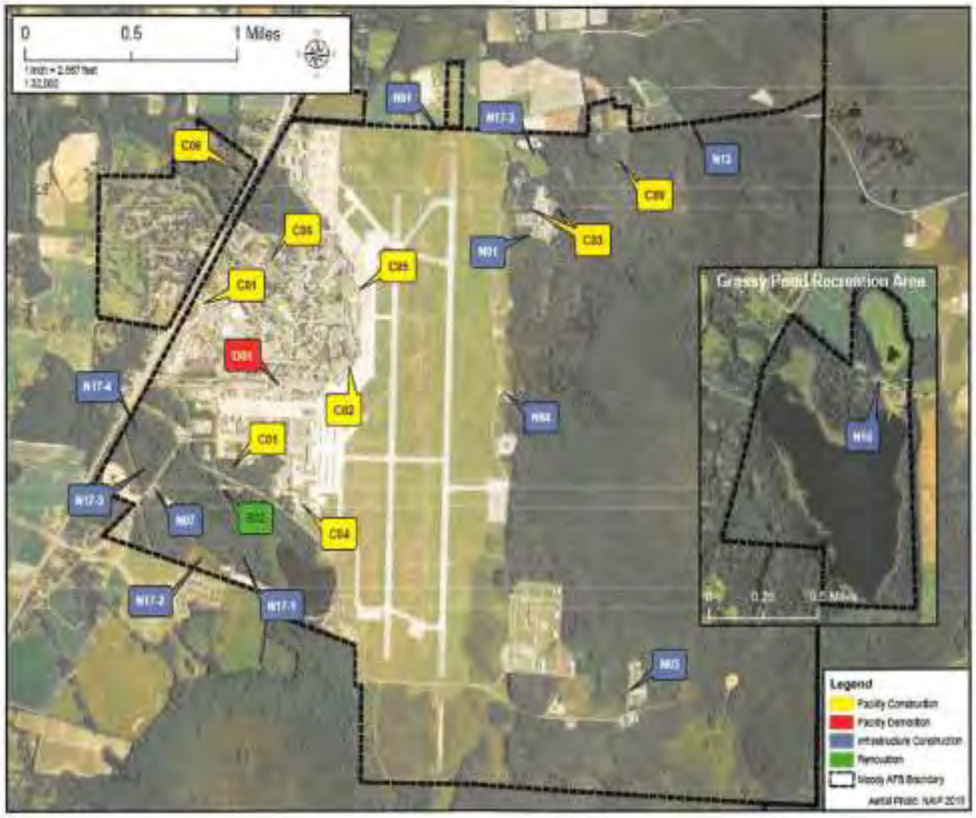

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Appendix A

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

0 1 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

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

Dear Chief Hobia

The United States Air Force (USAF) is preparing an Environmental Assessment (EA) in accordance with the National Environmental Policy Act to assess the potential environmental impacts associated with implementation of the Installation Development Plan (IDP). The purpose of the IDP is to improve facilities and infrastructure necessary to support the mission of the 23d Wing and tenant units at Moody Air Force Base (AFB), Georgia and the associated Grassy Pond recreation area. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition.

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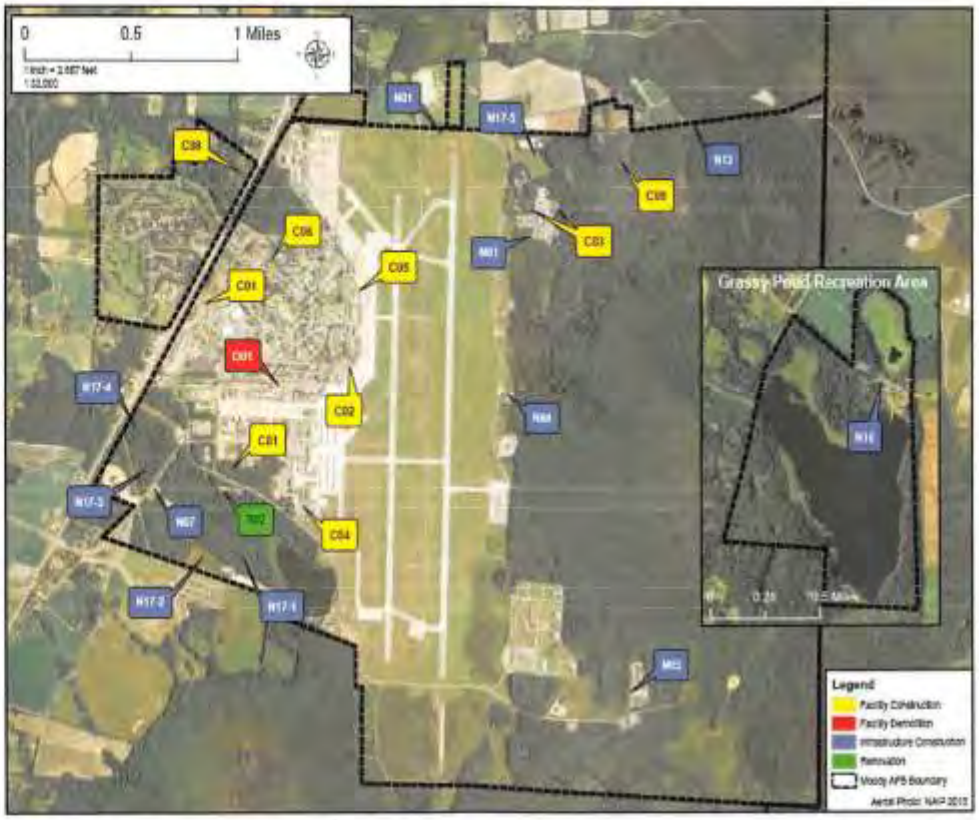

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

01 MAY 2017

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

Chairman Lovelin Poncho
Coushatta Tribe of Louisiana
1940 C.C. Bel Road
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

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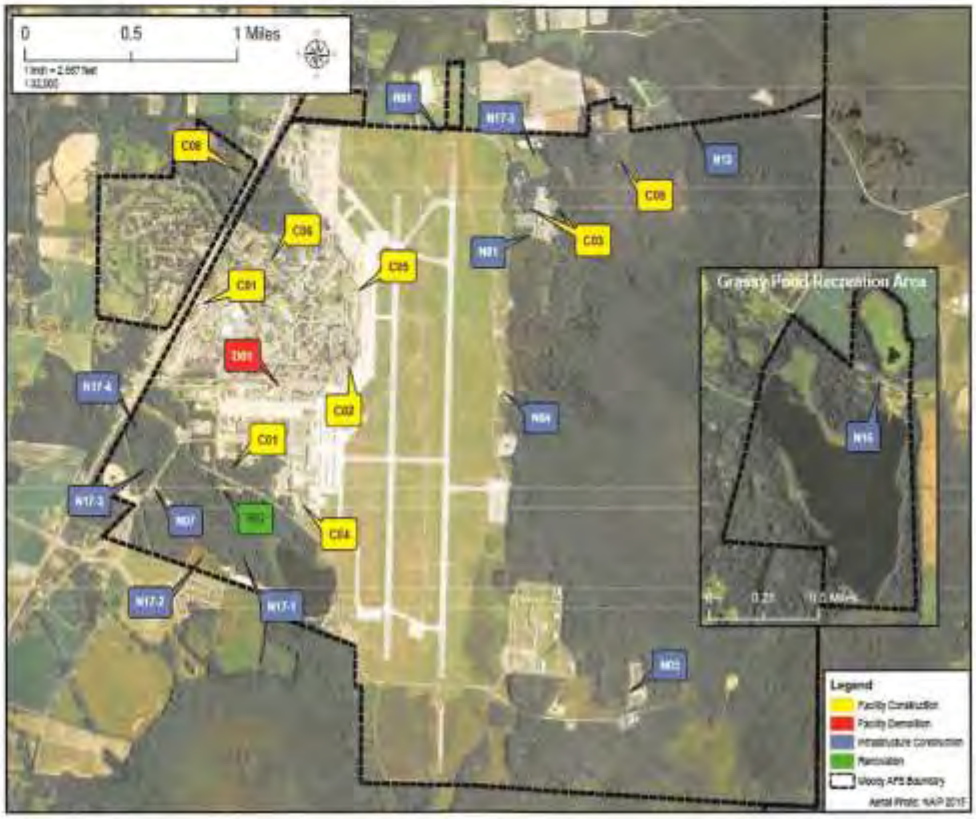

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HEADQUARTERS 23D WING (ACC)
MOODY AIR FORCE BASE GEORGIA

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

Chairman Lovelin Poncho
Coushatta Tribe of Louisiana
1940 C.C. Bel Road
P.O. Box 818
Elton, LA 70532

Dear Chairman Poncho

The United States Air Force (USAF) is in the process of preparing an environmental assessment at Moody Air Force Base (AFB), Georgia to assess the potential environmental impacts associated with implementation of the Installation Development Plan. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition. Last month 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 this 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 the planning process, especially during the next few weeks.

Please direct written issues or concerns to Mr. Hank Santicola, Environmental Planner, 3485 Georgia Street, Moody AFB, GA 31699 or through e-mail at henry.santicola.2@us.af.mil. Mr. Santicola can also be contacted at (229) 257-2396. Thank you in advance for your assistance with this project.

Sincerely

THOMAS E. KUNKEL, Colonel, USAF
Commander

Global Power for America

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

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

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

Dear Chief Hobia

The United States Air Force (USAF) is in the process of preparing an environmental assessment at Moody Air Force Base (AFB), Georgia to assess the potential environmental impacts associated with implementation of the Installation Development Plan. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition. Last month the USAF invited you to participate in government-to-government consultation regarding this proposal.

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MOODY AIR FORCE BASE GEORGIA

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

Principal Chief James Floyd
The Muscogee (Creek) Nation
P.O. Box 580
Okmulgee, OK 74447

Dear Chief Floyd

The United States Air Force (USAF) is in the process of preparing an environmental assessment at Moody Air Force Base (AFB), Georgia to assess the potential environmental impacts associated with implementation of the Installation Development Plan. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition. Last month the USAF invited you to participate in government-to-government consultation regarding this proposal.

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MOODY AIR FORCE BASE GEORGIA

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

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

Dear Chairwoman Denson Tucker

The United States Air Force (USAF) is in the process of preparing an environmental assessment at Moody Air Force Base (AFB), Georgia to assess the potential environmental impacts associated with implementation of the Installation Development Plan. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations, and building demolition. Last month the USAF invited you to participate in government-to-government consultation regarding this proposal.

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

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

Chairwoman Stephanie Bryan
Poarch Band of Creeks
5811 Jack Springs Road
Atmore, AL 36502

Dear Chairwoman Bryan

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

Colonel Thomas E. Kunkel
23d Wing Commander
23 Flying Tiger Way, Suite 1
Moody AFB, GA 31699

07 JUN 2017

Town King Ryan Morrow
Thlopthlocco Tribal Town
P.O. Box 188
Okemah, OK 75859

Dear Town King Morrow

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THOMAS E. KUNKEL, Colonel, USAF
Commander

Global Power for America

Akstulewicz, Kevin D. [US-US]

From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Sent: Monday, October 30, 2017 4:40 PM
To: Akstulewicz, Kevin D. [US-US]; LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE
Subject: EXTERNAL: FW: SNO Response to Moody AFB installation projects
Attachments: Moody IDP Supplemental Cultural Resources Information.pdf
Signed By: henry.santicola.2@us.af.mil

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Sent: Thursday, June 08, 2017 9:30 AM
To: Theodore Isham
Cc: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE <gregory.lee.5@us.af.mil>
Subject: RE: SNO Response to Moody AFB installation projects

Mr Isham, please see the attached supplemental cultural information per our previous discussion regarding the Moody AFB Installation Development Plan (IDP) projects.

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Sent: Friday, May 19, 2017 4:15 PM
To: Theodore Isham
Subject: RE: SNO Response to Moody AFB installation projects

Sir, the portion of the natural gas line that is in the vicinity of the archeological sites is not scheduled to occur until 2019 or later depending on funding. I referenced this as a natural gas pipeline. It is not a major transportation line, it is a 4-6 inch residential size line installed along an existing utility corridor.

We do not have CRAS reports on those sites, our archaeologist was not familiar with CRAS. We do have phase I and phase II survey information. I am travelling next week, but I will put something more detailed together for your review.

v/r
Hank

1

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

-----Original Message-----
From: Theodore Isham
Sent: Wednesday, May 17, 2017 5:02 PM
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Subject: [Non-DoD Source] RE: SNO Response to Moody AFB Installation projects

What is the timeline for the pipeline installation?
Do you have the CRAS reports on those sites?

Theodore Isham
Seminole Nation of Oklahoma
Historic Preservation Officer

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA [mailto:henry.santicola.2@us.af.mil]
Sent: Wednesday, May 17, 2017 3:56 PM
To: Theodore Isham
Subject: RE: SNO Response to Moody AFB installation projects

Sir, I forwarded the Moody INRMP and the Basewide Cultural Resources Survey via AMRDEC. Also included was a list of installation Flora and Fauna.

For the Installation Development Plan assessment there is ground disturbing activity and we respect the historic presence of the Seminole Nation of Oklahoma people in the project area. During the basewide cultural survey there were 5 sites identified, 2 of which were determined to be eligible for listing on the NRHP (Attachment 1). Attachment 2 depicts the Southeastern area of the installation with the archaeological sites and the different specific project areas. The only project in close proximity to the NRHP eligible archaeological sites is labeled N01, which is installing a natural gas pipeline in an existing utility corridor. The proposed gas line is shown in purple and the archaeological sites are shown in yellow. The planned gas line would not disturb site 9LW71 as it will be placed on the east side of the road separating it from the archeological site. The gas line will pass to the south of 9LW63. Though we plan to avoid disturbance to the eligible sites, we respect your concerns that there may be inadvertent discoveries outside of NRHP sites and will cease activity and notify your tribe and appropriate agencies immediately in the event of an inadvertent discovery.

2

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

-----Original Message-----
From: Theodore Isham
Sent: Monday, May 15, 2017 3:04 PM
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
<henry.santicola.2@us.af.mil>
Subject: [Non-DoD Source] SNO Response to Moody AFB installation projects

This Opinion is being provided by Seminole Nation of Oklahoma's Cultural Advisor, pursuant to authority vested by the Seminole Nation of Oklahoma General Council. The Seminole Nation of Oklahoma is an independently Federally-Recognized Indian Nation headquartered in Wewoka, OK.

In keeping with the National Environmental Policy Act (NEPA)d, and Section 106 of the National Historic Preservation Act (NHPA), 36 CFR Part 800, this letter is to acknowledge that the Seminole Nation of Oklahoma has received notice of the proposed project at the above mentioned location.

Based on the information provided showing the topographic setting; the undeveloped nature of the property, and the potential for buried cultural resources, the proposed project has a potential of affecting archaeological resources, some of which may be eligible for listing in the National Register of Historic Places (NRHP). We request the listings of all archaeological sites contained on Moody AFB properties.

We request a listing of the flora in the affected areas. Finally, we also request that if cultural or archeological resource materials are encountered at all activity cease and the Seminole Nation of Oklahoma and other appropriate agencies be contacted immediately.

Furthermore, due to the historic presence of our people in the project area, inadvertent discoveries of human remains and related NAGPRA items may occur, even in areas of existing or prior development. Should this occur we request all work cease and the Seminole Nation of Oklahoma and other appropriate agencies be immediately notified.

If you have any questions, please feel free to contact me at Thank you for your time and cooperation in this matter.

Sincerely,

3

Theodore Isham

Seminole Nation of Oklahoma

Historic Preservation Officer

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

Mr Gregory Lee
23d Civil Engineer Squadron
Environmental Element/Natural Resources
3485 Georgia Street
Moody AFB GA 31699

Mr. Theodore Isham
Seminole Nation of Oklahoma
Historic Preservation Officer
PO Box 1498
Wewoka Ok 74884

Dear Mr Isham

Please find enclosed for your review and comment supplemental information requested by your office on 15 May 2017 as part of the above-referenced project specific National Historic Preservation Act (NHPA) Section 106 consultation initiated in a letter provided to the Seminole Nation of Oklahoma from the Air Force on 1 May 2017. Additional requests on 15 May 2017 for the listings of all archeological sites contained on Moody AFB properties and a listing of the flora in the affected areas were fulfilled by Moody AFB via transmittal of the Moody AFB Basewide Cultural Resources Survey and the most recent copy of the Moody AFB Integrated Natural Resources Management Plan on 17 May 2017.

In 1996, a Phase I archeological survey (as part of the aforementioned Basewide Cultural Resources Survey) was conducted across Moody AFB pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) and its implementing regulations (36CFR Part 800: Protection of Historic Properties, as revised January 2001) to identify cultural resources and assess their eligibility for inclusion in the National Register of Historic Places (NRHP). Follow-on Phase II archeological investigations recommended two sites as eligible for listing on the NRHP. None of the proposed projects are within these two sites. As a result, the Air Force determined that an additional project-specific archeological survey and associated Cultural Resource Assessment Survey (CRAS) and separate report for the Moody AFB IDP was not required.

Assessment of cultural resources for the Moody Installation Development Plan (IDP) involved cross-referencing project footprints against the 1996 survey and Phase II information to identify cultural resources within the project corridors. Two eligible archeological sites were identified as being in close proximity one of the IDP projects; however, neither of the sites are within project footprints and the Air Force has identified no effect to archeological sites. Attachment 1 provides details on the project and the aforementioned archeological sites.

If you have any questions please feel to call Mr. Henry Santicola, 23 CES/CEIE at (229) 257-2396 or via email at henry.santicola.2@us.af.mil.

Gregory W. Lee

GREGORY W. LEE, GS-12
Environmental Element Chief

1 Attachment
1. Moody AFB IDP Cultural Resources Impact Assessment

Attachment 1
Moody IDP Cultural Resources Impact Assessment

1. Project Information

The 23d Wing at Moody Air Force Base (AFB), Georgia, and Headquarters Air Combat Command (HQ 3 ACC) have identified 17 projects for installation development and propose to implement them over the next five years (2017–2022). These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition. The following table (Table 1) provides a summary of the projects considered under the Moody AFB IDP, while the subsequent figures (Figures 1 and 2) show the location of each project in relation to Moody AFB.

Project ID	Project Name
Facility Construction Projects	
C01	Construct Security Forces Complex
C02	Construct Fire/Crash Rescue Station
C03	Construct Combative Arms Training Pit near B1540
C04	Construct Engine Test Support Facility
C05	Construct Covered Mobility Equipment Storage Addition, Building 657
C06	Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201 and 203
C08	Construct Paintball Facility
C09	Construct 23 CES Field Training Area (FTX)
Infrastructure Construction Projects	
N01	Addition/Repair Natural Gas Line, East of Airfield
N04	Construct Parking for the Control Tower and Radar Approach Control Facilities
N05	Construct Parking at Combat Arms Training and Maintenance (CATM)
N07	Widen Stone Road
N13	Widen and Pave Eisemann Road to Grand Bay Range
N16	Construct Waste-Water Infrastructure, Grassy Pond Recreational Area
N17	Construct Photovoltaic Panel Arrays
Renovation and Repair Projects	
R02	Construct Addition and Interior Repairs to the Kennel Facility, Building 1708
Demolition Projects	
D01	Demolition of Building 757

Table 1. Summary of Projects

Atch 1

Figure 1. Location of Moody AFB and Grassy Pond Recreational Area.

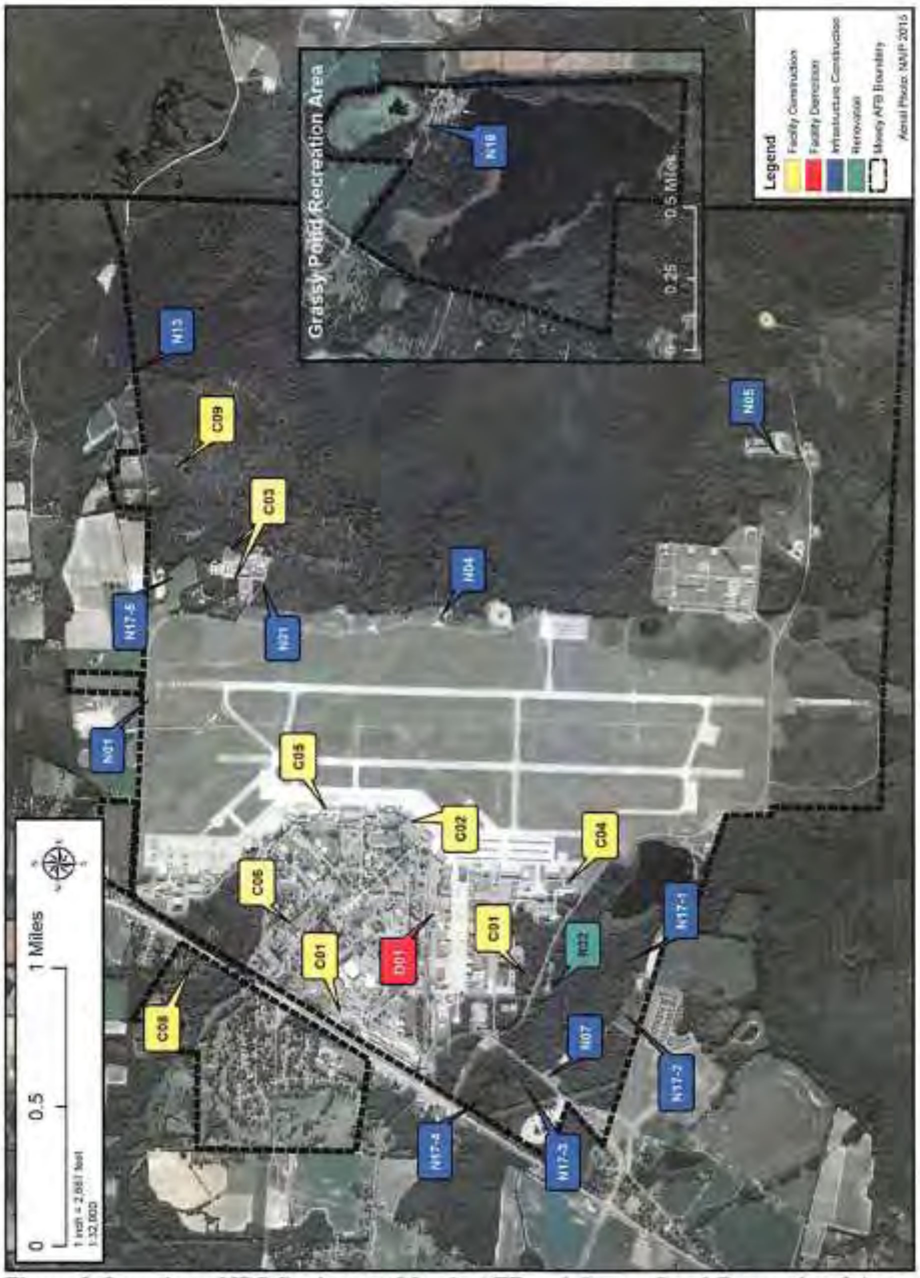

Figure 2. Location of IDP Projects at Moody AFB and Grassy Pond Recreational Area.

2. Cultural Resources Evaluation

Phase I archeological surveys of Moody AFB, Grassy Pond Recreation Area, and Grand Bay Range were conducted by Pan-American Consultants, Inc., from 1994 to 1995. On Moody AFB the survey identified 23 archeological sites, 39 isolated archeological finds, 234 Cold War-era and older buildings and structures. One historic structure was found to be eligible for listing under the National Register of Historic Places (NRHP). A subsequent phase II investigation determined only two of the archeological sites to be eligible for listing under the NRHP: Site 9LW63 and Site 9LW71. The following figure (Figure 3) shows the location of eligible archeological sites on Moody AFB.

Figure 3. Archeological Sites Located on Moody AFB.

[redacted]

NOTE TO READER:
This figure contains locations of sensitive archaeological sites and has therefore been redacted for public viewing.

[redacted]

Site 9LW71 is a multicomponent extractive/base camp prehistoric site affiliated with the Late Paleo-Indian, Early Archaic, Deptford, and Weeden Island manifestations. Originally, this site was comprised of two separate sites (9LW70 and 9LW71), but the subsequent Phase II investigation of 9LW71 completed in November 1999 recommended that these two sites be combined into one consolidated site to be designated 9LW71, and recommended the new, larger site as eligible for listing under the NRHP.

Site 9LW63 is a multi-component prehistoric artifact scatter located on a small landform between adjacent wetlands approximately 118 feet north of an exiting road. This site contains intact activity areas with temporally diagnostic artifacts. A Phase II investigation of 9LW63 in November 2008 recommended this site as eligible for listing under the NRHP.

In assessing potential impacts to cultural resources from proposed IDP projects the Air Force cross-referenced project footprints with known archeological site footprints to determine any potential interactions. The only project that is within close proximity to archeological sites is N01, which is to provide an addition and to repair the natural gas line east of the airfield within the existing utility easement; the footprint is near sites 9LW71 and 9LW63. The project footprint in relation to these sites is shown in Figure 4. No other project footprints are in proximity to any known archeological sites.

