DRAFT

ENVIRONMENTAL ASSESSMENT
FOR
THE IMPLEMENTATION OF THE AIR UNIVERSITY CAMPUS PLAN AT MAXWELL AIR FORCE BASE AND GUNTER ANNEX, ALABAMA

Prepared By:

Department of the Air Force

October 2021

Letters or other written comments provided may be published in the Final EA. As required by law, substantive comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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ABBREVIATIONS AND ACRONYMS

µg/m^3	micrograms per cubic meter of air
42 ABW	42d Air Base Wing
AAFES	Army and Air Force Exchange Service
ACTS	Air Corps Tactical School
ADEM	Alabama Department of Environmental Management
AFB	Air Force Base
AFI	Air Force Instruction
AFROTC	Air Force Reserve Officer Training Corps
AHC	Alabama Historical Commission
APE	Area of Potential Effect
AU	Air University
BGPA	Bald and Golden Eagle Protection Act
BMP	best management practice(s)
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
ft	foot/feet
FW	Fighter Wing
FY	Fiscal Year
GHG	greenhouse gas
gsf	gross square feet
IOS	International Officer School
km	kilometer(s)
km^2	square kilometer(s)
LEED	Leadership in Energy and Environmental Design
m	meter(s)
m^2	square meter(s)
MAFB	Maxwell Air Force Base

MBTA	Migratory Bird Treaty Act
MSFRIC	Muir S. Fairchild Research Information Center
MWWSSB	Montgomery Water Works and Sanitary Sewer Board
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NO^2	nitrogen dioxide
NOA	Notice of Availability
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O^3	ozone
ODS	Ozone Depleting Substances
OTS	Officer Training School
Pb	lead
PCE	Perchloroethylene
PM	particulate matter
$PM_{2.5}$	particulate matter 2.5 micrometers or less in diameter
PM_{10}	particulate matter 10 micrometers or less in diameter
PME	Professional Military Education
ppb	parts per billion
ppm	parts per million
ROAA	Record of Air Analysis
ROI	Region of Influence
SHPO	State Historic Preservation Officer or Office
SO_2	sulfur dioxide
SOQ	Senior Officer Quarters
TCE	Trichloroethylene
TMDL	Total Maximum Daily Load
U.S.C.	United States Code
USACE	United States Army Corps of Engineers
USAF	United States Air Force
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service

1.0 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

This Environmental Assessment (EA) supports a proposal by the 42d Air Base Wing (42 ABW) of the U.S. Air Force (USAF) to implement the Air University (AU) Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell Air Force Base (MAFB) and Gunter Annex (hereinafter referred to as Maxwell-Gunter AFB).

This EA analyzes the potential for significant environmental impacts associated with the Proposed Action and Alternatives, including the No Action Alternative. The environmental documentation process associated with preparing the EA is conducted in accordance with the National Environmental Policy Act (NEPA) (42 United States Code [U.S.C.] Sections 4321–4370), as implemented by the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500–1508); Air Force Environmental Impact Analysis Process Regulations (32 CFR Part 989); and Air Force Instruction (AFI) 32-1015, *Integrated Installation Planning*.

1.1.1 Background

The mission of the 42 ABW is to provide the foundation for AU's success, the 908th Airlift Wing, the Business and Enterprise Systems Directorate, and more than 30 tenant units (MAFB 2020a).

According to the Montgomery Chamber of Commerce (2020), the Montgomery military community contributes an estimated $2.6 billion to the local economy annually and represents over 68,000 people, including active duty, AU students, Air Force reservists, National Guard members, civilians, military contractors, military retirees, and their associated family members. About 7,000 military, civilians, and contractors are assigned to Maxwell-Gunter AFB (MAFB 2020b).

AU, headquartered at MAFB, is a major component of Air Education and Training Command, and is the largest tenant unit on MAFB with 4,000 military and civilian personnel. AU's mission is to educate and develop air, space, and cyberspace warrior leaders in support of the National Defense Strategy. AU is responsible for enlisted and officer professional military education (PME), continuing professional education, graduate education, and officer commissioning through Officer Training School (OTS) or Air Force Reserve Officer Training Corps (AFROTC). More than 50,000 resident and 160,000 non-resident officers, enlisted, and civilian personnel graduate from AU annually. AU has three campuses; the majority of AU programs are located on the MAFB campus; however, some programs are located on the Gunter Annex campus and one program is located on the Wright-Patterson AFB campus (MAFB 2020b).

1.1.2 Project Location

As shown in Figure 1-1, the two campuses comprising Maxwell-Gunter AFB (i.e., MAFB and Gunter Annex) are located in Montgomery, Alabama. MAFB encompasses approximately 2,527 acres (10.2 square kilometers [km^2]) as follows:

- approximately 700 acres (2.8 km^2) are occupied by buildings, structures, pavements, and landscaped resident housing;
- approximately 880 acres (3.6 km^2) are occupied by aircraft runways, taxiways, and adjacent airfield at; and
- approximately 947 acres (3.8 km^2) are occupied by recreation areas such as a golf course, picnic areas, playgrounds, and several ponds.

Gunter Annex is located approximately 5 miles (8 kilometers [km]) from MAFB on the east side of the City of Montgomery. Gunter Annex consists of 377 acres (1.5 km^2), is fully developed, and is occupied by housing, industrial, academic, and administrative facilities.

In addition to the MAFB and Gunter Annex campuses, the Vigilant Warrior Training Site is an associated facility located approximately 18 miles (29.0 km) north of MAFB and adjacent to Lake Jordan. This semi-developed training site is 201 acres (0.8 km^2) and has been leased by the USAF from Alabama Power Company since the mid-1990s.

1.2 PURPOSE OF THE PROPOSED ACTION

The purpose of the Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Specifically, the Proposed Action would accomplish the following:

- Co-locate Officer and Enlisted PME at MAFB,
- Provide modern space and dedicated space for officer pipeline,
- Provide Eaker Center space for key leadership development growth, and
- Provide modern space and capabilities for Air Force's e-learning capability and growth.

1.3 NEED FOR THE PROPOSED ACTION

The need for the Proposed Action is to meet AU's mission requirement of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy, and accommodating training needs of the Air Force.

1.4 DECISION TO BE MADE

The decision to be made is the selection of an alternative for Maxwell-Gunter AFB with regards to the proposed AU Campus plan. The decision options include the following:

- continuing current operations (the No Action Alternative),
- selecting a preferred alternative and preparing a Finding of No Significant Impact (FONSI),
- preparing an Environmental Impact Statement if the action alternative would result in significant environmental impacts.

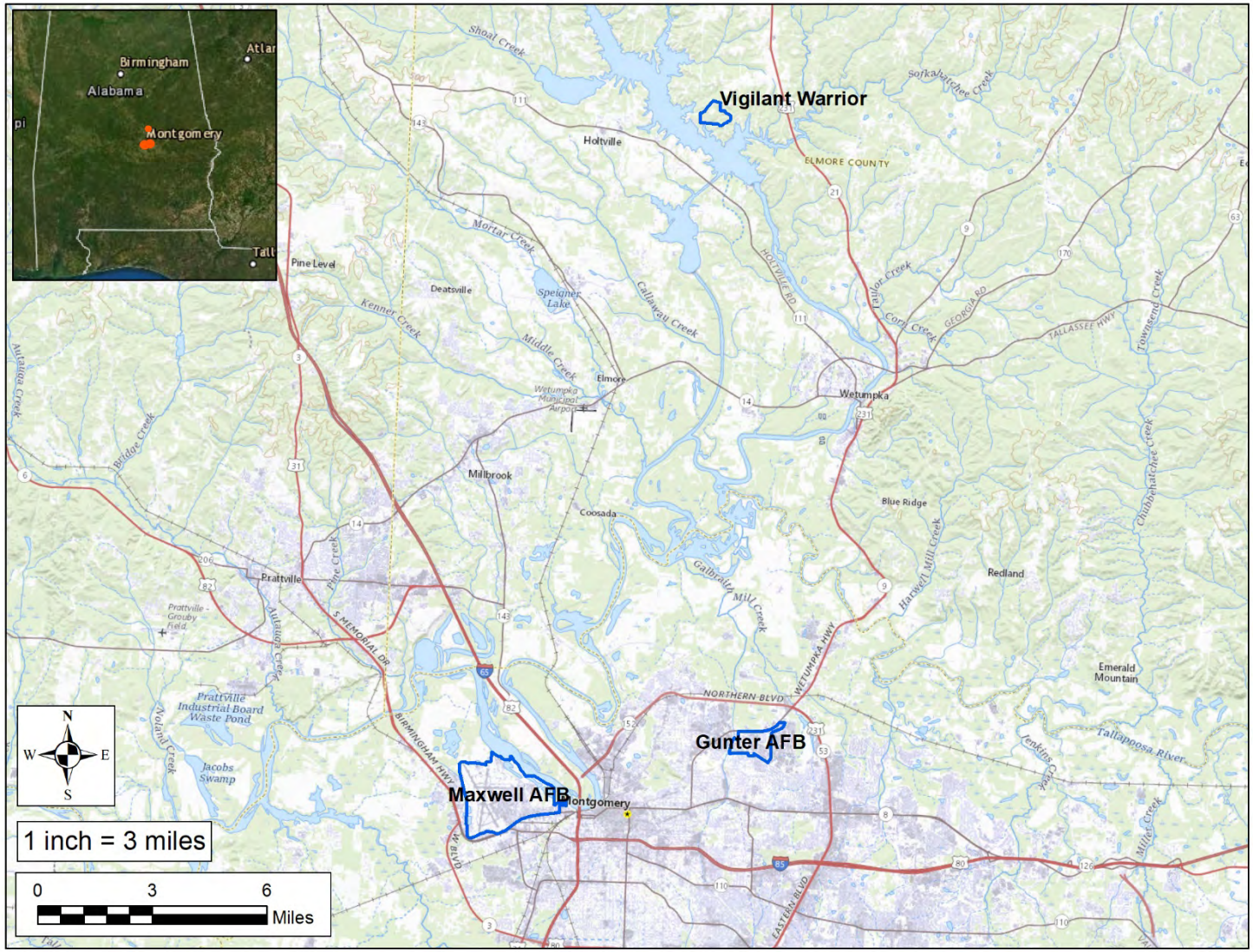

Figure 1-1. Site Location Map

1.5 INTERGOVERNMENTAL COORDINATION/CONSULTATIONS

1.5.1 Interagency and Intergovernmental Coordination and Consultations

Federal, State, and local agencies with jurisdiction that could be affected by the alternative actions were notified and consulted during the development of this EA. Appendix A contains a list of agencies consulted during this analysis and copies of correspondence, where applicable.

1.5.2 Government to Government Consultations

Executive Order (EO) 13175, Consultation and Coordination with Indian Tribal Governments (2000), 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.

To comply with legal mandates, federally recognized tribes that are affiliated historically with the Maxwell-Gunter AFB geographic region are 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 coordination process is distinct from NEPA consultation or the Interagency and Intergovernmental Coordination of Environmental Planning processes and requires separate notification of all relevant tribes. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The Maxwell-Gunter AFB point-of-contact for Native American tribes is the Installation Commander. The Maxwell-Gunter AFB point-of-contact for consultation with the Tribal Historic Preservation Officer and the Advisory Council on Historic Preservation is the Installation Cultural Resources Manager.

The Native American tribal governments that were coordinated with regarding this action are listed in Appendix A.

1.6 PUBLIC AND AGENCY REVIEW OF EA

A Notice of Availability (NOA) of the Draft EA and Draft FONSI was published in the *Montgomery Advertiser*. The NOA invites the public to review and comment on the Draft EA. Paper copies of the Draft EA and Draft FONSI will be available to the public at the libraries listed in Table 1-1. Comments received on the Draft EA within the specified submission schedule will be considered during preparation of the Final EA.

Table 1-1. Library Locations

Name of Library	*Location*
Air University Library	Building 1405 600 Chennault Circle Montgomery, AL 36112
Juliette Hampton Morgan Memorial Library	245 High Street Montgomery, AL 36104

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The 42 ABW proposes to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. For the purposes of this document, actions would occur at both the MAFB and Gunter Annex campuses. Project construction is expected to start in Fiscal Year (FY) 2024 and end in FY 2030.

It is assumed each phase includes one year for design and two years for construction. The AU Campus Plan would be implemented in four phases, as follows:

- Phase 1: Eaker Center and International Officer School (IOS) Modernization on both the MAFB and Gunter Annex campuses (construction expected to start in FY 2024);
- Phase 2: Consolidate Officer PME and Enlisted PME on the MAFB campus (construction expected to start in FY 2025);
- Phase 3: AU Park and Green Space Modernization on the MAFB campus (construction expected to start in FY 2026);
- Phase 4: AU Transformation Capstone on the MAFB campus (construction expected to start in FY 2027).

The Proposed Action would occur over a 7-year period and include the following major elements:

- Buildings completed in Phase 1 would be used as swing space. However, if modular units or construction trailers are needed, these units would be located on previously disturbed concrete, gravel, or grassy areas within the installation boundaries. Temporary utilities would be provided without impacting existing capacity.
- Construction staging areas (i.e., laydown areas for the temporary storage of equipment and supplies) have not been identified in the preliminary design documents; however, staging areas would be located on previously disturbed concrete, gravel, or grassy areas within the installation boundaries.
- Clean materials removed from roadbeds would be transported to a site identified at Maxwell-Gunter AFB that is appropriate for receiving clean excavated materials. Where applicable, these sites may also be used as borrow sites for small amounts of native soil, as needed. All excavated or filled materials would be "certified clean" before being brought on-site or taken off-site per the construction contract specifications.
- Construction-related traffic would enter MAFB via the Maxwell Boulevard gate and Gunter Annex via the Congressman Dickinson gate. Construction workers would arrive at the job sites via buses, work trucks, or personal vehicles. Parking would be provided at the construction laydown area. If needed, overflow parking at MAFB is available north of the Academic Circle on the golf course eighth fairway.

- Construction activities would occur during regular business hours. However, certain construction activities, such as concrete placement, may extend beyond these hours to accomplish activities that must be performed without interruption until completed. Most work is expected to occur during daylight, and no artificial lighting is anticipated as being needed.
- Typical construction equipment would include milling machines, excavators, bulldozers, graders, asphalt pavers, material transfer vehicles, compactors/rollers, water trucks, dump trucks, forklifts, scrapers, trenchers, line-up trucks, and pickup trucks.
- The Proposed Action would include installation of appropriate power utilities, fiber, or copper lines.
- The Proposed Action would incorporate site-specific health and safety requirements for construction workers per Occupational Safety and Health Administration regulations.
- The Proposed Action would incorporate Leadership in Energy and Environmental Design, commonly referred to as LEED, and sustainable development concepts to achieve optimum resource efficiency, sustainability, and energy conservation.

In addition to the AU Campus Plan, construction projects occurring concurrently under the Air Force's Facility Sustainment, Restoration, and Modernization program (hereinafter referred to as "Phase 0 projects") are also included in the Proposed Action since these projects would occur within the Proposed Action area. Although these projects would be executed under the approved Installation Development Plan and not the AU Campus Plan, these projects are considered related, are not expected to be categorically excluded, and are included to ensure comprehensive analysis of all direct and indirect effects. Phase 0 projects are expected to start in FY 23 and continue through FY28.

2.2 SELECTION STANDARDS

NEPA and CEQ regulations mandate the consideration of reasonable alternatives for the proposed action. "Reasonable alternatives" are those that also could be utilized to meet the purpose of and need for the Proposed Action. Per the requirements of 32 CFR Part 989, the Air Force's Environmental Impact Analysis Process regulations, selection standards are used to identify alternatives for meeting the purpose and need for the Air Force action. Potential alternatives that meet the purpose of and need of the Proposed Action were evaluated against the following screening factors:

- Operational Growth. Any proposed alternative must support the potential future growth as described in AU's Campus Plan.
- Mission Alignment. Any proposed alternative must align with the Maxwell-Gunter AFB's and AU's respective missions.
- Minimize or Avoid Unnecessary Adverse Environmental and Cultural Impacts. Any alternative that would meet the Purposed Action's purpose and need, but would result in

adverse environmental or cultural impacts that could otherwise be avoided or minimized, was not carried forward for detailed analysis. Not only is this consistent with Air Force environmental stewardship commitments but this criterion also reduces mitigation and monitoring expenses.

2.3 SCREENING OF ALTERNATIVES

Based on the selection standards, two alternatives were determined to meet the purpose and need of the Proposed Action.

2.4 DETAILED DESCRIPTION OF THE ALTERNATIVES

Two alternatives were identified that would meet the screening standards, and purpose of and need for the Proposed Action. Therefore, this EA considers the No Action Alternative as well as Alternatives 1 and 2.

2.4.1 No Action Alternative

Under the No Action Alternative, AU would not be transformed and would be unable to meet its stated mission of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy. As a result, Airmen would not have the specialized education needed to meet the needs of the Air Force, as well as achieve national security objectives.

The No Action Alternative would not meet the purpose of and need for the Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis in the EA. The No Action Alternative analyzes the consequences of not undertaking the Proposed Action and serves to establish a comparative baseline.

2.4.2 Alternative 1: Relocate Barnes Center to MAFB and Holm Center to Gunter Annex

Alternative 1 meets the purpose of and need for the Proposed Action and satisfies the reasonable alternative screening factors presented in Section 2.2. As described in this section, shown in Figures 2-1 through 2-7, and summarized in Table 2-1, Alternative 1 includes four phases and related projects.

2.4.2.1 Phase 1: Eaker Center and IOS Modernization

Phase 1 would transform Eaker Center for leadership development and professional continuing education growth, as well as expand and modernize the IOS to meet growing international PME requirements. As part of Phase 1, the following would occur on the MAFB and Gunter Annex campuses:

- renovate Building 1405, Muir S. Fairchild Research Information Center (MSFRIC) as a student learning common, consolidate PME student services, and repurpose archives for world-class student collaboration and learning;
- demolish Building 800, Gunter Annex Fitness Center, and construct a 66,000 gross square foot (gsf) (6,131.6 square meter [m^2]) fitness center in its location to support AU students, faculty, and their families;

- demolish Building 811, Gunter Annex Commissary;
- demolish Building 1420, Army and Air Force Exchange Service (AAFES) and construct Academic Building A (up to three stories with 188,165 gsf [17,481.1 m^2) in its location;
- demolish Building 1450, former AU library;
- demolish a surface parking lot and construct Parking Garage A (four stories with 600 spaces) in its location;
- construct a 15,000 gsf (1,393.5 m^2) AAFES Exchange in an area currently used as a surface parking lot; and
- construct a 55,357 gsf (5,142.8 m^2) IOS building and 3,361 gsf (312.2 m^2) track and field house.

2.4.2.2 Phase 2: Consolidate Officer and Enlisted PME

Phase 2 would focus on consolidating PME missions, as well as enabling lodging growth to accommodate student housing goals and complete the student housing village. As part of Phase 2, the following would occur on the MAFB and Gunter Annex campuses:

- demolish Building 863, Youth Center;
- demolish Building 1429, Barnes Center;
- construct Outdoor Training Facilities and Indoor Cadet Physical Training Facility; demolish Facilities 310, 323, 324, and 326; and demolish Buildings 329, 331–334, 336–342, 350–358, 360, 370–376, and 451–455;
- construct a 4 acre (16,187.4 m^2) Parade Field and demolish Building 826, CCAF;
- construct Lodging Building A at MAFB and demolish Building 872, Visiting Officer's Quarters at Gunter Annex;
- construct a 20,000 gsf (1,858.1 m^2) Community Support Facility and demolish Butler Avenue buildings (Buildings 821, 825, 829, 833, 847, and 850) totaling 105,000 gsf (9,754.8 m^2);
- construct a 75,000 gsf (6,967.7 m^2) student services center;
- construct a 15,000 gsf (1,393.5 m^2) cadet chapel;
- construct Dormitory Complexes A and B (three stories each with a total of 270,000 gsf [25,083.8 m^2]) in an area currently used as an outdoor running track and field;
- construct a 250,000 gsf (23,225.8 m^2) dining facilities;
- construct Lodging Building A (two, four-story buildings; one building totaling 72,000 gsf [6,689.0 m^2] and the second building totaling 78,000 gsf [7,246.4 m^2]) in an area currently used as a surface parking lot;
- construct Parking Garage B (four stories with 840 spaces) in a grassy area.