3. Impact Assessment / Determination

The Air Force has determined that the proposed projects would have no effect to archeological sites eligible for listing on the NRHP, sacred sites, TCPs, or other tribal resources. As shown in Figure 4, the planned gas line would not disturb site 9LW71 as it will be placed on the east side of the road separating it from the archeological site, and would not affect 9LW63 as it would pass 108 feet to the south of the site within the existing utility easement/corridor.

As per the Moody AFB Integrated Cultural Resources Management Plan (ICRMP), dated 2012, in the case of inadvertent discovery of cultural resources, work on-site would cease and the discovery immediately reported to the cultural resources manager, who would initiate the NHPA Section 106 process. Additionally, the archeological site would be treated as potentially eligible for listing on the NRHP until the Georgia State Historic Preservation Officer has concurred that the site is not eligible and Air Force activity can then resume.

[redacted]

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[redacted]

Figure 4. Location of IDP Projects in Relation to Archeological Sites.

Akstulewicz, Kevin D. [US-US]

From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Sent: Monday, October 30, 2017 4:41 PM
To: Akstulewicz, Kevin D. [US-US]
Subject: EXTERNAL: FW: SNO Response to Moody AFB installation projects

-----Original Message-----
From: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE
Sent: Thursday, June 08, 2017 2:40 PM
To: Theodore Isham < SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Subject: RE: SNO Response to Moody AFB installation projects

Mr. Isham,

Neither Salis humulis nor Salix carolinia have been recorded from Moody AFB. The only willow species we have on the installation is the Black Willow, Salix nigra, and it is not very common.

I checked the records for the state-owned Grand Bay Wildlife Management Area, immediately south of Moody AFB, and the Comprehensive Conservation Plan for the Banks Lake National Wildlife Refuge, immediately northeast of Moody AFB, and the only Salix species recorded on either property was Salix nigra.

Salix humulis and Salix carolinia may be recorded in our county, but I have never seen these species in the local area, including when I took my dendrology classes in college. I can check with the Valdosta State University botanist, Dr. Richard Carter, to determine the actual local distribution.

The question of specific flora species has never been asked before in tribal coordinations. For our education and to help facilitate future coordinations, what is the Seminole Nation of Oklahoma's interest in these species?

Thanks,

Greg Lee

Gregory W. Lee, Certified Wildlife Biologist Supervisory Biological Scientist/Chief, Moody AFB Environmental Element
gregory.lee.5@us.af.mil
229-257-5881 (DSN 460-5881)

"Providing flexibility for mission activities while protecting natural and cultural resources"

PURCHASE YOUR MOODY AFB FISHING AND HUNTING LICENSES ONLINE: https://moody.isportsman.net MOODY AFB ENVIRONMENTAL FACEBOOK SITE: https://www.facebook.com/MoodyEnvironmental

1

-----Original Message-----
From: Theodore Isham [
Sent: Thursday, June 8, 2017 11:18 AM
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Cc: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE <gregory.lee.5@us.af.mil>
Subject: [Non-DoD Source] RE: SNO Response to Moody AFB installation projects

I was looking for the plants salix humulis and salix carolinia? On your base. I see from the usda plant maps that your county is included in the area as being seen there.

Theodore Isham
Seminole Nation of Oklahoma
Historic Preservation Officer

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA [mailto:henry.santicola.2@us.af.mil]
Sent: Thursday, June 8, 2017 8:30 AM
To: Theodore Isham
Cc: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE <gregory.lee.5@us.af.mil>
Subject: RE: SNO Response to Moody AFB installation projects

Mr Isham, please see the attached supplemental cultural information per our previous discussion regarding the Moody AFB Installation Development Plan
(IDP) projects.

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

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Sent: Friday, May 19, 2017 4:15 PM
To: Theodore Isham
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2

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

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From: Theodore Isham
Sent: Wednesday, May 17, 2017 5:02 PM
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA <henry.santicola.2@us.af.mil>
Subject: [Non-DoD Source] RE: SNO Response to Moody AFB installation projects

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line will pass to the south of 9LW63. Though we plan to avoid disturbance
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v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA

3

Com 229-257-2396 DSN 460-2396

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Sent: Monday, May 15, 2017 3:04 PM
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Subject: [Non-DoD Source] SNO Response to Moody AFB installation projects

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We request a listing of the flora in the affected areas. Finally, we also request that if cultural or archeological resource materials are encountered at all activity cease and the Seminole Nation of Oklahoma and other appropriate agencies be contacted immediately.

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If you have any questions, please feel free to contact me at (. Thank you for your time and cooperation in this matter.

Sincerely,

Theodore Isham

Seminole Nation of Oklahoma

Historic Preservation Officer

From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
To: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE; Akstulewicz, Kevin D. [US-US]
Subject: EXTERNAL: FW: Moody AFB Development Cultural Assessment
Date: Tuesday, January 02, 2018 12:36:36 PM
Attachments: Moody AFB Development Projects Cultural Assessment.pdf
Coushatta Tribe G2G.pdf
Coushatta Tribe of LA Follow Up.pdf

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Sent: Tuesday, January 02, 2018 12:01 PM
To:
Subject: FW: Moody AFB Development Cultural Assessment

Good morning Ms Langley, and Happy New Year

In May and June our Installation Commander sent an invitation for consultation to your Chairman regarding 17 installation projects in the developed cantonment area at Moody AFB. We had not heard from the Coushatta Tribe regarding this proposal, so I wanted to follow up to discuss any Traditional
Cultural Properties or items of tribal concern that we may not be aware of.

Moody AFB proposes 17 projects over the next 5 years as part of installation development. I have attached a map and brief description of each project and relationship with known archaeological sites eligible for listing on the NRHP for your review.

If you have any concerns or wish to follow up please contact me at: 229-257-2396 or by reply to this e-mail.

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

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

Mr Hank Santicola
23d Civil Engineer Squadron
Environmental/Natural/Cultural Resources
3485 Georgia Street
Moody AFB GA 31699

2 Jan 18

Ms. Linda Langley
Coushatta Tribe of Louisiana
Historic/Cultural Preservation Office
PO Box 10
Elton, LA 70532

Dear Ms Langley,

Please find for your review supplemental information regarding cultural information included in the Moody Air Force Base (AFB) Installation Development Environmental Assessment. On 1 May 2017 Moody AFB contacted the Coushatta Tribe of Louisiana to initiate consultation and requested assistance in identifying any Traditional Cultural Properties, items of religious significance, or items of concern to the Coushatta Tribe of Louisiana. A follow up letter was sent on 7 June 2017. Based upon archeological surveys, the Air Force has determined that there would be no effect to archeological resources eligible for listing on the National Register of Historic Places.

In 1996, a Phase I archeological survey (as part of a Base wide Cultural Resources Survey) was conducted across Moody AFB pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) and its implementing regulations (36CFR Part 800: Protection of Historic Properties, as revised January 2001) to identify cultural resources and assess their eligibility for inclusion in the National Register of Historic Places (NRHP). Follow-on Phase II archeological investigations recommended two sites as eligible for listing on the NRHP. None of the proposed projects are within these two sites. As a result, the Air Force determined that an additional project-specific archeological survey and associated Cultural Resource Assessment Survey (CRAS) and separate report for the Moody AFB Installation Development Plan (IDP) was not required.

Assessment of cultural resources for the Moody IDP involved cross-referencing project footprints against the 1996 survey and Phase II information to identify cultural resources within the project corridors. Two eligible archeological sites were identified as being in close proximity one of the IDP projects; however, neither of the sites are within project footprints and the Air Force has identified no effect to archeological sites. Attachment 1 provides details on the project and the aforementioned archeological sites.

If you have any questions please feel to contact me at (229) 257-2396 or via email at henry.santicola.2@us.af.mil.

HENRY J. SANTICOLA, GS-12
Environmental/Cultural Program

1 Attachment
1. Moody AFB IDP Cultural Resources Impact Assessment

Attachment 1
Moody IDP Cultural Resources Impact Assessment

1. Project Information

The 23d Wing at Moody Air Force Base (AFB), Georgia, and Headquarters Air Combat Command (HQ 3 ACC) have identified 17 projects for installation development and propose to implement them over the next five years (2017–2022). These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition. The following table (Table 1) provides a summary of the projects considered under the Moody AFB IDP, while the subsequent figures (Figures 1 and 2) show the location of each project in relation to Moody AFB.

Project ID	Project Name
Facility Construction Projects	
C01	Construct Security Forces Complex
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R02	Construct Addition and Interior Repairs to the Kennel Facility, Building 1708
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Figure 1. Location of Moody AFB and Grassy Pond Recreational Area.

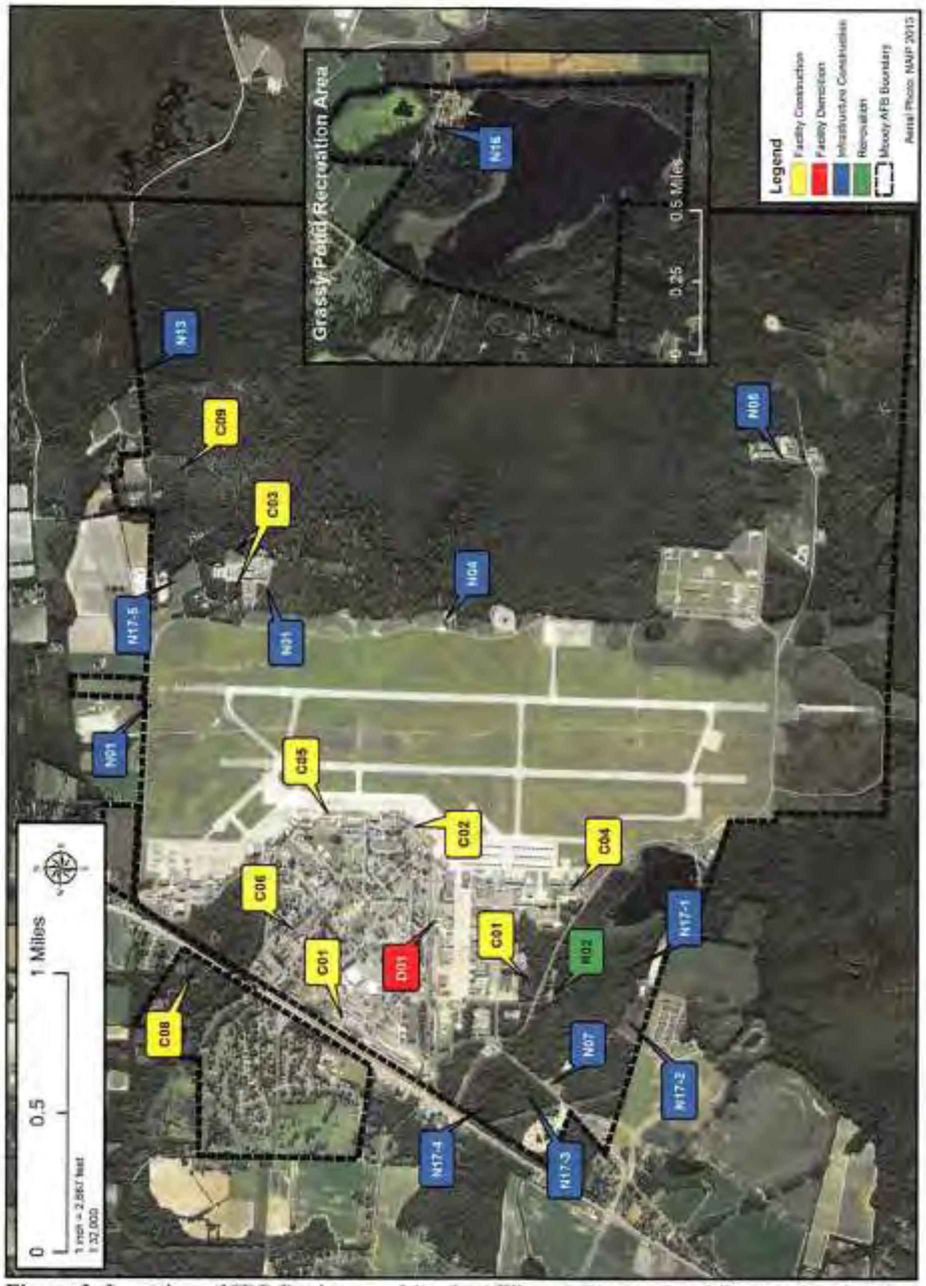

Figure 2. Location of IDP Projects at Moody AFB and Grassy Pond Recreational Area.

2. Cultural Resources Evaluation

Phase I archeological surveys of Moody AFB, Grassy Pond Recreation Area, and Grand Bay Range were conducted by Pan-American Consultants, Inc., from 1994 to 1995. On Moody AFB the survey identified 23 archeological sites, 39 isolated archeological finds, 234 Cold War-era and older buildings and structures. One historic structure was found to be eligible for listing under the National Register of Historic Places (NRHP). A subsequent phase II investigation determined only two of the archeological sites to be eligible for listing under the NRHP: Site 9LW63 and Site 9LW71. The following figure (Figure 3) shows the location of eligible archeological sites on Moody AFB.

Figure 3. Archeological Sites Located on Moody AFB.

NOTE TO READER:
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Site 9LW71 is a multicomponent extractive/base camp prehistoric site affiliated with the Late Paleo-Indian, Early Archaic, Deptford, and Weeden Island manifestations. Originally, this site was comprised of two separate sites (9LW70 and 9LW71), but the subsequent Phase II investigation of 9LW71 completed in November 1999 recommended that these two sites be combined into one consolidated site to be designated 9LW71, and recommended the new, larger site as eligible for listing under the NRHP.

Site 9LW63 is a multi-component prehistoric artifact scatter located on a small landform between adjacent wetlands approximately 118 feet north of an existing road. This site contains intact activity areas with temporally diagnostic artifacts. A Phase II investigation of 9LW63 in November 2008 recommended this site as eligible for listing under the NRHP.

In assessing potential impacts to cultural resources from proposed IDP projects the Air Force cross-referenced project footprints with known archeological site footprints to determine any potential interactions. The only project that is within close proximity to archeological sites is N01, which is to provide an addition and to repair the natural gas line east of the airfield within the existing utility easement; the footprint is near sites 9LW71 and 9LW63. The project footprint in relation to these sites is shown in Figure 4. No other project footprints are in proximity to any known archeological sites.

3. Impact Assessment / Determination

The Air Force has determined that the proposed projects would have no effect to archeological sites eligible for listing on the NRHP, sacred sites, TCPs, or other tribal resources. As shown in Figure 4, the planned gas line would not disturb site 9LW71 as it will be placed on the east side of the road separating it from the archeological site, and would not affect 9LW63 as it would pass 108 feet to the south of the site within the existing utility easement/corridor.

As per the Moody AFB Integrated Cultural Resources Management Plan (ICRMP), dated 2012, in the case of inadvertent discovery of cultural resources, work on-site would cease and the discovery immediately reported to the cultural resources manager, who would initiate the NHPA Section 106 process. Additionally, the archeological site would be treated as potentially eligible for listing on the NRHP until the Georgia State Historic Preservation Officer has concurred that the site is not eligible and Air Force activity can then resume.

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Figure 4. Location of IDP Projects in Relation to Archeological Sites.

From: Linda Langley
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Subject: [Non-DoD Source] RE: Moody AFB Development Cultural Assessment
Date: Wednesday, January 03, 2018 11:29:54 AM

Mr. Santicola,
Thank you for reaching out to us to follow-up on this consultation invitation. Based on the information provided, I do not believe that Moody AFB projects will have a negative impact on any archaeological, historic or cultural resources of the Coushatta people. Accordingly, we do not wish to consult further on these projects. If any inadvertent discoveries are made in the course of project implementations, we expect to be contacted immediately and reserve the right to consult with you further at that time.
Aliilamo (thank you), and best wishes for the New Year.
Linda Langley, Ph.D.
Coushatta THPO

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA [mailto:henry.santicola.2@us.af.mil]
Sent: Tuesday, January 2, 2018 11:01 AM
To: Linda Langley
Subject: FW: Moody AFB Development Cultural Assessment

Good morning Ms Langley, and Happy New Year

In May and June our Installation Commander sent an invitation for consultation to your Chairman regarding 17 installation projects in the developed cantonment area at Moody AFB. We had not heard from the Coushatta Tribe regarding this proposal, so I wanted to follow up to discuss any Traditional
Cultural Properties or items of tribal concern that we may not be aware of.

Moody AFB proposes 17 projects over the next 5 years as part of installation development. I have attached a map and brief description of each project and relationship with known archaeological sites eligible for listing on the NRHP for your review.

If you have any concerns or wish to follow up please contact me at 229-257-2396 or by reply to this e-mail.

v/r
Hank

Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
To: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE; Aktulewicz, Kevin D. (US-US)
Subject: EXTERNAL: FW: Moody AFB Cultural Information
Date: Tuesday, January 02, 2018 12:36:42 PM
Attachments: Cultural Resource Impact Assessment Moody AFB IDP.pdf
Muscogee (Creek) G2G.pdf
MCN Follow UP.pdf

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Sent: Tuesday, January 02, 2018 11:11 AM
To:
Subject: Moody AFB Cultural Information

Good morning Mr Proctor, and Happy New Year.

In May and June our Installation Commander sent an invitation for consultation to your Principal Chief regarding 17 installation projects in the developed cantonment area at Moody AFB. We had not heard from the MCN regarding this proposal, so I wanted to follow up to discuss any Traditional Cultural Properties or items of tribal concern that we may not be aware of. Moody AFB proposes 17 projects over the next 5 years as part of installation development. I have attached a map and brief description of each project and relationship with known archaeological sites eligible for listing on the NRHP for your review.

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Henry J. Santicola
NEPA / Environmental Planner
23 CES/CEIEA Moody AFB, GA
Com 229-257-2396 DSN 460-2396

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

Mr Hank Santicola
23d Civil Engineer Squadron
Environmental/Natural/Cultural Resources
3485 Georgia Street
Moody AFB GA 31699

Mr. David J. Proctor
Muscogee (Creek) Nation
Historic Preservation Officer
PO Box 580
Okmulgee, OK 74447

Dear Mr Proctor,

Please find for your review supplemental information regarding cultural information included in the Moody Air Force Base (AFB) Installation Development Environmental Assessment. On 1 May 2017 Moody AFB contacted the Muscogee (Creek) Nation to initiate consultation and requested assistance in identifying any Traditional Cultural Properties, items of religious significance, or items of concern to the Muscogee (Creek) Nation. A follow up letter was sent on 7 June 2017. Based upon archeological surveys, the Air Force has determined that there would be no effect to archeological resources eligible for listing on the National Register of Historic Places.

In 1996, a Phase I archeological survey (as part of a Base wide Cultural Resources Survey) was conducted across Moody AFB pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) and its implementing regulations (36CFR Part 800: Protection of Historic Properties, as revised January 2001) to identify cultural resources and assess their eligibility for inclusion in the National Register of Historic Places (NRHP). Follow-on Phase II archeological investigations recommended two sites as eligible for listing on the NRHP. None of the proposed projects are within these two sites. As a result, the Air Force determined that an additional project-specific archeological survey and associated Cultural Resource Assessment Survey (CRAS) and separate report for the Moody AFB Installation Development Plan (IDP) was not required.

Assessment of cultural resources for the Moody IDP involved cross-referencing project footprints against the 1996 survey and Phase II information to identify cultural resources within the project corridors. Two eligible archeological sites were identified as being in close proximity one of the IDP projects; however, neither of the sites are within project footprints and the Air Force has identified no effect to archeological sites. Attachment 1 provides details on the project and the aforementioned archeological sites.

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HENRY J. SANTICOLA, GS-12
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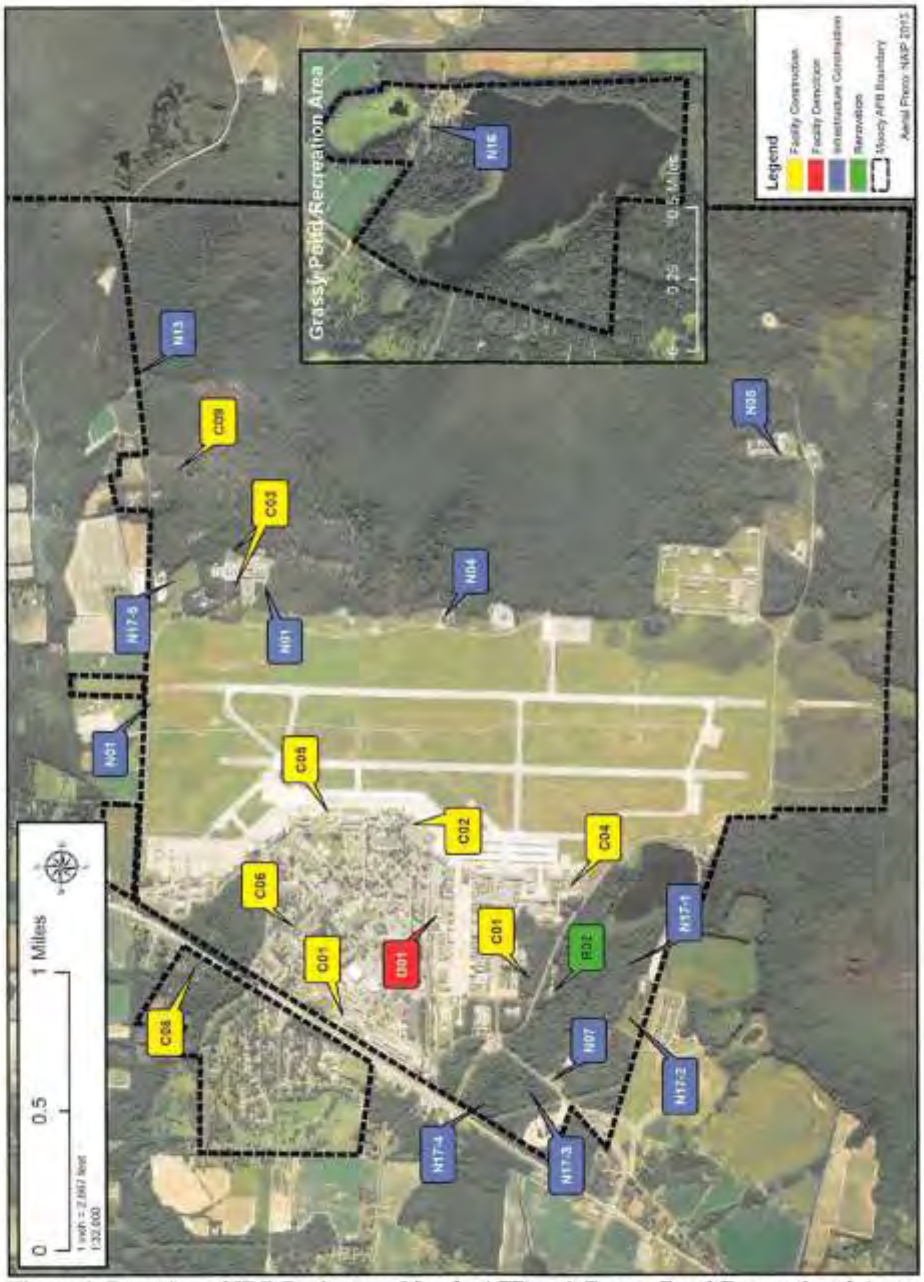

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From: David Proctor
To: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Subject: [Non-DoD Source] Moody AFB Installation Development Environmental Assessment
Date: Wednesday, January 03, 2018 11:49:01 AM

Henry Santicola

Environmental Planner

Department of the Air Force

Moody AFB, GA 31699

Mr. Santicola:

Thank you for the correspondence regarding the Installation Developmental Environmental Assessment of for the proposed 17 construction projects of new facilities and infrastructure, facility renovations and building demolition at Moody Air Force Base and the Grassy Pond Recreation area, Lowndes and Lanier Co., GA. We are unaware of any known historic/Tribal properties located in the APE and that work should proceed as planned. However, as the project is located in an area that is of general historic interest to the Tribe, we request that work be stopped and our office contacted immediately if any Native American cultural materials are encountered. This stipulation should be placed on the construction plans to insure contractors are aware of it. Please feel free to contact me with any further questions or concerns.

David J. Proctor

Historic and Cultural Preservation Department, Traditional Cultural Advisor

Muscogee (Creek) Nation

From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
To: LEE, GREGORY W GS-12 USAF ACC 23 CES/CEIE; Akstulewicz, Kevin D. (US-US)
Subject: EXTERNAL: FW: Moody AFB Development Plan Cultural Information
Date: Tuesday, January 02, 2018 12:28:14 PM
Attachments: Moody AFB Development Plan Cultural Assessment.pdf
Thlopthlocco Tribal G2G.pdf
Thlopthlocco Follow Up.pdf

-----Original Message-----
From: SANTICOLA, HENRY J GS-12 USAF ACC 23 CES/CEIEA
Sent: Tuesday, January 02, 2018 12:21 PM
To:
Subject: Moody AFB Development Plan Cultural Information

Good morning Mr Cloudner, and Happy New Year.

In May and June our Installation Commander sent an invitation for consultation to your Town King regarding 17 installation projects in the developed cantonment area at Moody AFB. We had not heard from the Thlopthlocco Tribal Town regarding this proposal, so I wanted to follow up to discuss any Traditional Cultural Properties or items of tribal concern that we may not be aware of.