2.4.2.3 Phase 3: AU Park and Green Space Modernization

Phase 3 would transform Heritage Park and Air Park, deliver key green/walking areas and modernize the AU road network, and promote a campus-like environment and feel. As part of Phase 3, the following would occur on the MAFB campus:

- construct a 2.3 acre (9,307.8 m^2) Heritage Park;
- construct a 0.6 acre (2,428.1 m^2) Gateway Monument Park;
- construct Sycamore Street Promenade, totaling 1,100 linear ft (335.3 m);
- renovate 23 acres (0.1 km^2) of Circle Park/Library Plaza;
- improve 5,200 linear feet (ft) (1,585.0 meters [m]) of the Chennault Circle streetscape;
- improve 2,400 linear ft (731.5 m) of the Maxwell Boulevard streetscape;
- improve 12 acres (0.1 km^2) of Air Park;
- improve 12,000 linear ft (3,657.6 m) of Riverfront Trail; and
- improve 10,000 linear ft (3,048 m) of stormwater landscape corridor.

2.4.2.4 Phase 4: AU Transformation Capstone

Phase 4 would create a modern 500-person conference and collaboration center; transform AU with a distance learning facility, collaboration hub, and dining facilities; construct a new Lemay facility for professional continuing education; and construct a new AU Visitor Center and Enlisted Heritage complex. As part of Phase 4, the following would occur on the MAFB campus:

- demolish Building 518, Visitor Center and construct a 76,000 gsf (7,060.6 m^2) consolidated Enlisted Heritage Hall and Visitor Center in its place;
- construct Academic Building B (up to four stories with 170,000 gsf [15,793.5 m^2]) in previous location of Building 1429, Barnes Center;
- construct Lodging Buildings B (five stories with 58,000 gsf [5,388.4 m^2]) and C (up to four stories with 130,000 gsf [12,077.4 m^2]) with a total capacity of 500 rooms in an area currently used as a surface parking lot and grassy area;
- construct a 72,000 gsf (6,689.0 m^2) Conference Center / Distinguished Visitors Quarters Facility in an area currently used as a surface parking lot; and
- construct a 4,700 gsf (436.6 m^2) addition onto Building 1402, Air Command and Staff College; and
- construct Parking Garage C (four stories with 500 spaces) in an area currently used as a surface parking lot.

2.4.2.5 Phase 0: Facility Sustainment, Restoration, and Modernization

The Air Force's Facility Sustainment, Restoration, and Modernization is a centralized program that occurs annually. This program is managed through the Air Force Comprehensive Asset Management Plan and executed in accordance with the approved Installation Development Plan.

Although these construction projects are not included in the AU Campus Plan, these projects are considered related actions, are not expected to be categorically excluded, and are therefore included in the scope of this EA to ensure comprehensive analysis of all direct and indirect effects. Phase 0 construction projects included in this EA include the following:

- renovate Building 714, Civil Air Patrol Headquarters, to repair/replace deteriorated interior finishes, electrical, communication, fire protection, and plumbing systems;
- renovate Buildings 1401, Air War College, and 1487, OTS;
- renovate Building 1402, Air Command and Staff College;
- renovate Buildings 1403, 1405, 1406, 1408, 1486, OTS Dormitory; 1488, OTS Dormitory; 1489, OTS Dormitory; and 1491, OTS Dormitory;
- renovate Building 1404, Eaker Center;
- construct a 5,000 gsf (464.5 m^2) one-story addition to Buildings 1400 and 1400A (between wings of existing facility), LeMay Center, for Doctrine Development and Education;
- construct a 5,000 gsf (464.5 m^2) one-story addition to Building 1402, Air Command and Staff College, adjacent to the east end of the facility; and
- modernize and expand the Vigilant Warrior Training Site to include constructing a new medical center, classroom buildings, covered training facility, and latrine/storm shelter; renovating the dining facility; replacing the pavilion and huts; and expanding the existing obstacle course.

2.4.3 Alternative 2: Consolidate Air University Programs at MAFB

Alternative 2 meets the purpose of and need for the Proposed Action and satisfies the reasonable alternative screening factors presented in Section 2.2. As described in this section, shown in Figures 2-8 through 2-13, and summarized in Table 2-2, Alternative 2 includes four phases and related projects.

2.4.3.1 Phase 1: Eaker Center and IOS Modernization

Phase 1 would transform Eaker Center for leadership development and professional continuing education growth, as well as expand and modernize the IOS to meet growing international PME requirements. As part of Phase 1, the following would occur on the MAFB and Gunter Annex campuses:

- renovate Building 1405, MSFRIC as a student learning common, consolidate PME student services, and repurpose archives for world-class student collaboration and learning;

- demolish Building 800, Gunter Annex Fitness Center, and construct a 66,000 gross square foot (gsf) (6,131.6 m^2) fitness center in its location to support AU students, faculty, and their families;
- demolish Building 811, Gunter Annex Commissary;
- demolish Building 1420, Army and Air Force Exchange Service (AAFES) and construct Academic Building A (up to three stories with 188,165 gsf [17,481.1 m^2) in its location;
- demolish Building 1450, former AU library;
- construct a 15,000 gsf (1,393.5 m^2) AAFES Exchange in an area currently used as a surface parking lot; and
- construct an outdoor running track and field, and modernize Building 689, Maxwell Fitness Center.

2.4.3.2 Phase 2: Consolidate Officer and Enlisted PME

Phase 2 would focus on consolidating PME missions, as well as enabling lodging growth to accommodate student housing goals and complete the student housing village. As part of Phase 2, the following would occur on the MAFB campus:

- demolish Building 1429, Barnes Center;
- demolish a surface parking lot and construct Parking Garage A (four stories with 600 spaces) in its location;
- construct Academic Building C (four stories with 130,000 gsf [12,077.4 m^2]) in the location of former Building 1470, Visiting Officer Quarters;
- construct Academic Building B (up to four stories with 130,000 gsf [12,077.4 m^2]) in previous location of Building 1429, Barnes Center;
- construct Dormitory Complexes A and B (three stories each with a total of 270,000 gsf [25,083.8 m^2]) in an area currently used as an outdoor running track and field;
- construct Lodging Building A (two, four-story buildings; one building totaling 72,000 gsf [6,689.0 m^2] and the second building totaling 78,000 gsf [7,246.4 m^2]) in an area currently used as a surface parking lot;
- construct Parking Garage B (four stories with 840 spaces) in a grassy area; and
- construct Administrative Building (51,000 gsf [4,738.1 m^2]) in a grassy area.

2.4.3.3 Phase 3: AU Park and Green Space Modernization

Phase 3 would transform Air Park, deliver key green/walking areas and modernize AU road network, and promote a campus-like environment and feel. As part of Phase 3, the following would occur on the MAFB campus:

- construct a 0.6 acre (2,428.1 m^2) Gateway Monument Park;
- construct Sycamore Street Promenade, totaling 1,100 linear ft (335.3 m);
- renovate 23 acres (0.1 km^2) of Circle Park/Library Plaza;
- improve 5,200 linear feet (ft) (1,585.0 m) of the Chennault Circle streetscape;
- improve 2,400 linear ft (731.5 m) of the Maxwell Boulevard streetscape;
- improve 12 acres (0.1 km^2) of Air Park;
- improve 12,000 linear ft (3,657.6 m) of Riverfront Trail; and
- improve 10,000 linear ft (3,048 m) of stormwater landscape corridor.

2.4.3.4 Phase 4: AU Transformation Capstone

Phase 4 would create a modern 500-person conference and collaboration center; transform AU with a distance learning, collaboration hub, and dining facilities; and construct a new AU Visitor Center and Enlisted Heritage complex. As part of Phase 4, the following would occur on the MAFB campus:

- demolish Building 518, Visitor Center and construct a 76,000 gsf (7,060.6 m^2) consolidated Enlisted Heritage Hall and Visitor Center in its place;
- construct Lodging Buildings B (five stories with 58,000 gsf [5,388.4 m^2]) and C (up to four stories with 170,000 gsf [15,793.5 m^2]) with a total capacity of 500 rooms in an area currently used as a surface parking lot and grassy area;
- construct a 72,000 gsf (6,689.0 m^2) Conference Center / Distinguished Visitors Quarters Facility in an area currently used as a surface parking lot;
- construct Parking Garage C (four stories with 500 spaces) in an area currently used as a surface parking lot;
- construct a 4,700 gsf (436.6 m^2) addition onto Building 1402, Air Command and Staff College; and
- construct an 85,000 gsf (7,896.8 m^2) Historical Research Agency Facility in a grassy area.

2.4.3.5 Phase 0: Facility Sustainment, Restoration, and Modernization

The Air Force's Facility Sustainment, Restoration, and Modernization is a centralized program that occurs annually. This program is managed through the Air Force Comprehensive Asset Management Plan and executed in accordance with the approved Installation Development Plan.

Although these construction projects are not included in the AU Campus Plan, these projects are considered related actions, are not expected to be categorically excluded, and are therefore included in the scope of this EA to ensure comprehensive analysis of all direct and indirect effects. Phase 0 construction projects included in this EA include the following:

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- renovate Building 1402, Air Command and Staff College;
- renovate Buildings 1403, 1405, 1406, 1408, 1486, OTS Dormitory; 1488, OTS Dormitory; 1489, OTS Dormitory; and 1491, OTS Dormitory;
- renovate Building 1404, Eaker Center;
- construct a 5,000 gsf (464.5 m^2) one-story addition to Buildings 1400 and 1400A (between wings of an existing facility), LeMay Center, for Doctrine Development and Education;
- construct a 5,000 gsf (464.5 m^2) one-story addition to Building 1402, Air Command and Staff College, adjacent to the east end of the facility; and
- modernize and expand the Vigilant Warrior Training Site to include constructing a new medical center, classroom buildings, covered training facility, and latrine/storm shelter; renovating the dining facility; replacing the pavilion and huts; and expanding the existing obstacle course.

2.5 BEST MANAGEMENT PRACTICES INCLUDED IN THE PROPOSED ACTION

This section presents an overview of the best management practices (BMPs) incorporated into the Proposed Action. BMPs are existing policies, procedures, and measures the USAF would adopt to reduce the environmental impacts of designated activities, functions, or processes.

Although BMPs mitigate potential impacts by avoiding, minimizing, or reducing/eliminating impacts, BMPs are distinguished from other possible mitigation measures because BMPs are: (1) existing requirements for the Proposed Action; (2) ongoing, regularly occurring practices; or, (3) not unique to this Proposed Action. In other words, the BMPs identified in this document are inherently part of the Proposed Action and are not potential mitigation measures proposed as a function of the NEPA environmental review process for the Proposed Action.

Table 2-3 includes a list of BMPs. Mitigation measures, where applicable, are discussed separately in the appropriate chapters of this EA.

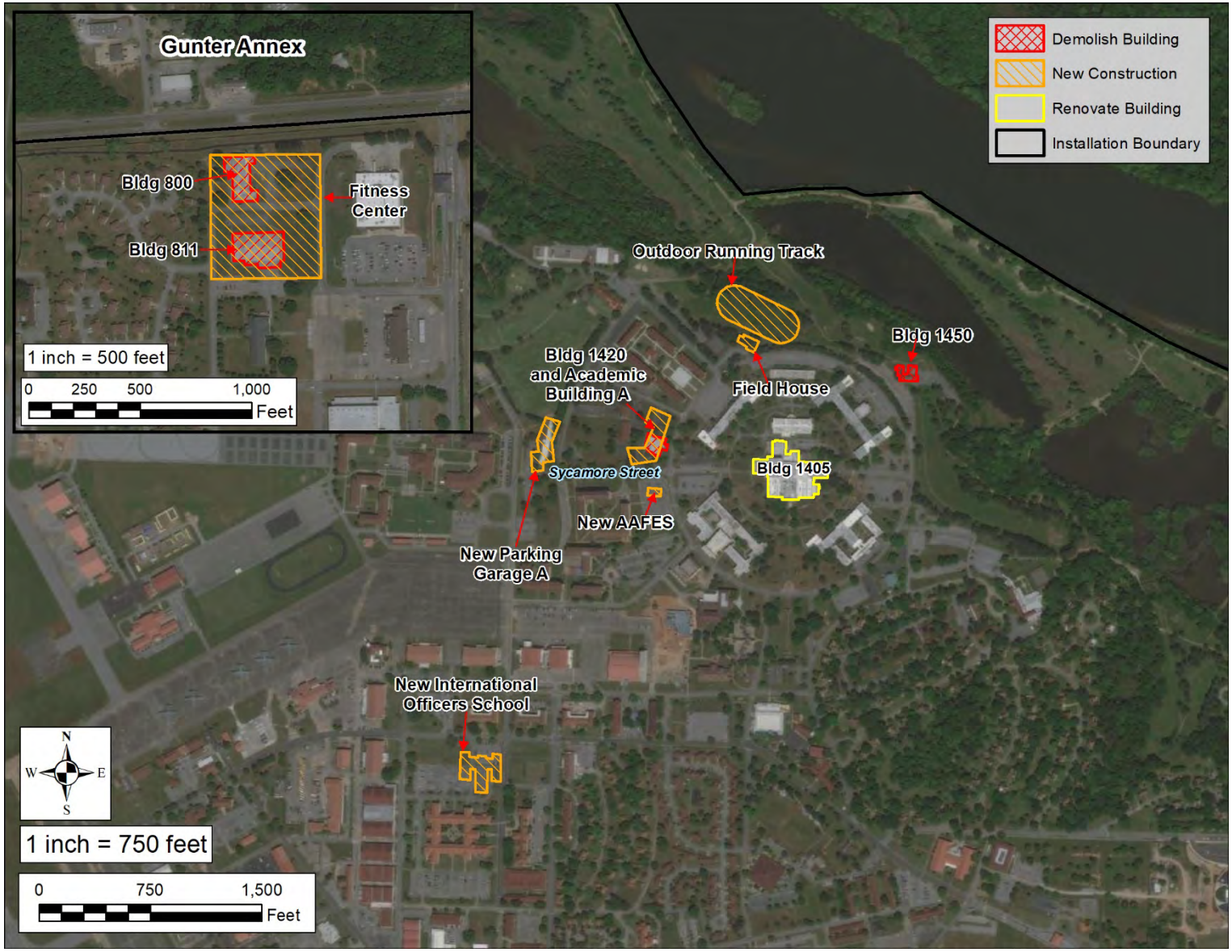

Figure 2-1. Alternative 1, Phase 1 Project Locations

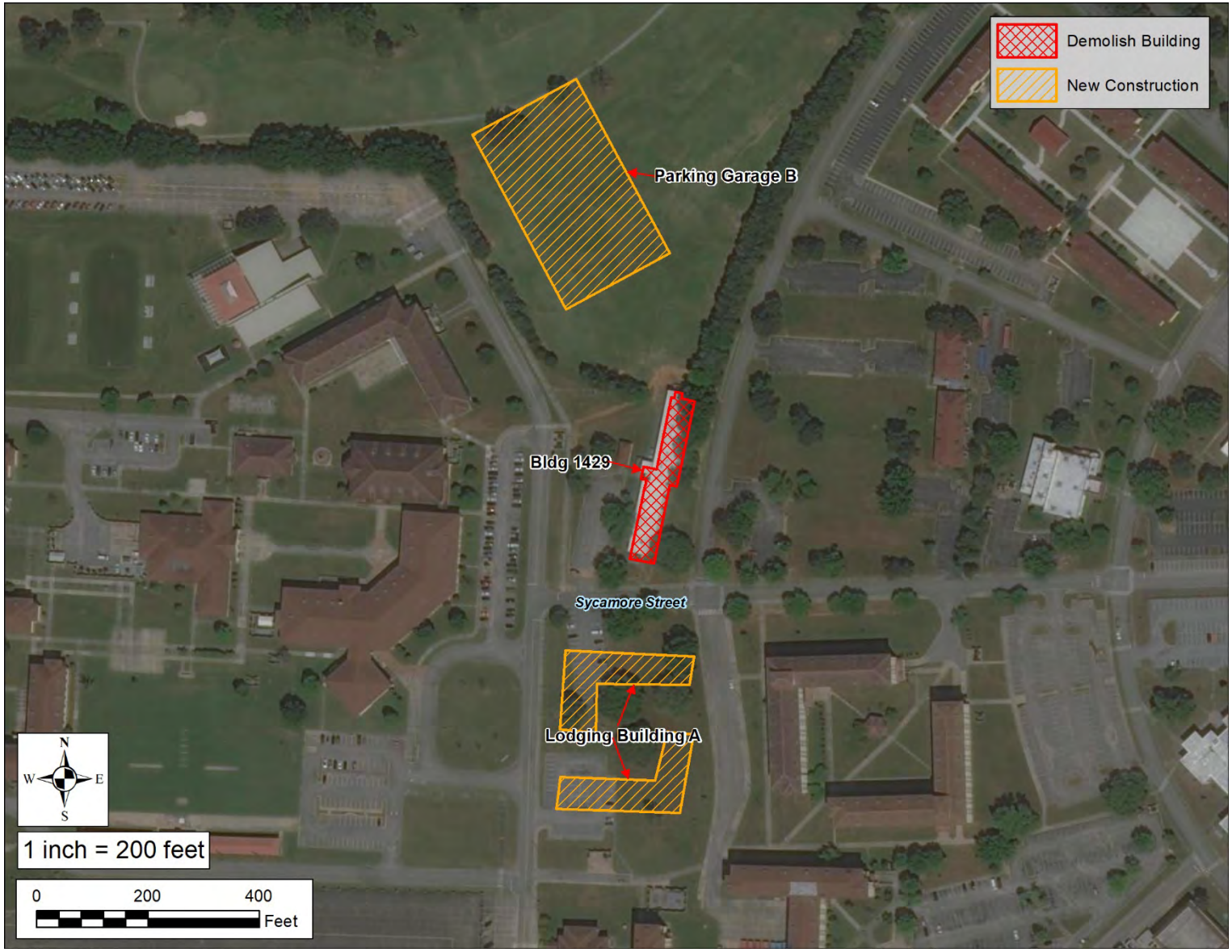

Figure 2-2. Alternative 1, Phase 2 Project Locations (MAFB)