Moody AFB proposes 17 projects over the next 5 years as part of installation development. I have attached a map and brief description of each project and relationship with known archaeological sites eligible for listing on the NRHP for your review.

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

Mr Hank Santicola
23d Civil Engineer Squadron
Environmental/Natural/Cultural Resources
3485 Georgia Street
Moody AFB GA 31699

2 Jan 18

Mr. Terry Clouthier
Thlopthlocco Tribal Town
Historic/Cultural Preservation Office
P.O. Box 188
Okemah OK 74859

Dear Mr Clouthier,

Please find for your review supplemental information regarding cultural information included in the Moody Air Force Base (AFB) Installation Development Environmental Assessment. On 1 May 2017 Moody AFB contacted the Thlopthlocco Tribal Town to initiate consultation and requested assistance in identifying any Traditional Cultural Properties, items of religious significance, or items of concern to the Thlopthlocco Tribal Town. A follow up letter was sent on 7 June 2017. Based upon archeological surveys, the Air Force has determined that there would be no effect to archeological resources eligible for listing on the National Register of Historic Places.

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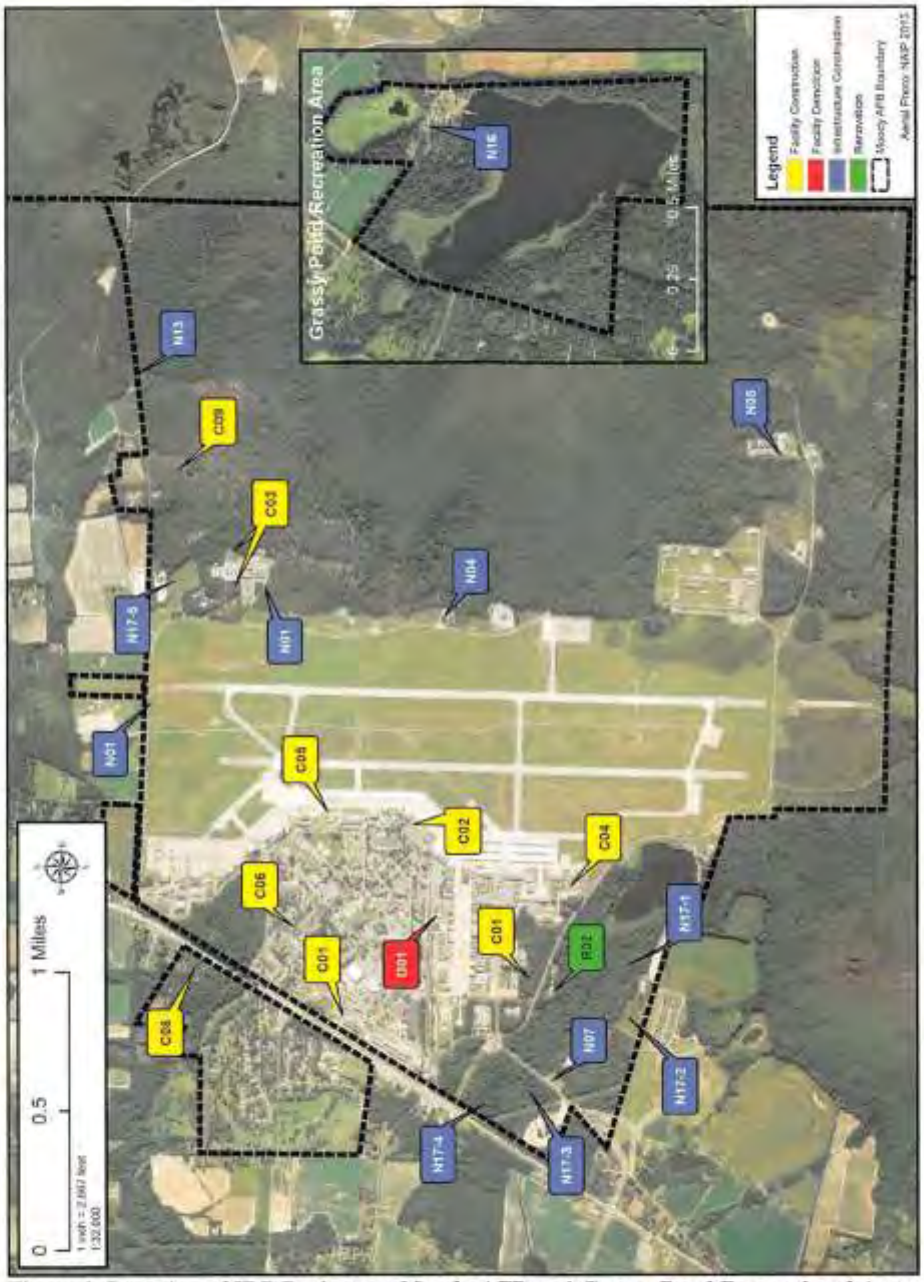

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23D CIVIL ENGINEER SQUADRON (ACC)
MOODY AIR FORCE BASE GEORGIA

Mr Hank Santicola
23d Civil Engineer Squadron
Environmental/Natural/Cultural Resources
3485 Georgia Street
Moody AFB GA 31699

8 Jan 18

Mr David Cook
Kialegee Tribal Town
Historic/Cultural Preservation Office
P.O. Box 332
Wetumpka OK, 74883

Dear Mr Cook,

Please find for your review supplemental information regarding cultural information included in the Moody Air Force Base (AFB) Installation Development Environmental Assessment. On 1 May 2017 Moody AFB contacted the Kialegee Tribal Town to initiate consultation and requested assistance in identifying any Traditional Cultural Properties, items of religious significance, or items of concern to the Kialegee Tribal Town. A follow up letter was sent on 7 June 2017. Based upon archeological surveys, the Air Force has determined that there would be no effect to archeological resources eligible for listing on the National Register of Historic Places.

In 1996, a Phase I archeological survey (as part of a Base wide Cultural Resources Survey) was conducted across Moody AFB pursuant to Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-665, as amended) and its implementing regulations (36CFR Part 800: Protection of Historic Properties, as revised January 2001) to identify cultural resources and assess their eligibility for inclusion in the National Register of Historic Places (NRHP). Follow-on Phase II archeological investigations recommended two sites as eligible for listing on the NRHP. None of the proposed projects are within these two sites. As a result, the Air Force determined that an additional project-specific archeological survey and associated Cultural Resource Assessment Survey (CRAS) and separate report for the Moody AFB Installation Development Plan (IDP) was not required.

Assessment of cultural resources for the Moody IDP involved cross-referencing project footprints against the 1996 survey and Phase II information to identify cultural resources within the project corridors. Two eligible archeological sites were identified as being in close proximity one of the IDP projects; however, neither of the sites are within project footprints and the Air Force has identified no effect to archeological sites. Attachment 1 provides details on the project and the aforementioned archeological sites.

If you have any questions please feel to contact me at (229) 257-2396 or via email at henry.santicola.2@us.af.mil.

HENRY J. SANTICOLA, GS-12
Environmental/Cultural Program

1 Attachment
1. Moody AFB IDP Cultural Resources Impact Assessment

Attachment 1
Moody IDP Cultural Resources Impact Assessment

1. Project Information

The 23d Wing at Moody Air Force Base (AFB), Georgia, and Headquarters Air Combat Command (HQ 3 ACC) have identified 17 projects for installation development and propose to implement them over the next five years (2017–2022). These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition. The following table (Table 1) provides a summary of the projects considered under the Moody AFB IDP, while the subsequent figures (Figures 1 and 2) show the location of each project in relation to Moody AFB.

Project ID	Project Name
Facility Construction Projects	
C01	Construct Security Forces Complex
C02	Construct Fire/Crash Rescue Station
C03	Construct Combative Arms Training Pit near B1540
C04	Construct Engine Test Support Facility
C05	Construct Covered Mobility Equipment Storage Addition, Building 657
C06	Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201 and 203
C08	Construct Paintball Facility
C09	Construct 23 CES Field Training Area (FTX)
Infrastructure Construction Projects	
N01	Addition/Repair Natural Gas Line, East of Airfield
N04	Construct Parking for the Control Tower and Radar Approach Control Facilities
N05	Construct Parking at Combat Arms Training and Maintenance (CATM)
N07	Widen Stone Road
N13	Widen and Pave Eisemann Road to Grand Bay Range
N16	Construct Waste-Water Infrastructure, Grassy Pond Recreational Area
N17	Construct Photovoltaic Panel Arrays
Renovation and Repair Projects	
R02	Construct Addition and Interior Repairs to the Kennel Facility, Building 1708
Demolition Projects	
D01	Demolition of Building 757

Table 1. Summary of Projects

Atch 1

Appendix A

Figure 1. Location of Moody AFB and Grassy Pond Recreational Area.

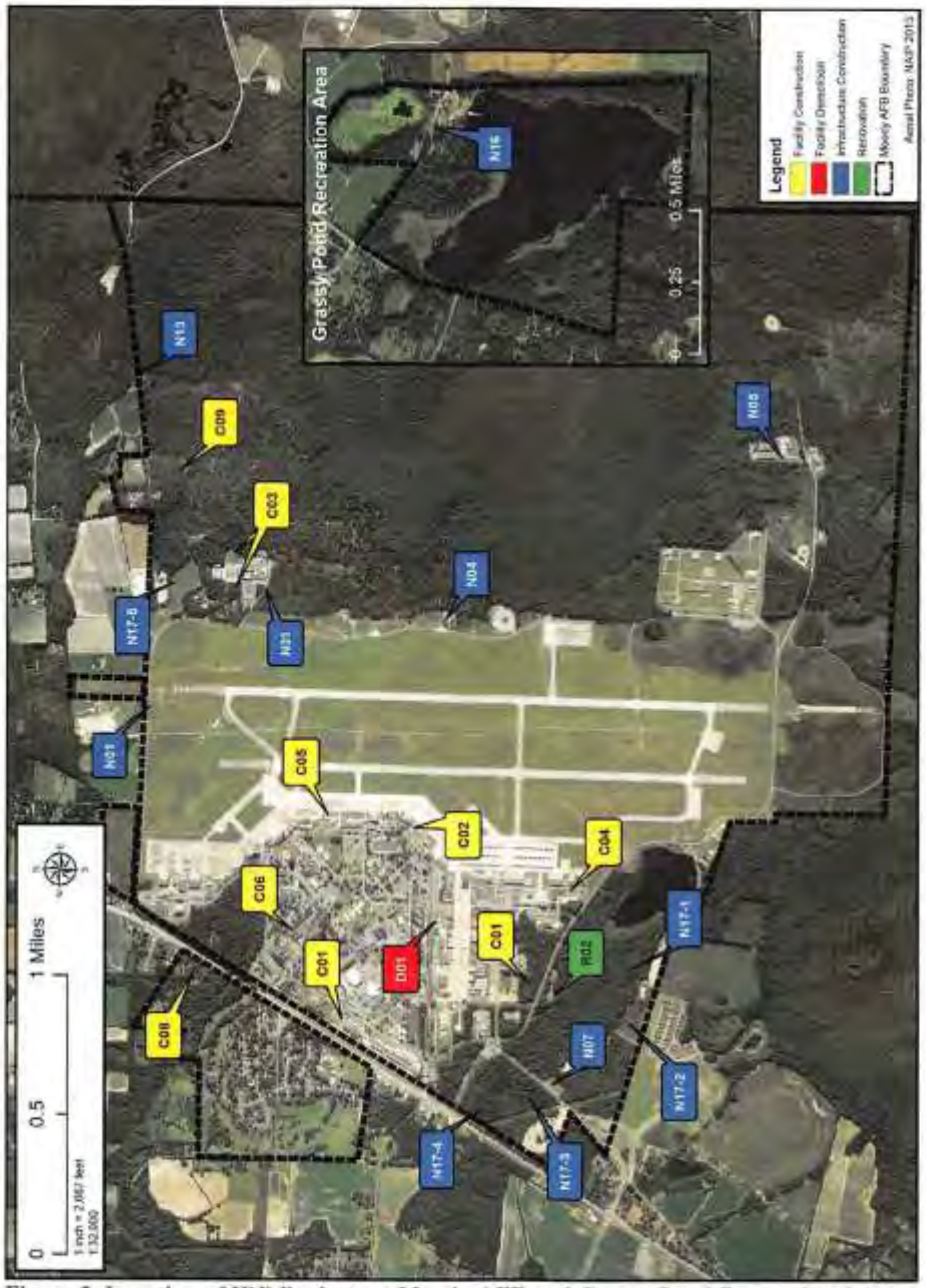

Figure 2. Location of IDP Projects at Moody AFB and Grassy Pond Recreational Area.

2. Cultural Resources Evaluation

Phase I archeological surveys of Moody AFB, Grassy Pond Recreation Area, and Grand Bay Range were conducted by Pan-American Consultants, Inc., from 1994 to 1995. On Moody AFB the survey identified 23 archeological sites, 39 isolated archeological finds, 234 Cold War-era and older buildings and structures. One historic structure was found to be eligible for listing under the National Register of Historic Places (NRHP). A subsequent phase II investigation determined only two of the archeological sites to be eligible for listing under the NRHP: Site 9LW63 and Site 9LW71. The following figure (Figure 3) shows the location of eligible archeological sites on Moody AFB.

Figure 3. Archeological Sites Located on Moody AFB.

NOTE TO READER:
This figure contains locations of sensitive archaeological sites and has therefore been redacted for public viewing.

Site 9LW71 is a multicomponent extractive/base camp prehistoric site affiliated with the Late Paleo-Indian, Early Archaic, Deptford, and Weeden Island manifestations. Originally, this site was comprised of two separate sites (9LW70 and 9LW71), but the subsequent Phase II investigation of 9LW71 completed in November 1999 recommended that these two sites be combined into one consolidated site to be designated 9LW71, and recommended the new, larger site as eligible for listing under the NRHP.

Site 9LW63 is a multi-component prehistoric artifact scatter located on a small landform between adjacent wetlands approximately 118 feet north of an existing road. This site contains intact activity areas with temporally diagnostic artifacts. A Phase II investigation of 9LW63 in November 2008 recommended this site as eligible for listing under the NRHP.

In assessing potential impacts to cultural resources from proposed IDP projects the Air Force cross-referenced project footprints with known archeological site footprints to determine any potential interactions. The only project that is within close proximity to archeological sites is N01, which is to provide an addition and to repair the natural gas line east of the airfield within the existing utility easement; the footprint is near sites 9LW71 and 9LW63. The project footprint in relation to these sites is shown in Figure 4. No other project footprints are in proximity to any known archeological sites.

3. Impact Assessment / Determination

The Air Force has determined that the proposed projects would have no effect to archeological sites eligible for listing on the NRHP, sacred sites, TCPs, or other tribal resources. As shown in Figure 4, the planned gas line would not disturb site 9LW71 as it will be placed on the east side of the road separating it from the archeological site, and would not affect 9LW63 as it would pass 108 feet to the south of the site within the existing utility easement/corridor.

As per the Moody AFB Integrated Cultural Resources Management Plan (ICRMP), dated 2012, in the case of inadvertent discovery of cultural resources, work on-site would cease and the discovery immediately reported to the cultural resources manager, who would initiate the NHPA Section 106 process. Additionally, the archeological site would be treated as potentially eligible for listing on the NRHP until the Georgia State Historic Preservation Officer has concurred that the site is not eligible and Air Force activity can then resume.

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Figure 4. Location of IDP Projects in Relation to Archeological Sites.

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

Mr Hank Santicola
23d Civil Engineer Squadron
Environmental/Natural/Cultural Resources
3485 Georgia Street
Moody AFB GA 31699

12 Jan 18

Ms Carolyn White
Poarch Band of Creeks
Historic/Cultural Preservation Office
5811 Jack Springs Rd
Atmore, AL 36502

Dear Ms White,

Please find for your review supplemental information regarding cultural information included in the Moody Air Force Base (AFB) Installation Development Environmental Assessment. On 1 May 2017 Moody AFB contacted the Poarch Band of Creeks to initiate consultation and requested assistance in identifying any Traditional Cultural Properties, items of religious significance, or items of concern to your tribe. A follow up letter was sent on 7 June 2017. Based upon archeological surveys, the Air Force has determined that there would be no effect to archeological resources eligible for listing on the National Register of Historic Places.

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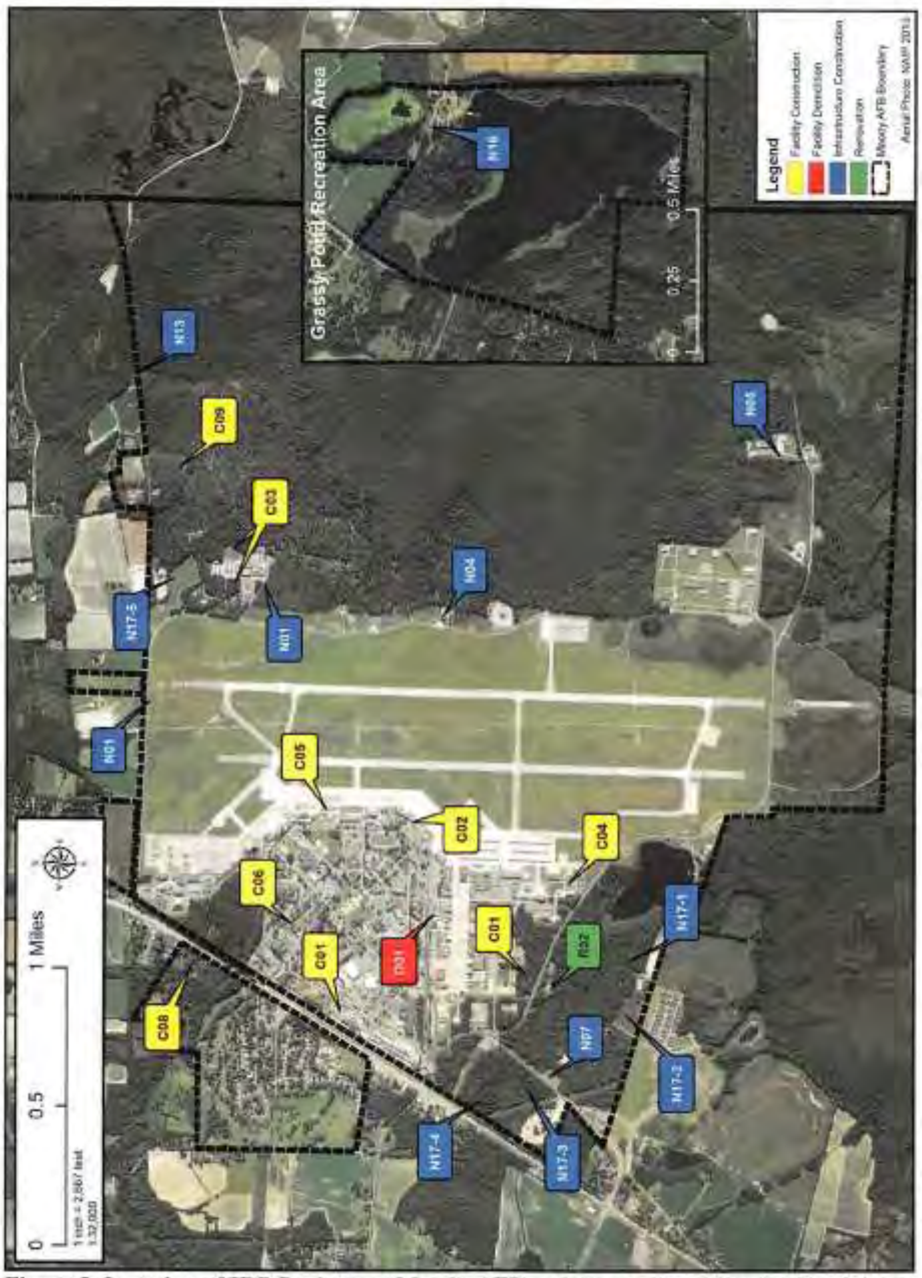

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THLOPTHLOCCO TRIBAL TOWN

Tribal Historic Preservation Office

Terry Clouthier, Tribal Historic Preservation Officer

P.O. Box 188
Okemah, OK 74859
(918) 560-6113
thpo@tttown.org

January 8, 2018

THPO File Number: 2018-12

Henry J. Santicola
Environmental/Cultural Program
23rd Civil Engineer Squadron
Environmental/Natural/Cultural Resources
Department of the Air Force
3485 Georgia Street
Moody Air Force Base, Georgia 31699

RE: Moody AFB Development Plan Cultural Information for Environmental Assessment

Dear Mr. Santicola,

Thank you for contacting the Thlopthlocco Tribal Town Tribal Historic Preservation Office (THPO) soliciting comments regarding the Moody AFB Development Plan Cultural Information for Environmental Assessment at Moody Air Force Base, Georgia. Our office has reviewed the documents and offers the following comments.

The survey conducted for these proposed undertakings is well over 20 years old and as such should not be used to justify not conducting additional surveys. It is the recommendation of the THPO, and other Tribes who attended a joint National Guard meeting in September of 2017 at Little Rock, Arkansas, that surveys which pre-date 2000 are too old due to factors which may not have existed at the time of the survey (such as erosion) or new technologies or survey standards which were not used 20 years ago (wide spread use of ground penetrating radar for instance) which could potentially expose or document sites. The THPO highly recommends that your agency commit to conducting a new survey of Moody Air Force Base as this will be the only time that the THPO will agree with the results of the previous survey.

Upon review of the documents and consulting our records, we are unaware of any culturally significant sites within the area of potential effects (APE) for each undertaking. However, should any human remains or cultural resources be inadvertently discovered, please cease all work and contact our THPO at thpo@tttown.org or (918) 560-6113 immediately.

Please feel free to contact the THPO at thpo@tttown.org or (918) 560-6113 if you have any questions.

Please refer to THPO file number 2018-12 in all correspondence for this undertaking.

Sincerely,

T— Cl—

Terry Clouthier
Thlopthlocco Tribal Town
Tribal Historic Preservation Officer

A.4 STATE HISTORIC PRESERVATION OFFICER (SHPO) CORRESPONDENCE

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

April 20, 2016

John L. Eunice, III, GS-14, DAFC
Deputy Base Civil Engineer
23d Civil Engineer Squadron
3485 Georgia Street
Moody AFB, GA 31699
Attn: Hank Santicola, EA Project Manager

RE: Moody AFB: Thirty-Six (36) Installation Development Projects, Valdosta
Lanier County et. al., Georgia
HP-160401-002

Dear Mr. Eunice,

The Historic Preservation Division (HPD) has received initial information concerning the above referenced project requesting comments pursuant to the National Environmental Policy Act of 1969. Our comments are offered to assist the Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Thank you for notifying us of this federal undertaking. We look forward to receiving Section 106 compliance documentation as appropriate. To aid our office in processing such a large number of projects, HPD recommends assessing the National Register of Historic Places (NRHP)-eligibility of a given historic resource on Moody AFB, not only individually, but within the context of a historic district(s) since the majority of military resources were constructed and utilized within a larger context on a military installation. Further, HPD recommends assessing Moody AFB's historic resources not only within a national level of significance, such as the Cold War, but within a state or local level of significance under the various criteria of NRHP-eligibility. This holistic approach toward Moody AFB's resources will aid in efficient consultation during the Section 106 process for projects throughout the installation.

Please refer to project number **HP 160401-002** in future correspondence regarding this project. If we may be of further assistance, please contact me at (770) 389-7851 or jennifer.dixon@dnr.ga.gov.

Sincerely,

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

JEWETT CENTER FOR HISTORIC PRESERVATION
2610 GA HWY 155, SW | STOCKBRIDGE, GA 30281
770.389.7844 | FAX 770.389.7878 | WWW.GEORGIASHPO.ORG

:HQ ACC/CEVR :12-13-93 :10:01AM : LAFB, VA→ 912 333 4981:# 4/12

Roy – see me

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 347TH COMBAT SUPPORT GROUP (TAC)
MOODY AIR FORCE BASE GA 31699-[illegible]

16 DEC 1986

REPLY TO ATTN OF: 347 CSG/DEEV (Eiseman, 4654)

SUBJECT: Completion of Archeological Survey and Evaluative Testing for Moody AFB, GA.

TO: HQ TAC/~~DEEV~~ SNP

1. We have received the agreement negotiated by the Department of the Interior (DOI) with the Georgia State Historic Preservation Officer for Moody AFB.

2. It is noted that one site on the Grand Bay Range remains to be investigated to complete this requirement.

3. Moody has identified an unfunded budget requirement for $30,000.00 to transfer to the DOI who will act as Moody's contract officer to complete this study.

4. We request your assistance to fund this requirement and hopefully complete it prior to Grand Bay Range becoming operational in Sept/Oct 1987.

WILLIAM S. BRYAN
Chief, Engrg and Env Plng Br

cc: HQ TAC/DEPF

Readiness is our Profession

·SY:HQ ACC/CEVR :12-13-93 :10:01AM : LAFB. VA- 912 333 4981:# 5/12

SEP 22 1986

DEEV

Cultural Resource Survey Requirements, Moody AFB, GA

347 CSG/DE

1. After a recent visit to Moody Air Force Base, a National Park Service archaeologist concluded that the cantonment area and Grassy Pond are free of significant cultural sites. In accordance with federal law, this information was presented to the State Historic Preservation Officer (SHPO), whose concurrence is documented in a 26 Jun 86 letter from the Service to the SHPO, a copy of which was sent to 347 CSG/DEEV. That letter should be made part of your permanent files, as it permits construction and other development in the most "desirable" portions of the base without the need for further surveys (unless cultural sites are found during construction). This is a significant achievement for Moody AFB, and will result in substantial savings of time and money over the years.

2. By law, the Air Force must locate and identify all cultural resources on its lands. Although the SHPO agreed that there are no such sites the the cantonment area or on Grassy Pond, he did note that some undeveloped portions of Moody must be surveyed. In an 8 Sep 86 letter to this office, the Service provided a methodology and cost estimate for this survey, which we are transmitting to you herewith. As required by law, the SHPO has reviewed and approved the methodology.

3. Although a survey is required by law, there is no statutory time limit for its accomplishment, except that no construction may take place in the areas prior to the survey. You may wish to budget funds specifically for the survey, or, if installation plans call for construction in the area, you may find it more advantageous to include all or part of the work in the construction project budget.

4. Direct inquiries on this matter to Mr. Roy Barker at AUTOVON 574-4430.

FOR THE COMMANDER

SIGNED

GILBERT N. BURNET
Acting Chief, Environmental Plng Div

1 Atch
NPS Ltr, Dtd 8 Sep 86

!Roy Barker/3081V/16 Sep 86/DEEV/SLP

SENT BY:HQ ACC/CEVR :12-13-93 :10:02AM : LAFB. VA- 912 333 4981:# 6/12

United States Department of the Interior

NATIONAL PARK SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street, S.W.
Atlanta, Georgia 30303

IN REPLY REFER TO:

JUN 23 1986

Dr. Elizabeth A. Lyon
Deputy State Historic
Preservation Officer
Historic Preservation Section
Floyd Tower East, Suite 1462
205 Butler Street, S.E.
Atlanta, Georgia 30334

Dear Dr. Lyon:

A few months ago, Headquarters Tactical Air Command (TAC) requested our assistance in fulfilling cultural resource compliance responsibilities for TAC bases in the Southeast Region. In working with the military and other agencies, we have developed a procedure to meet legal and regulatory requirements and professional standards in a cost effective manner. This involves a preliminary visit to an area by one of our archeologists to determine the need for and scope of any cultural resource investigations. If additional work is necessary, a proposed program and strategy are presented to the State Historic Preservation Officer for review, recommendations, and eventual concurrence. This procedure has worked very well for Military Airlift Command bases in the southeast, Cape Canaveral Air Force Station and Tyndall Air Force Base (AFB), Florida, Fort Rucker, Alabama, and Columbus AFB, Mississippi.

On May 27-30, Mr. Wilfred Husted of my staff, performed a preliminary cultural resource reconnaissance of Moody AFB, Georgia, and its associated Grassy Pond recreation area about 25 miles south of the base.

Moody AFB dates from World War II and has been in continuous operation except for a five year period between the end of World War II and the Korean conflict. The base is contained on the Bemiss, Georgia U.S.G.S. 7.5 minute quadrangle of 1971 (EXHIBIT 1). Considerable development has taken place since 1971 as illustrated by the base Master Plan, Basic Layout Plan (EXHIBIT 2). Both runways have been extended to 8,000 feet each, taxiways have been added, and explosives holding areas have been constructed north and south of the cantonment area. A number of buildings have been added in the main base area, and the housing area across Highway 125 has been enlarged and a trailer park and recreational facilities added.

Original construction and subsequent development have resulted in near total disturbance of the airfield, the main base, and the golf course-housing area across the highway. On the main base this would include all of the area west of the perimeter road parallel to and east of Runway 18L (EXHIBIT 2). On the topographic map there is an apparently undisturbed area in the southwest corner of Moody AFB. This area includes Mission Pond (Lake), and is marked number 1 on EXHIBIT 2. However, Mission Pond is an artificial impoundment formed by the excavation of borrow for airfield construction. An abandoned sanitary landfill occupies the western end of this area. The remainder of the area contains radioactive waste disposal sites and is disturbed by roads. Inspection of dirt roads and numerous clear areas revealed no archeological remains.

The area off the south ends of the runways (EXHIBIT 2, Area 2) is encircled by a dirt crash trail. Most of this area is low and wet, and the topographic map indicates some disturbance in the past. Mr. Husted drove around the crash trail checking the road and clear spots along the way. No archeological materials were noted.

The slopes immediately east of the fire fighting and rescue training grounds (EXHIBIT 2, Area 3) are eroded for the most part with large expanses of bare ground. Inspection of this area revealed no archeological evidence.

The receiver site (EXHIBIT 2, Area 4) is in pine woods. Inspection of bare ground around the site revealed no archeological remains. The same was true for the transmitter building site (EXHIBIT 2, Area 5).

Inspection of dirt roads and trails in a medical field training area (EXHIBIT 2, Area 6) produced no archeological evidence.

Area 7 (Exhibits 2 and 3) is a severely disturbed landfill. East of the landfill are two low rises or hills, one on either side of the Lowndes-Lanier County line (EXHIBIT 1). These appeared to be potentially good places for archeological sites. However, the easternmost hill is now occupied by a dump. It had been scraped clear, and careful inspection of the surface revealed no archeology. Clear areas on the other hill were searched but nothing was found. On later reflection, the two hills appear to be too far from permanent water to be good site locations.

Inspection of the dirt perimeter road at points 8 and 9 on EXHIBIT 3 produced no archeological evidence. Beyond point 9 the road is under construction to accommodate a boundary change. At this point, the road is on a fill in a low, at least seasonally wet, area.

Clear spots around the ordnance storage area (Area 10, EXHIBITS 2 and 3) were carefully observed, but nothing was seen. Similarly, bare places between the ordnance storage compound and the small arms range to the east were inspected with negative results. The small arms range (Area 11, EXHIBIT 3) was in use and could not be inspected. However, it had been badly disturbed by earth moving to construct a backstop.

The E.O.D. Proficiency Range (Area 12, EXHIBIT 3) is an area of rubble fill, and thus, would not contain archeological sites.

Three widely scattered stone flakes were observed on the surface of a one to two acre clear area on Dudley's Hammock (Area 13, EXHIBIT 3). Four shovel tests were excavated in the area of the finds, but no additional material was found. There was no intact subsurface cultural deposit. There was a low rise some 30-40 meters to the north. Careful inspection of the surface revealed no archeological remains, and four shovel tests on the rise were negative. A few chunks of concrete and two wire nails were noted on the surface where the stone flakes were found. There is no significant site at this location. A Georgia Archaeological Survey form for the site, Moody AFB #1, is enclosed.

Except for a small, low, dry area toward its northern end, the crash trail (Area 14, EXHIBIT 3) is on a fill with standing water on both sides.

The area enclosed by the crash trail and the higher ground on the main base (EXHIBIT 1 and Area 15, EXHIBIT 3) is wet at least part of the year. It slopes eastward very gradually from about the 190 foot contour with the vegetation changing from pine flatwoods to mixed pine and hardwoods to hardwoods in continually wet areas. Mr. Husted was not able to enter this area because most of it is in the impact area for the small arms range which was in use during his visit to Moody AFB. However, he does not believe that the area is suitable for occupation because it is low lying and wet a good portion of the year. Any occupation in the vicinity most likely would be on the higher slopes along the western side of this low lying area above the 190 foot contour.

On the basis of his reconnaissance, Mr. Husted concluded that the only part of Moody AFB with any reasonable potential for archeological sites are the slopes bordering the west side of the large, low, wet area discussed immediately above. Even here, the site potential may be low because of the distance from permanent, reliable water to the east. However, we propose to sample this area in conjunction with sampling of the Grand Bay Range area discussed below.

Mr. Husted investigated the Grassy Pond recreation area on the afternoon of May 28 and the following morning. Grassy Pond is located approximately 25 miles south of Moody AFB about one mile north of the Florida-Georgia border. The recreation area is shown on the Lake Park, GA-FLA. U.S.G.S. 7.5 minute quadrangle, 1971. The recreation area includes Grassy and Lot Pond and (EXHIBITS 4 and 5).

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4

The facility consists of a marina with associated parking areas and a store/restaurant/lodge building located on the Grassy Pond side of the neck between the two ponds. Cabins, picnic shelters, roads, and recreational facilities are scattered about the lower slopes of the hill or ridge between Grassy and Lot Ponds. A maintenance area and picnic shelters are located across the entrance road on the shore of Lot Pond.

A diffuse lithic scatter occupies the hill or ridge top and extends downslope nearly to the shoreline of Grassy Pond. The area is grassed, but there are numerous bare areas. An occasional stone flake was noted in some of these bare areas and in the dirt access roads. Shovel tests placed in the vicinity of the surface finds indicated a very thin gray sand overlying orange sand. No archeological finds were made in the shovel tests. There is a very good road cut exposure on the southwest side of the entrance road along the top of the ridge. It extends unbroken for approximately 75-100 meters. No cultural deposit was present and only two flakes and a core were noted eroding from the cut. All of the flakes observed on the site were large primary and secondary flakes. The site represents a large but diffuse lithic reduction station of unknown age. It has no research potential because of its lack of depth and very diffuse nature. A Georgia Archaeological Survey form for the site, Moody AFB Rec. #1, is enclosed.

A dirt trail surrounds Grassy Pond. Mr. Husted walked this trail looking for archeological material. Except for the eastern side of the pond, the trail crosses low, seasonally wet land with little or no archeological potential. Nothing of an archeological nature was seen in the trail or the occasional clear areas in this low area. Two stone flakes were observed in the trail along the eastern side of Grassy Pond. However, the land is steeply sloping in this area, and the flakes obviously came from a probable site on the ridgetop outside the recreation area boundary (EXHIBIT 4).

A few stone flakes were observed on the surface behind the maintenance trailer across the entrance road from the marina. Several shovel tests in this area indicated the same thin gray sand with underlying orange sand as on the hill above Grassy Pond. An employee mentioned the finding of a projectile point in the field east of the trailer and outside the area boundary. The flakes probably are associated with a site on the ridge to the east. There is no research potential to that portion in the recreation area.

Mr. Husted walked around the narrow strip of land within the boundary around Lot Pond. This is a low wet area with no archeological potential. Any archeological sites most likely would be found on the ridges around the pond.

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Based on his investigation, Mr. Husted concluded that the site at Grassy Pond requires no further work and that there are no other significant sites within the recreation boundary.

Recently, the Air Force acquired approximately 5,900 acres of low lying land adjoining the eastern side of Moody AFB for a bombing and strafing range. Initially called the Winnersville Range, the area is now known as the Grand Bay Range. The range area consists of low lying hummocks and land along Grand Bay and Grand Bay Creek south of Banks Lake in Lanier and Lowndes Counties. The range is shown on EXHIBIT 1).

A sample survey of the portion of the area to be developed was conducted by Archaeological Research Associates during the winter of 1985 (Wright 1985). Three lithic scatters and one prehistoric archeological site producing PaleoIndian and Archaic projectile points were discovered. On the basis of his survey, Wright recommended evaluative testing of the site and a sampling survey of the remainder of the range area.

Mr. Husted met with Mr. John Morgan at your offices on June 13 and presented the results of his investigation of Moody AFB and the recreation area and discussed further survey needs. Mr. Morgan agreed that no further investigations were necessary at the Grassy Pond recreation area but requested that a site survey form be completed for the lithic reduction site (enclosed). He also agreed that survey of Moody AFB and the housing area across Highway 125 was not necessary except for that portion of the base adjacent to the west side of the low wet area between the eastern base boundary and the airfield proper (EXHIBIT 3, Area 15).

Mr. Husted and Mr. Morgan discussed completion of the Grand Bay Range survey and agreed that the area would be sampled by intensive survey of the land and hummocks within 200 meters of Grand Bay and Grand Bay Creek. Also, several transects will be surveyed across the portion of land containing the abandoned landing field (EXHIBIT 1). The transects will extend from U.S. Highway 221 northwestward to Grand Bay and include the higher land at and above the 200 foot contour. The slopes bordering the west side of Area 15 on Moody AFB will be included in the sampling. The areas to be included in the survey are shown on EXHIBIT 6.

The potentially significant prehistoric archeological site discovered by the 1985 survey will be evaluated for National Register of Historic Places eligibility.

Your concurrence with this strategy is requested. When approved, we will develop a cost estimate to complete the survey and present it to Headquarters Tactical Air Command. When funding is available, the survey will be conducted either by the Air Force or through our office.

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Should you have any questions or wish additional information, please contact Mr. Husted at 331-2630.

Sincerely,

John E. Ehrenhard

John E. Ehrenhard
Chief, Archeological
Services Division

Enclosures

cc:

Roy Barker, HQ TAC
John Eiseman, Moody AFB

SENT BY:HQ ACC/CEVR :12-13-93 :10:06AM : LAFB. VA- 912 333 4981:#12/12

Reference Cited

Wright, Newell O.

1985 Archaeological Resources of the Winnersville Range. Moody Air Force Base, Georgia. Archaeological Research Associates, Report of Investigation 16. Valdosta.

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

NOV 3 0 2017

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

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

SUBJECT: Section 106 Consultation for the Installation Development Plan, Moody AFB GA

1. In accordance with Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR Part 800, the Air Force is providing information for your review and concurrence regarding the above-referenced project.

2. The 23d Wing at Moody Air Force Base (AFB), Georgia (Attachment 1), and Headquarters Air Combat Command (HQ ACC) have identified priorities for installation development projects and propose to implement them over the next five years (2017–2022). The intent of the ongoing process of installation development at Moody AFB is to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units. The 17 projects considered were identified as priorities for installation development in the Moody AFB Installation Development Plan (IDP) and the Moody AFB Facilities Board. These plans identify requirements for the improvement of the physical infrastructure and functionality of Moody AFB, including current and future mission and facility requirements, development constraints and opportunities, and land use relationships.

3. This IDP involves 17 individual projects, including demolition activities, restoration activities on specific structures, construction of facilities, and construction of supporting infrastructure (Attachment 2). Based on the projects presented in the Proposed Action, ground disturbance would be expected. The Air Force has defined the Area of Potential Effect (APE) for direct effects to historic properties as the specific footprint areas impacted by the 17 distinct projects described within the Moody AFB IDP and represented in the attachments to this letter (Attachments 3, 4, 5, 6, 7, 8). The APE for indirect effects is defined as a 1,000 foot buffer around the individual project areas. Given the auditory and visual environment of a developed cantonment area located on an active Air Force Base, this buffer should capture all locations from which individual project construction or demolition activity may be visible or audible.

Global Power for America

4. The proposed APE (both direct and indirect) for the IDP project was previously surveyed for archaeological resources and no archaeological resources considered eligible for listing in the NRHP were identified within the direct impact APE (Attachments 9, 10, and 11). The nearest recorded archaeological resources eligible for listing on the NRHP are site 9LW71, located approximately 50 feet east and on the opposite side of the road as project N01 and 9LW63, located 80 feet north of the same gas line project. As both resources are subsurface archaeological sites, and some distance from the proposed activity, neither site would be directly impacted by the gas line repair/ addition or indirectly affected by the proposed action.

5. Moody AFB completed an historic structure survey in August 2017 of the installation's remaining Cold War facilities and unevaluated facilities that have reached 50 years of age to determine eligibility for listing in the NRHP, individually or as a district. This architectural survey and evaluation encompassed 210 buildings and structures. The survey identified one structure, the Base Chapel (Building 110), as eligible for listing on the NRHP (Attachment 12). Previous to this study, Moody AFB had conducted five historic surveys on installation facilities. The first study was completed in 1999 and reviewed all 234 buildings and structures 50 years of age or older or those that hold a significant Cold War association. As a result of this effort, only one structure was considered eligible for the NRHP, the water tower (building 618). Another study completed in 2011 inventoried 42 buildings and structures constructed between 1941 and 1965. Twenty-six of the buildings and structures were 50 years of age or older, while the remaining 16 resources were less than 50 years of age and, therefore, evaluated under Criteria Consideration G. None of the buildings and structures under consideration were recommended as eligible for the NRHP. As part of Moody AFB's ongoing Section 110 compliance efforts, a third study was completed in 2016 of eight structures (Attachment 13) that were determined to not be eligible for NRHP listing due to a lack of integrity. Also completed in 2016, was a cultural resource study of 2 buildings, both determined to be not eligible to the NRHP (Attachment 14). In January of 2017, a Section 106 cultural resource study concluded that 7 additional structures were not eligible for listing in the NRHP (Attachment 15). HPD concurrence was received on these determinations (Attachments 13, 14, 15). With the completion of these studies, all base facilities constructed during the World War II era, the Cold War era, and all base facilities that have reached 50 years of age to date have been evaluated. The Base Chapel and the Base Water Tower are the only two structures on Moody AFB that have been determined eligible for inclusion on the NRHP.

6. There are five structures on Moody AFB directly impacted by IDP projects. The first is building 757, originally constructed as a flight training simulator in 1962. This structure would be demolished under project D01. Project C05 would potentially involve an addition to building 657. Project R02 is a renovation to building 1708, a K-9 kennel constructed in 1986. Building 621, a fire station constructed in 1969 would be demolished under C02-1 and renovated under alternative C02-2. Facility 4130, a pre-fabricated building constructed in 1990 would potentially be demolished as part of project C04. Building 757 and 621 were previously evaluated and considered as not eligible for listing on the NRHP with HPD concurrence. The remaining structures (657, 1708 and 4130) were evaluated as part of the August 2017 survey. As a result of this study, all three of these buildings were recommended as not eligible for listing on the National Register of Historic Places due to a lack of historic and/or architectural significance. No further work is recommended on these buildings. HPD concurred with these recommendations in a letter dated November 6, 2017 (Attachment 16).

7. In the same November 6, 2017 letter, the HPD concurred with the finding that the Chapel (building 110) and the Water Tower (building 618) are the only structures on Moody AFB eligible for listing in the NRHP. Neither building falls within the direct impact APE for this project. When the 1,000-foot buffer is applied to projects in consideration of indirect impacts to historic properties, two project footprints C02-1 and C02-2, are located approximately 250 feet from the Water Tower. These footprints are the proposed and alternative locations for the construction of a Fire/Crash Rescue Station adjacent to the airfield. In a review considering the presence of historic districts on Moody AFB, it was determined that both the water tower and chapel have lost integrity of setting due to the installation's constant pace of repair, demolition, and new construction. This history of development has changed both resources' relationships with surrounding facilities and features. The base water tower view shed has been significantly altered by renovations of surrounding facilities as well as construction and demolition within the immediate area, and the base Chapel view shed has been significantly altered since the time of construction by elimination of the adjacent Austin Ellipse roadway and major reconfigurations of Bradley Circle and Hickam Street, facility demolitions within the former Austin Ellipse, and construction of the installation's new Air Park, 23d Wing Headquarters facility and 93 Air Ground Operations Wing/23d Mission Support Group Headquarters facility adjacent to the Chapel. Given the previous loss of integrity of setting, and that these locations are adjacent to an active flight line, it is unlikely that any visual, atmospheric or audible effects would be introduced that would further "diminish the integrity of the property's significant historic features (36 CFR § 800.5(a)(2)(v))." The land use setting of the historic property would also remain consistent with its intended use on a military facility.

8. Additional information was provided at the request of SHPO regarding previous evaluations of Moody AFB's main cantonment, flight line, golf course, munitions storage, Combat Arms Training and Maintenance (CATM)/Explosive Ordnance Disposal, 820th Base Defense Group, and Grassy Pond military recreation areas as districts. All Moody AFB facilities constructed during the Cold War era had previously been surveyed and determined not significant for association. As such, the Cold War era period of significance is not a contributing factor for evaluation of historical districts on Moody AFB. Therefore, significance for evaluation of districts on Moody AFB focuses primarily on the WWII period of significance and Criteria A – D for facilities that have reached 50 years of age. As a result of previous surveys it was determined that no areas of Moody AFB are eligible as historic districts as the base overall has lost its integrity of association and feel due to building alterations and modern construction, preventing an understanding of the WWII and Cold War missions of the base, its role in the development of aviation technology for the USAF, and the architectural evolution of the buildings on base. HPD concurred that Moody AFB does not currently contain NRHP-eligible historic districts (Attachment 16).

9. As no historic properties have been identified within the direct effects APE for the IDP and no historic properties would be affected by actions occurring in the indirect effects APE, the Air Force recommends a Finding of "No Historic Properties Affected" pursuant to 36 CFR 800.4(d)(1). Attached for your review are copies of relevant documents supporting our finding, along with a map showing the location of the property. This documentation satisfies requirements set forth at 36 CFR 800.11(d).

10. If you have questions regarding this finding, please direct them to Mr. Henry Santieola, 23 CES/CEIE, Moody AFB, GA by e-mail at henry.santieola.2@us.af.mil, or by phone at (229) 257-2396. Thank you for your attention to this matter.

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

16 Attachments:
1. Location of Moody AFB
2. Location of Projects Included in the IDP
3. Location of Proposed Projects (Northwest of Airfield)
4. Location of Proposed Projects (Southwest of Airfield)
5. Location of Proposed Projects (Northeast of Airfield)
6. Location of Proposed Projects (Southeast of Airfield)
7. Location of Proposed Projects (Grassy Pond)
8. Description of IDP Projects
9. Location of IDP Projects in Relation to Eligible Archaeological Sites and NRHP Historic Structures on Moody AFB
10. Small-Scale Depiction of IDP Projects in Relation to NRHP Eligible Historic Structures
11. Documentation of 1986 Consultations with Moody AFB, DoI and SHPO
12. Letter from HPD to Moody AFB, April 20, 2016
13. Letter from HPD to Moody AFB, March, 2016
14. Letter from HPD to Moody AFB, January 6, 2016
15. Letter from HPD to Moody AFB, January 31, 2017
16. Letter from HPD to Moody AFB, November 6, 2017


Knoxville
TENNESSEE
NORTH CAROLINA
Chattanooga
General Area of IDP Projects
0 2 4
Miles
Columbia
Athens
Atlanta
SOUTH CAROLINA
Augusta
GEORGIA
Macon
Columbus
ALABAMA
Savannah
Moody AFB
Grassy Pond Recreation Area
Atlantic Ocean
Tallahassee
FLORIDA
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Legend
Major Cities
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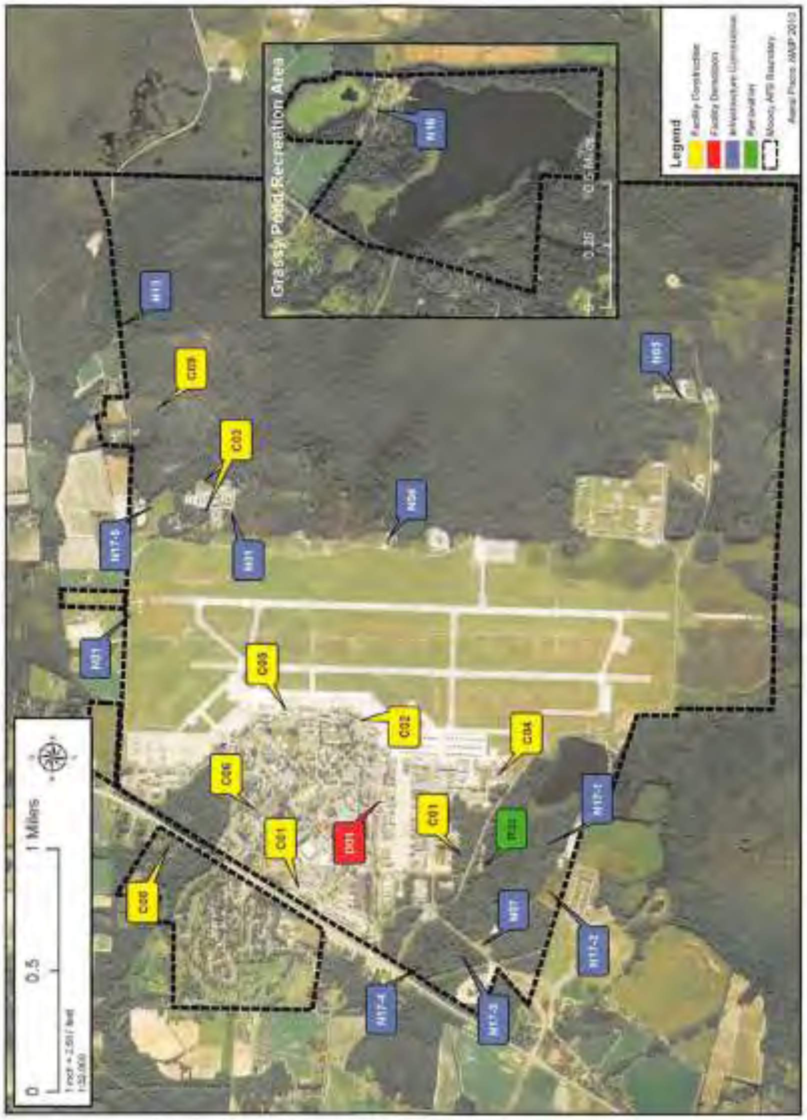
Georgia
Lanier County
Lowndes County
0 25 50 100
Miles