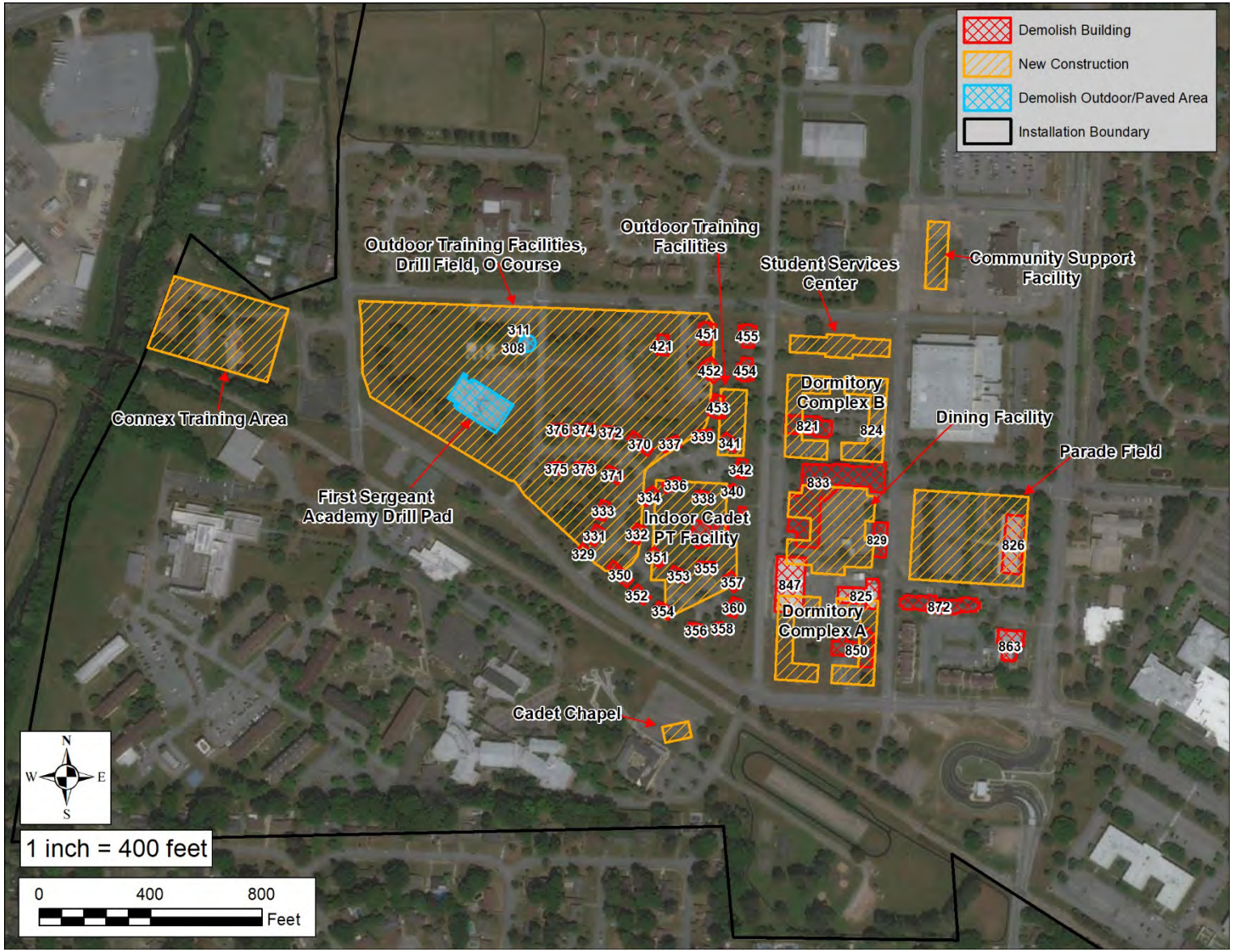

Figure 2-3. Alternative 1, Phase 2 Project Locations (Gunter Annex)

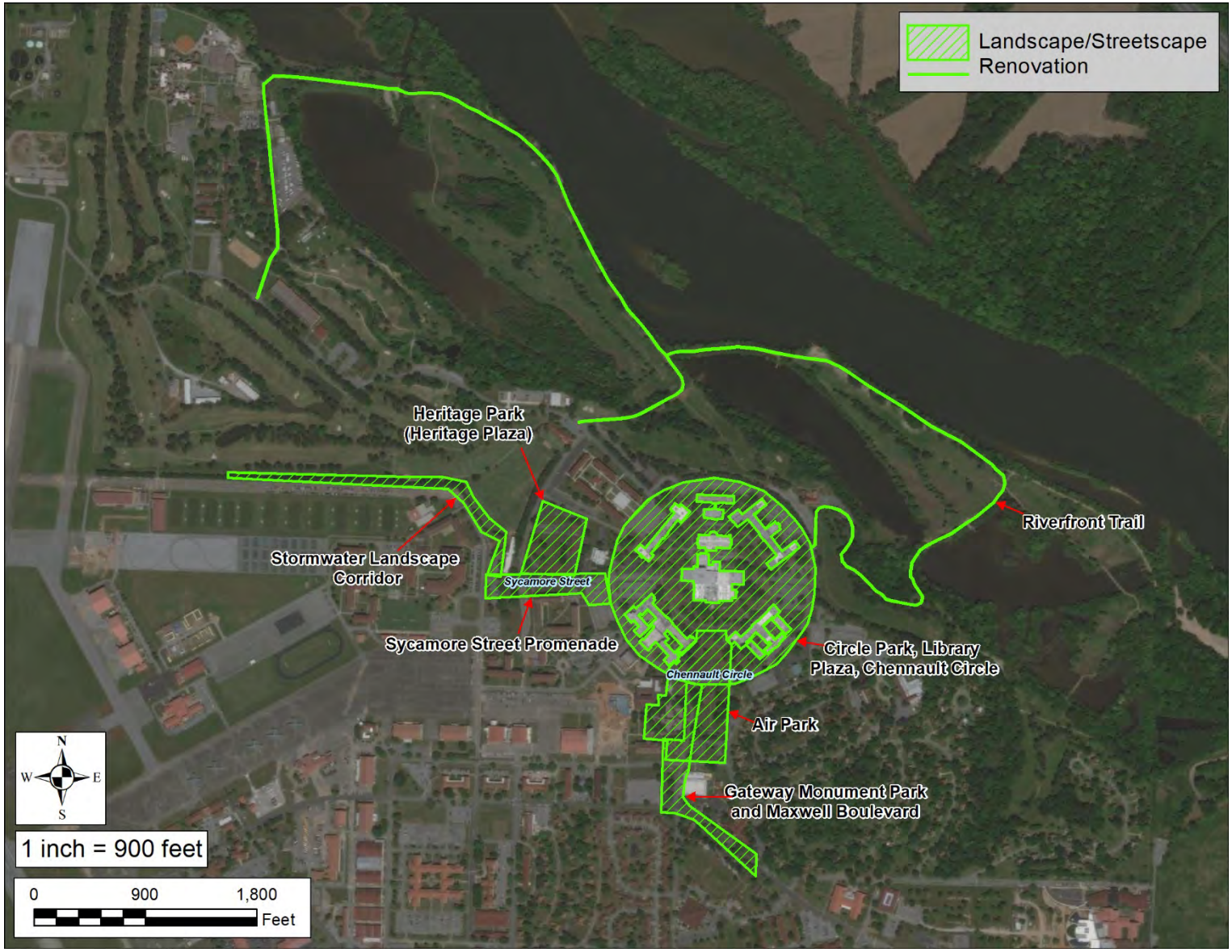

Figure 2-4. Alternative 1, Phase 3 Project Locations

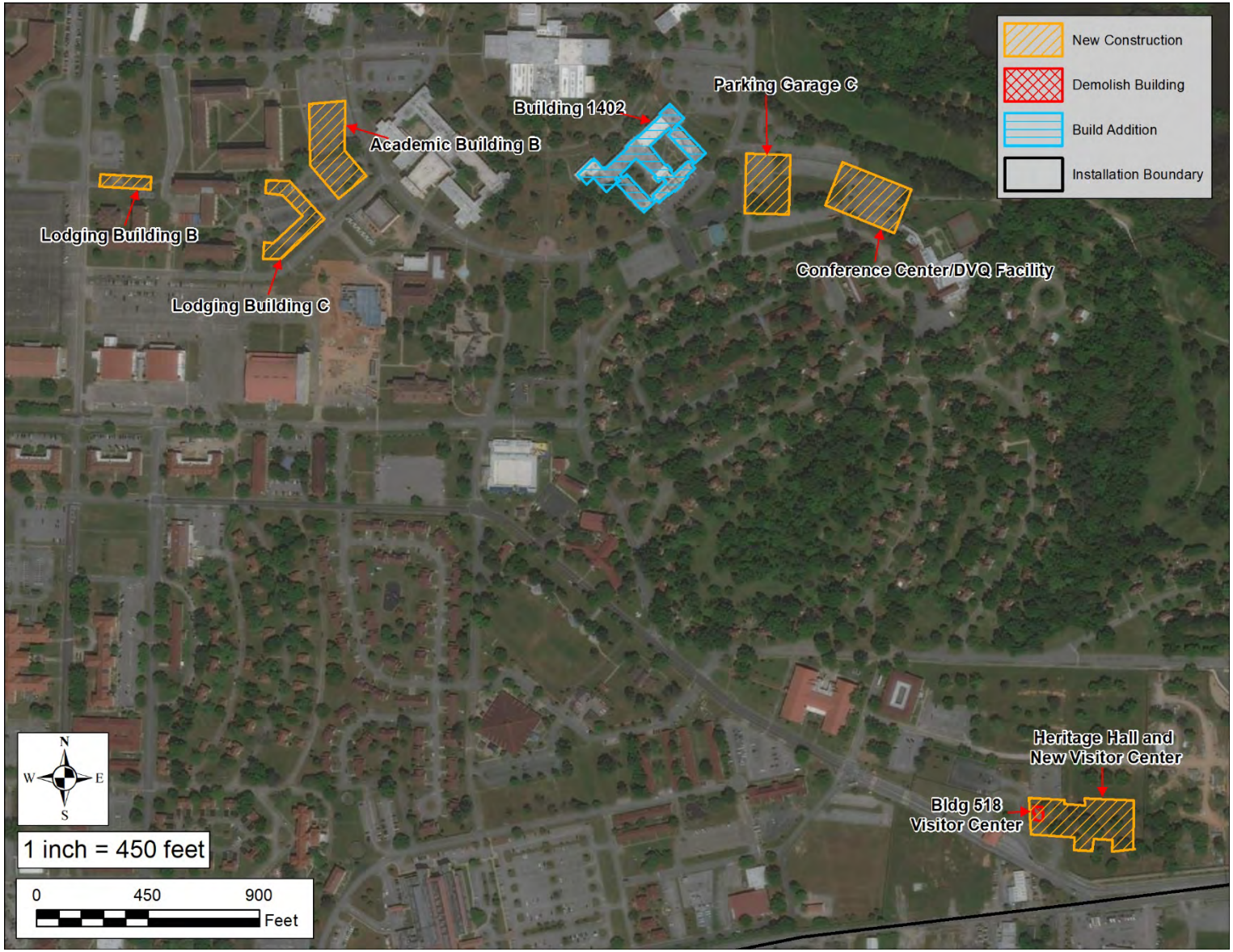

Figure 2-5. Alternative 1, Phase 4 Project Locations

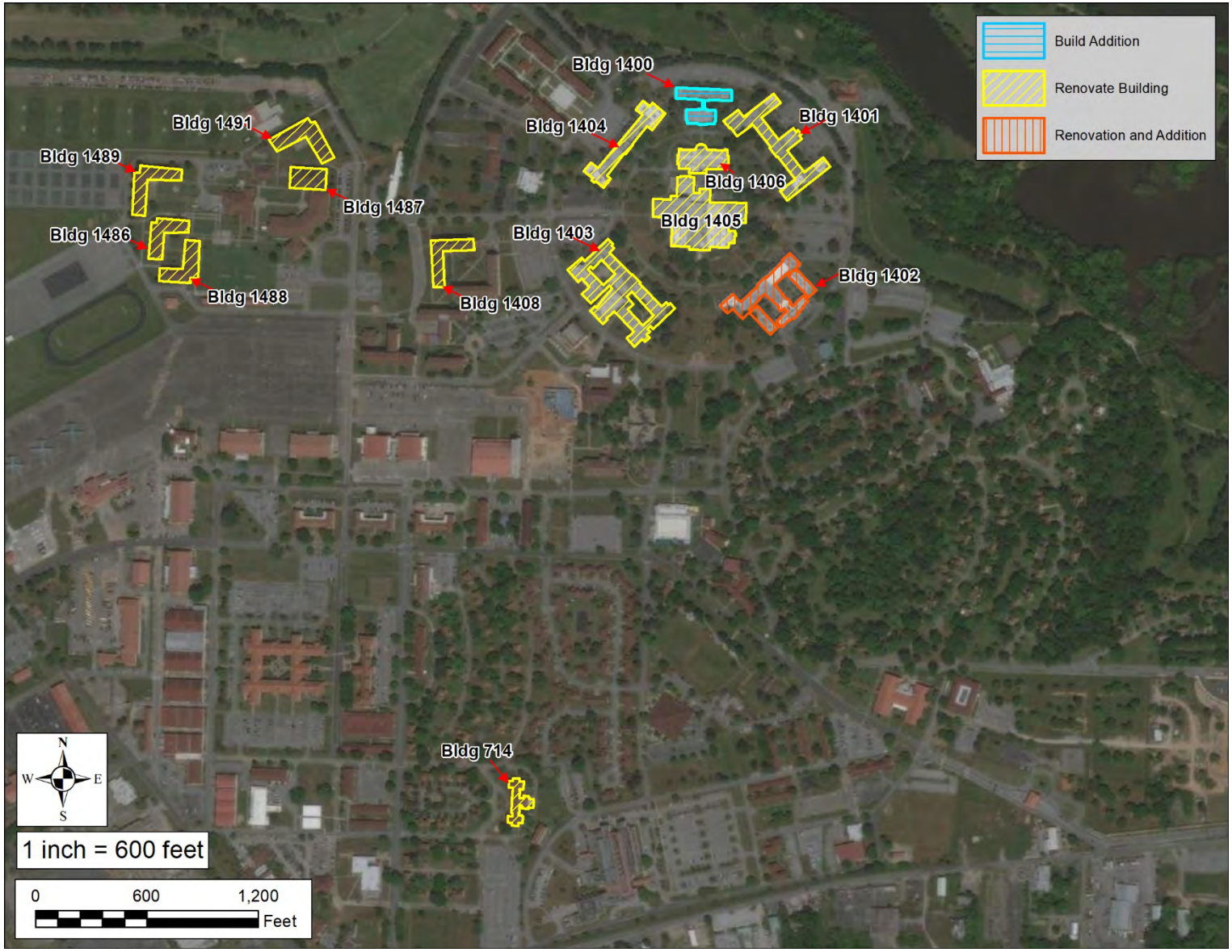

Figure 2-6. Alternative 1, Phase 0 Project Locations (MAFB)

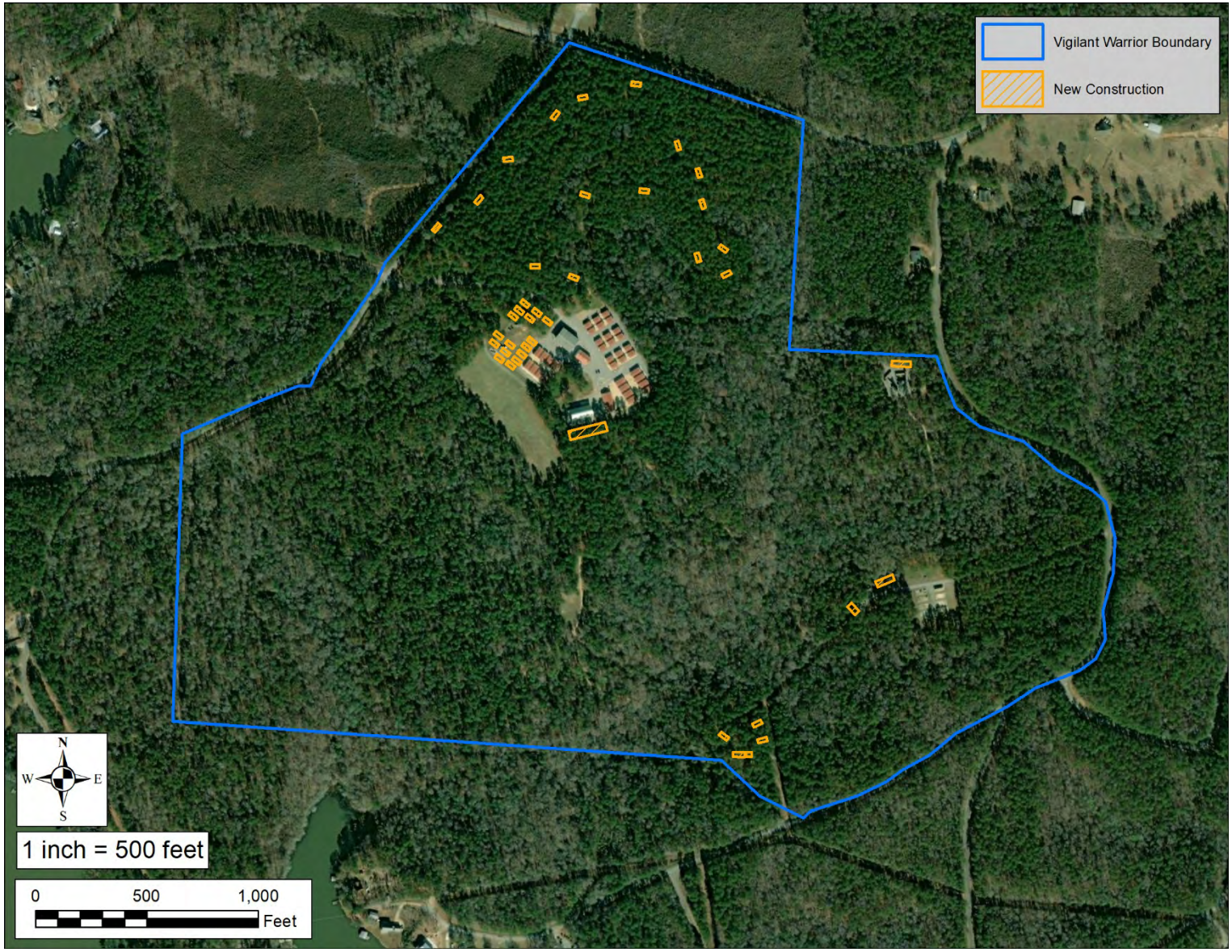

Figure 2-7. Alternative 1, Phase 0 Project Locations (Vigilant Warrior Complex)

Table 2-1. Summary of Phases for Alternative 1 – Relocate Barnes Center to MAFB and Holm Center to Gunter Annex

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Phase 1: Eaker Center and International Officer School Modernization								
Renovate Building 1405, MSFRIC	MAFB	1405				181,000		FY24–26
Construct Fitness Center; demolish Building 800, Gunter Annex Fitness Center; and demolish Building 811, Gunter Annex Commissary	Gunter Annex	800 811			66,000		55,000	FY24–26
Construct new AAFES and demolish Building 1420, AAFES	MAFB	1420			15,000		15,000	FY24–26
Construct Academic Building A and demolish Building 1450, former library	MAFB	1450			188,165		10,000	FY24–26
Construct Parking Garage A	MAFB				50,000			FY24–26
Construct IOS building, and track and field house	MAFB				58,718			FY24–26
Phase 1 Totals			**0**	**0**	**377,883**	**181,000**	**80,000**	
Phase 2: Consolidate Officer and Enlisted Professional Military Education								
Demolish Building 863, Youth Center	Gunter Annex	863					6,650	FY25–27
Construct Community Support Facility, and demolish Butler Avenue Buildings (821, 825, 829, 833, 847, and 850)	Gunter Annex	821 825 829 833 847 850			20,000		105,000	FY25–27
Construct Parade Field and demolish Building 826, CCAF	Gunter Annex	826		4.0			27,500	FY25–27
Construct Lodging Building A at MAFB and demolish Building 872 at Gunter Annex	MAFB and Gunter Annex	872			145,000		16,000	FY25–27
Construct Outdoor Training Facilities and Indoor Cadet Physical Training Facility; demolish Facilities 310, 323, 324, and 326; and demolish Buildings	Gunter Annex	Facilities 310 323 324		20.0	115,000		130,650	FY25–27

Table 2-1. Summary of Phases for Alternative 1 – Relocate Barnes Center to MAFB and Holm Center to Gunter Annex

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
329, 331–334, 336–342, 350–358, 360, 370–376, and 451–455		326 329 331–334 336–342 350–358 360 370–376 451–455						
Relocate surface parking, demolish parking lots, and demolish Building 1429, Barnes Center	MAFB	1429			330,000		230,000	FY25–27
Construct Student Services Center	Gunter Annex				75,000			FY25–27
Construct Cadet Chapel	Gunter Annex				15,000			FY25–27
Construct Dormitory Complex A and Dining Facility	Gunter Annex				310,000			FY25–27
Construct Dormitory Complex B	Gunter Annex				210,000			FY25–27
Construct Parking Garage B	MAFB				160,000			FY25–27
Phase 2 Totals			**0**	**24.0**	**1,385,000**	**0**	**515,800**	
Phase 3: Air University Park and Green Space Modernization								
Construct Sycamore Street Promenade, renovate Circle Park/Library Plaza, and improve Chennault Circle streetscape	MAFB		6,300	23.0				FY26–28
Construct Heritage Park	MAFB			2.3				FY26–28
Improve Air Park	MAFB			12.0				FY26–28
Construct Gateway Monument Park	MAFB			0.6				FY26–28
Improve Maxwell Boulevard Streetscape	MAFB		2,400					FY26–28
Improve/Implement Riverfront Trail and	MAFB		12,000					FY26–28