Atch 1



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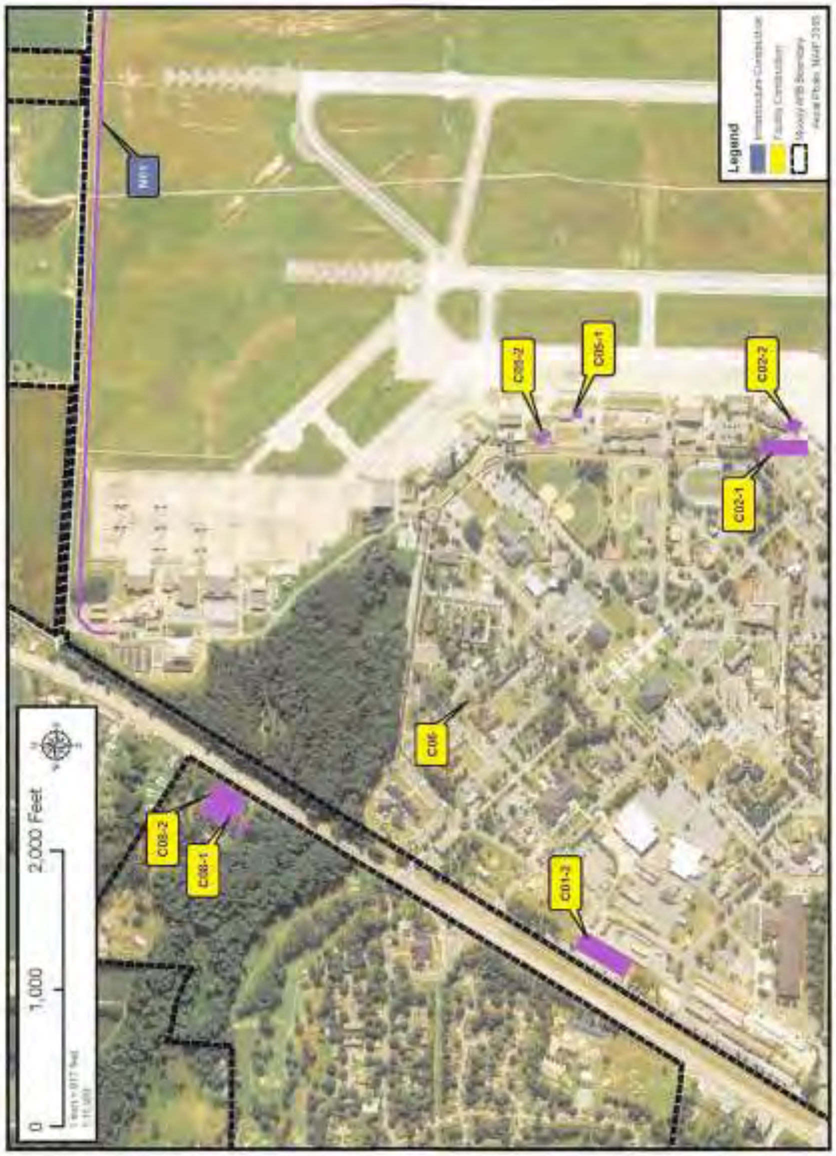
C05-2
C05-1
C02-2
C02-1
C06
C08-2
C08-1
C01-2
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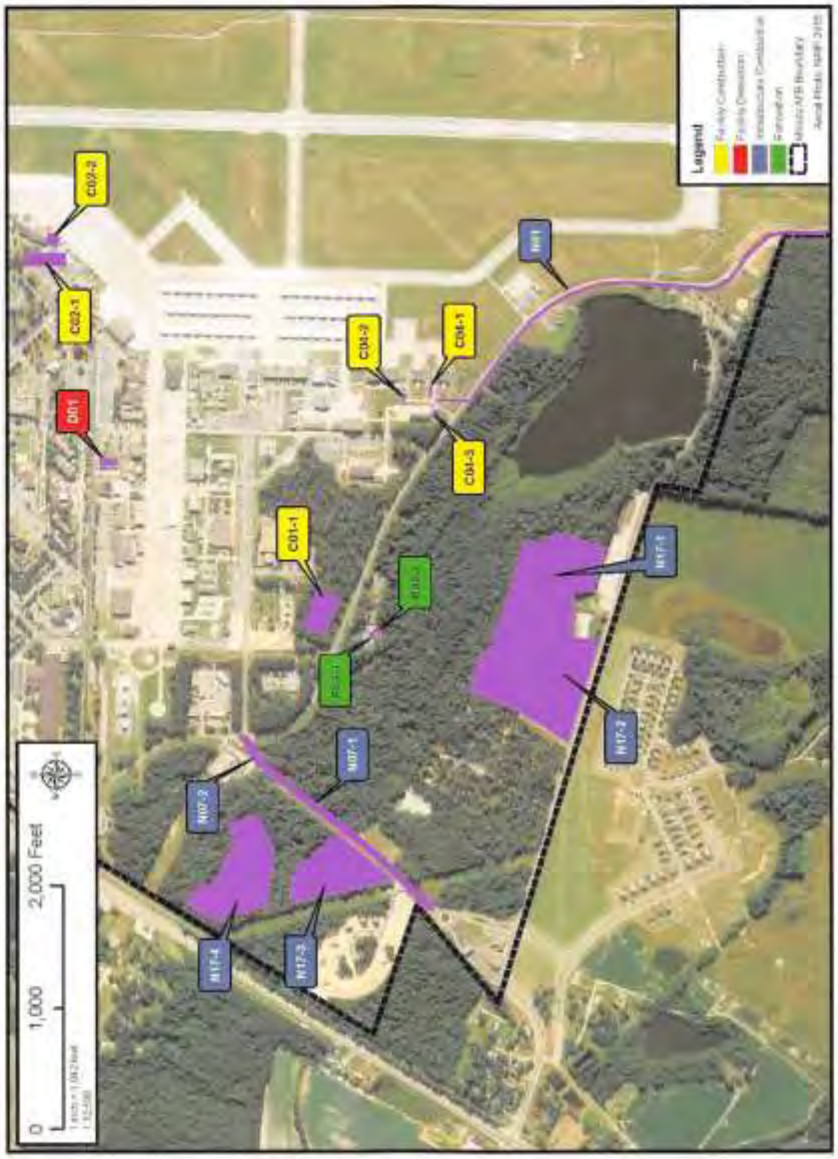
Legend

Atch 3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C04-3
C01-1
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N07-1
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N17-3
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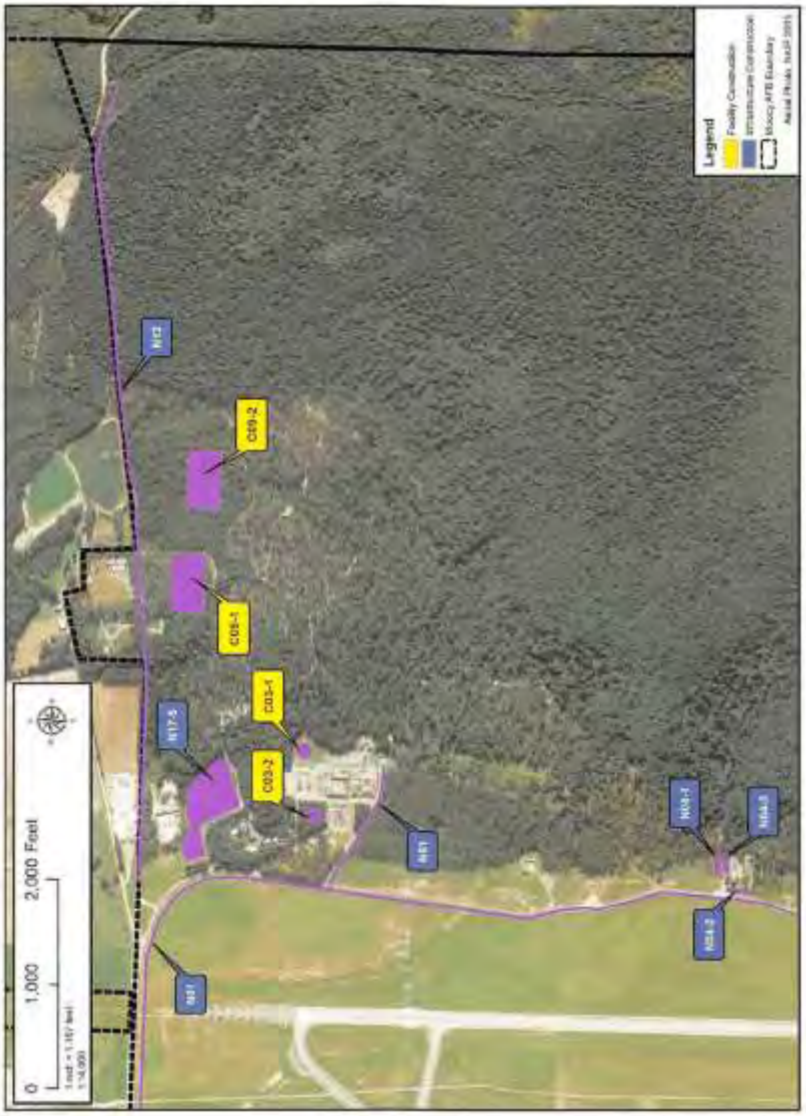
2,000 Feet

Atch 4


Legend
Facility Construction
Infrastructure Construction
Moody AFB Boundary
N12
C09-2
C09-1
C03-1
C03-2
N17-5
0
1,000
2,000 Feet

Atch 5

Appendix A

Atch 6

Appendix A

Atch 7

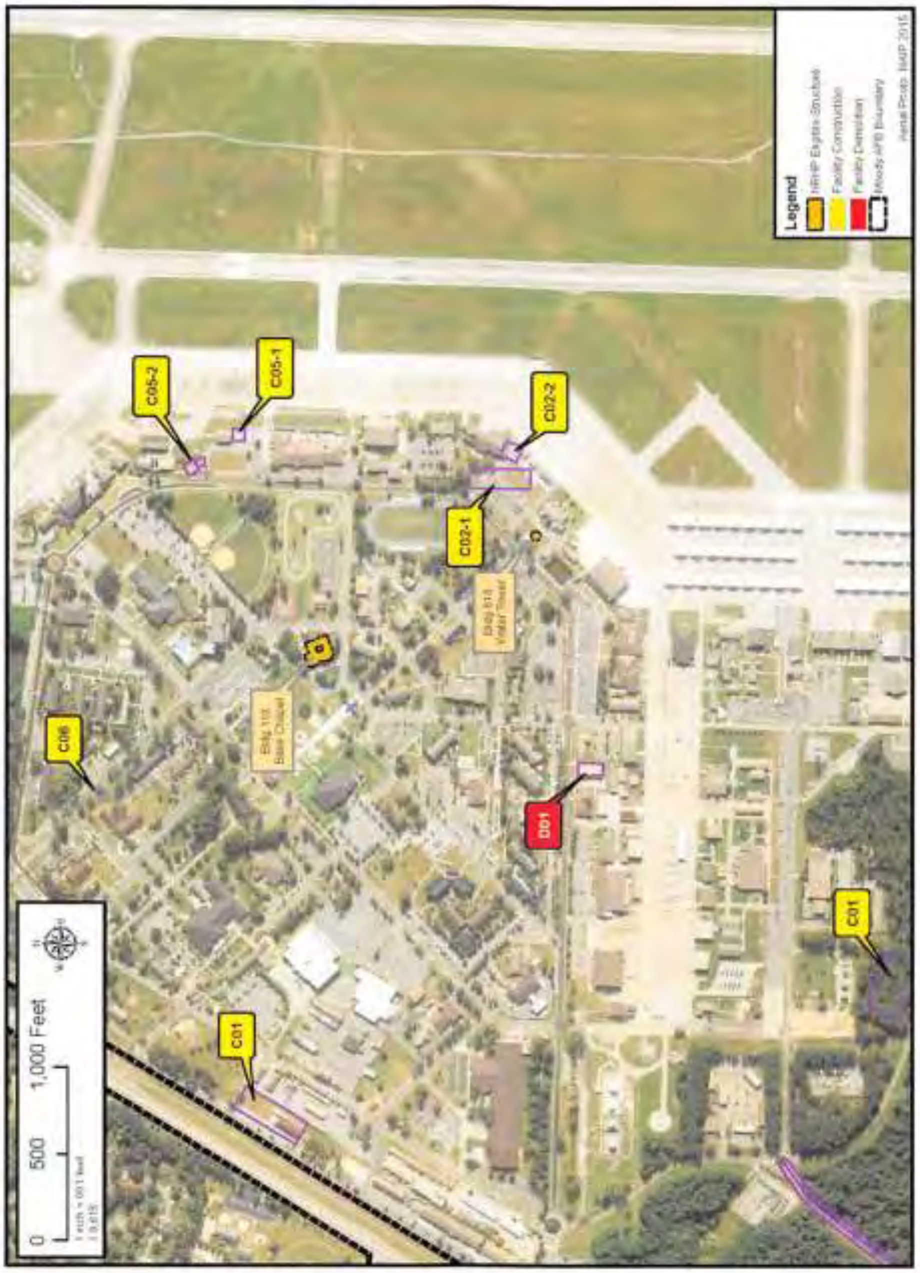
Project ID	Project Name
Facility Construction Projects	
C01	Security Forces Complex
C02	Construct Fire/Crash Rescue Station
C03	Construct Combative Arms Training Pit near Building 1540
C04	Construct Engine Test Support Facility
C05	Construct Covered Mobility Equipment Storage Addition, Building 657
C06	Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201 and 203
C08	Construct Paintball Facility
C09	Construct 23 CES Field Training Area (FTX)
Infrastructure Construction Projects	
N01	Addition/Repair Natural Gas Line, East of Airfield
N04	Construct Parking for the Control Tower and Radar Approach Control Facilities
N05	Construct Parking at CATM
N07	Widen Stone Road
N13	Widen and Pave Eisemann Road to Grand Bay Range
N16	Construct Waste-Water Infrastructure, Grassy Pond Recreational Area
N17	Construct Photovoltaic Panel Arrays
Renovation and Repair Projects	
R02	Construct Addition and Interior Repairs to the Kennel Facility, Building 1708
Demolition Projects	
D01	Demolition of Building 757

CATM = Combat Arms Training and Maintenance; FTX = Field Training Area

Atch 8

NOTE TO READER:
This figure contains locations of sensitive archaeological sites and has therefore been redacted for public viewing.

Atch 9



Atch 10

HQ ACC/CEVR :12-13-93 :10:01AM : LAFB, VA- 912 333 4981:# 4/12

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 347TH COMBAT SUPPORT GROUP (TAC)
MOODY AIR FORCE BASE GA 31699-5000

Roy – pls see

16 DEC 1986

REPLY TO ATTN OF: 347 CSG/DEEV (Eiseman, 4654)

SUBJECT: Completion of Archeological Survey and Evaluative Testing for Moody AFB, GA.

TO: HQ TAC/DEEV ~~DEEP~~

1. We have received the agreement negotiated by the Department of the Interior (DOI) with the Georgia State Historic Preservation Officer for Moody AFB.

2. It is noted that one site on the Grand Bay Range remains to be investigated to complete this requirement.

3. Moody has identified an unfunded budget requirement for $30,000.00 to transfer to the DOI who will act as Moody's contract officer to complete this study.

4. We request your assistance to fund this requirement and hopefully complete it prior to Grand Bay Range becoming operational in Sept/Oct 1987.

WILLIAM S. BRYAN
Chief, Engrg and Env Plng Br

cc: HQ TAC/DEPF

Readiness is our Profession

Atch 11

SENT BY:HQ ACC/CEVR 12-18-98 10:01AM LAFB VA 512 333 4981 # 8/12

SEP 22 1986

DEEV

Cultural Resource Survey Requirements, Moody AFB, GA

347 CSG/DE

1. After a recent visit to Moody Air Force Base, a National Park Service archaeologist concluded that the cantonment area and Grassy Pond are free of significant cultural sites. In accordance with federal law, this information was presented to the State Historic Preservation Officer (SHPO), whose concurrence is documented in a 26 Jun 86 letter from the Service to the SHPO, a copy of which was sent to 347 CSG/DEEV. That letter should be made part of your permanent files, as it permits construction and other development in the most "desirable" portions of the base without the need for further surveys (unless cultural sites are found during construction). This is a significant achievement for Moody AFB, and will result in substantial savings of time and money over the years.

2. By law, the Air Force must locate and identify all cultural resources on its lands. Although the SHPO agreed that there are no such sites the the cantonment area or on Grassy Pond, he did note that some undeveloped portions of Moody must be surveyed. In an 8 Sep 86 letter to this office, the Service provided a methodology and cost estimate for this survey, which we are transmitting to you herewith. As required by law, the SHPO has reviewed and approved the methodology.

3. Although a survey is required by law, there is no statutory time limit for its accomplishment, except that no construction may take place in the areas prior to the survey. You may wish to budget funds specifically for the survey, or, if installation plans call for construction in the area, you may find it more advantageous to include all or part of the work in the construction project budget.

4. Direct inquiries on this matter to Mr. Roy Barker at AUTOVON 574-4430.

FOR THE COMMANDER
SIGNED

GILBERT W. BURNET
Acting Chief, Environmental Plng Div

1 Atch
NPS Ltr, Dtd 8 Sep 86

Roy Barker/3081V/16 Sep 86/DEEV/SLP

SENT BY:HQ ACC/CEVR ;12-13-93 ;10:02AM ; LAFB, VA→ 912 333 4881;# 6/12

United States Department of the Interior

NATIONAL PARK SERVICE
SOUTHEAST REGIONAL OFFICE
75 Spring Street, S.W.
Atlanta, Georgia 30303

JUN 25 1985

Dr. Elizabeth A. Lyon
Deputy State Historic
Preservation Officer
Historic Preservation Section
Floyd Tower East, Suite 1462
205 Butler Street, S.E.
Atlanta, Georgia 30334

Dear Dr. Lyon:

A few months ago, Headquarters Tactical Air Command (TAC) requested our assistance in fulfilling cultural resource compliance responsibilities for TAC bases in the Southeast Region. In working with the military and other agencies, we have developed a procedure to meet legal and regulatory requirements and professional standards in a cost effective manner. This involves a preliminary visit to an area by one of our archeologists to determine the need for and scope of any cultural resource investigations. If additional work is necessary, a proposed program and strategy are presented to the State Historic Preservation Officer for review, recommendations, and eventual concurrence. This procedure has worked very well for Military Airlift Command bases in the southeast, Cape Canaveral Air Force Station and Tyndall Air Force Base (AFB), Florida, Fort Rucker, Alabama, and Columbus AFB, Mississippi.

On May 27-30, Mr. Wilfred Husted of my staff, performed a preliminary cultural resource reconnaissance of Moody AFB, Georgia, and its associated Grassy Pond recreation area about 25 miles south of the base.

Moody AFB dates from World War II and has been in continuous operation except for a five year period between the end of World War II and the Korean conflict. The base is contained on the Bemiss, Georgia U.S.G.S. 7.5 minute quadrangle of 1971 (EXHIBIT 1). Considerable development has taken place since 1971 as illustrated by the base Master Plan, Basic Layout Plan (EXHIBIT 2). Both runways have been extended to 8,000 feet each, taxiways have been added, and explosives holding areas have been constructed north and south of the cantonment area. A number of buildings have been added in the main base area, and the housing area across Highway 125 has been enlarged and a trailer park and recreational facilities added.

Original construction and subsequent development have resulted in near total disturbance of the airfield, the main base, and the golf course-housing area across the highway. On the main base this would include all of the area west of the perimeter road parallel to and east of Runway 18L (EXHIBIT 2). On the topographic map there is an apparently undisturbed area in the southwest corner of Moody AFB. This area includes Mission Pond (Lake), and is marked number 1 on EXHIBIT 2. However, Mission Pond is an artificial impoundment formed by the excavation of borrow for airfield construction. An abandoned sanitary landfill occupies the western end of this area. The remainder of the area contains radioactive waste disposal sites and is disturbed by roads. Inspection of dirt roads and numerous clear areas revealed no archeological remains.

The area off the south ends of the runways (EXHIBIT 2, Area 2) is encircled by a dirt crash trail. Most of this area is low and wet, and the topographic map indicates some disturbance in the past. Mr. Busied drove around the crash trail checking the road and clear spots along the way. No archeological materials were noted.

The slopes immediately east of the fire fighting and rescue training grounds (EXHIBIT 2, Area 3) are eroded for the most part with large expanses of bare ground. Inspection of this area revealed no archeological evidence.

The receiver site (EXHIBIT 2, Area 4) is in pine woods. Inspection of bare ground around the site revealed no archeological remains. The same was true for the transmitter building site (EXHIBIT 2, Area 5).

Inspection of dirt roads and trails in a medical field training area (EXHIBIT 2, Area 6) produced no archeological evidence.

Area 7 (Exhibits 2 and 3) is a severely disturbed landfill. East of the landfill are two low rises or hills, one on either side of the Lowndes-Lanier County line (EXHIBIT 3). These appeared to be potentially good places for archeological sites. However, the westernmost hill is now occupied by a dump. It had been scraped clear, and careful inspection of the surface revealed no archeology. Clear areas on the other hill were searched but nothing was found. On later reflection, the two hills appear to be too far from permanent water to be good site locations.

Inspection of the dirt perimeter road at points 8 and 9 on EXHIBIT 2 produced no archeological evidence. Beyond point 9 the road is under construction to accommodate a boundary change. At this point, the road is on a fill in a low, at least seasonally wet, area.

Clear spots around the ordnance storage area (Area 10, EXHIBITS 2 and 3) were carefully observed, but nothing was seen. Similarly, some places between the ordnance storage compound and the small arms range to the east were inspected with negative results. The small arms range (Area 11, EXHIBIT 3) was in use and could not be inspected. However, it had been badly disturbed by earth moving to construct a backstop.

The E.O.D. Proficiency Range (Area 12, EXHIBIT 3) is an area of rubble fill, and thus, would not contain archeological sites.

Three widely scattered stone flakes were observed on the surface of a one to two acre clear area on Dudley's Hammock (Area 13, EXHIBIT 3). Four shovel tests were excavated in the area of the finds, but no additional material was found. There was no intact subsurface cultural deposit. There was a low rise some 30-40 meters to the north. Careful inspection of the surface revealed no archeological remains, and four shovel tests on the rise were negative. A few chunks of concrete and two wire nails were noted on the surface where the stone flakes were found. There is no significant site at this location. A Georgia Archaeological Survey form for the site, Moody AFB #1, is enclosed.

Except for a small, low, dry area toward its northern end, the crash trail (Area 14, EXHIBIT 3) is on a fill with standing water on both sides.

The area enclosed by the crash trail and the higher ground on the main base (EXHIBIT 1 and Area 15, EXHIBIT 3) is wet at least part of the year. It slopes eastward very gradually from about the 190 foot contour with the vegetation changing from pine flatwoods to mixed pine and hardwoods to hardwoods in continually wet areas. Mr. Husted was not able to enter this area because most of it is in the impact area for the small arms range which was in use during his visit to Moody AFB. However, he does not believe that the area is suitable for occupation because it is low lying and wet a good portion of the year. Any occupation in the vicinity most likely would be on the higher slopes along the western side of this low lying area above the 190 foot contour.

On the basis of his reconnaissance, Mr. Husted concluded that the only part of Moody AFB with any reasonable potential for archeological sites are the slopes bordering the west side of the large, low, wet area discussed immediately above. Even here, the site potential may be low because of the distance from permanent, reliable water to the east. However, we propose to sample this area in conjunction with sampling of the Grand Bay Range area discussed below.

Mr. Husted investigated the Grassy Pond recreation area on the afternoon of May 29 and the following morning. Grassy Pond is located approximately 25 miles south of Moody AFB about one mile north of the Florida-Georgia border. The recreation area is shown on the Lake Park, GA-FLA, U.S.G.S. 7.5 minute quadrangle, 1971. The recreation area includes Grassy and Lee Pond and (EXHIBITS 4 and 5).

The facility consists of a marina with associated parking areas and a store/restaurant/lodge building located on the Grassy Pond side of the neck between the two ponds. Cabins, picnic shelters, roads, and recreational facilities are scattered about the lower slopes of the hill or ridge between Grassy and Lot Ponds. A maintenance area and picnic shelters are located across the entrance road on the shore of Lot Pond.

A diffuse lithic scatter occupies the hill or ridge top and extends downslope nearly to the shoreline of Grassy Pond. The area is grassed, but there are numerous bare areas. An occasional stone flake was noted in some of these bare areas and in the dirt access roads. Shovel tests placed in the vicinity of the surface finds indicated a very thin gray sand overlying orange sand. No archeological finds were made in the shovel tests. There is a very good road cut exposure on the southwest side of the entrance road along the top of the ridge. It extends unbroken for approximately 75-100 meters. No cultural deposit was present and only two flakes and a core were noted eroding from the cut. All of the flakes observed on the site were large primary and secondary flakes. The site represents a large but diffuse lithic reduction station of unknown age. It has no research potential because of its lack of depth and very diffuse nature. A Georgia Archeological Survey form for the site, Moody AFB Arc. #1, is enclosed.