Table 2-1. Summary of Phases for Alternative 1 – Relocate Barnes Center to MAFB and Holm Center to Gunter Annex

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Improve Stormwater Landscape Corridor	MAFB		10,000					FY26–28
Phase 3 Totals			**30,700**	**37.9**	**0**	**0**	**0**	
Phase 4: Air University Transformation Capstone								
Construct Lodging Building B	MAFB				58,000			FY27–29
Construct Academic Building B	MAFB				170,000			FY27–29
Construct Conference Center / Distinguished Visitors Quarters Facility	MAFB				72,000			FY27–29
Construct Parking Garage C	MAFB				160,000			FY27–29
Construct Lodging Building C	MAFB				130,000			FY27–29
Construct Enlisted Heritage Hall; construct new Visitor Center; and demolish Building 518, Visitor Center	MAFB	518			76,000		15,000	FY27–29
Construct addition onto Building 1402	MAFB	1402			4,700			FY27–29
Phase 4 Totals			**0**	**0**	**670,700**	**0**	**15,000**	
Phase 0: Facility Sustainment, Restoration, and Modernization								
Renovate Buildings 1403, 1405, 1406, 1408, 1486, 1488, 1489, and 1491	MAFB	1403 1405 1406 1408 1486 1488 1489 1491				762,102		FY23
Renovate Buildings 1401, Air War College and 1487, OTS	MAFB	1401 1487				221,626		FY23
Renovate Building 1402, Air Command and Staff College	MAFB	1402				110,986		FY24
Renovate Building 1404, Eaker Center	MAFB	1404				59,573		FY25
Construct additions to Buildings 1400 and 1402	MAFB	1400 1402			10,000			FY26

Table 2-1. Summary of Phases for Alternative 1 – Relocate Barnes Center to MAFB and Holm Center to Gunter Annex

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Renovate Building 714, Civil Air Patrol Headquarters	MAFB	714				45,861		FY26
Modernize and expand Vigilant Warrior Training Site	VWTS				39,485	4,550	4,430	
Phase 0 Totals			**0**	**0**	**49,485**	**1,204,698**	**4,430**	
Grand Totals – All Phases	**MAFB and Gunter Annex**		**30,700**	**61.9**	**2,478,068**	**1,385,698**	**615,230**	**FY23–29**

Notes: AAFES = Army and Air Force Exchange Service; CCAF = Community College of the Air Force; IOS = International Officer School; MAFB = Maxwell Air Force Base; MSFRIC = Muir S. Fairchild Research Information Center; OTS = Officer Training School; and VWTS = Vigilant Warrior Training Site

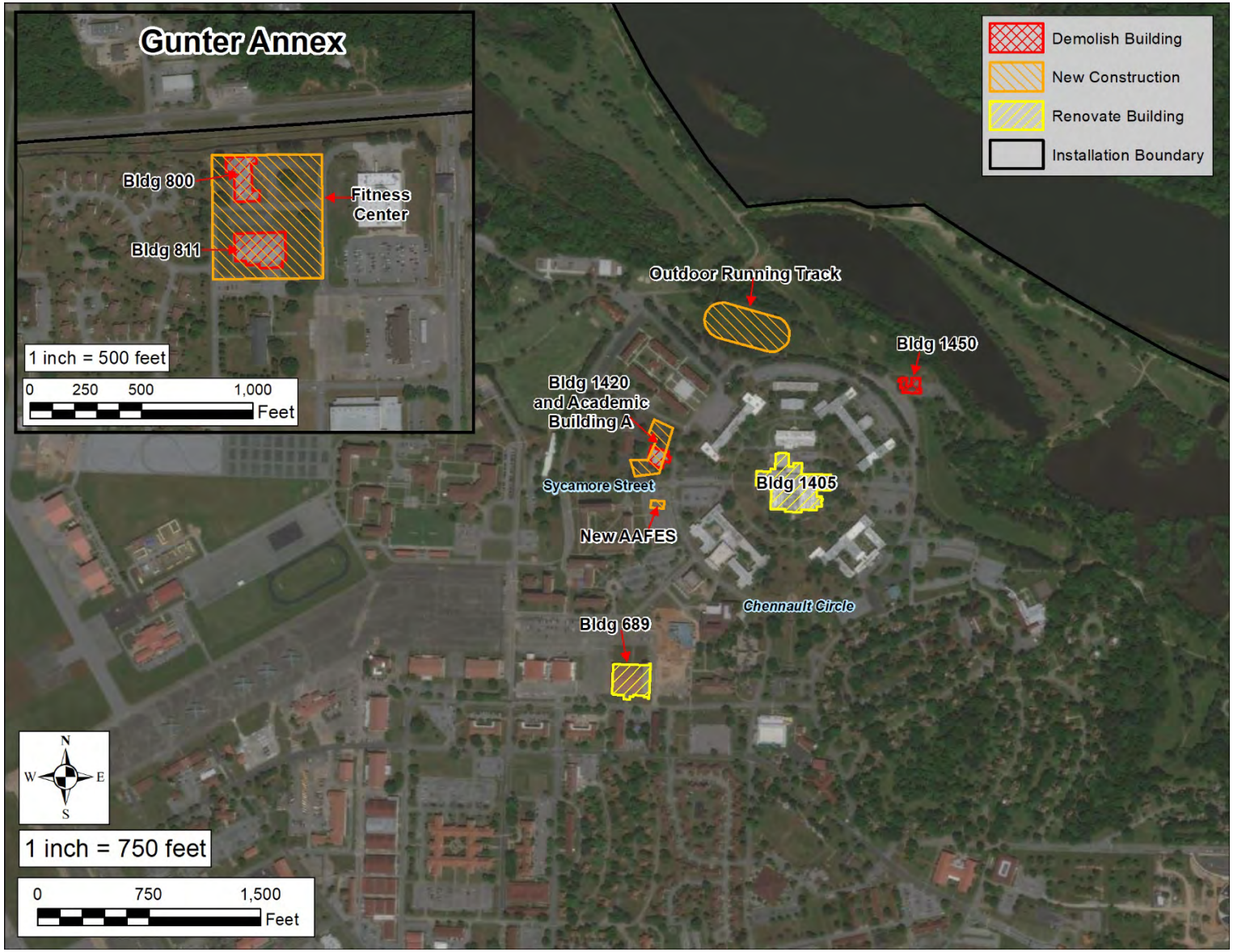

Figure 2-8. Alternative 2, Phase 1 Project Locations

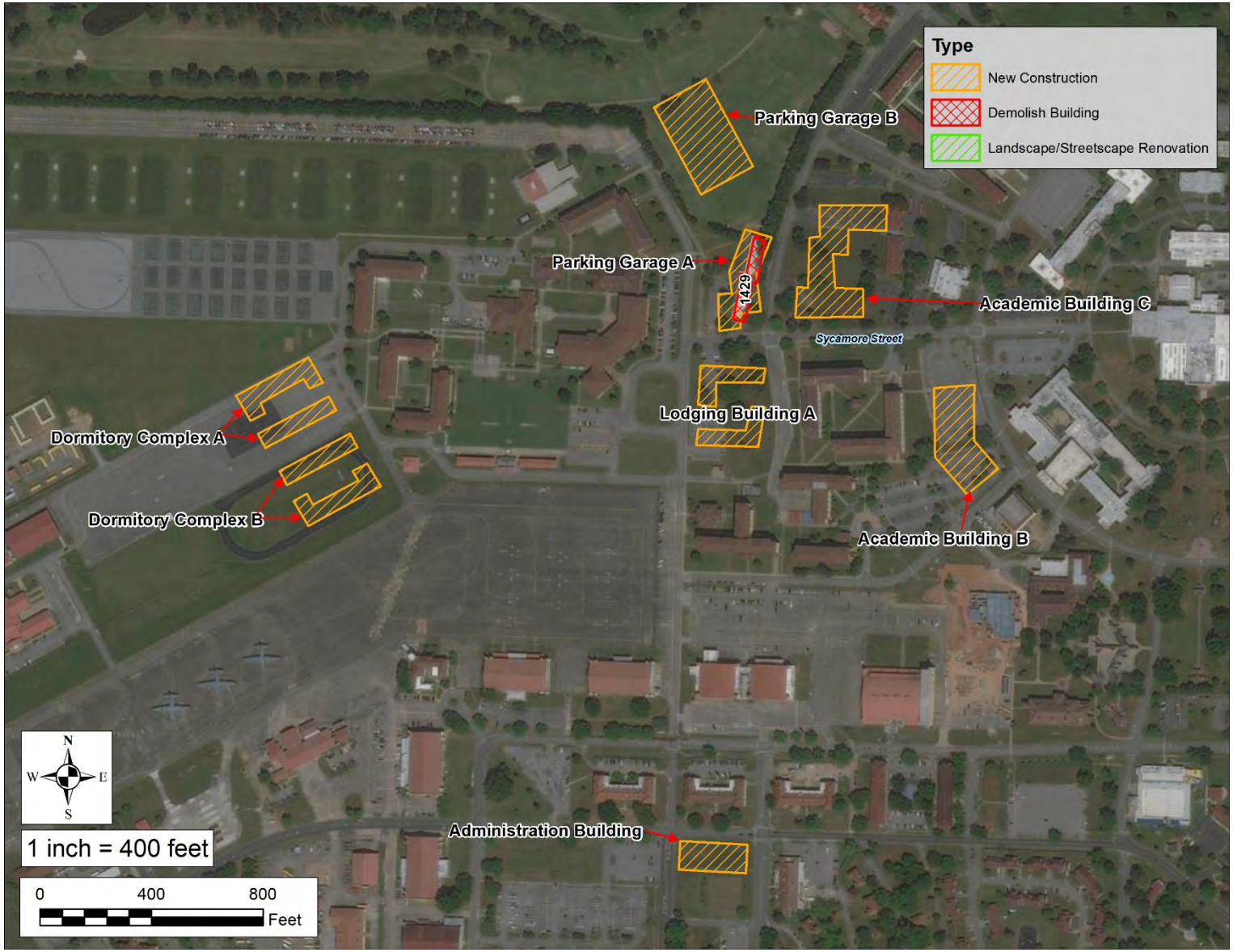

Figure 2-9. Alternative 2, Phase 2 Project Locations

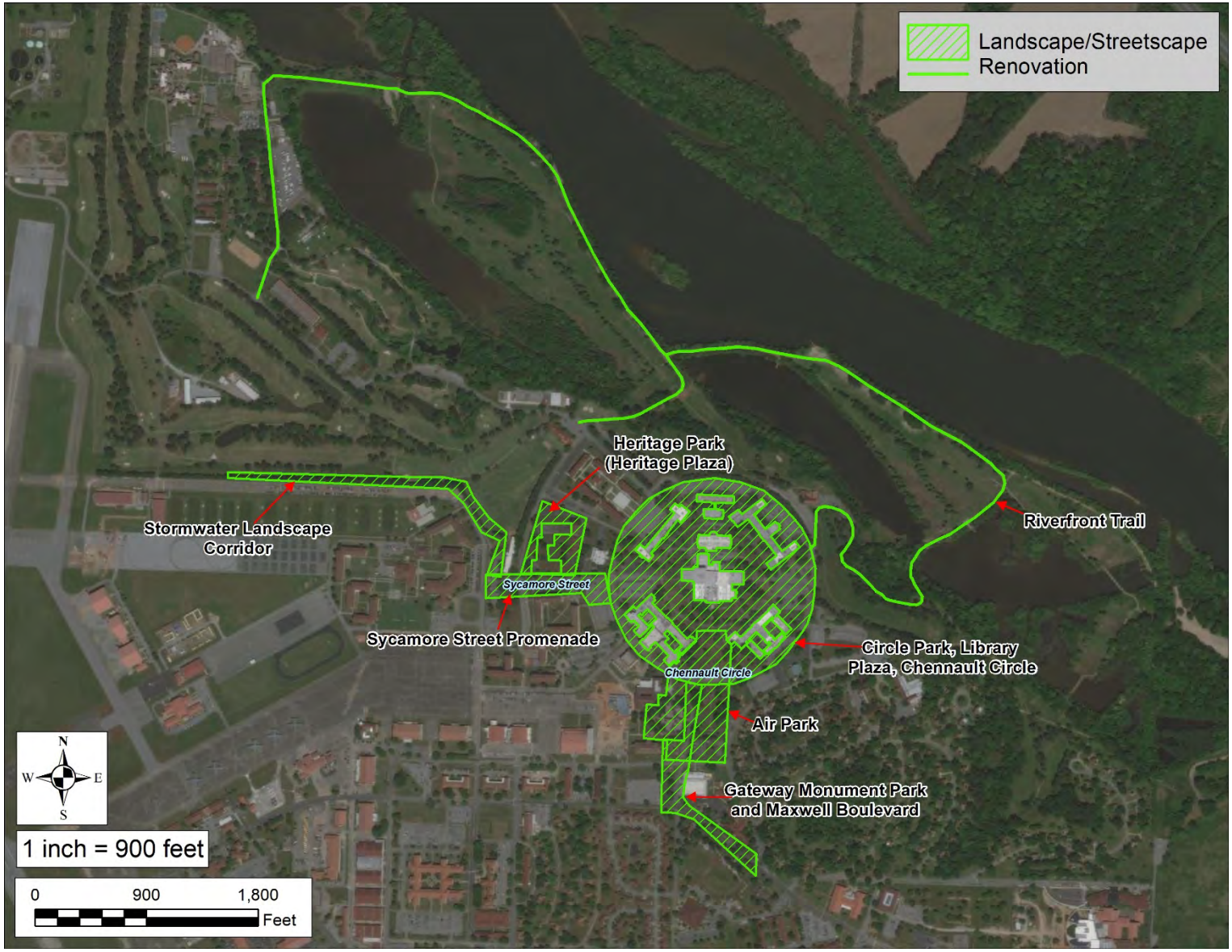

Figure 2-10. Alternative 2, Phase 3 Project Locations

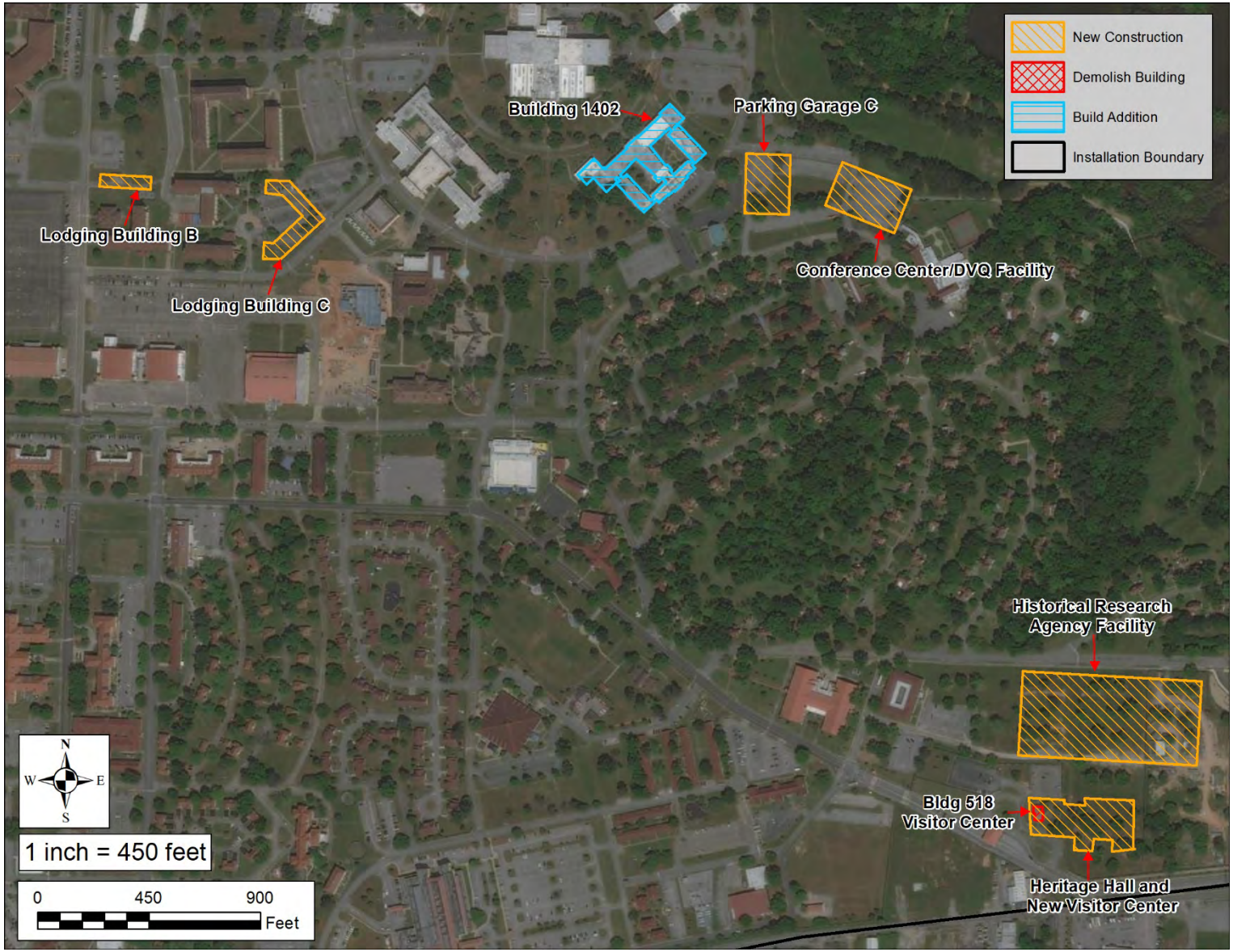

Figure 2-11. Alternative 2, Phase 4 Project Locations

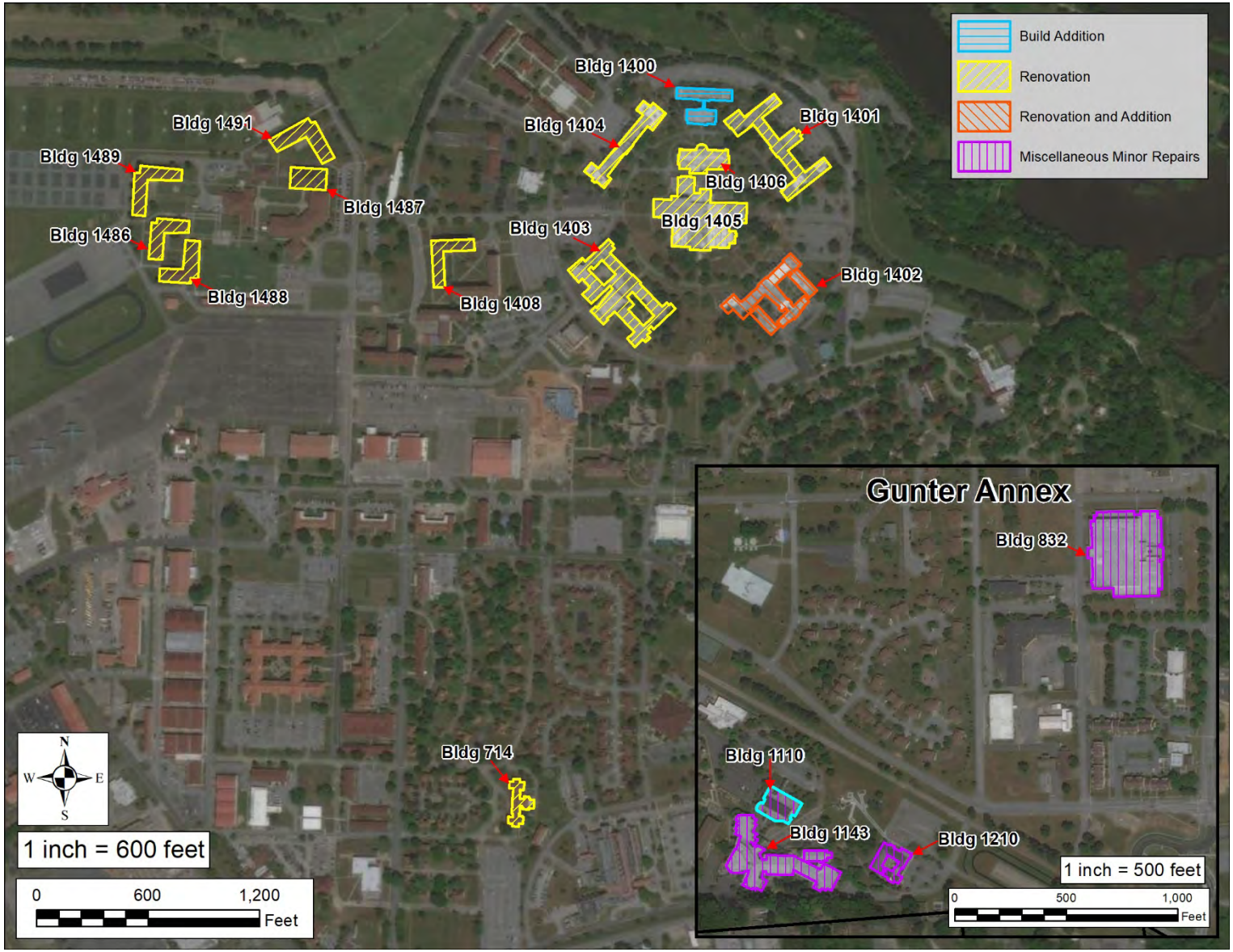

Figure 2-12. Alternative 2, Phase 0 Project Locations (MAFB and Gunter Annex)

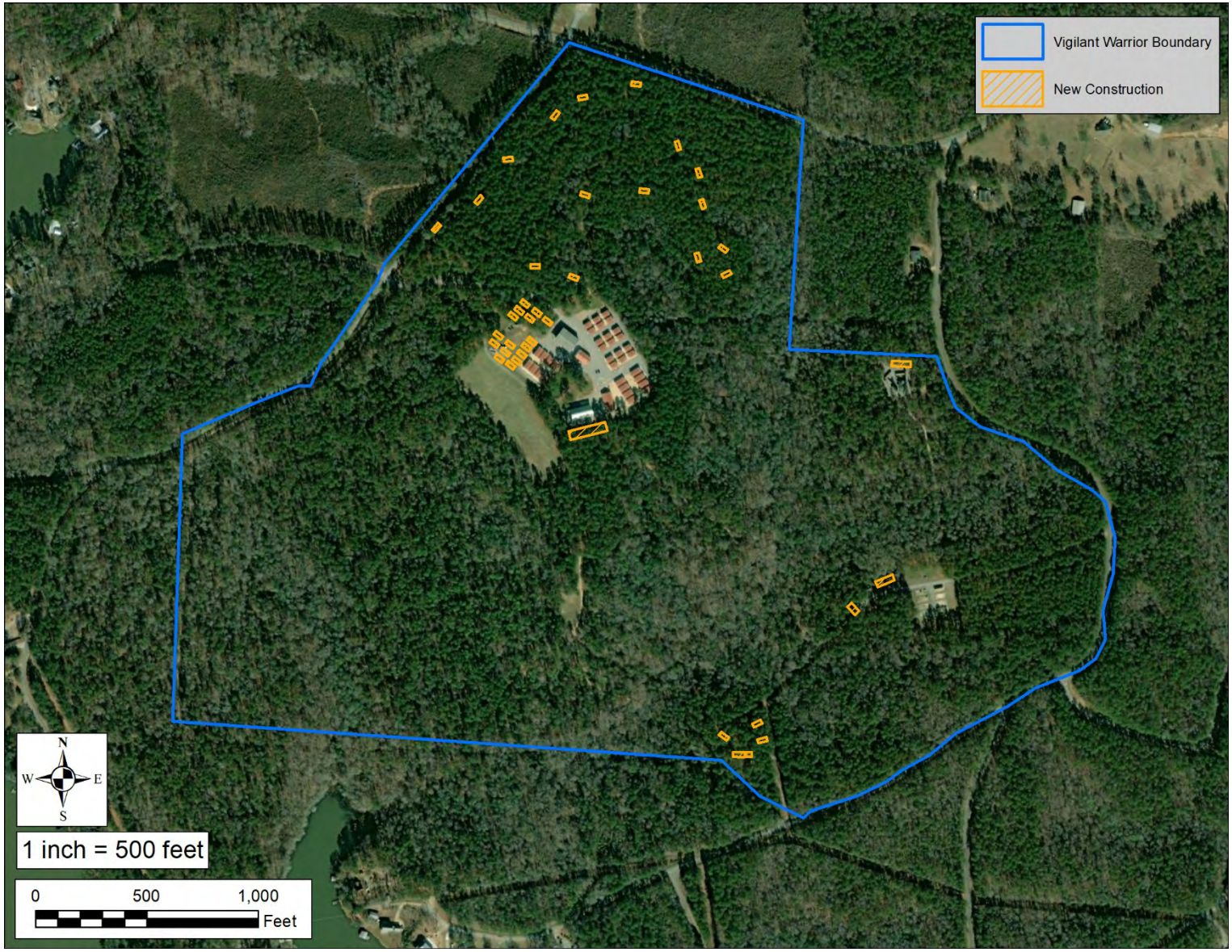

Figure 2-13. Alternative 2, Phase 0 Project Locations (Vigilant Warrior Complex)

Table 2-2. Summary of Phases for Alternative 2 – Consolidate Air University Programs at MAFB

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Phase 1: Eaker Center and International Officer School Modernization								
Renovate Building 1405, MSFRIC	MAFB	1405				181,000		FY24–26
Construct Academic Building A and demolish Building 1450, former library	MAFB	1450			188,165		10,000	FY24–26
Construct new AAFES and demolish Building 1420, AAFES	MAFB	1420			15,000		15,000	FY24–26
Construct Outdoor Running Track and Field and modernize Building 689, Maxwell Fitness Facility	MAFB	689		2.9		53,190		FY24–26
Construct Fitness Center; demolish Building 811, Commissary; and demolish Building 800, Gunter Annex Fitness Center	Gunter Annex	800 811			66,000		55,000	FY24–26
Phase 1 Totals			**0**	**2.9**	**269,165**	**234,190**	**80,000**	
Phase 2: Consolidate Officer and Enlisted Professional Military Education								
Construct Academic Building B, construct Parking Garage A, relocate surface parking; demolish parking lots; and demolish Building 1429, Barnes Center	MAFB	1429			330,000		230,000	FY25–27
Construct Dormitory Complex A	MAFB				145,000		16,000	FY25–27
Construct Dormitory Complex B	MAFB				125,000			FY25–27
Construct Academic Building C, Heritage Plaza, and Parking Garage B	MAFB				415,000		26,000	FY25–27
Construct Lodging Building A	MAFB				145,000			FY25–27
Construct Administrative Building	MAFB				51,000			FY25–27
Phase 2 Totals			**0**	**0**	**1,211,000**	**0**	**272,000**	
Phase 3: Air University Park and Green Space Modernization								
Construct Sycamore Street Promenade, renovate Circle Park/Library Plaza, and improve Chennault Circle streetscape	MAFB		6,300	23.0				FY24–26

Table 2-2. Summary of Phases for Alternative 2 – Consolidate Air University Programs at MAFB

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Construct Gateway Monument Park	MAFB			0.6				FY26–28
Improve Maxwell Boulevard streetscape	MAFB		2,400					FY26–28
Improve Air Park	MAFB			12.0				FY26–28
Improve/Enhance Riverfront Trail	MAFB		12,000					FY26–28
Improve Stormwater Landscape Corridor	MAFB		10,000					FY26–28
Phase 3 Totals			**30,700**	**35.6**	**0**	**0**	**0**	
Phase 4: Air University Transformation Capstone								
Construct Enlisted Heritage Hall, construct new Visitor Center, and demolish Building 518, Visitor Center	MAFB	518			76,000		15,000	FY27–29
Construct Lodging Building B	MAFB				58,000			FY27–29
Construct Conference Center / Distinguished Visitors Quarters Facility	MAFB				72,000			FY27–29
Construct Parking Garage C	MAFB				160,000			FY27–29
Construct Lodging Building C	MAFB				170,000			FY27–29
Construct Historical Research Agency Facility	MAFB				85,000			FY24–26
Construct addition onto Building 1402	MAFB	1402			4,700			FY24–26
Phase 4 Totals			**0**	**0**	**625,700**	**0**	**15,000**	
Phase 0: Facility Sustainment, Restoration, and Modernization								
Renovate Buildings 1403, 1405, 1406, 1408, 1486, 1488, 1489, and 1491)	MAFB	1403 1405 1406 1408 1486 1488 1489 1491				762,102		FY23

Table 2-2. Summary of Phases for Alternative 2 – Consolidate Air University Programs at MAFB

Phase	*Affected Campus*	*Affected Existing Building*	*Streets (linear feet)*	*Landscape (acres)*	*Constructed (gross square feet)*	*Renovated (gross square feet)*	*Demolished (gross square feet)*	*Anticipated Timeline*
Renovate Buildings 1401, Air War College, and 1487, OTS	MAFB	1401 1487				221,626		FY23
Renovate Building 1402, Air Command and Staff College	MAFB	1402				110,986		FY24
Renovate Building 1404, Eaker Center	MAFB	1404				59,573		FY25
Construct additions to Buildings 1400 and 1402	MAFB	1400 1402			10,000			FY26
Renovate Building 714, Civil Air Patrol Headquarters	MAFB	714				45,861		FY26
Modernize and expand Vigilant Warrior Training Site	VWTS				39,485	4,550	4,430	
Phase 0 Totals			**0**	**0**	**49,485**	**1,204,698**	**4,430**	
Grand Totals – All Phases	**MAFB and Gunter Annex**		**30,700**	**38.5**	**2,155,350**	**1,438,888**	**371,430**	**FY23–29**

Notes: AAFES = Army and Air Force Exchange Service; MSFRIC = Muir S. Fairchild Research Information Center; OTS = Officer Training School; and VWTS = Vigilant Warrior Training Site

Table 2-3. Summary of Best Management Practices Included in the Proposed Action

BMP	*Description*	*Impacts Reduced/Avoided*
Erosion and Sediment Control Plan	Identifies how the contractor will implement a range of best management practices to control erosion during construction to eliminate and/or minimize nonpoint source pollution in surface waters due to sediment to include the following: • Exposed soil protected from erosion • Use of silt-containment barriers • Re-vegetate areas as soon as possible after construction • Minimize construction activities during inclement weather • Cover exposed soils under construction during inclement weather	Reduces nonpoint source pollution.
Stormwater Management Plan	Identifies how the contractor will implement procedures and practices to reduce discharge of pollutants to storm drainage systems.	Reduces stormwater pollution via prevention measures.
Stormwater Pollution Prevention Plan for Construction Activities	Identifies how the contractor will implement procedures and practices to ensure compliance with the installation's stormwater permit during construction activities.	Reduces stormwater pollution during construction activities via pollution prevention measures.
Hazardous Materials Management Plan	Identifies how the contractor will safely transport, store, and dispose of hazardous materials. In addition, the plan will describe how spills will be controlled, personnel will be trained, and equipment maintained.	Reduces potential impacts from hazardous materials.
Hazardous Waste Management Plan	Identifies how the contractor will minimize generation of hazardous waste, including asbestos-containing materials, lead-based paint, polychlorinated biphenyls, and mercury-containing light bulbs; control any spills; train personnel; and transport, store, use, handle, and dispose of hazardous waste.	Reduces and minimizes generation of hazardous waste.
Spill Prevention Control and Countermeasures Plan	Identifies how the contractor will protect water bodies; minimize risks of spills, leaks, and releases; respond to spills, leaks, or releases; and minimize risk of human exposure to contaminated liquid media.	Reduces and minimizes impacts from liquid products regulated under 40 CFR Part 112, Oil Pollution Prevention.
Noise Abatement	Requires the contractor to ensure all equipment has the manufacturers recommended noise abatement measures intact, inspect construction equipment, turn off idling equipment when not in use, and work during normal business hours.	Reduces impacts from noise exposure.

Table 2-3. Summary of Best Management Practices Included in the Proposed Action

BMP	*Description*	*Impacts Reduced/Avoided*
Health and Safety Plan	29 CFR Part1910, *Occupational Safety and Health Standards*, and 29 CFR Part 1926, *Safety and Health Regulations for Construction*, requires employees and their supervisors be trained in the specific hazards and control measures associated with their assigned tasks. The contractor will be required to prepare and implement a site specific health and safety plan to document compliance with Occupational Safety and Health Administration regulations to include, but not limited to, management commitment and employee involvement, site characterization and job hazard analysis, hazard prevention and control, safety and health training, personal protective equipment, medical surveillance, exposure monitoring, emergency response, and recordkeeping and program evaluation. In addition to site-specific information, the job hazard analysis will include items related to construction-related noise, asbestos-containing materials, lead-based paint, polychlorinated biphenyls, and mercury-containing light bulbs.	Reduces and minimizes impacts to health and safety.
Air Quality	Requires the contractor to inspect and maintain equipment and use new equipment, when practicable, that meets the most stringent applicable federal air quality standards.	Reduces impacts to air quality.
Contaminated Sites	There is TCE and PCE contamination in groundwater near the southern edge of MAFB at sites SS-004 (Operable Unit 01, basewide groundwater) and SS-008. In 2006, TCE was detected in both the surficial aquifer and the Eutaw aquifer at SS-004 near the MAFB Kelly Street gate. Further, a VOC groundwater plume is monitored annually in the vicinity of the plume. If determined to be required during the engineering design phases of the Proposed Action, vapor intrusion mitigation methods would be employed prior to construction to prevent the movement of chemical vapors into the newly constructed buildings. Additionally, it is recommended that annual data be evaluated to assess the effectiveness of the vapor intrusion mitigation. Portions of Gunter Annex, as depicted in Figure 2-3, are within designated ERP sites (ST001, SS001, and SS005) that have Land Use Controls restrictions in place to reduce risks to human health and the environment. If determined to be required during the engineering design phases of the Proposed Action, vapor intrusion mitigation methods would be employed prior to construction to prevent the movement of chemical vapors into the newly constructed buildings. In addition, if determined to be required during the engineering design phases of the Proposed Action, a soil management plan would be prepared to address dig restrictions or other required actions if activities would disturb the soil cover.	Prevent accumulation of chemical vapors in the installation buildings.

Source: Bechtel 2006.

Notes: CFR = Code of Federal Regulations; ERP = Environmental Restoration Program; LUC = Land Use Controls; MAFB = Maxwell Air Force Base; PCE = perchloroethylene; TCE = trichloroethylene; and VOC – volatile organic compounds.

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3.0 AFFECTED ENVIRONMENT

3.1 SCOPE OF THE ANALYSIS

This chapter describes the current conditions of the environmental resources, either man-made or natural, that could potentially be affected by the Proposed Action.

Consistent with CEQ's July 16, 2020, Final Rule (40 CFR Sections 1501.5 and 1508.1) and 32 CFR Part 989, EAs should be concise and support a determination of whether to prepare a FONSI or an Environmental Impact Statement. Based on the scope of the Proposed Action, issues with minimal or no impacts were identified through a preliminary screening process. In reaching this determination, consideration of short- and long-term effects, beneficial and adverse effects, effects on public health and safety, and effects that would violate laws protecting the environment were considered. Resources not analyzed in this EA because their potential impacts are considered to be less than significant and would not result in a decision to prepare an Environmental Impact Statement include the following:

- Air Installation Compatible Use Zone, Land Use, and Noise: The Proposed Action would not result in a change to land use or aircraft operations. Short-term noise would occur during construction; however, the best management practices listed in Table 2-3 would be used to reduce impacts from noise exposure. Therefore, there would be no effect to Air Installation Compatible Uses Zone and land use, and negligible impact to noise.
- Safety and Occupational Health: As indicated in Table 2-3, contractors would be required to prepare and adhere to site specific health and safety plans in compliance with Occupational Safety and Health Administration regulations. Therefore, negligible impacts to safety and occupational health are anticipated.
- Hazardous Materials, Hazardous Waste, and Contaminated Sites: The best management practices listed in Table 2-3 would reduce impacts associated with hazardous materials and/or waste. In addition, contractors would be required to provide documentation indicating how hazardous materials would be safely transported, stored, and disposed of and how the contractors would minimize the generation of hazardous waste. In addition, the contractor would take actions to minimize impacts from liquid products that could enter water bodies or contaminate soils. With regards to contamination at MAFB and Gunter Annex, the best management practices identified in 2-3 would be employed as part of the engineering design phase if deemed necessary. Therefore, no significant impacts to hazardous materials, hazardous waste, or contaminated sites would occur.
- Soils, Geologic Resources, and Topography: There would be long-term beneficial impacts from improved stormwater drainage which would address ponding in select areas. No changes to geologic resources or topography would occur. The best management practices listed in Table 2-3 would control runoff and prevent erosion during construction activities. No significant impacts to soils, geologic resources, or topographic resources would occur.

- Socioeconomic Resources: Local, short-term minor beneficial impacts to socioeconomics are anticipated as a result of construction; however, no migration to the area is anticipated as the construction labor and materials would either be procured locally or the regional area would likely absorb the temporary increased demand for jobs and materials. No long-term impacts are anticipated as there would be no changes to employment and expenditures.
- Environmental Justice: The United States Environmental Protection Agency's (USEPA's) Environmental Justice Screening and Mapping Tool indicates the area surrounding Maxwell-Gunter AFB has a higher than State, USEPA Region, and U.S. average for certain environmental and demographic indicators (USEPA 2021). The best management practices listed in Table 2-3 would reduce impacts during construction activities. No disproportionately high or adverse impacts to minority or low-income populations, or disproportionate environmental, health, and safety risks to children would occur.

In compliance with NEPA, CEQ, and Air Force guidelines, the discussion of the affected environment focuses only on those resource areas potentially subject to impacts. In addition, the level of detail used in describing a resource category is commensurate with the anticipated level of potential impact to that respective resource. The following resources are included for analysis in this document:

- air quality,
- water resources (surface water, wetlands, and floodplains),
- cultural resources, and
- facilities and infrastructure (electrical distribution, natural gas supply, water supply, sanitary sewer and wastewater treatment, stormwater management, communications, solid waste management, and transportation).

3.2 AIR QUALITY

Air quality is regulated under Federal Clean Air Act regulations (40 CFR Parts 50 through 99) and the Alabama Air Pollution Control Act (Alabama Code 22-28-1 through 22-28-23). The USEPA, under the authority of the Clean Air Act, as amended, has established nationwide air quality standards known as the National Ambient Air Quality Standards (NAAQS). The NAAQS represent the maximum allowable atmospheric concentrations of health-based criteria and are referred to as "criteria pollutants." These criteria pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO_2), ozone (O_3), sulfur dioxide (SO_2), particulate matter 10 micrometers or less in diameter (PM_{10}), and particulate matter 2.5 micrometers or less in diameter ($PM_{2.5}$). The NAAQS are further broken down into two categories, the National Primary Standards and National Secondary Standards. The Primary NAAQS provide public health protection including the health of "sensitive" populations including the elderly, children, and persons with asthma. The Secondary NAAQS provide general public welfare protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Table 3-1 lists the NAAQS.

Table 3-1. Federal National Ambient Air Quality Standards

Pollutant	*Average Time*	*Federal Primary NAAQS*	*Federal Secondary NAAQS*
CO	8-hour	9 ppm	N/A
	1-hour	35 ppm	N/A
Pb	Rolling 3-month Average	0.15 µg/m^3	0.15 µg/m^3
NO_2	1-hour	100 ppb	N/A
	Annual	53 ppb	53 ppb
O_3	8-hour	0.07 ppm	0.07 ppm
$PM_{2.5}$	Annual	12 µg/m^3	15 µg/m^3
	24-hour	35 µg/m^3	35 µg/m^3
PM_{10}	24-hour	150 µg/m^3	150 µg/m^3
SO_2	1-hour	75 ppb	N/A
	3-hour	N/A	0.5 ppm

Source: USEPA 2020a.