A dirt trail surrounds Grassy Pond. Mr. Husted walked this trail looking for archeological material. Except for the eastern side of the pond, the trail crosses low, seasonally wet land with little or no archeological potential. Nothing of an archeological nature was seen in the trail or the occasional clear areas in this low area. Two stone flakes were observed in the trail along the eastern side of Grassy Pond. However, the land is steeply sloping in this area, and the flakes obviously came from a probable site on the ridgetop outside the recreation area boundary (EXHIBIT 4).

A few stone flakes were observed on the surface behind the maintenance trailer across the entrance road from the marina. Several shovel tests in this area indicated the same thin gray sand with underlying orange sand as on the hill above Grassy Pond. An employee mentioned the finding of a projectile point in the field east of the trailer and outside the area boundary. The flakes probably are associated with a site on the ridge to the east. There is no research potential to that portion in the recreation area.

Mr. Husted walked around the narrow strip of land within the boundary around Lot Pond. This is a low wet site with no archeological potential. Any archeological sites most likely would be found on the ridges around the pond.

SENT BY:HQ ACC/CEVR :12-13-93 :10:05AM : LAFB, VA- 912 333 4581:#10/12

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Based on his investigation, Mr. Husted concluded that the site at Grassy Pond requires no further work and that there are no other significant sites within the recreation boundary.

Recently, the Air Force acquired approximately 5,500 acres of low lying land adjoining the eastern side of Moody AFB for a bombing and strafing range. Initially called the Winnersville Range, the area is now known as the Grand Bay Range. The range area consists of low lying hammocks and land along Grand Bay and Grand Bay Creek south of Banks Lake in Lanier and Lowndes Counties. The range is shown on EXHIBIT 1).

A sample survey of the portion of the area to be developed was conducted by Archaeological Research Associates during the winter of 1985 (Wright 1985). Three lithic scatters and one prehistoric archaeological site producing PaleoIndian and Archaic projectile points were discovered. On the basis of his survey, Wright recommended evaluative testing of the site and a sampling survey of the remainder of the range area.

Mr. Husted met with Mr. John Morgan at your offices on June 13 and presented the results of his investigation of Moody AFB and the recreation area and discussed further survey needs. Mr. Morgan agreed that no further investigations were necessary at the Grassy Pond recreation area but requested that a site survey form be completed for the lithic reduction site (enclosed). He also agreed that survey of Moody AFB and the housing area across Highway 125 was not necessary except for that portion of the base adjacent to the west side of the low wet area between the eastern base boundary and the airfield proper (EXHIBIT 3, Area 13).

Mr. Husted and Mr. Morgan discussed completion of the Grand Bay Range survey and agreed that the area would be sampled by intensive survey of the land and hammocks within 300 meters of Grand Bay and Grand Bay Creek. Also, several transects will be surveyed across the portion of land containing the abandoned landing field (EXHIBIT 1). The transects will extend from U.S. Highway 221 northwestward to Grand Bay and include the higher land at and above the 200 foot contour. The slopes bordering the west side of Area 13 on Moody AFB will be included in the sampling. The areas to be included in the survey are shown on EXHIBIT 6.

The potentially significant prehistoric archaeological site discovered by the 1985 survey will be evaluated for National Register of Historic Places eligibility.

Your concurrence with this strategy is requested. When approved, we will develop a cost estimate to complete the survey and present it to Headquarters Tactical Air Command. When funding is available, the survey will be conducted either by the Air Force or through our office.

SENT BY:HQ ACC/CEVR :12-13-93 :10:05AM : LAFB, VA- 912 333 4581:#11/12

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Should you have any questions or wish additional information, please contact Mr. Husted at 331-2630.

Sincerely,

John E. Ehrenhard

John E. Ehrenhard
Chief, Archeological
Services Division

Enclosures

cc:

Roy Barker, HQ TAC
John Eiseman, Moody AFB

SENT BY:HQ ACC/CEVR :12-13-93 :10:08AM : LAFB. VA- 912 333 4981:#12/12

Reference Cited

Wright, Newell O.

1985 Archaeological Resources of the Winnersville Range, Moody Air Force Base, Georgia. Archaeological Research Associates, Report of Investigation 16. Valdosta.

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

April 20, 2016

John L. Eunice, III, GS-14, DAFC
Deputy Base Civil Engineer
23d Civil Engineer Squadron
3485 Georgia Street
Moody AFB, GA 31699
Attn: Hank Santicola, EA Project Manager

RE: Moody AFB: Thirty-Six (36) Installation Development Projects, Valdosta
Lanier County et. al., Georgia
HP-160401-002

Dear Mr. Eunice,

The Historic Preservation Division (HPD) has received initial information concerning the above referenced project requesting comments pursuant to the National Environmental Policy Act of 1969. Our comments are offered to assist the Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended.

Thank you for notifying us of this federal undertaking. We look forward to receiving Section 106 compliance documentation as appropriate. To aid our office in processing such a large number of projects, HPD recommends assessing the National Register of Historic Places (NRHP)-eligibility of a given historic resource on Moody AFB, not only individually, but within the context of a historic district(s) since the majority of military resources were constructed and utilized within a larger context on a military installation. Further, HPD recommends assessing Moody AFB's historic resources not only within a national level of significance, such as the Cold War, but within a state or local level of significance under the various criteria of NRHP-eligibility. This holistic approach toward Moody AFB's resources will aid in efficient consultation during the Section 106 process for projects throughout the installation.

Please refer to project number **HP 160401-002** in future correspondence regarding this project. If we may be of further assistance, please contact me at (770) 389-7851 or jennifer.dixon@dnr.ga.gov

Sincerely,

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

Atch 12

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

March 22, 2016

Henry Santicola
NEPA Environmental Planner
23 CES/CEIEA
Moody Air Force Base Georgia 31699

**RE: Moody AFB: Cultural Resources Survey, Eight Buildings, Valdosta
Lanier County et. al., Georgia
FP-160307-001**

Dear Mr. Santicola:

The Historic Preservation Division (HPD) has reviewed the report entitled, *Cultural Resources Study of Eight Buildings at Moody Air Force Base, Valdosta, Lowndes and Lanier Counties, Georgia*, prepared by Amec Foster Wheeler and dated March 2016. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 110 of the National Historic Preservation Act (NHPA).

Based on the information contained in the report, HPD concurs that buildings 325, 328, 621, 658, 704, 753, 785, and 901 are not eligible for listing in the National Register of Historic Places (NRHP), due to a lack of integrity. It is HPD's opinion that although not significant within a Cold War context at a national level, military resources may be significant at a state or local level under various criteria. Furthermore, HPD recommends also discussing the eligibility of a resource within the context of a historic district since the majority of military resources were constructed and utilized within a larger context on a military installation.

HPD requests a CD with the photographs, as noted in the cover letter. Please refer to project number **FP-160307-001** in any future correspondence concerning this project. If we may be of further assistance, please do not hesitate to contact me at (770) 389-7851 or Jennifer.dixon@dnr.ga.gov.

Sincerely,

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

Cc: Malida Scherer, Amec Foster Wheeler

Atch 13

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 6, 2016

Henry Santicola
EA Project Manager
Moody Air Force Base (AFB)
23d Civil Engineer Squadron
3485 Georgia Street
Moody AFB, Georgia 31699

RE: **Moody AFB: Cultural Resource Survey, Buildings 1500 and 1501, Valdosta**
Lanier and Lowndes Counties, Georgia
FP-151014-001

Dear Mr. Santicola:

The Historic Preservation Division (HPD) has reviewed the additional information provided and the report entitled, *Cultural Resources Study of Building 1500 and Building 1501 at Moody Air Force Base, Valdosta, Lowndes and Lanier Counties, Georgia*, prepared by Amec Foster Wheeler and dated September 2015. Our comments are offered to assist the United States Department of the 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).

Based on the information contained in the report and the additional information provided, HPD concurs that Buildings 1500 and 1501 are not eligible for listing in the National Register of Historic Places (NRHP).

Please refer to project number **FP-151014-001** 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

Cc: Mathai N. Scherer, Amec Foster Wheeler

Atch 14

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 31, 2017

Brittany Miller
Architectural Historian
AECOM
400 Northpark Town Center
1000 Abernathy Road, NE, Suite 900
Atlanta, Georgia 30328

RE: Moody AFB: Acquire 106 Acres, Relocate Fencing/Road, Clear Trees
Lanier County et. al., Georgia
HP-151228-008

Dear Ms. Miller:

The Historic Preservation Division (HPD) has reviewed the addendum report entitled, *Cultural Resource Assessment Addendum for the Southwest Land Purchase at Moody Air Force Base, Lowndes County, Georgia HP-151228-008*, dated January 10, 2017. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 106 of the National Historic Preservation Act (NHPA).

Based on the additional information provided in the addendum report, HPD concurs that historic resource 618, which is eligible for listing in the National Register of Historic Places (NRHP), is outside of the proposed project's area of potential effect (APE). Additionally, HPD concurs that historic resources 1100, 1106, 1704, 1705, 1713, 7001, and 7046 are not eligible for listing in the NRHP. Therefore, HPD concurs that no historic properties that are listed or eligible for listing in the NRHP will be affected by this undertaking, as defined in 36 CFR Part 800.4(d)(1).

For future reports, HPD recommends including a map that clearly identifies the project area, where construction is occurring, and the APE, within which both direct and indirect effects may occur. Furthermore, HPD recommends including a general description of the APE within the report.

Please refer to project number **HP-151228-008** 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

Cc: Greg Lee, Moody AFB
Henry Santicola, Moody AFB

Jewett Center for Historic Preservation
[illegible]
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Atch 15

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

November 6, 2017

Michael U. Francis, Lt Col
Commander
Department of the Air Force
23D Civil Engineering Squadron (ACC)
Moody Air Force Base, Georgia
Attn: Greg Lee, Environmental Element Chief

RE: **Moody AFB: Cold War Era Building Survey**
Lowndes and Lanier Counties, Georgia
FP-170818-001

Dear Lt. Col. Francis:

The Historic Preservation Division (HPD) has reviewed the report entitled, *Moody Air Force Base, Building and Structure Survey of Cold War Resources at Moody Air Force Base,* dated August 2017. Our comments are offered to assist the US Department of the Air Force and Moody Air Force Base (AFB) in complying with the provisions of Section 110 of the National Historic Preservation Act (NHPA).

Based on the information contained in the report and subsequent information submitted, HPD concurs that the Chapel (110) and Water Tower (618) are eligible for listing in the National Register of Historic Places (NRHP). Additionally, HPD concurs that the remaining resources outlined in Table 1 (pages 21-27) are not individually eligible for listing in the NRHP. Furthermore, HPD concurs that Moody AFB does not appear to currently contain NRHP-eligible historic district(s).

Please refer to project number **FP-170818-001** in any future correspondence concerning 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

Cc: Hank Santicola, Moody AFB

JEWETT CENTER FOR HISTORIC PRESERVATION
2610 GA HWY 155, SW | STOCKBRIDGE, GA 30281
770.389.7844 | FAX 770.389.7878 | WWW.GEORGIASHPO.ORG

Atch 16

JANUARY, 2018

ABSTRACT
Addendum to the 30 November 2017 "Section 106 Consultation for the Installation Development Plan, Moody AFB GA" specifically addressing GA SHPO request for additional photographs and setting information regarding the proposed Fire Station project and the NRHP eligible Moody Base Water Tower.

HP-160401-002

Global Power for America

The Base Water Tower (building 618) is one of two structures on Moody Air Force Base (AFB) eligible for listing in the National Register of Historic Places (NRHP). Located on the flightline near the runway aprons, this 200,000 gallon-capacity steel water tower with elevated tank was constructed in 1941. The initial cost was $25,875 and the contractor was the R. D. Cole Manufacturing Company of Newnan, Georgia. The tower is 178 feet in total height, including the tank and eight steel columns on concrete piers. The tank was the first large water reservoir for Moody Field, supplying water at a static pressure of 65-170 psi. During the 1950's the structure was painted in a pattern of alternating aviation surface orange and white paint. It is now mono-chromatic with the Air Force insignia painted on the tank. It has a metal ladder to the tank, and several antennas are mounted around the top. This water tower was dominant on the landscape of Moody Field during World War II. Elevated on steel columns, it is the tallest structure on the installation and is highly visible from a distance, even from the air. Its historical significance is partly symbolic, because it is one of the few remaining recognizable structures that has remained almost constant for the entire history of Moody. It is eligible for the NRHP under Criterion A for its association with World War II mobilization and training activities at Moody Field. Its level of significance is local. In 2017, during examination of installation districts it was determined that the Base Water Tower has lost integrity of setting due to the installation's constant pace of repair, demolition, and new construction and therefore is not part of a historic district. The Water Tower view shed has previously been significantly altered by vertical and horizontal landscape growth, renovations of surrounding facilities, as well as construction and demolition within the immediate area.

Base Water Tower 2017.

This proposed action is to develop a centrally located modern facility to accommodate authorized crash, fire, and rescue resources in one location with emergency response capability to both the flightline and cantonment area. Two alternatives are under consideration, the first (CO2-1) is to construct a new fire station adjacent to the existing fire station. The second (CO2-2) alternative is to modify the existing fire station by enclosing and enlarging an existing covered parking area on the south side of the facility. The alternatives for implementing the proposed action are described below:

CO2-1 Proposed New Fire Station

Alternative CO2-1: This alternative would construct a new Fire Station to support Moody AFB, to include fire/crash/rescue functions for all assigned and transient flying missions, and cantonment area facility emergency response. The new station would be approximately 38,800 square feet and be located adjacent to the existing station. The roofline is proposed to be 36 feet in elevation. An existing parking lot would be modified to accommodate the facility, and entry ramps for vehicles would be constructed in front of each side of the vehicle bays. Vehicle entry ramps and sidewalks would be approximately 72,559 square feet. The current fire station (building 621) with entry ramps and sidewalks would be demolished after it is vacated upon completion of the new station. This location is the only centrally located flightline site available for a large facility that meets all proposed action requirements.

CO2-2 Proposed Renovation of Existing Fire Station

Alternative CO2-2: This alternative is to construct an addition to the existing facility and renovate the interior. The addition would be enclosure of approximately 4,000 square feet of covered parking to accommodate four additional vehicles in a drive-through configuration and provide additional equipment storage space of approximately 20 feet by 40 feet for low-speed vehicles and equipment trailers. The addition would be approximately 31' high to match the existing roof line of the fire station. This is 10' below the top of the fire tower observation post which is approximately 41' in elevation. The renovation would be on the south side of the existing fire station. The addition is depicted in black on the above diagram.

The project footprint of C02-1 (new fire station) is located approximately 250 feet from the Water Tower, and C02-2 (modification/renovation of existing fire station) is located approximately 400 feet from the Water Tower. The Water Tower structure falls within the indirect Area of Potential Effects (APE) defined as within 1000' of the proposed Base Fire Station projects. It does not fall within the direct impact APE for this project. These footprints are adjacent to the airfield.

Present Day Aerial View and Proposed Fire Station Project

The Water Tower view shed has been significantly altered by renovations of surrounding facilities as well as construction and demolition within the immediate area. A review of aerial images from the present day, 1993, and 1941 show a significant amount of progressive landscape and view shed changes, including horizontal and vertical growth of existing vegetation, construction of additional impervious areas (i.e. surface parking lots), alteration of facilities surrounding the Water Tower, and additional roadway restructuring.

Aerial View 1993

Aerial View 1941

View sheds to the north, east and west have changed since 1941 due to construction of facilities and various other installation improvements. Neither project alternative is expected to significantly change current building elevations or alter the current view shed in any significant way. Given the previous loss of integrity of setting, and that these locations are adjacent to an active flight line, it is unlikely that any visual effects would be introduced that would further "diminish the integrity of the property's significant historic features (36 CFR § 800.5(a)(2)(v))." The land use setting of the historic property would also remain consistent with its intended use on a military facility.

The following pictures provide proposed changes to the view shed, as well as views from and towards the water tower facing north, south, east and west. The project would be to the east of the water tower.

The view shed to the south east provides a view of the closest facility, the Security Forces building (Building 617). This facility has been highly modified and is representative of the loss of integrity of setting surrounding the Water Tower. This facility is approximately 100' from the base of the tower.

Tower Base Looking South East

Tower Base Looking East North East at Fire Station

Tower Base Looking East North East at Fire Station

Tower Base Looking South

Tower Base Looking West

South Looking North at Tower

West Looking East at Tower

View from Fire Station Looking at Tower

East Looking West at Tower

North Looking South at Tower

Given the previous loss of integrity of setting, the view shed alterations that have occurred, the land use setting would remain consistent with its intended use on a military facility, and the insignificant changes in building elevation for both proposed alternatives, it is unlikely that any visual effects would be introduced that would further "diminish the integrity of the property's significant historic features (36 CFR § 800.5(a)(2)(v))."

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION

MARK WILLIAMS
COMMISSIONER

DR. DAVID CRASS
DIVISION DIRECTOR

January 31, 2018

John L. Eunice, III
Deputy Base Civil Engineer
23D Civil Engineer Squadron
3485 Georgia Street
Moody Air Force Base, Georgia 31699
Attn: Henry Santicola

RE: **Moody AFB: Installation Development Plan (IDP), 2017-2022**
Lowndes County, Georgia
HP-171207-003

Dear Mr. Eunice:

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

The subject project consists of seventeen (17) individual projects, including demolition activities, restoration activities on specific structures, construction of facilities, and construction of supporting infrastructure throughout Moody AFB. Based on the information provided, HPD concurs that buildings 757, 657, 1708, 621, and 4130, for which demolition, renovation, and/or additions are proposed, are not eligible for listing in the National Register of Historic Places (NRHP). Additionally, HPD concurs that the NRHP-eligible Water Tower is within the area of potential effect (APE) for a proposed new construction or addition project. However, it is HPD's opinion that the new construction or addition project, as proposed, will have **no adverse effect** on historic properties within its APE, as defined in 36 CFR Part 800.5(d)(1), due to existing visual intrusions.

This letter evidences consultation with our office for compliance with Section 106 of the NHPA. It is important to remember that any changes to this project as it is currently proposed may require additional consultation. HPD encourages federal agencies 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-171207-003** in any future correspondence regarding this project. If we may be of further assistance, please do not hesitate to contact me at (770) 389-7851 or jennifer.dixon@dnr.ga.gov.

Sincerely,

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

cc: Greg Lee, Moody AFB

JEWETT CENTER FOR HISTORIC PRESERVATION
2610 GA HWY 155, SW | STOCKBRIDGE, GA 30281
770.389.7844 | FAX 770.389.7878 | WWW.GEORGIASHPO.ORG

A.5 U.S. FISH AND WILDLIFE SERVICE (USFWS) CONSULTATION

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

26 JUN 2017

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/CD

SUBJECT: Consultation for Proposed Installation Development Plan (IDP), Moody AFB, GA

1. Moody AFB requests informal consultation per Section 7 of the Endangered Species Act regarding the proposed IDP at Moody AFB, Lowndes County, GA (Attachment 1).

2. The purpose of this Proposed Action is to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general, individual projects are needed to improve the physical infrastructure and functionality of Moody AFB to meet current and future mission and facility requirements. A map showing the locations of the proposed projects is attached (Attachment 2). The table below summarizes the projects under consideration:

Project Name	Project ID / Alternatives (Alt.)	Approximate Size	Planned Activity Year
Facility Construction Projects			
Security Forces Complex	C01-1 (Preferred Alt.)	34,740 SF	2020
	C01-2		
Construct Fire/Crash Rescue Station	C02-1 (Preferred Alt.)	11,359 SF	2017
	C02-2	12,000 SF	
Construct Combative Arms Training Pit near B1540	C03-1 (Preferred Alt.)	17,662 SF	2019
	C03-2		
Construct Engine Test Support Facility	C04-1 (Preferred Alt.)	1,800 SF	2019
	C04-2		
	C04-3		

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Construct Covered Mobility Equipment Storage Addition, Building 657	C05-1 (Preferred Alt.)	4,900 SF	2019
	C05-2	6,900 SF	
Construct Smoking Break Area, Temporary Lodging Facility and Visitors Quarters, Building 200, 201 and 203	C06-1 (Preferred Alt.)	80 SF	2018
Construct Paintball Facility	C08-1 (Preferred Alt.)	52,900 SF (course) 600 SF (facility) 3,150 SF (parking)	2021
	C08-2		
Construct 23 CES Field Training Exercise (FTX) site	C09-1 (Preferred Alt.)	14,174 SF	2018
	C09-2		
Infrastructure Construction Projects			
Addition/Repair Natural Gas Line, East of Airfield	N01 (Preferred Alt.)	30,100 LF	2019
Construct Parking for the Control Tower and Radar Approach Control Facilities	N04-1 (Preferred Alt.)	7,500 SF	2018
	N04-2		
	N04-3	8,500 SF	
Construct Parking at Combat Arms Training and Maintenance Area (CATM)	N05-1 (Preferred Alt.)	9,000 SF	2017
	N05-2		
Widen Stone Road	N07-1 (Preferred Alt.)	45,704 SF	2019
	N07-2		
Widen and Pave Eisemann Road to Grand Bay Range	N13 (Preferred Alt.)	157,500 SF	2021
Construct Waste-Water Infrastructure, Grassy Pond Recreational Area	N16 (Preferred Alt.)	5,700 LF	2019
Construct Photovoltaic Panel Arrays	N17-1 (Preferred Alt.)	23 Acres	2020
	N17-2	9 acres	
	N17-3	5 acres	
	N17-4	8 acres	
	N17-5	6 acres	
Demolition Projects			
Demolition of Building 757	D01 (Preferred Alt.)	10,388 SF	2020
Renovation Projects			
Construct Addition and Interior Repairs to the Kennel Facility, Building 1708	R02-1 (Preferred Alt.)	2,050	2020
	R02-2		

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3. The majority of projects under consideration occur within already developed or maintained areas of the installation. However, depending on projects initiated, a cumulative maximum of approximately 13 acres of pine forest, 25 acres of mixed hardwood forest, 5 acres of pine plantation, 0.38 acres of wetlands and 2 acres of floodplain may be affected.

4. Initial surveys for listed species on the installation were first conducted in 1993-1994 by biologists with the Nature Conservancy, and have been supplemented with periodic surveys by installation staff and species-specific surveys for gopher tortoises *(Gopherus polyphemus)*, eastern indigo snakes *(Drymarchon couperi)*, frosted flatwoods salamanders *(Ambystoma cingulatum)*, and striped newts (*Notophthalmus perstriatus*). Additional information on rare, threatened, and endangered species surveys and management is in the Moody AFB Integrated Natural Resources Management Plan (INRMP).

5. The main areas of concern for sensitive species are primarily southwest and northeast of the airfield, as shown in Attachment 3. Areas potentially impacted southwest of the airfield and northeast of the airfield were resurveyed by the Moody AFB Natural Resources Office for listed and candidate species in 2012 and 2014, respectively, as part of the environmental impact analysis process and by biologists from Valdosta State University as part of an on-going demographic and disease investigation of gopher tortoises. The only listed or candidate species known to occur near the proposed project areas is the gopher tortoise (*Gopherus polyphemus*) (Federal Candidate). However, this informal consultation also addresses potential impacts to eastern indigo snakes (*Drymarchon couperi*) due to the commensal relationship with the gopher tortoise, as well as the Wood Stork (*Mycteria americana)* due to sightings on Moody AFB and at Grassy Pond Recreational Area.

a. GOPHER TORTOISES: Biological studies of gopher tortoises on Moody AFB, including the proposed project areas, have been on-going since 1998. As part of these studies, annual surveys of known and potential gopher tortoise habitat are conducted to update maps of tortoise burrow distribution on the installation. Despite intensive habitat management activities, including prescribed burning, timber thinning, and hardwood midstory removal, gopher tortoise populations have declined in the proposed project area over the last fifteen years. While there is no definitive answer for the decline, installation staff attribute the decline to habitat fragmentation and habitat succession effects (canopy closure in pine plantations), population senescence, and lack of adequate reproduction, recruitment, and immigration. Based on current survey information there are a number of tortoise burrows in the immediate vicinity of some of the projects (Attachment 3). However, to facilitate project activities, Moody AFB proposes to conduct site-specific tortoise surveys prior to project initiation and remove tortoises from any potentially impacted burrows using standard scientific protocols (i.e. capture and removal of tortoises by live trapping and collapsing/ destroying the burrows to prevent recolonization). Burrow cameras will be used to ensure the burrows are vacant and no tortoises or other commensals are present prior to collapse. The captured tortoises will be marked (if necessary) and relocated to supplement the 71st Colony east of the airfield. Relocated tortoises will be restrained inside a temporary enclosure for 9-12 months at the recipient site to increase site fidelity. It is likely the relocation of these isolated tortoises from these areas to the established 71st Gopher Tortoise Colony would result in beneficial effects on the receiving population.