Notes: CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; Pb =lead; $PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter; PM_{10} = particulate matter 10 micrometers or less in diameter; SO_2 = sulfur dioxide; µg/m^3 = micrograms per cubic meter of air; ppb = parts per billion; and ppm = parts per million.

The State of Alabama has a statewide network of air-quality monitoring. The focus of this network is the management of air quality throughout the state to determine whether areas meet NAAQS, to provide public information, to complete Air Quality Index reporting, and to provide data to Air Quality Researchers (ADEM 2020a). Regional air quality in Alabama is assessed at the county level; therefore, for the purposes of this EA, the affected environment is Montgomery County.

Montgomery County is designated as "in attainment" with the NAAQS (USEPA 2020b). The term "in attainment" refers to areas with concentrations of criteria pollutants that are below the levels established by the NAAQS. If the concentration of one or more criteria pollutant in an area exceeds the levels established by the NAAQS, the area may be classified as a "non-attainment" area. Since Montgomery County is in attainment for all regulated criteria pollutants, no conformity determination is required for the Proposed Action.

The Alabama Department of Environmental Management (ADEM) publishes an annual monitoring network plan for their air quality surveillance system in compliance with the Clean Air Act (ADEM 2020a). As noted in ADEM's 2020 Ambient Air Monitoring 2020 Network Plan, monitoring requirements vary for each pollutant. For Montgomery County, $PM_{2.5}$, PM_{10}, and O_3 require monitoring (ADEM 2020a). Montgomery County has two monitoring stations located at the monitoring site on Coliseum Boulevard in Montgomery, Alabama. Table 3-2 summarizes the reported $PM_{2.5}$, PM_{10}, and O_3 emissions data for the last five years.

Table 3-2. History of Actual Annual Emissions in Montgomery County

Pollutant	*Year*				
	2019	*2018*	*2017*	*2016*	*2015*
Station 1 – $PM_{2.5}$ ($\mu g/m^3$)	8.9	8.5	9.0	8.6	9.1
Station 2 – $PM_{2.5}$ ($\mu g/m^3$)	8.7	8.3	8.3	8.7	8.9
Station 1 – PM_{10} ($\mu g/m^3$)	72.0	59.0	33.0	32.0	N/A
Station 2 – PM_{10} ($\mu g/m^3$)	32.0	62.0	36.0	29.0	N/A
O_3 (ppm)	0.077	0.068	0.06	0.072	0.075

Source: USEPA 2020c.

Notes: O_3 = ozone; $PM_{2.5}$ = particulate matter 2.5 micrometers or less in diameter; PM_{10} = particulate matter 10 micrometers or less in diameter; $\mu g/m^3$ = micrograms per cubic meter of air; N/A = data not available; and ppm = parts per million.

3.3 WATER RESOURCES

Floodplains are those normal dry, low-lying, and relatively flat areas near water bodies or wetlands that are subject to at least a one percent or greater chance of flooding in any given year. Alterations to floodplains are subject to EO 11998, Floodplain Management and AFI 31-7061. The purpose of EO 11998 is to avoid, to the extent possible, 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 to those impacts. AFI 31-7061 strongly discourages development in and around floodplains. Where no practicable alternative exists, the project should be designed to ensure the special qualities of floodplains are preserved to the maximum extent practicable, and ensure the action does not lead to an increase in flood losses or losses of natural and beneficial floodplain values. Prior to any construction activity in a floodplain, the proponent must first prepare a Finding of No Practicable Alternative in accordance with 32 CFR Section 989.15 to document no practicable alternative exists and that the proposed action includes all practicable measures to minimize impacts to floodplains.

The Clean Water Act (CWA) of 1972 (33 U.S.C. Section 1251 *et seq*.) is the primary Federal law that protects the nation's waters, including lakes, rivers, wetlands, aquifers, and coastal areas. The primary objective of the CWA is to restore and maintain the integrity of the nation's waters.

Under the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program manages water quality through the regulation of stormwater runoff, including runoff occurring during construction activities, and point sources such as pipes or man-made ditches that discharge pollutants into Waters of the United States. In Alabama, ADEM is the permitting authority for the NPDES permit program.

The United States Army Corps of Engineers (USACE) has permitting authority for regulated activities within or directly affecting navigable waters (Section 10 of the Rivers and Harbors Act of 1899) and other waters (Section 404 of the CWA).

3.3.1 Floodplains

Portions of MAFB property fall within the 100-year floodplain. The majority of the 100-year floodplain are located in the northeast along the Alabama River. The largest 100-year floodplain is associated with the two golf courses, surface lakes, and Federal Prison Camp facilities (MAFB 2020c).

Floodplains are also located in the western area of Gunter Annex along the Three Mile Branch (MAFB 2020c).

3.3.2 Wetlands and Surface Waters

Within the Proposed Action area, there are 10 jurisdictional wetlands and 2 jurisdictional lakes near the abandoned golf course within the floodplain of the Alabama River (Figure 3-1). These potentially jurisdictional waters and wetlands appear to be of moderate quality and drain into the Alabama River. There are no wetland areas at Gunter Annex (MAFB 2020c). Refer to Appendix C for the preliminary jurisdictional waters of the United States and wetlands survey report prepared in support of this EA. Additionally, refer to the September 2021 Wetland Delineation Report for information regarding the eight wetlands, four perennial streams, and six intermittent streams on the Vigilant Warrior Training Site (CCR Environmental, Inc. 2021a).

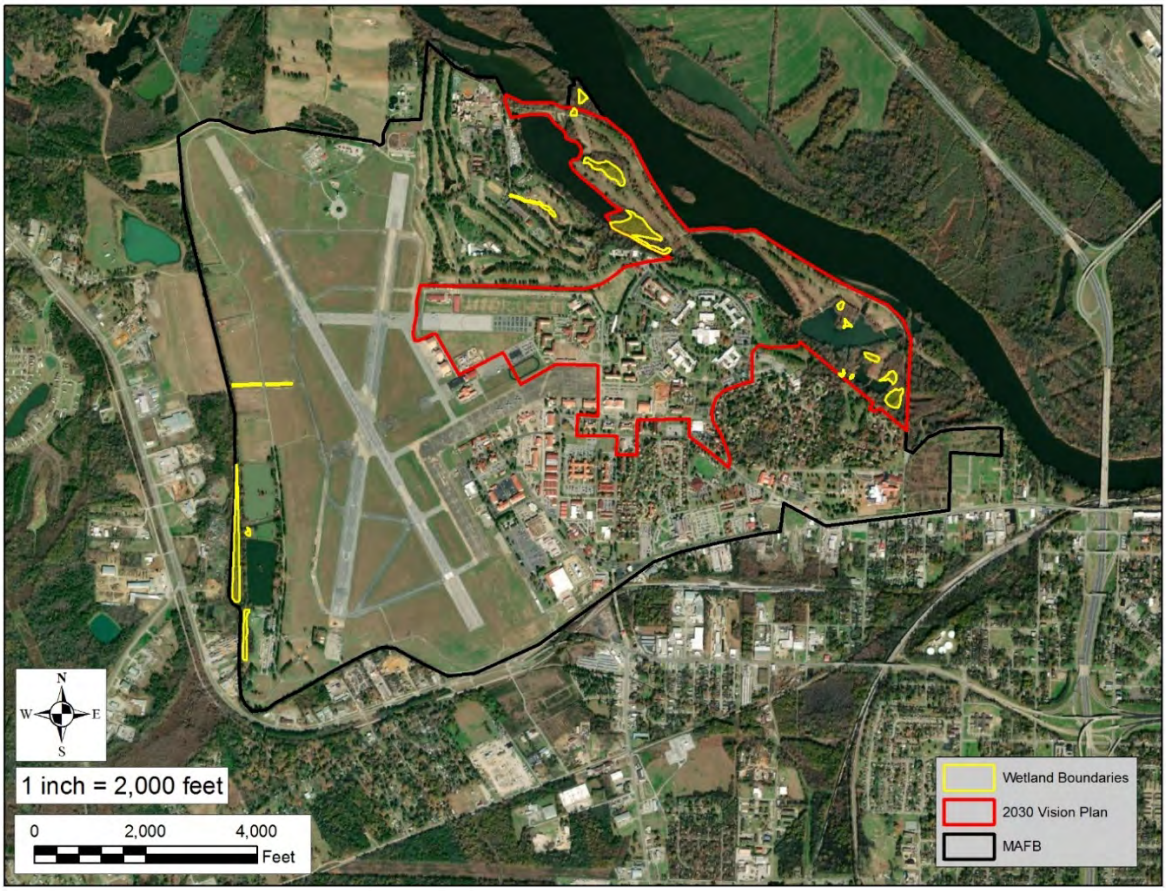

Figure 3-1. Wetlands at MAFB

3.4 BIOLOGICAL RESOURCES

The Endangered Species Act (ESA) of 1973 (16 U.S.C. Section 1531 *et seq.*) is the primary Federal law that protects rare and imperiled plants and animals. The ESA is intended to provide for the recovery of sustainable populations. Species listed under the ESA are designated as either Endangered or Threatened. Endangered means a species is in danger of extinction throughout all or a significant portion of its range. "Threatened", in this context, means a species is likely to become endangered within the foreseeable future.

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. Section 703-712) protects North American migratory birds and regulates their usage and trade. The MBTA makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid Federal Permit.

The United States Fish and Wildlife Service (USFWS) lists 10 threatened and endangered species and one Bald and Golden Eagle Protection Act (BGPA) as possible inhabitants of Montgomery County, Alabama (Table 3-3). Specific to the bald eagle and wood stork, potential habitat includes semi-improved recreation areas along the Alabama River.

Table 3-3. ESA-Listed Species of Montgomery County Alabama

Group	*Common Name*	*Scientific Name*	*Federal Status*	*Potential Habitat in MAFB AU Campus ?*	*Potential Habitat in Gunter Annex?*
Birds	Bald eagle	*Haliaeetus leucocephalus*	BGPA	Yes	No
Birds	Wood stork	*Mycteria americana*	Threatened	Yes	No
Flowering Plants	Georgia rockcress	*Arabis georgiana*	Threatened	No	No
Flowering Plants	Alabama canebrake pitcher-plant	*Sarracenia rubra ssp. alabamensis*	Endangered	No	No
Mussels	Choctaw bean	*Villosa choctawensis*	Endangered	No	No
Mussels	Southern kidneyshell	*Ptychobranchus jonesi*	Endangered	No	No
Mussels	Narrow pigtoe	*Fusconaia escambia*	Threatened	No	No
Mussels	Southern sandshell	*Hamiota australis*	Threatened	No	No
Mussels	Southern clubshell	*Pleurobema decisum*	Endangered	No	No
Mussels	Fuzzy pigtoe	*Pleurobema strodeanum*	Threatened	No	No
Snails	Tulotoma snail	*Tulotoma magnifica*	Threatened	No	No

Source: MAFB 2020c.

Notes: BGPA = Bald and Golden Eagle Protection Act.

Maxwell-Gunter AFB includes several habitats including Urban Forest/Developed Areas, Bottomland/Floodplain Forest, and Floodplain Marsh. These habitats have the potential to provide upland and aquatic /wetland habitat that supports invertebrates, fish, reptiles, amphibians, birds, and mammals common to the area. A list of plant and animal species recently observed and common within the Region of Influence (ROI) are included in Appendix D.

Refer to Appendix E for a copy of the flora and fauna survey prepared in support of this EA. Additionally, refer to the September 2021 Floral Survey Report and September 2021 Faunal Survey Report for information specific to the Vigilant Warrior Training Site (CCR Environmental, Inc. 2021b and 2021c).

3.5 CULTURAL RESOURCES

Cultural resources, as defined by AFI 32-7065, include any prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places (NRHP) (USAF 2016). For management purposes, cultural resources can be classified as archaeological sites, architectural resources, landscapes, and traditional cultural properties, or districts. Definitions of these cultural resource types are as follows.

- An **archaeological site** is defined by National Register Bulletin 36 as a "place… where the remnants of a past culture survive in a physical context that allows for the interpretation of those remains" (Little et al. 2000).
- An **architectural resource** can be a building (a construction designed to shelter human activity), structure (a construction that does not create human shelter, such as a bridge or fence), or an object (construction that is artistic and small in scale, such as a boundary marker or monument).
- A **cultural landscape** is defined as "a geographic area, including both cultural and natural resources associated with a historic event, activity, or person or exhibiting other cultural or aesthetic values." Cultural landscapes can include gardens, parks, scenic roads, cemeteries, or agricultural landscapes (National Park Service 1998).
- A **traditional cultural property** is a property eligible for inclusion in the NRHP through association with a living community's beliefs and cultural practices that derive from the community's history and are important to maintaining the continuing identify of the community (Parker and King 1992).

A grouping of cultural resources, of the same or different type, is called a district. A district is defined as "a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (National Park Service 1997).

There are many federal cultural resource laws but the National Historic Preservation Act (NHPA) is the keystone law for cultural resources at the Federal level. Both the EA process and Section 106 of the NHPA (along with its implementing regulation, 36 CFR Part 800) require federal agencies to take into account the effects of their actions on cultural resources. According to 36

CFR Part 800, Federal agencies must assess projects for potential to affect cultural resources. Every project has an Area of Potential Effect (APE), which is defined in 36 CFR Section 800.16 (d) as "the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties… The [APE] is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking." Direct effects on a property can include not only physical effects such as demolition of or alteration to a building, but even visual effects, such as altering views to and from a historic building (Advisory Council on Historic Preservation 2019).

Per the terms of the NHPA, determinations of any adverse effects to cultural resources, and consultations on mitigating those adverse effects, would be presented to the State Historic Preservation Officer (SHPO). MAFB's eight associated Indian Tribes would also be consulted on any effects to cultural resources.

Originally acquired by the U.S. War Department in 1918 for World War I, Maxwell-Gunter AFB is one of the oldest bases in the USAF. The base's educational mission dates back to 1928, when the Army Air Corps moved the Air Corps Tactical School (ACTS) to the base from Langley Field, Virginia. Maxwell Field, as it was then called, hosted ACTS until the beginning of World War II, when the base became home to the Southeast Air Corps Training Center. In 1946, the United States Army Air Forces officially named the educational facilities at the base "Air University" and in 1947, the USAF became a separate service from the Army (MAFB 2016).

3.5.1 Archaeological Resources

There have been four archaeological investigations conducted at MAFB and Gunter Annex. There is only one site NRHP-eligible at MAFB, 1Mt200. Because of widespread ground disturbance, there are no NRHP-eligible sites at Gunter Annex (MAFB 2016).

3.5.2 Architectural Resources

There have been multiple architectural inventories at MAFB since 1997. Of the 487 facilities at MAFB, 250 buildings and structures are listed on the NRHP, eligible for the NRHP, or recommended eligible. In addition to individually listed or eligible buildings, a portion of these resources comprise two historic districts, the Chennault Circle Historic District (consisting of Buildings 1400, 1401, 1402, 1403, 1404, 1405, and 1406) and the Senior Officer Quarters (SOQ) Historic District (consisting of 150 family housing units built between World War I and World War II).

Two NRHP-eligible buildings are located at Gunter Annex. One is a post-World War I hospital (Building 205) and the other is a Cold War-era SAGE Direction Center (Building 857). See Figures 3-2 and 3-3 for NRHP-listed resources at MAFB and Gunter Annex, respectively.

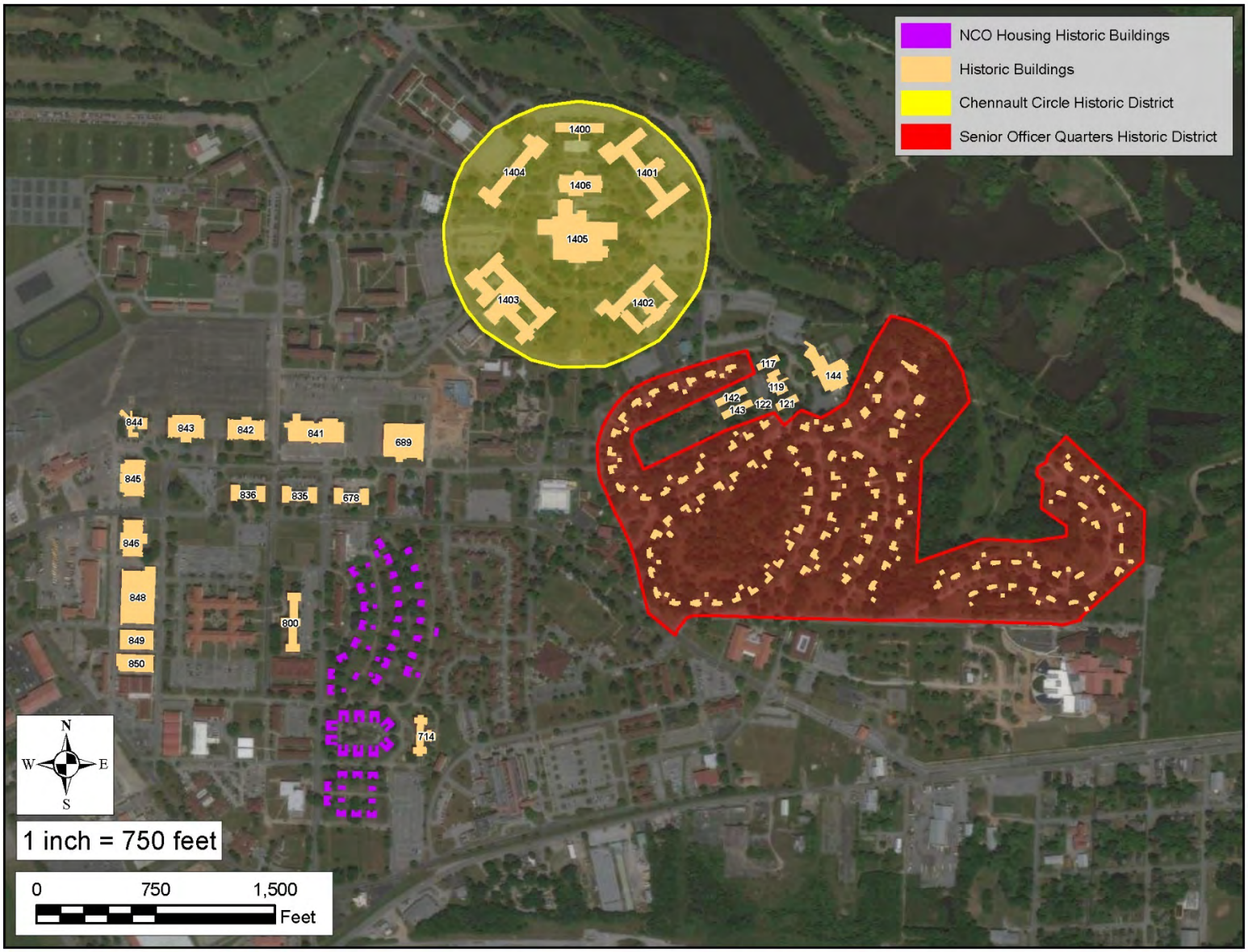

Figure 3-2. NRHP-Eligible and NRHP-Listed Resources at MAFB

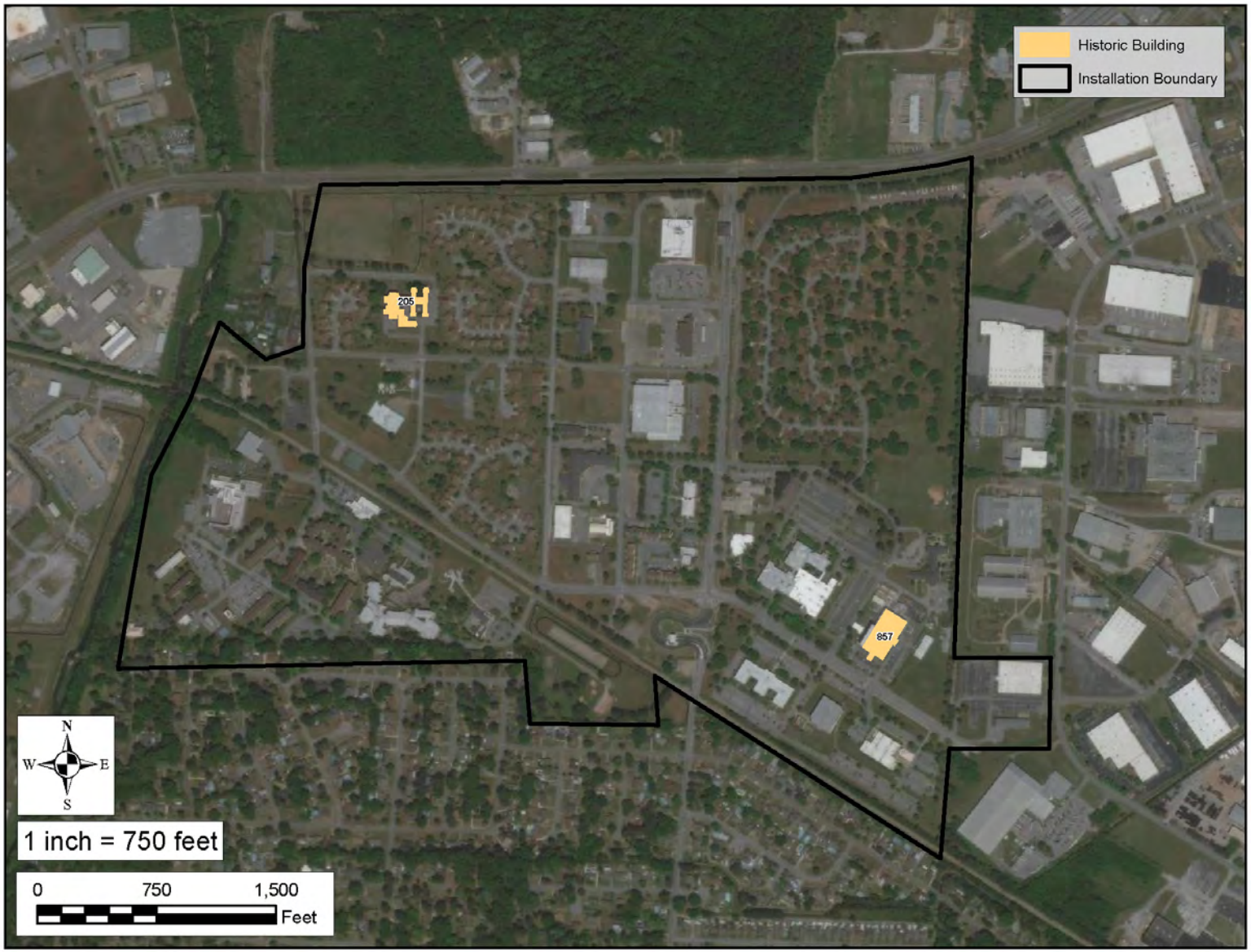

Figure 3-3. NRHP-Eligible Resources at Gunter Annex

3.5.3 Cultural Landscapes

There has been one landscape survey conducted at MAFB to analyze the overall design of the MAFB historic areas to include building placement, plantings, sidewalks, and other design elements. The report's recommendations were that, in general, the MAFB landscape is historically significant.

The report specifically identified the landscapes in the Chennault Circle Historic District, the SOQ Historic District, and a neighborhood of Non-Commissioned Officer family housing units built in the 1930s as retaining a high level of integrity and contributing to the NRHP eligibility of these areas (MAFB 2017; Tooker et al. 2013).

3.5.4 Traditional Cultural Properties

No traditional cultural properties have been identified on MAFB (MAFB 2017).

3.6 FACILITIES AND INFRASTRUCTURE

This section focuses on Maxwell-Gunter AFB's electrical distribution, natural gas supply, water supply, sanitary sewer and wastewater treatment, stormwater management, communications, solid waste management, and transportation resources.

3.6.1 Power and Gas

Cooperative Utility Services, LLC, a joint opportunity created by Central Alabama Electric Cooperative and Dixie Electric Cooperative, owns and operates the electrical distribution systems at Maxwell-Gunter AFB. The substations are owned by the Alabama Power Company (Alabama Living 2018). Natural gas is supplied by Alabama Gas Company.

3.6.2 Water Supply

Montgomery Water Works and Sanitary Sewer Board (MWWSSB) provides water supplies and sewer services to Maxwell-Gunter AFB. MWWSSB has a water production capacity of approximately 96 million gallons per day (MWWSSB 2020). Water sources include groundwater from MWWSSB's west and southwest well fields (33.3 percent capacity) and surface water from the Tallapoosa River (66.7 percent capacity) (MWWSSB 2020). Water is transported to MAFB via 8- and 12-inch diameter service lines; an estimated 1 million gallons per day is consumed. Water is transported to Gunter Annex via 8-, 10-, and 12-inch diameter service lines; an estimated 275,000 gallons per day is consumed (MAFB 2020a).

MWWSSB conducts monthly, quarterly, and annual sampling of drinking waters in accordance with ADEM, USEPA, and Air Force regulations. Monthly samples are analyzed for the presence/absence of coliforms, free available chlorine, fluoride, pH, and temperature. Quarterly samples are analyzed for haloacetic acids, total trihalomethanes, synthetic organic chemicals, volatile organic chemicals, nitrite, and nitrate. Annual samples are analyzed for haloacetic acids, total trihalomethanes, lead, copper, perfluorooctanesulfonic acid, perfluorooctanoic acid, and inorganic chemicals. Water in child-occupied buildings is also analyzed for lead (MAFB 2020d).

MAFB operates a pumping station that withdraws surface water from the Alabama River for golf course irrigation (MAFB 2020c).

3.6.3 Sanitary Sewer and Wastewater Treatment

MWWSSB provides sewage service to Maxwell-Gunter AFB. MWWSSB has eight wastewater treatment plants including the Day Street, Hanan, Rolling Hills, Wallahatchie, Horse Farm, Kilby, Youth Services, and the C.T. Perry Water Treatment Plants with a combined treatment capacity of 96 million gallons per day (MWWSSB 2020). An estimated sewage volume of 5.75 million gallons per month (approximately 0.19 million gallons per day) is sent to the MWWSSB's sewage disposal and treatment facilities (MAFB 2020d).

3.6.4 Stormwater Management

The surface drainage patterns on MAFB are generally from the southwest to northeast. Stormwater from MAFB is routed to four outfalls that discharge into the Alabama River, or to outfalls that discharge to other drainage ways prior to discharging in the Alabama River. Localized ponding occurs during heavy rainfall near impermeable surface areas (MAFB 2020c).

The surface drainage patterns on Gunter Annex generally flow from northeast to southwest towards Three Mile Branch, which is a state impaired waterbody with an approved Total Maximum Daily Load (TMDL) for *E. coli*. Three Mile Branch is a perennial stream located along Gunter Annex's western boundary and serves as the main surface water in the area. The stream flows north, joining the Galbraith Mille Creek, and discharges into the Alabama River. Localized ponding occurs during heavy rainfall near impermeable surface areas (MAFB 2020c).

3.6.5 Communications

Spectrum provides television, internet, and phone services to Maxwell-Gunter AFB.

3.6.6 Solid Waste Management

Air Force contractors manage all municipal solid waste generated at Maxwell-Gunter AFB. After collection, solid waste is taken to the local RePower South facility where recyclables are sorted using a mixed material system (RePower South 2021). Solid waste from the RePower South facility, as well as construction and demolition debris, are taken to the North Montgomery Landfill. The North Montgomery Landfill has an approved maximum daily waste volume of 2,000 tons (1,814.4 metric tons) per day of municipal solid waste and 400 tons (362.9 metric tons) per day of construction/demolition waste (ADEM 2020b).

3.6.7 Transportation

MAFB is accessible from the Maxwell Boulevard Gate, and Gunter Annex is accessible from the Congressman Dickinson Gate. Both locations are located within close proximity to Interstate 65. In addition to those primary access points, MAFB also has the Day Street and Kelly Street Gates. All commercial traffic is routed to the Kelly Street Gate where commercial vehicle inspections

occur. Alternate access to Gunter Annex besides the Congressman Dickinson Gate is provided through the Dalraida Gate.

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4.0 ENVIRONMENTAL CONSEQUENCES

The ROI for the Proposed Action is MAFB and Gunter Annex, unless otherwise specified below for a particular resource area where a resource would have a different ROI.

4.1 SCOPE OF THE ANALYSIS

This chapter presents an analysis of the potential direct and indirect effects associated from implementing the No Action Alternative, Alternative 1, or Alternative 2. Direct and indirect effects from implementing the Proposed Action when considered with past, present, or reasonably foreseeable future projects are also included in this chapter.

In compliance with NEPA, CEQ, and Air Force guidelines, the level of detail used in describing a resource category is commensurate with the anticipated level of potential impact to that respective resource. The following resources are analyzed in this chapter:

- air quality,
- water resources (surface water, wetlands, and floodplains),
- cultural resources, and
- facilities and infrastructure (electrical distribution, natural gas supply, water supply, sanitary sewer and wastewater treatment, stormwater management, communications, solid waste management, and transportation).

Where information is complete and available, all potential direct and indirect adverse and beneficial impacts are assessed. However, for projects still very early in the planning process where sufficient details are not available for NEPA analysis, potential direct and indirect adverse and beneficial impacts would be assessed programmatically using the best available information. Once construction design plans are known and available, the USAF would determine whether supplemental NEPA analysis is required.

4.2 AIR QUALITY

4.2.1 No Action Alternative

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, existing air quality conditions described in Section 3.2.1 would continue and no significant impacts to air quality would be anticipated.

4.2.2 Alternative 1

As part of Alternative 1, 30,700 linear ft (9,357.4 m) of streets would be improved, 61.9 acres (0.25 km^2) of landscape would be renovated, 2,478,068 gsf (230,220.1 m^2) of buildings and parking lots would be constructed, 1,385,698 gsf (128,735.6 m^2) of buildings would be renovated (interior renovations only), and 615,230 gsf (57,156.7 m^2) of buildings would be demolished. For the purposes of air quality, indoor air emissions resulting from interior renovations is not

applicable and was therefore not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the USAF maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was modeled. Further, since it is anticipated construction and demolition activities would occur over multiple years in phases, the actual air emissions would be less than those presented in Table 4-1. Additionally, implementation of the BMPs identified in Table 2-3 would further minimize impacts to air quality.

Table 4-1. Maximum Annual Construction Emissions Estimates for Alternative 1 (tons/year)

Year	*VOC*	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_{2e}*
2025	31.717	19.205	18.966	0.061	93.352	0.710	6,284.5

Notes: CO = carbon monoxide; CO2*e* = carbon dioxide equivalent; FY = Fiscal Year; N/A = Not Applicable; NOx = nitrogen oxides; SOx = sulfur oxides; PM2.5 = particulate matter less than or equal to 2.5 microns in diameter; PM10 = particulate matter less than or equal to 10 microns in diameter; and VOC = volatile organic compound.

With regards to greenhouse gas (GHG) emissions, emissions would be generated during construction activities and continued operations. Furthermore, in June 2019, CEQ issued a revised draft memorandum entitled, "National Environmental Policy Act Guidance on Consideration of Greenhouse Gas Emissions." This new draft replaced the previously issued final guidance issued August 1, 2016. This new guidance states:

> *Under CEQ regulations and the 'rule of reason' that bounds all NEPA analysis, impacts of a proposed action should be discussed in proportion to their significance, and there should only be brief discussion of issues that are not significant. As with all NEPA analyses, the rule of reason permits agencies to use their expertise and experience to decide how and to what degree to analyze particular effects. Agencies preparing NEPA analyses need not give greater consideration to potential effects from GHG emissions than to other potential effects on the human environment" (CEQ 2019).*

Emissions of GHGs and Ozone Depleting Substances (ODS) are of concern in the upper atmosphere. The lowest layer of the atmosphere is the troposphere, which extends to 6 miles (9.7 km) above the Earth's surface, and where the vast majority of human activities occur. The stratosphere begins just above the troposphere and extends to 31 miles (50 km) high and contains the ozone layer. The majority of ozone is concentrated in the lower stratosphere (9 to 18 miles [15 to 30 km] above the Earth's surface) (USEPA 2020d). During construction, Proposed Action activities would generate GHG emissions; however, the amount of emissions from the Proposed Action would not be appreciable enough to contribute significantly to global GHG emissions. Following construction activities, it is anticipated the energy efficiency of the equipment installed

as a result of new construction would result in a slight indirect beneficial impact on GHG emissions since newly installed equipment would have a lower overall run time.

No other past, present, or future projects at Maxwell-Gunter AFB are anticipated to directly or indirectly interact with Alternative 1. Regionally, Governor Ivey announced in April 2020 that the Air Force selected the 187th Fighter Wing (FW) of the Alabama Air National Guard as home to the F-35A (Office of the Governor of Alabama 2020). The 187 FW is co-located with Montgomery Regional Airport (Dannelly Field) which is approximately 9 miles (14.5 km) from MAFB and 15 miles (24.3 km) from Gunter Annex (USAF 2020). The 18 F-35As are expected to begin arriving at Dannelly Field in 2023 and will replace the existing 18 F-16C/D aircraft (187 FW 2020; USAF 2020). Airfield operations are anticipated to increase slightly, from 7,026 annual operations to 7,094 operations (USAF 2020). To support the beddown, up to 15 projects would occur between 2020 and 2023 to construct new facilities or modify existing facilities. These projects would result in up to 208,570 gsf (19,376.8 m^2) of new construction including up to 124,589 gsf (11,574.7 m^2) of new impervious surface. A net increase of 27 personnel positions would occur (USAF 2020). The USAF concluded no significant impacts to air quality and a Record of Air Analysis (ROAA) was prepared and signed on July 2, 2019; the ROAA is included in Appendix C of the Environmental Impact Statement (USAF 2020).

Additionally, in November 2020, it was announced MAFB was selected as the preferred location to host the MH-139A Grey Wolf Formal Training Unit (WSFA 2020). At this time, it is anticipated the proposed beddown would require a 500 gsf (46.5 m^2) addition to Building 1455. No changes to the flightline would occur. An environmental analysis is currently underway and is anticipated to be released for public review in the winter 2021 (WSFA 2020).

There would be a minor, localized, short-term increase in annual emissions at MAFB and Gunter Annex from the implementation of Alternative 1. BMPs would be implemented which would further minimize impacts to air quality. These small increases in criteria pollutant emissions from Alternative 1 and other cumulative projects would not have a significant impact on Montgomery County's air quality. A ROAA is included in Appendix B.

4.2.3 Alternative 2

As part of Alternative 2, 30,700 linear ft (9,357.4 m) of streets would be improved, 38.5 acres (0.16 km^2) of landscape would be renovated, 2,155,350 gsf (200,238.6 m^2) of buildings and parking lots would be constructed, 1,438,888 gsf (133,677.1 m^2) of buildings would be renovated (interior renovations only), and 371,430 gsf (34,507.0 m^2) of buildings would be demolished. For the purposes of air quality, indoor air emissions resulting from interior renovations is not applicable and was therefore not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the USAF maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was

modeled. Further, since it is anticipated construction and demolition activities would occur over multiple years in phases, the actual air emissions would be less than those presented in Table 4-2. Additionally, implementation of the BMPs identified in Table 2-3 would further minimize impacts to air quality.

Table 4-2. Maximum Annual Construction Emissions Estimates for Alternative 2 (tons/year)

Year	*VOC*	*NO_x*	*CO*	*SO_x*	*PM_{10}*	*$PM_{2.5}$*	*CO_{2e}*
2025	26.103	18.053	18.542	0.058	80.217	0.671	5,907.5

Notes: CO = carbon monoxide; CO2*e* = carbon dioxide equivalent; FY = Fiscal Year; N/A = Not Applicable; NOx = nitrogen oxides; SOx = sulfur oxides; PM2.5 = particulate matter less than or equal to 2.5 microns in diameter; PM10 = particulate matter less than or equal to 10 microns in diameter; and VOC = volatile organic compound.

Similar to Alternative 1, any small increases in criteria pollutant emissions from Alternative 2 when considered with other cumulative projects would not have a significant impact on Montgomery County's air quality.

4.3 WATER RESOURCES

4.3.1 No Action Alternative

4.3.1.1 Floodplains

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, there would be no floodplain impacts under the No Action Alternative.

4.3.1.2 Surface Waters

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, there would be no impacts to surface waters.

4.3.1.3 Wetlands

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, there would be no impacts to wetlands under the No Action Alternative.

4.3.2 Alternative 1

4.3.2.1 Floodplains

As stated in Section 3.3.1, the area along the Alabama River, to include the two golf courses and surface lakes are within the 100-year floodplain. As a result, the Phase 3 riverfront trails project would occur near the 100-year floodplain. Consistent with EO 11988, Floodplain Management, this project is meant to restore and preserve the natural and beneficial value of this portion of the installation. No impact to human safety, health, or welfare would result from this project.

Additionally, this project is consistent with the MAFB Integrated natural Resources Management Plan's Goal 12, Objective 12.5 which encourages the continued appropriate use of floodplains for recreational opportunities. Therefore, no adverse impact from the implementation of Alternative 1 projects are anticipated.

4.3.2.2 Surface Waters

All the Alternative 1 projects would be subject to and conducted in compliance with the ADEM NPDES permit program and Maxwell-Gunter AFB's Stormwater Management Plan Construction Site Stormwater Run-off Control section. The BMPs listed in Table 2-3 would reduce nonpoint source pollution and stormwater pollution. No other past, present, or future projects at Maxwell-Gunter AFB are anticipated to directly or indirectly interact with Alternative 1 projects; therefore, only negligible, short-term adverse impacts are expected to occur. Implementation of Alternative 1 would result in no significant impact to water quality.

4.3.2.3 Wetlands

As stated in Section 3.3.2, there are jurisdictional wetlands and lakes near the abandoned golf course within the floodplain of the Alabama River. As a result, the Phase 3 riverfront trails project would occur near wetlands. In support of this EA, a wetlands survey was prepared (refer to Appendix C) so wetland impacts from the riverfront trails project can be avoided. Furthermore, there are eight wetlands, four perennial streams, and six intermittent streams on the Vigilant Warrior Training Site. A wetlands survey was prepared in September 2021 so wetland impacts from the modernization and expansion of the Vigilant Warrior training complex under Phase 0 can be avoided. In addition, contractors will adhere to the BMPs listed in Table 2-3 which will reduce impacts to wetlands from other nearby construction-related activities. Therefore, there would be no significant adverse impacts to wetlands, either direct or indirect, from the implementation of Alternative 1.

4.3.3 Alternative 2

4.3.3.1 Floodplains

As stated in Section 3.3.1, the area along the Alabama River, to include the two golf courses and surface lakes are within the 100-year floodplain. As a result, the Phase 3 riverfront trails project would occur near the 100-year floodplain. Consistent with EO 11988, Floodplain Management, this project is meant to restore and preserve the natural and beneficial value of this portion of the installation. No impact to human safety, health, or welfare would result from this project. Additionally, this project is consistent with the MAFB Integrated natural Resources Management Plan's Goal 12, Objective 12.5 which encourages the continued appropriate use of floodplains for recreational opportunities. Therefore, no adverse impact from the implementation of Alternative 2 projects are anticipated.

4.3.3.2 Surface Waters

Alternative 2 projects would be subject to and conducted in compliance with the ADEM NPDES permit program and Maxwell-Gunter AFB's Stormwater Management Plan Construction Site Stormwater Run-off Control section. The BMPs listed in Table 2-3 would reduce nonpoint source pollution and stormwater pollution. No other past, present, or future projects at Maxwell-Gunter AFB are anticipated to directly or indirectly interact with Alternative 2 projects; therefore, only negligible, short-term adverse impacts are expected to occur. Implementation of Alternative 2 would result in no significant impact to water quality.