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Burrows remaining near proposed project areas will be marked with stakes and flagging to prevent disturbance from current or proposed construction and military training activities. Habitat management and population monitoring for gopher tortoises and associated species will continue on Moody AFB and 71st Gopher Tortoise Colony areas as outlined in the approved Moody AFB INRMP.

b. EASTERN INDIGO SNAKE: No eastern indigo snakes have been sighted west of the Carolina Bay wetland complex dividing the Moody AFB Main Base from Grand Bay Range, with the closest sighting of an eastern indigo snake occurring approximately 0.5 miles away from the proposed project areas southeast of the airfield (see map at Attachment 4). All sightings of eastern indigo snakes have occurred on Grand Bay Range, with three sightings in 1991, and the capture of a juvenile and adult eastern indigo snake adjacent to Bemiss Field in 1996. Additionally, three eastern indigo snakes confiscated by the Georgia Department of Natural Resources (GDNR) were released on Grand Bay Range in 1993 and 1995. However, there have been no additional confirmed sightings of eastern indigo snakes on Moody AFB since 1996, despite subsequent species-specific surveys for eastern indigo snakes in 2002 and extensive gopher tortoise burrow monitoring activities. While there is a potential for individual snakes to continue to exist on the installation, Moody AFB lacks the important habitat characteristics (i.e., large contiguous tracts of longleaf pine/sandhills adjacent to an early successional habitat mosaic) necessary to support a viable, self-sustaining population. Despite the absence of eastern indigo snakes in or near the proposed project areas, habitat management for eastern indigo snakes will continue on Moody AFB as outlined in the Moody AFB INRMP.

c. WOOD STORK: The federally threatened and state endangered wood stork uses a variety of freshwater and estuarine wetlands for breeding, feeding, and roosting. Nests may be located in large or small trees; however, the trees must be in standing water or on islands surrounded by water. This type of habitat does not exist within the proposed project areas for the IDP on Moody AFB. Wood storks are only occasionally sighted in wetland areas of Moody AFB, and individuals in flight have been sighted over open water at Grassy Pond Recreational Area. Nesting is not known to occur at Grassy Pond and no wood stork rookeries have been identified on Moody AFB or Grassy Pond. Previous aerial surveys by the Georgia DNR have not identified any wood stork rookeries within 15 miles of the proposed project areas. While transients may occasionally forage on Moody AFB and Grassy Pond during suitable water conditions, there should not be an overall impact to wood stork populations from the proposed action.

6. Based upon this analysis, it is the opinion of our staff that the proposed action will not adversely affect any listed or candidate species. Therefore, Moody AFB requests your written concurrence as an informal consultation under Section 7 of the Endangered Species Act.

Global Power for America

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.

JOHN L. EUNICE, III, GS-14, DAF
Director

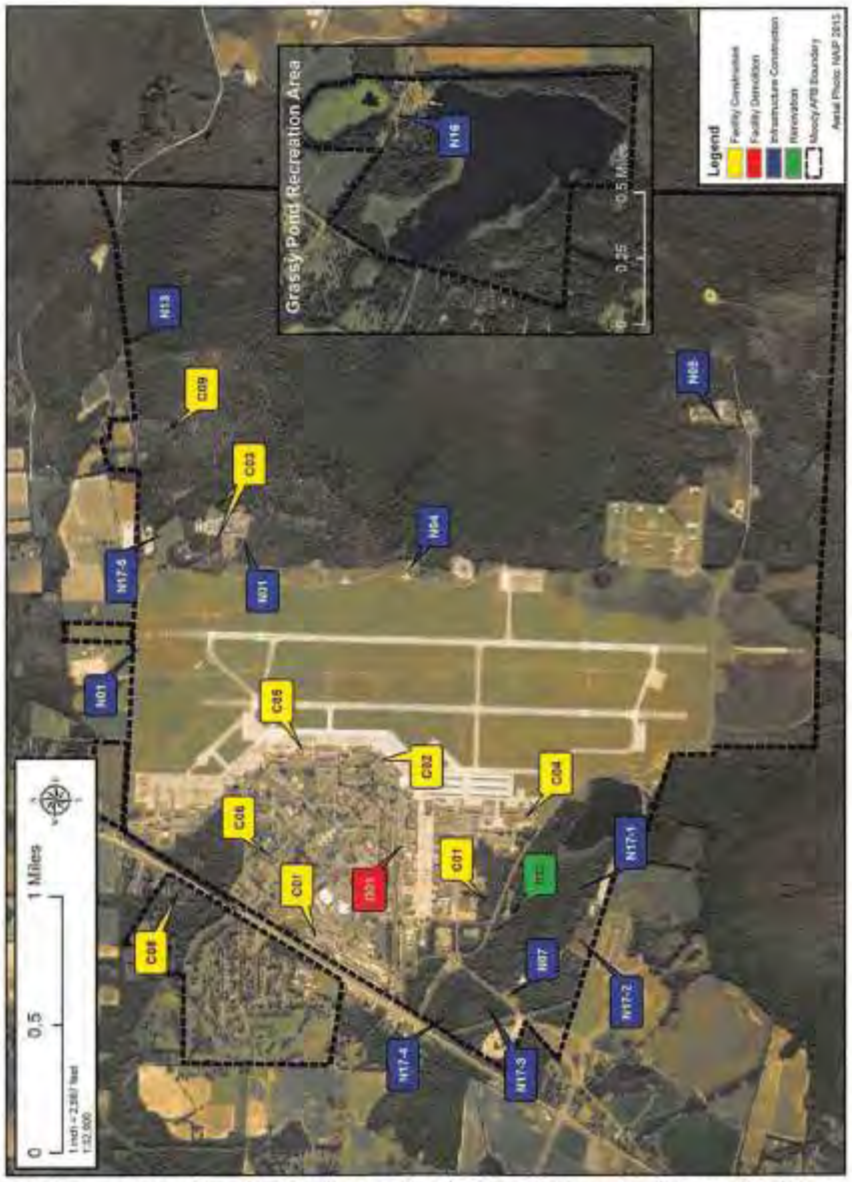
Attachments:
1. Location of Moody AFB, GA
2. Project Locations Overview
3. Proximity of Gopher Tortoise Burrows to Proposed Project Locations
4. Proximity of Eastern Indigo Snake Sightings to Proposed Project Locations

Global Power for America

Appendix A

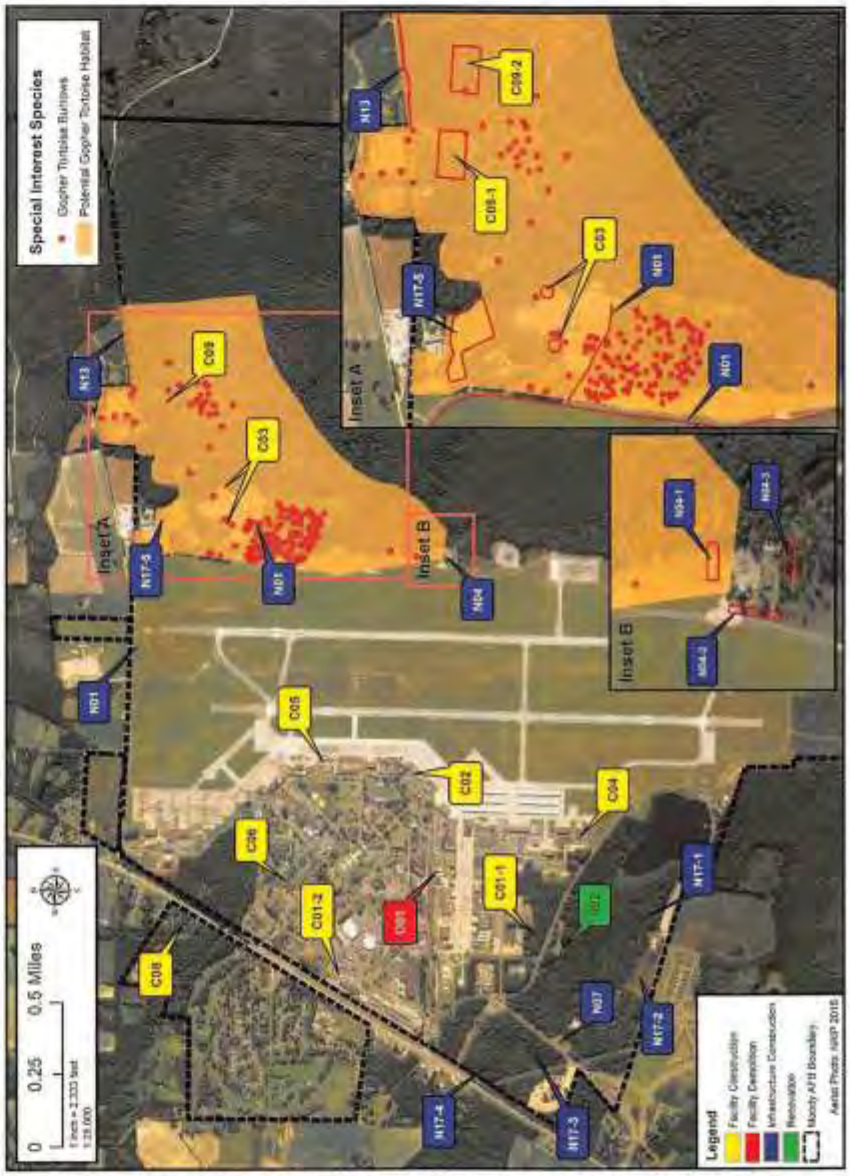
Attachment 1. Location of Moody AFB and Grassy Pond Recreational Area.

Global Power for America



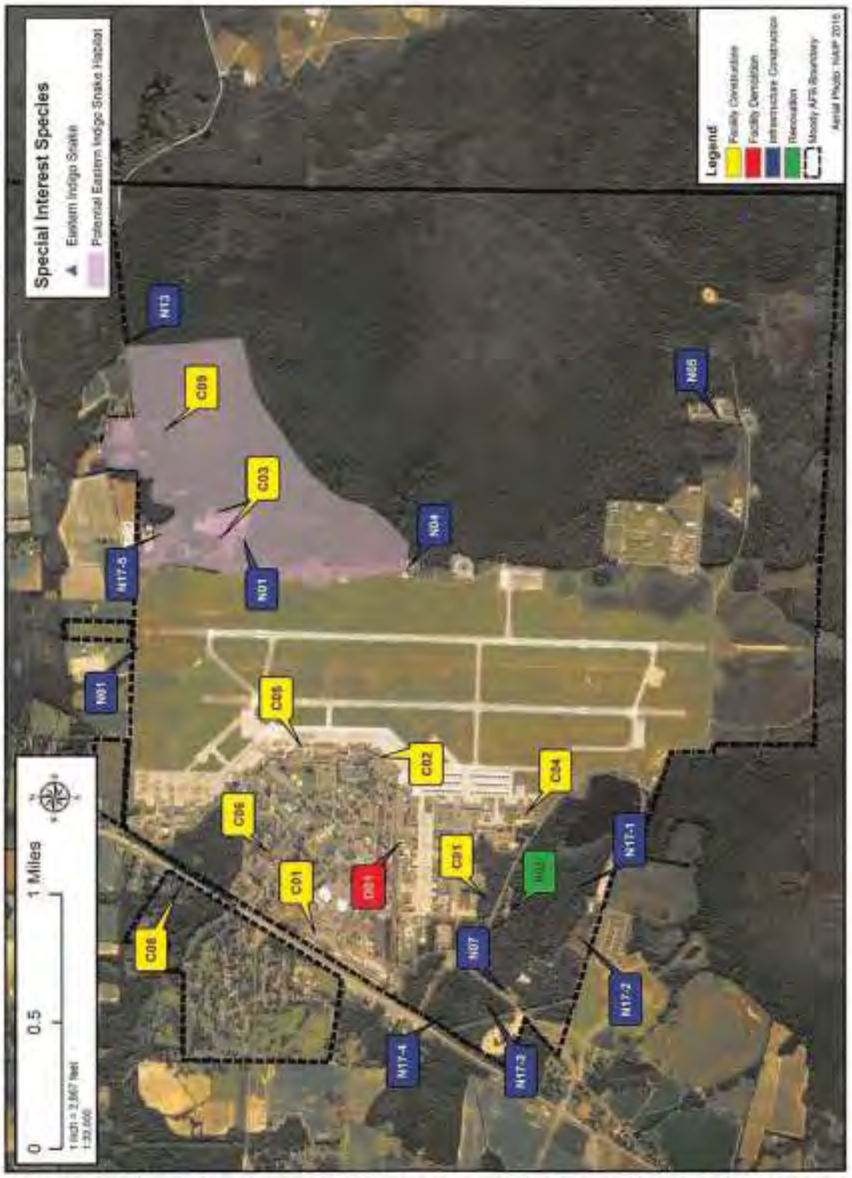
Attachment 2. Location of IDP Projects at Moody AFB and Grassy Pond Recreational Area.

Global Power for America



Attachment 3. Proximity of Gopher Tortoise Burrows to Proposed Project Locations

Global Power for America



Attachment 4. Proximity of Eastern Indigo Snake Sightings to Proposed Project Locations.

Global Power for America

2017-0737

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

26 JUN 2017

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

RECEIVED

FROM: 23 CES/CD

SUBJECT: Consultation for Proposed Installation Development Plan (IDP), Moody AFB, GA

1. Moody AFB requests informal consultation per Section 7 of the Endangered Species Act regarding the proposed IDP at Moody AFB, Lowndes County, GA (Attachment 1).

2. The purpose of this Proposed Action is to provide facilities and infrastructure improvements necessary to support the mission of the 23d Wing and tenant units. The Proposed Action consists of 17 projects involving construction of new facilities and infrastructure, facility renovations and infrastructure improvements, and building demolition. Each project has its own purpose and need; however, in general, individual projects are needed to improve the physical infrastructure and functionality of Moody AFB to meet current and future mission and facility requirements. A map showing the locations of the proposed projects is attached (Attachment 2). The table below summarizes the projects under consideration:

Project Name	Project ID / Alternatives (Alt.)	Approximate Size	Planned Activity Year
Facility Construction Projects			
Security Forces Complex	C01-1 (Preferred Alt.)	34,740 SF	2020
	C01-2		
Construct Fire/Crash Rescue Station	C02-1 (Preferred Alt.)	11,359 SF	2017
	C02-2	12,000 SF	
Construct Combative Arms Training Pit near B1540	C03-1 (Preferred Alt.)		
	C03-2		
Construct Engine Test Support Facility	C04-1 (Preferred Alt		
	C04-2		
	C04-3		

U. S. Fish and Wildlife Service
105 Westpark Drive, Suite D
Athens, GA 30606 ; 706-613-9493

FWS Log No.
2017-0737

Based on information provided, we concur with your determination that the project is not likely to adversely affect federally-listed species. No further action is required under Section 7(a)(2) of the Endangered Species Act. However, consultation should be resumed if the project changes, a new species is listed, or new data shows impacts to listed species may occur.

Donald W. Imm, Ph.D., Field Supervisor   7/13/17
Date

Global Power for America

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APPENDIX B

AIR QUALITY

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AIR QUALITY

This appendix presents an overview of the Clean Air Act (CAA) and Georgia Department of Natural Resources (DNR) Air Protection Branch (APB) 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 Air Protection Branch of the Georgia Environmental Protection Division 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. 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. Camden 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 Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Federal Primary NAAQS	Federal Secondary NAAQS
Carbon monoxide (CO)	8-hour	9 ppm	No standard
	1-hour	35 ppm	No standard
Lead (Pb)	Rolling 3-month average	0.15 μg/m^3 [a]	0.15 μg/m^3
Nitrogen dioxide (NO_2)	Annual	53 ppb[b]	53 ppb
	1-hour	100 ppb	No standard [c]

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

Criteria Pollutant	Averaging Time	Federal Primary NAAQS	Federal Secondary NAAQS
Particulate matter ≤10 micrometers (PM_{10})	24-hour	150 µg/m^3	150 µg/m^3
Particulate matter <2.5 micrometers ($PM_{2.5}$)	Annual	12 µg/m^3	15 µg/m^3
	24-hour	35 µg/m^3	35 µg/m^3
Ozone (O_3)	8-hour	0.070 ppm[c]	0.070 ppm
Sulfur dioxide (SO_2)	Annual	No standard	No standard
	24-hour[a]	No standard	No standard
	3-hour	No standard	0.50 ppm[c]
	1-hour	75 ppb [d]	No standard

Source: USEPA, 2016

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) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(b) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(c) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(d) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.

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

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

Pollutant	Emission Rate (tons/year)
VOCs or ammonia (if determined to be significant precursors)	100
Pb: All nonattainment areas	25

Source: USEPA, 2016
CO = carbon monoxide; NO_2 = nitrogen dioxide; NO_x = nitrogen oxides; VOC = volatile organic compound; 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
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, 2016
CO = carbon monoxide; NO_x = nitrogen oxides; VOC = volatile organic compound; 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
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; VOC = volatile organic compound; 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; 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 ($\mu g/m^3$)		
		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; $\mu g/m^3$ = 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, 2016a), the criteria pollutants are compared with the ROI emissions (Lowndes and Lanier Counties). Lowndes and Lanier County are both in attainment for all criteria pollutants.

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 2014 National Emissions Inventory (NEI) data which was last updated December 21, 2016. 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 USEPC-designated Air Quality Control Region, which is a much larger area.

B.3 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. The 2014 NEI data was last updated December 21, 2016, so those data were used in all analysis.

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 and nonroad mobile sources—the Federal Highway Administration's estimate of vehicle miles traveled and emission factors from USEPA's MOVES 2014a Model.
- USEPA's Clean Air Market program supplies emissions data for electric power plants.
- For stationary area sources—state data, USEPC-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.

B.4 SIGNED AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

1. General Information: The Air Force's Air Conformity Applicability Model (ACAM) was used to perform an analysis to assess the potential air quality impact/s associated with the action in accordance with the Air Force Instruction 32-7040, Air Quality Compliance And Resource Management; the Environmental Impact Analysis Process (EIAP, 32 CFR 989); and the General Conformity Rule (GCR, 40 CFR 93 Subpart B). This report provides a summary of the ACAM analysis.

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

b. Action Title: Moody IDP EA

c. Project Number/s (if applicable):

d. Projected Action Start Date: 1 / 2018

e. Action Description:

This EA evaluates the potential environmental impacts that may arise from the implementation of the 16 projects selected from the 2015 Installation Development Plan, as well as the Field Training Area (FTX) site, and approved as installation development priorities for the next five years (2017–2022) at Moody AFB (a total of 17 projects). This document treats each project as a discrete proposed action, and evaluates each project and its alternatives separately. These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition.

f. Point of Contact:
Name: Brad Boykin
Title: CTR
Organization: Leidos
Email: boykinb@leidos.com
Phone Number: 850-609-3450

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

__X__ applicable
_____ not applicable

Total combined direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the "worst-case" and "steady state" (net gain/loss upon action fully implemented) emissions.

"Air Quality Indicators" were used to provide an indication of the significance of potential impacts to air quality. These air quality indicators are EPA General Conformity Rule (GCR) thresholds (de minimis levels) that are applied out of context to their intended use. Therefore, these indicators do not trigger a regulatory requirement; however, they provide a warning that the action is potentially significant. It is important to note that these indicators only provide a clue to the potential impacts to air quality.

Given the GCR de minimis threshold values are the maximum net change an action can acceptably emit in non-attainment and maintenance areas, these threshold values would also conservatively indicate an actions emissions within an attainment would also be acceptable. An air quality indicator value of 100 tons/yr is used based on the GCR de minimis threshold for the least severe non-attainment classification for all criteria pollutants (see 40 CFR

AIR CONFORMITY APPLICABILITY MODEL REPORT
RECORD OF AIR ANALYSIS (ROAA)

93.153). Therefore, the worst-case year emissions were compared against the GCR Indicator and are summarized below.

Analysis Summary:

2018

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	10.415	100	No
NOx	62.811	100	No
CO	52.562	100	No
SOx	0.115	100	No
PM 10	182.485	100	Yes
PM 2.5	3.130	100	No
Pb	0.000	100	No
NH3	0.030	100	No
CO2e	11217.0		

2019

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.013	100	No
NOx	0.241	100	No
CO	0.202	100	No
SOx	0.001	100	No
PM 10	0.018	100	No
PM 2.5	0.018	100	No
Pb	0.000	100	No
NH3	0.000	100	No
CO2e	290.2		

2020 - (Steady State)

Pollutant	Action Emissions (ton/yr)	AIR QUALITY INDICATOR	
		Threshold (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.013	100	No
NOx	0.241	100	No
CO	0.202	100	No
SOx	0.001	100	No
PM 10	0.018	100	No
PM 2.5	0.018	100	No
Pb	0.000	100	No
NH3	0.000	100	No
CO2e	290.2		

Some estimated emissions associated with this action are above the GCR indicators, indicating a significant impact to air quality; therefore, further air assessment is needed.

Brad Boykin, CTR

03 January 2018
DATE

B.5 DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT

This section presents an export of results directly from the air quality modeling software, retaining the organizational headings and table formatting produced by the software.

1. General Information

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

- Action Title: Moody IDP EA

- Project Number/s (if applicable):

- Projected Action Start Date: 1 / 2018

- Action Purpose and Need:
The Installation Development Plan (IDP) comprehensive planning process describes (base) Air Force Base past, present, and future physical state. Ideal development principles for maximizing the Installation's long-term capabilities are identified in Strategic Vision Alignment. The need for installation development at Moody AFB is to provide and maintain facilities and infrastructure that is adequate to the needs of 23d Wing and its tenant units, and to do so in a manner that:
• Meets applicable DoD installation master planning criteria, consistent with UFC 2-100-01, Installation Master Planning and Air Force Instruction 32-7062 Comprehensive Planning and Air Force Policy Directive 32-10 Installations and Facilities.
• Meets all applicable DoD, Federal, State, and local laws and regulations such as but not limited to the Endangered Species Act (ESA), National Historic Preservation Act (NHPA), Clean Water Act (CWA), Clean Air Act (CAA), Resource Conservation and Recovery Act (RCRA) and Migratory Bird Treaty Act (MBTA). More detailed information regarding resource specific laws and regulations are provided in the specific resource sections located in Chapter 3.

- Action Description:
This EA evaluates the potential environmental impacts that may arise from the implementation of the 16 projects selected from the 2015 Installation Development Plan, as well as the Field Training Area (FTX) site, and approved as installation development priorities for the next five years (2017–2022) at Moody AFB (a total of 17 projects). This document treats each project as a discrete proposed action, and evaluates each project and its alternatives separately. These projects include initiatives for facility construction; infrastructure construction; repairs and renovations; and demolition.

- Point of Contact
Name: Brad Boykin
Title: CTR
Organization: Leidos
Email: boykinb@leidos.com
Phone Number: 850-609-3450

- Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	C01
3.	Construction / Demolition	C02
4.	Construction / Demolition	C04

Activity Type		Activity Title
5.	Construction / Demolition	C05
6.	Construction / Demolition	C06
7.	Construction / Demolition	C08
8.	Construction / Demolition	C09
9.	Construction / Demolition	N04
10.	Construction / Demolition	N05
11.	Construction / Demolition	N07
12.	Construction / Demolition	N13
13.	Construction / Demolition	R02
14.	Construction / Demolition	D01
15.	Construction / Demolition	C03
16.	Construction / Demolition	N01
17.	Construction / Demolition	N16
18.	Construction / Demolition	N17
19.	Heating	End-State Heating

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

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

- Activity Title: C01

- Activity Description:
Bldg - 20,100
Pave - 34,740
Demo - 12,325

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.051262
SO_x	0.009274
NO_x	5.201026
CO	4.621028
PM 10	5.151800

Pollutant	Total Emissions (TONs)
PM 2.5	0.275975
Pb	0.000000
NH_3	0.003305
CO_2e	911.4

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

2.1.2 Demolition Phase Assumptions
- General Demolition Information
Area of Building to be demolished (ft^2): 12325
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0604	0.0006	0.3958	0.3850	0.0260	0.0260	0.0054	58.600
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

2.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (0.00042 * BA * BH) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.2 Site Grading Phase

2.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 80598
Amount of Material to be Hauled On-Site (yd^3): 185
Amount of Material to be Hauled Off-Site (yd^3): 185

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

2.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.3 Building Construction Phase

2.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

2.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial

Area of Building (ft^2): 20100
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

2.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

2.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

2.4 Architectural Coatings Phase

2.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

2.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 20100
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

2.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
VMT_{WT} = (1 * WT * PA) / 800

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

2.5 Paving Phase

2.5.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

2.5.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 34740

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

2.5.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

2.5.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase

$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)

2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

3. Construction / Demolition

3.1 General Information & Timeline Assumptions

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

- Activity Title: C02

- Activity Description:
Bldg - 38,800
Pave - 72,559

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.504150
SO_x	0.011471
NO_x	6.632910
CO	5.749796
PM 10	8.332759

Pollutant	Total Emissions (TONs)
PM 2.5	0.356077
Pb	0.000000
NH_3	0.004101
CO_2e	1123.6

3.1 Site Grading Phase

3.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

3.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 133631

Amount of Material to be Hauled On-Site (yd^3): 307
Amount of Material to be Hauled Off-Site (yd^3): 307

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

3.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.2 Building Construction Phase

3.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 38800
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	6
Forklifts Composite	2	6
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8
Welders Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

3.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Generator Sets Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0477	0.0006	0.3758	0.2785	0.0191	0.0191	0.0043	61.100
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912
Welders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0387	0.0003	0.1940	0.1876	0.0133	0.0133	0.0034	25.690

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

3.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

3.3 Architectural Coatings Phase

3.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

3.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 38800
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

3.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

3.4 Paving Phase

3.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

3.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 72559

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

3.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

3.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_P = (2.62 * PA) / 43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

4. Construction / Demolition

4.1 General Information & Timeline Assumptions

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

- Activity Title: C04

- Activity Description:
Bldg - 1800
Demo - 1056

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.339143
SO_x	0.004177
NO_x	2.099086
CO	1.849490
PM 10	0.207128

Pollutant	Total Emissions (TONs)
PM 2.5	0.099231
Pb	0.000000
NH_3	0.001119
CO_2e	408.4

4.1 Demolition Phase

4.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

4.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 1056
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0604	0.0006	0.3958	0.3850	0.0260	0.0260	0.0054	58.600
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

4.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards ($1\ yd^3 / 27\ ft^3$)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.2 Site Grading Phase

4.2.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

4.2.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 3427
Amount of Material to be Hauled On-Site (yd^3): 8
Amount of Material to be Hauled Off-Site (yd^3): 8

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.2.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

4.2.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)

20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.3 Building Construction Phase

4.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

4.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1800
Height of Building (ft): 15
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

4.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**Pb**	**NH_3**	**CO_2e**
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

4.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

4.4 Architectural Coatings Phase

4.4.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 10
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

4.4.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 1800
Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

4.4.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

4.4.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

5. Construction / Demolition

5.1 General Information & Timeline Assumptions

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

- Activity Title: C05

- Activity Description:
Bldg - 4900

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.427070
SO_x	0.004902
NO_x	2.503354
CO	2.043680
PM 10	0.464346

Pollutant	Total Emissions (TONs)
PM 2.5	0.113277
Pb	0.000000
NH_3	0.001171
CO_2e	481.4

5.1 Site Grading Phase

5.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

5.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 5880
Amount of Material to be Hauled On-Site (yd^3): 14
Amount of Material to be Hauled Off-Site (yd^3): 14

- Site Grading Default Settings
Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

5.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.2 Building Construction Phase

5.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

5.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 4900
Height of Building (ft): 25
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

5.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

5.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

5.3 Architectural Coatings Phase

5.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

5.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 4900
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

5.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

5.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

6. Construction / Demolition

6.1 General Information & Timeline Assumptions

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

- Activity Title: C06

- Activity Description:
Blg - 80
Pave - 80

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 4
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.126599
SO_x	0.001422
NO_x	0.781585
CO	0.712142
PM 10	0.042887

Pollutant	Total Emissions (TONs)
PM 2.5	0.040947
Pb	0.000000
NH_3	0.000503
CO_2e	138.5

6.1 Site Grading Phase

6.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 1
Number of Days: 0

6.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 192
Amount of Material to be Hauled On-Site (yd^3): 0.4
Amount of Material to be Hauled Off-Site (yd^3): 0.4

- Site Grading Default Settings
Default Settings Used: Yes

Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

6.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6.2 Building Construction Phase

6.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 2
Number of Days: 0

6.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 80
Height of Building (ft): 10
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

6.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

6.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

6.3 Architectural Coatings Phase

6.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 3
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 1
Number of Days: 0

6.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 80
Number of Units: N/A

- Architectural Coatings Default Settings

Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

6.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

6.4 Paving Phase

6.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 2
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

6.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 80

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

6.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

Appendix B

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

6.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

7. Construction / Demolition

7.1 General Information & Timeline Assumptions

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

- Activity Title: C08

- Activity Description:
Bldg - 600
Pave - 3390

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.545339
SO_x	0.006108
NO_x	3.402276
CO	3.000785
PM 10	0.461244

Pollutant	Total Emissions (TONs)
PM 2.5	0.175338
Pb	0.000000
NH_3	0.002015
CO_2e	597.1

7.1 Site Grading Phase

7.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1

Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

7.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 4788
Amount of Material to be Hauled On-Site (yd^3): 11
Amount of Material to be Hauled Off-Site (yd^3): 11

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.1.3 Site Grading Phase Emission Factor(s)
- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

7.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.2 Building Construction Phase

7.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

7.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 600
Height of Building (ft): 10
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

7.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

7.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)

(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

7.3 Architectural Coatings Phase

7.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 10

Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

7.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 600
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

7.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

7.4 Paving Phase

7.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

7.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 3390

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

7.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

7.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

8. Construction / Demolition

8.1 General Information & Timeline Assumptions

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

- Activity Title: C09

- Activity Description:
Bldg - 800
Pave - 29774

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False

End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.727888
SO_x	0.008066
NO_x	4.540561
CO	3.990102
PM 10	2.430406

Pollutant	Total Emissions (TONs)
PM 2.5	0.240359
Pb	0.000000
NH_3	0.002577
CO_2e	788.9

8.1 Site Grading Phase

8.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

8.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 36689
Amount of Material to be Hauled On-Site (yd^3): 84
Amount of Material to be Hauled Off-Site (yd^3): 84

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

8.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8.2 Building Construction Phase

8.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

8.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 800
Height of Building (ft): 10
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

8.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

8.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase
$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)

(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

8.3 Architectural Coatings Phase

8.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 7
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

8.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 800
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

8.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)
800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0$

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

8.4 Paving Phase

8.4.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

8.4.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 29774

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

8.4.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

8.4.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

9. Construction / Demolition

9.1 General Information & Timeline Assumptions

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

- Activity Title: N04

- Activity Description:
Pave - 7500

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.451093
SO_x	0.004901
NO_x	2.847252
CO	2.473604
PM 10	0.686537

Pollutant	Total Emissions (TONs)
PM 2.5	0.149248
Pb	0.000000
NH_3	0.001648
CO_2e	480.7

9.1 Site Grading Phase

9.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

9.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 9000
Amount of Material to be Hauled On-Site (yd^3): 21
Amount of Material to be Hauled Off-Site (yd^3): 21

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

9.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

9.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

9.2 Paving Phase

9.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

9.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 7500

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

9.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61

Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

9.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

10. Construction / Demolition

10.1 General Information & Timeline Assumptions

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

- Activity Title: N05

- Activity Description:
Pave - 9000

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.451152
SO_x	0.004902
NO_x	2.847393
CO	2.473653
PM 10	0.793980

Pollutant	Total Emissions (TONs)
PM 2.5	0.149253
Pb	0.000000
NH_3	0.001649
CO_2e	480.7

10.1 Site Grading Phase

10.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1

Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

10.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 10800
Amount of Material to be Hauled On-Site (yd^3): 25
Amount of Material to be Hauled Off-Site (yd^3): 25

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61

Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

10.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

10.2 Paving Phase

10.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

10.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 9000

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

10.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

10.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)

HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_P = (2.62 * PA) / 43560

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

11. Construction / Demolition

11.1 General Information & Timeline Assumptions

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

- Activity Title: N07

- Activity Description:
Pave - 29304

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.543736
SO_x	0.005652
NO_x	3.430110
CO	2.935602
PM 10	2.287203

Pollutant	Total Emissions (TONs)
PM 2.5	0.188165
Pb	0.000000
NH_3	0.001841
CO_2e	555.9

11.1 Site Grading Phase

11.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

11.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 35165
Amount of Material to be Hauled On-Site (yd^3): 81
Amount of Material to be Hauled Off-Site (yd^3): 81

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

11.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

11.2 Paving Phase

11.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

11.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 29304

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	1	8
Rollers Composite	1	7
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

11.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

11.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)

43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

12. Construction / Demolition

12.1 General Information & Timeline Assumptions

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

- Activity Title: N13

- Activity Description:
Pave - 157500

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.878279
SO_x	0.009509
NO_x	5.775539
CO	4.549590
PM 10	22.859240

Pollutant	Total Emissions (TONs)
PM 2.5	0.297070
Pb	0.000000
NH_3	0.002450
CO_2e	939.8

12.1 Site Grading Phase

12.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

12.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 189000
Amount of Material to be Hauled On-Site (yd^3): 433
Amount of Material to be Hauled Off-Site (yd^3): 433

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Tractors/Loaders/Backhoes Composite	2	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

12.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

12.2 Paving Phase

12.2.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

12.2.2 Paving Phase Assumptions

- General Paving Information
Paving Area (ft^2): 157500

- Paving Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cement and Mortar Mixers Composite	4	6
Pavers Composite	1	7
Paving Equipment Composite	2	6
Rollers Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

12.2.3 Paving Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97

Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

12.2.4 Paving Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = PA * 0.25 * (1 / 27) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
PA: Paving Area (ft^2)
0.25: Thickness of Paving Area (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
$VOC_P = (2.62 * PA) / 43560$

VOC_P: Paving VOC Emissions (TONs)
2.62: Emission Factor (lb/acre)
PA: Paving Area (ft^2)
43560: Conversion Factor square feet to acre (43560 ft2 / acre)^2 / acre)

13. Construction / Demolition

13.1 General Information & Timeline Assumptions

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

- Activity Title: R02

- Activity Description:
Bldg - 1050

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.196821
SO_x	0.002440
NO_x	1.246934
CO	1.020195
PM 10	0.094116

Pollutant	Total Emissions (TONs)
PM 2.5	0.056475
Pb	0.000000
NH_3	0.000562
CO_2e	239.4

13.1 Site Grading Phase

13.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

13.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1260
Amount of Material to be Hauled On-Site (yd^3): 3
Amount of Material to be Hauled Off-Site (yd^3): 3

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97

Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

13.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

13.2 Building Construction Phase

13.2.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

13.2.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 1050
Height of Building (ft): 15
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

13.2.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

13.2.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)

2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

$VMT_{VT} = BA * BH * (0.38 / 1000) * HT$

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)

2000: Conversion Factor pounds to tons

13.3 Architectural Coatings Phase

13.3.1 Architectural Coatings Phase Timeline Assumptions

- Phase Start Date
Start Month: 10
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 3
Number of Days: 0

13.3.2 Architectural Coatings Phase Assumptions

- General Architectural Coatings Information
Building Category:
Total Square Footage (ft^2): 1050
Number of Units: N/A

- Architectural Coatings Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

13.3.3 Architectural Coatings Phase Emission Factor(s)

- Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

13.3.4 Architectural Coatings Phase Formula(s)

- Worker Trips Emissions per Phase
$VMT_{WT} = (1 * WT * PA) / 800$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
1: Conversion Factor man days to trips (1 trip / 1 man * day)
WT: Average Worker Round Trip Commute (mile)
PA: Paint Area (ft^2)

800: Conversion Factor square feet to man days (1 ft^2 / 1 man * day)

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Off-Gassing Emissions per Phase
VOC_{AC} = (AB * 2.0 * 0.0116) / 2000.0

VOC_{AC}: Architectural Coating VOC Emissions (TONs)
BA: Area of Building (ft^2)
2.0: Conversion Factor total area to coated area (2.0 ft^2 coated area / total area)
0.0116: Emission Factor (lb/ft^2)
2000: Conversion Factor pounds to tons

14. Construction / Demolition

14.1 General Information & Timeline Assumptions

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

- Activity Title: D01

- Activity Description:
Demo - 10388

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.185717
SO_x	0.002134
NO_x	1.194127
CO	1.214137
PM 10	0.121483

Pollutant	Total Emissions (TONs)
PM 2.5	0.066856
Pb	0.000000
NH_3	0.000808
CO_2e	211.7

14.1 Demolition Phase

14.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

14.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 10388
Height of Building to be demolished (ft): 25

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

14.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0604	0.0006	0.3958	0.3850	0.0260	0.0260	0.0054	58.600
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

14.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (0.00042 * BA * BH) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

15. Construction / Demolition

15.1 General Information & Timeline Assumptions

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

- Activity Title: C03

- Activity Description:
17663 sq ft
288 trench

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.727944
SO_x	0.010101
NO_x	4.809913
CO	4.101560
PM 10	0.877627

Pollutant	Total Emissions (TONs)
PM 2.5	0.220392
Pb	0.000000
NH_3	0.001964
CO_2e	973.5

15.1 Site Grading Phase

15.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1

Start Year: 2018

- Phase Duration
Number of Month: 6
Number of Days: 0

15.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 8128
Amount of Material to be Hauled On-Site (yd^3): 19
Amount of Material to be Hauled Off-Site (yd^3): 19

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Graders Composite	1	6
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	6
Tractors/Loaders/Backhoes Composite	1	7

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

15.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

15.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)

WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

15.2 Trenching/Excavating Phase

15.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

15.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 1440
Amount of Material to be Hauled On-Site (yd^3): 3
Amount of Material to be Hauled Off-Site (yd^3): 3

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

15.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

15.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

15.3 Building Construction Phase

15.3.1 Building Construction Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

15.3.2 Building Construction Phase Assumptions

- General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 17663

Height of Building (ft): 15
Number of Units: N/A

- Building Construction Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Cranes Composite	1	4
Forklifts Composite	2	6
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

- Vendor Trips
Average Vendor Round Trip Commute (mile): 40 (default)

- Vendor Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

15.3.3 Building Construction Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Cranes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1012	0.0013	0.7908	0.4059	0.0318	0.0318	0.0091	128.85
Forklifts Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0371	0.0006	0.2186	0.2173	0.0101	0.0101	0.0033	54.479
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

15.3.4 Building Construction Phase Formula(s)

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = BA * BH * (0.42 / 1000) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.42 / 1000): Conversion Factor ft^3 to trips (0.42 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Vender Trips Emissions per Phase

VMT_{VT} = BA * BH * (0.38 / 1000) * HT

VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
BA: Area of Building (ft^2)
BH: Height of Building (ft)
(0.38 / 1000): Conversion Factor ft^3 to trips (0.38 trip / 1000 ft^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VT}: Vender Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

16. Construction / Demolition

16.1 General Information & Timeline Assumptions

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

- Activity Title: N01

- Activity Description:
26400 trench

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.356796
SO_x	0.005176
NO_x	2.295841
CO	2.056026
PM 10	15.864373

Pollutant	Total Emissions (TONs)
PM 2.5	0.106742
Pb	0.000000
NH_3	0.000750
CO_2e	489.5

16.1 Trenching/Excavating Phase

16.1.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1

Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

16.1.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 132000
Amount of Material to be Hauled On-Site (yd^3): 303
Amount of Material to be Hauled Off-Site (yd^3): 303

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

16.1.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.551	000.007	000.598	004.770	000.011	000.010		000.034	00367.669
LDGT	000.745	000.010	001.037	007.835	000.013	000.011		000.034	00491.872
HDGV	001.369	000.015	002.869	024.858	000.031	000.027		000.045	00767.677
LDDV	000.235	000.003	000.315	003.662	000.007	000.006		000.008	00375.935
LDDT	000.540	000.005	000.843	007.445	000.008	000.008		000.008	00586.287
HDDV	000.832	000.014	008.507	002.815	000.369	000.339		000.029	01578.178
MC	002.711	000.008	000.750	014.906	000.029	000.025		000.051	00395.124

16.1.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (20 * ACRE * WD) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

$VMT_{VE} = (HA_{OnSite} + HA_{OffSite}) * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase

$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds

EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

17. Construction / Demolition

17.1 General Information & Timeline Assumptions

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

- Activity Title: N16

- Activity Description:
30000 sq ft demo
1312 lin ft trench

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	0.541686
SO_x	0.007292
NO_x	3.481692
CO	3.267292
PM 10	1.788422

Pollutant	Total Emissions (TONs)
PM 2.5	0.173312
Pb	0.000000
NH_3	0.001517
CO_2e	699.0

17.1 Demolition Phase

17.1.1 Demolition Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

17.1.2 Demolition Phase Assumptions

- General Demolition Information
Area of Building to be demolished (ft^2): 30000

Height of Building to be demolished (ft): 6

- Default Settings Used: Yes

- Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Concrete/Industrial Saws Composite	1	8
Rubber Tired Dozers Composite	1	1
Tractors/Loaders/Backhoes Composite	2	6

- Vehicle Exhaust

Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips

Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.1.3 Demolition Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Concrete/Industrial Saws Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0604	0.0006	0.3958	0.3850	0.0260	0.0260	0.0054	58.600
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61
Tractors/Loaders/Backhoes Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

17.1.4 Demolition Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD} = (0.00042 * BA * BH) / 2000$

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
0.00042: Emission Factor (lb/ft^3)
BA: Area of Building to be demolished (ft^2)
BH: Height of Building to be demolished (ft)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
$CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000$

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
$VMT_{VE} = BA * BH * (1 / 27) * 0.25 * (1 / HC) * HT$

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
BA: Area of Building being demolish (ft^2)
BH: Height of Building being demolish (ft)
(1 / 27): Conversion Factor cubic feet to cubic yards (1 yd^3 / 27 ft^3)
0.25: Volume reduction factor (material reduced by 75% to account for air space)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

$V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
$VMT_{WT} = WD * WT * 1.25 * NE$

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

17.2 Trenching/Excavating Phase

17.2.1 Trenching / Excavating Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration
Number of Month: 12
Number of Days: 0

17.2.2 Trenching / Excavating Phase Assumptions

- General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 13212
Amount of Material to be Hauled On-Site (yd^3): 30
Amount of Material to be Hauled Off-Site (yd^3): 30

- Trenching Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	2	8
Other General Industrial Equipmen Composite	1	8
Tractors/Loaders/Backhoes Composite	1	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

17.2.3 Trenching / Excavating Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.551	000.007	000.598	004.770	000.011	000.010		000.034	00367.669
LDGT	000.745	000.010	001.037	007.835	000.013	000.011		000.034	00491.872
HDGV	001.369	000.015	002.869	024.858	000.031	000.027		000.045	00767.677
LDDV	000.235	000.003	000.315	003.662	000.007	000.006		000.008	00375.935
LDDT	000.540	000.005	000.843	007.445	000.008	000.008		000.008	00586.287
HDDV	000.832	000.014	008.507	002.815	000.369	000.339		000.029	01578.178
MC	002.711	000.008	000.750	014.906	000.029	000.025		000.051	00395.124

17.2.4 Trenching / Excavating Phase Formula(s)

- Fugitive Dust Emissions per Phase
$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase
CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase
VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)

WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

$V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000$

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

18. Construction / Demolition

18.1 General Information & Timeline Assumptions

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

- Activity Title: N17

- Activity Description:
23 acres cleared

- Activity Start Date
Start Month: 1
Start Month: 2018

- Activity End Date
Indefinite: False
End Month: 12
End Month: 2018

- Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	1.360506
SO_x	0.017034
NO_x	9.721203
CO	6.503485
PM 10	120.021645

Pollutant	Total Emissions (TONs)
PM 2.5	0.421528
Pb	0.000000
NH_3	0.001842
CO_2e	1697.5

18.1 Site Grading Phase

18.1.1 Site Grading Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2018

- Phase Duration

Number of Month: 12
Number of Days: 0

18.1.2 Site Grading Phase Assumptions

- General Site Grading Information
Area of Site to be Graded (ft^2): 1001880
Amount of Material to be Hauled On-Site (yd^3): 230
Amount of Material to be Hauled Off-Site (yd^3): 230

- Site Grading Default Settings
Default Settings Used: Yes
Average Day(s) worked per week: 5 (default)

- Construction Exhaust (default)

Equipment Name	Number Of Equipment	Hours Per Day
Excavators Composite	1	8
Graders Composite	1	8
Other Construction Equipment Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	3	8
Tractors/Loaders/Backhoes Composite	3	8

- Vehicle Exhaust
Average Hauling Truck Capacity (yd^3): 20 (default)
Average Hauling Truck Round Trip Commute (mile): 20 (default)

- Vehicle Exhaust Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	0	0	0	0	0	100.00	0

- Worker Trips
Average Worker Round Trip Commute (mile): 20 (default)

- Worker Trips Vehicle Mixture (%)

	LDGV	LDGT	HDGV	LDDV	LDDT	HDDV	MC
POVs	50.00	50.00	0	0	0	0	0

18.1.3 Site Grading Phase Emission Factor(s)

- Construction Exhaust Emission Factors (lb/hour) (default)

Excavators Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0848	0.0013	0.5180	0.5159	0.0249	0.0249	0.0076	119.77
Graders Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.1049	0.0014	0.7217	0.5812	0.0354	0.0354	0.0094	132.97
Other Construction Equipment Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.0633	0.0012	0.4477	0.3542	0.0181	0.0181	0.0057	122.66
Rubber Tired Dozers Composite								
	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	CH_4	CO_2e
Emission Factors	0.2343	0.0024	1.8193	0.8818	0.0737	0.0737	0.0211	239.61

Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.2135	0.0026	1.6041	0.8417	0.0653	0.0653	0.0192	262.96
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0512	0.0007	0.3330	0.3646	0.0189	0.0189	0.0046	66.912

- Vehicle Exhaust & Worker Trips Emission Factors (grams/mile)

	VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
LDGV	000.336	000.002	000.280	003.512	000.008	000.007		000.025	00339.290
LDGT	000.433	000.003	000.488	005.206	000.010	000.008		000.026	00439.098
HDGV	000.867	000.005	001.272	017.093	000.022	000.020		000.045	00771.784
LDDV	000.114	000.003	000.151	002.586	000.004	000.004		000.008	00332.636
LDDT	000.308	000.004	000.487	005.082	000.007	000.007		000.008	00484.402
HDDV	000.584	000.013	005.846	002.028	000.220	000.202		000.029	01527.182
MC	002.616	000.003	000.727	013.442	000.027	000.024		000.053	00395.713

18.1.4 Site Grading Phase Formula(s)

- Fugitive Dust Emissions per Phase

$PM10_{FD}$ = (20 * ACRE * WD) / 2000

$PM10_{FD}$: Fugitive Dust PM 10 Emissions (TONs)
20: Conversion Factor Acre Day to pounds (20 lb / 1 Acre Day)
ACRE: Total acres (acres)
WD: Number of Total Work Days (days)
2000: Conversion Factor pounds to tons

- Construction Exhaust Emissions per Phase

CEE_{POL} = (NE * WD * H * EF_{POL}) / 2000

CEE_{POL}: Construction Exhaust Emissions (TONs)
NE: Number of Equipment
WD: Number of Total Work Days (days)
H: Hours Worked per Day (hours)
EF_{POL}: Emission Factor for Pollutant (lb/hour)
2000: Conversion Factor pounds to tons

- Vehicle Exhaust Emissions per Phase

VMT_{VE} = (HA_{OnSite} + $HA_{OffSite}$) * (1 / HC) * HT

VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
HA_{OnSite}: Amount of Material to be Hauled On-Site (yd^3)
$HA_{OffSite}$: Amount of Material to be Hauled Off-Site (yd^3)
HC: Average Hauling Truck Capacity (yd^3)
(1 / HC): Conversion Factor cubic yards to trips (1 trip / HC yd^3)
HT: Average Hauling Truck Round Trip Commute (mile/trip)

V_{POL} = (VMT_{VE} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{VE}: Vehicle Exhaust Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)

VM: Vehicle Exhaust On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

- Worker Trips Emissions per Phase
VMT_{WT} = WD * WT * 1.25 * NE

VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
WD: Number of Total Work Days (days)
WT: Average Worker Round Trip Commute (mile)
1.25: Conversion Factor Number of Construction Equipment to Number of Works
NE: Number of Construction Equipment

V_{POL} = (VMT_{WT} * 0.002205 * EF_{POL} * VM) / 2000

V_{POL}: Vehicle Emissions (TONs)
VMT_{WT}: Worker Trips Vehicle Miles Travel (miles)
0.002205: Conversion Factor grams to pounds
EF_{POL}: Emission Factor for Pollutant (grams/mile)
VM: Worker Trips On Road Vehicle Mixture (%)
2000: Conversion Factor pounds to tons

19. Heating

19.1 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: End-State Heating

- Activity Description:
Facility heating post-construction.

- Activity Start Date
Start Month: 1
Start Year: 2019

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

- Activity Emissions:

Pollutant	Emissions Per Year (TONs)
VOC	0.013258
SO_x	0.001446
NO_x	0.241050
CO	0.202482
PM 10	0.018320

Pollutant	Emissions Per Year (TONs)
PM 2.5	0.018320
Pb	0.000000
NH_3	0.000000
CO_2e	290.2

19.2 Heating Assumptions

- Heating
Heating Calculation Type: Heat Energy Requirement Method

- Heat Energy Requirement Method
Area of floorspace to be heated (ft^2): 68130
Type of fuel: Natural Gas
Type of boiler/furnace: Commercial/Institutional (0.3 - 9.9 MMBtu/hr)
Heat Value (MMBtu/ft^3): 0.00105
Energy Intensity (MMBtu/ft^2): 0.0743

- Default Settings Used: Yes

- Boiler/Furnace Usage
Operating Time Per Year (hours): 900 (default)

19.3 Heating Emission Factor(s)

- Heating Emission Factors (lb/1000000 scf)

VOC	SO_x	NO_x	CO	PM 10	PM 2.5	Pb	NH_3	CO_2e
5.5	0.6	100	84	7.6	7.6			120390

19.4 Heating Formula(s)

- Heating Fuel Consumption ft^3 per Year
FC_{HER}= HA * EI / HV / 1000000

FC_{HER}: Fuel Consumption for Heat Energy Requirement Method
HA: Area of floorspace to be heated (ft^2)
EI: Energy Intensity Requirement (MMBtu/ft^2)
HV: Heat Value (MMBTU/ft^3)
1000000: Conversion Factor

- Heating Emissions per Year
HE_{POL}= FC * EF_{POL} / 2000

HE_{POL}: Heating Emission Emissions (TONs)
FC: Fuel Consumption
EF_{POL}: Emission Factor for Pollutant
2000: Conversion Factor pounds to tons

B.6 REFERENCES

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