4.3.3.3 Wetlands

As stated in Section 3.3.2, there are jurisdictional wetlands and lakes near the abandoned golf course within the floodplain of the Alabama River. As a result, the Phase 3 riverfront trails project would occur near wetlands. In support of this EA, a wetlands survey was prepared (refer to Appendix C) so wetland impacts from the riverfront trails project can be avoided. Furthermore, there are eight wetlands, four perennial streams, and six intermittent streams on the Vigilant Warrior Training Site. A wetlands survey was prepared in September 2021 so wetland impacts from the modernization and expansion of the Vigilant Warrior training complex under Phase 0 can be avoided. In addition, contractors will adhere to the BMPs listed in Table 2-3 which will reduce impacts to wetlands from other nearby construction-related activities. Therefore, there would be no significant adverse impacts to wetlands, either direct or indirect, from the implementation of Alternative 2.

4.4 BIOLOGICAL RESOURCES

4.4.1 No Action Alternative

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, there would be no impacts to biological resources.

4.4.2 Alternative 1

All the Alternative 1 projects would occur within previously developed and disturbed portions of Maxwell-Gunter AFB and the Vigilant Warrior Training Site. Therefore, there would be negligible impacts to biological resources. Furthermore, the USAF has determined there would be no effect to the bald eagle or wood stork, or their habitat under Alternative 1.

4.4.3 Alternative 2

Alternative 2 projects would occur within previously developed and disturbed portions of Maxwell-Gunter AFB and the Vigilant Warrior Training Site. Therefore, there would be negligible impacts to biological resources. Furthermore, the USAF has determined there would be no effect to the bald eagle or wood stork, or their habitat under Alternative 2.

4.5 CULTURAL RESOURCES

4.5.1 No Action Alternative

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, no significant impacts to cultural resources would be anticipated.

4.5.2 Alternative 1

Implementation of Alternative 1 has the potential to incur some adverse effects on cultural resources, primarily visual effects to NRHP-eligible or listed buildings or historic districts. Currently Maxwell-Gunter AFB, in accordance with Section 106 requirements of the NHPA, is consulting with the Alabama SHPO regarding these potential effects under Alternative 1 (SHPO consultation documents are included in Appendix G). A description of the individual effects on cultural resources for individual phases and projects under Alternative 1 are presented below.

4.5.2.1 Phase 1

Phase 1 of Alternative 1 has some potential to incur adverse effects on cultural resources, primarily Building 1405 within the Chennault Circle Historic District, and to a lesser extent, Buildings 678, 800, 835, 836, 842, 843, 844, 845, 846, and 848. Maxwell-Gunter AFB is currently conducting Section 106 consultation with the SHPO on all Phase 1 projects. A summary of the individual effects on cultural resources for Phase 1 are presented below.

- *Renovate Building 1405, MSFRIC at MAFB.*
    - Resources impacted by project: Building 1405is contributing components to the Chennault Circle Historic District.
    - Project effects: The project is still in an early design stage. Once designs have been sufficiently developed for renovations to Building 1405, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effects to these resources. Maxwell-Gunter AFB will, to the maximum extent possible, design these renovations in keeping with the historic character of the resources.
- *Construct Fitness Center; demolish Building 800, Gunter Annex Fitness Center, and Building 811, Gunter Annex Commissary at Gunter Annex.*
    - Resources impacted by project: Building 800, constructed in 1943, has been previously determined not eligible for the NRHP. Building 811, constructed in 1973, is not yet 50 years old and has not been evaluated for the NRHP but will require evaluation prior to its planned demolition in FY24–26.
    - Project effects: It is anticipated this project would have no adverse effect on cultural resources. Demolition of Building 800 and construction of a new fitness center would have no direct or visual impact to any NRHP-eligible buildings at Gunter Annex.

Although demolition of Building 811 still requires consultation with the SHPO, the building's preliminary recommended evaluation is that this building is not eligible for the NRHP.

- *Construct new AAFES and demolish Building 1420, AAFES, at MAFB.*
  - Resources impacted by project: Building 1420 is a non-contributing resource west of and adjacent to the Chennault Circle Historic District. The project would relocate its function (AAFES) to a new site west of and adjacent to the Historic District.
  - Project effects: The project is still in an early design stage. It is likely this project would have no adverse effect on cultural resources. Although the project would impact the viewshed west of the Chennault Circle Historic District, the new AAFES building would be constructed in an area historically occupied by other buildings of similar scale, so infilling this space would in a sense re-establish previous building patterns in the area. Regardless, additional design information is required prior to completing assessment of adverse effects. Once designs have been sufficiently developed for the new AAFES building, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effects to these resources.
- *Construct Academic Building A and demolish Building 1450 at MAFB.*
  - Resources impacted by project: The project involves construction of a new three-story tall academic building west of and adjacent to the Historic District. Building 1450 is a non-contributing resource northeast of the Chennault Circle Historic District.
  - Project effects: The project is still in an early design stage. Building 1450 is a non-contributing resource, and the viewshed between Building 1450 and the Chennault Circle Historic District is obscured by cypress trees planted along the northeast quadrant of Chennault Circle.

    The new Academic Building A would be located west of the Chennault Circle Historic District, and would be directly adjacent to and within viewshed of the Chennault Circle Historic District. Academic Building A would be constructed in an area historically occupied by other buildings of similar scale, so infilling this space would in a sense re-establish previous building patterns in the area. Regardless, additional design information is required prior to completing assessment of adverse effects. Once designs have been sufficiently developed for Academic Building A, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effects to these resources.
- *Construct Parking Garage A at MAFB.*
  - Resources impacted by project: Parking Garage A would be within viewshed of the Chennault Circle Historic District and NRHP-eligible flightline area (Buildings 842, 843, and 844).

- Project effects: The construction site for Parking Garage A is 820 ft (250 m) west of the Chennault Circle Historic District and 1,640 ft (500 m) north of Buildings 842, 843, and 844. Recent construction in the 1990s and 2000s incurred a greater impact on Chennault Circle and Buildings 842, 843, and 844 historic viewsheds than the potential impact of this project. Because of the distance from these resources and previous viewshed effects, construction of Parking Garage A is unlikely to incur adverse effects. However, Parking Garage A is still in a preliminary design stage. Once a design has been sufficiently developed for review, MAFB will continue Section 106 consultation regarding this project. In conclusion, with consultation, it is anticipated that implementation of Alternative 1, Phase 1, would incur no adverse effects to cultural resources.

- *Construct IOS Building, and Track and Field House at MAFB.*

  - Resources impacted by project: The new IOS Building will alter viewsheds of two NRHP-listed facilities, Buildings 800 and 836 (the oldest building at MAFB), and five NRHP-eligible facilities, Buildings 678 and 835, 845, 846, and 848.

  - Project effects: The IOS Building will be located adjacent to some of the oldest buildings at MAFB, but in an area historically occupied by other buildings of similar scale. Infilling this space would in a sense re-establish previous building patterns in the area. Regardless, additional design information is required prior to completing assessment of adverse effects. Once designs have been sufficiently developed for the IOS Building, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effects to these resources. Regarding the track and field house site, this portion of the project should incur no adverse effects on cultural resources. The track and field house location is only 98 ft (30 m) to the north of the Chennault Circle Historic District. The viewshed from the project site to the Historic District, however, is obscured by a screen of trees. The track site has been previously surveyed for archaeological sites with no NRHP-eligible resources located.

4.5.2.2 Phase 2

Phase 2 of Alternative 1 has a slight potential to incur adverse effects to Buildings 842, 843, and 844 at MAFB, and Building 205 at Gunter Annex. Maxwell-Gunter AFB is currently conducting Section 106 consultation with the SHPO on all Phase 2 projects. A description of the individual effects on cultural resources for Phase 2 are presented below.

- *Demolish Building 863, Youth Center at Gunter Annex.*

  - Resources impacted by project: Building 863 was constructed in 1982 and is not eligible for the NRHP.

- Project effects: It is anticipated this project would have no adverse effect on cultural resources. The building is not NRHP-eligible and the project site is not within viewshed of NRHP-eligible buildings.

- *Construct Community Support Facility and demolish Butler Avenue buildings (Buildings 821, 825, 829, 833, 847, and 850) at Gunter Annex.*
  - Resources impacted by project: Buildings 821, 825, 829, and 833 were built between 1993 and 1994 and are not eligible for the NRHP. Buildings 847 and 850 were constructed in 1941 and 1942 and have been previously evaluated and determined not eligible for the NRHP.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources. None of the buildings scheduled for demolition are eligible for the NRHP and the project site is not within viewshed of NRHP-eligible buildings.
- *Construct Parade Field and demolish Building 826, CCAF, at Gunter Annex.*
  - Resources impacted by project: Building 826 was built in 1991 and is not eligible for the NRHP.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources. Building 826 is not eligible for the NRHP and the project site is not within viewshed of NRHP-eligible buildings.
- *Construct Lodging Building A at MAFB and demolish Building 872 at Gunter Annex.*
  - Resources impacted by project: Building 872 was built in 1993 and is not eligible for the NRHP. Construction of Lodging Building A would occur within viewshed of three NRHP-eligible buildings (Buildings 842, 843, and 844) located on the 1930s flightline.
  - Project effects: The project is still in an early design stage. It is likely this project would have no adverse effect on cultural resources.

    Construction of Lodging Building A would occur within the viewshed of NRHP-eligible Buildings 842, 843, and 844. Construction of Lodging Building A is unlikely to incur an adverse effect to these buildings, however. The project is approximately 984 ft (300 m) away from this grouping of buildings and there are existing non-historic buildings of equivalent or greater scale than the proposed new lodging building also within viewshed of the historic buildings and located at a closer distance. Therefore, the visual effect of this project would be minimal and is unlikely to incur an adverse effect on Building 205. Once designs have been sufficiently developed for construction of Lodging Building A, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effect to these resources.

    Building 872 at Gunter Annex is not eligible for the NRHP, and its demolition would not occur within viewshed of NRHP-eligible buildings.

- *Construct Outdoor Training Facilities and Indoor Cadet Physical Training Facility, demolish Facilities 310, 323, 324, and 326; and demolish Buildings 329, 331-334, 336-342, 350-358, 360, 370-376, and 451-455 at Gunter Annex.*

  - Resources impacted by project: All facilities planned for demolition under this project were constructed between 2001 and 2016 and are not eligible for the NRHP. The viewshed south of Building 205, an NRHP-eligible building at Gunter Annex, would be altered through demolition of these buildings, construction of a drill field, and construction of an Indoor Cadet Physical Training Facility.

  - Project effects: The project is still in an early design stage; however, it is likely this project would have no adverse effect on cultural resources.

    Construction of the Outdoor Training Facilities and Indoor Cadet Physical Training Facility, and demolition of multiple recreation and family housing facilities would occur just south of and within viewshed of Building 205, an NRHP-eligible building at Gunter Annex constructed in 1940. Although this would alter the current viewshed for Building 205, the building's historic viewshed has previously been completely altered at some point after 1996 with the demolition of multiple surrounding World War II-era buildings. Because Building 205's historic surroundings have already been completely altered, this proposed development within the viewshed of Building 205 should incur no adverse effect. Once designs have been sufficiently developed for construction of these training facilities, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effect to these resources. All buildings and facilities scheduled for demolition under the project post-date 2000 and are not eligible for the NRHP.

- *Relocate surface parking, demolish parking lots, and demolish Building 1429, Barnes Center, at MAFB.*

  - Resources impacted by project: Building 1429 was constructed in 1975 and has not been evaluated for the NRHP. Although less than 50 years old, the building would be a historic-period building at the time of its planned demolition and will require NRHP evaluation.

  - Project effects: The project is still in an early design stage; however, it is likely this project would have no adverse effect on cultural resources.

    Although demolition of Building 1429 still requires completion of consultation with the SHPO, Building 1429 has a preliminary recommended evaluation of not eligible for the NRHP.

- *Construct Student Services Center at Gunter Annex.*

  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.

- Project effects: It is anticipated this project would have no adverse effect on cultural resources.

- *Construct Chapel at Gunter Annex.*
  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources.
- *Construct Dormitory Complex A and Dining Facility at Gunter Annex.*
  - Resources impacted by project: The project site is not currently within viewshed of any NRHP-eligible buildings. With the demolition of family housing as part of the Outdoor Training Facilities project, however, the dining facility would be within partial view of Building 205, an NRHP-eligible facility.
  - Project effects: The project is still in an early design stage. It is likely this project would have no adverse effect on cultural resources. It is anticipated that this project would have no adverse effect on cultural resources. Although this would alter the current viewshed for Building 205, the building's historic viewshed has previously been completely altered at some point after 1996 with the demolition of multiple surrounding World War II-era buildings. Because Building 205's historic surroundings have already been completely altered, this proposed development within the viewshed of Building 205 should incur no adverse effect. Once designs have been sufficiently developed for construction of Dormitory Complex A, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effect to these resources.
- *Construct Dormitory Complex B at Gunter Annex.*
  - Resources impacted by project: The project site is not currently within viewshed of any NRHP-eligible buildings. With the demolition of family housing as part of the Outdoor Training Facilities project, however, Dormitory Complex B would be within partial view of Building 205, an NRHP-eligible facility.
  - Project effects: The project is still in an early design stage; however, it is anticipated this project would have no adverse effect on cultural resources. Although this would alter the current viewshed for Building 205, the building's historic viewshed has previously been completely altered at some point after 1996 with the demolition of multiple surrounding World War II-era buildings. Because Building 205's historic surroundings have already been completely altered, this proposed development within the viewshed of Building 205 should incur no adverse effect. Once designs have been sufficiently developed for construction of Dormitory Complex B, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effect to these resources.

- *Construct Parking Garage B at MAFB.*
  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources.

In conclusion, with consultation, it is anticipated that implementation of Alternative 1, Phase 2, would incur no adverse effects to cultural resources.

4.5.2.3 Phase 3

Phase 3 of Alternative 1 has some potential to incur some adverse effects to the southern and western portions of the Chennault Circle Historic District. Maxwell-Gunter AFB is currently conducting Section 106 consultation with the SHPO on all Phase 3 projects. A description of the individual effects on cultural resources for Phase 3 are presented below.

- *Construct Sycamore Street Promenade, renovate Circle Park/Library Plaza, and improve Chennault Circle streetscape at MAFB.*
  - Resources impacted by project: Sycamore Street has not been evaluated for NRHP eligibility. Building 1429 was constructed in 1975 and has not been evaluated for the NRHP. Although less than 50 years old, the building would be a historic-period building at the time of its planned demolition and will require NRHP evaluation. Circle Park/Library Plaza and the Chennault Circle streetscape are contributing components to the Chennault Circle Historic District.
  - Project effects:

    For construction of the Sycamore Street Promenade, based on current planning, this project would maintain existing curbs and road lanes, add more shade trees along the street, and feature multi-purpose green spaces. Currently, the streetscape design along Sycamore Street consists of sidewalks, streetlights, and scattered hardwoods (mostly oaks) lining the road on either side. The streetscape appears to hold no design or historical significance but the street and the project area abut the western edge of the Chennault Circle Historic District. The 2012 historic landscape study of MAFB (Tooker, Hartman and Smith 2012:166) included a recommendation that streets on the outskirts of historic districts be planted with trees, a recommendation consistent with the current plan for the Sycamore Street Promenade. It is unlikely this project component would incur an adverse effect to Chennault Circle Historic District. Maxwell-Gunter AFB will, however, continue Section 106 consultation regarding this project.

    The renovations to Circle Park/Library Plaza and improvements to the Chennault Circle streetscape project are still in an early design stage. Once designs have been sufficiently developed, Maxwell-Gunter AFB will follow Section 106 requirements and continue

consultation with the SHPO concerning the potential effects to these resources. Maxwell-Gunter AFB will, to the maximum extent possible, design these renovations in keeping with the historic character of the resources.

- *Construct Heritage Park/Plaza at MAFB.*
  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.
  - Project effects: It is anticipated that this project would have no adverse effect on cultural resources.
- *Improve Air Park at MAFB.*
  - Resources impacted by project: The Air Park is not 50 years old and is not eligible for the NRHP. Redesign of the Air Park, however, would involve a partial landscape redesign for the southern portion of the Chennault Circle Historic District landscape.
  - Project effects: It is expected the new landscape design would be in keeping with the historic character of Chennault Historic District and would have no adverse effect on cultural resources. However, the project is in the early stages of design, so there are currently no plans available to review. When plans are available MAFB will continue Section 106 consultation with the SHPO.
- *Construct Gateway Monument Park at MAFB.*
  - Resources impacted by project: The proposed project site is an empty lot and is not within viewshed of NRHP-eligible or listed resources.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources.
- *Improve Maxwell Boulevard Streetscape at MAFB.*
  - Resources impacted by project: Maxwell Boulevard streetscape components do not possess any significance under NRHP criteria, but the project involves a partial landscape redesign for the southern portion of the Chennault Circle Historic District landscape.
  - Project effects: It is expected the new landscape design would be in keeping with the historic character of Chennault Historic District and would have no adverse effect on cultural resources. However, the project is in the early stages of design, so there are currently no plans available to review. When plans are available, MAFB will continue Section 106 consultation with the SHPO.

- *Improve/Implement Riverfront Trail at MAFB.*
  - Resources impacted by project: The project would not affect and is not within viewshed of any NRHP-eligible or listed buildings. The project footprint is within 23 ft (7 m) of MAFB's only NRHP-eligible archaeological site, Site 1MT200.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources. The current proposed action in the vicinity of Site 1MT200 would be improvements to riverfront trails. No impervious areas would be created as part of these improvements and no changes to the functional characteristics are anticipated. Actions would involve minor improvements such as mulching of recreational trails to improve the trail experience. Given the minor ground disturbing nature of the undertaking, and the fact that the cultural assemblage was recovered below the uppermost strata at depths exceeding 0.5 ft (15 cm), no adverse impacts to this NRHP-eligible property would occur as a result of the proposed project.
- *Improve Stormwater Landscape Corridor at MAFB.*
  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.
  - Project effects: It is anticipated that this project would have no adverse effect on cultural resources.

In conclusion, with consultation, it is anticipated that implementation of Alternative 1, Phase 3, would incur no adverse effects to cultural resources.

4.5.2.4 Phase 4

Phase 4 of Alternative 1 may potentially adversely affect Building 1402 within the Chennault Circle Historic District, and viewsheds for the following resources: the Chennault Circle Historic District, the SOQ Historic District, Buildings 117, 119, 121, and 144, and to a lesser extent, Buildings 689 and 841. Maxwell-Gunter AFB is currently conducting Section 106 consultation with the SHPO on all Phase 4 projects. A description of the individual effects on cultural resources for Phase 4 are presented below.

- *Construct Lodging Building B at MAFB.*
  - Resources impacted by project: This project would be within viewshed of three NRHP-eligible buildings within the old flightline area (Buildings 842, 843, and 844).
  - Project effects: The project is still in an early design stage; however, it is likely that this project would have no adverse effect on cultural resources. Construction of Lodging Building B would occur within the viewshed of NRHP-eligible Buildings 842, 843, and 844. However, construction of Lodging Building B is unlikely to incur an adverse effect to these buildings. The project is approximately 984 ft (300 m) away from this grouping of buildings and there are existing non-historic buildings of equivalent or greater scale than the proposed new lodging building within the viewshed of the historic

buildings and located at a closer distance. Therefore, the visual effect of this project would be minimal and it is unlikely to incur an adverse effect on these historic buildings. Once designs have been sufficiently developed for construction of Lodging Building B, Maxwell-Gunter AFB will follow Section 106 requirements and continue consultation with the SHPO concerning the potential effect to these resources.

- *Construct Academic Building B at MAFB.*
  - Resources impacted by project: This project would be within viewshed of the Chennault Circle Historic District and one NRHP-eligible building within the old flightline area, Building 689.
  - Project effects: The project is still in an early design stage. The construction site for Academic Building B is adjacent to and southwest of the Chennault Circle Historic District and 705 ft (215 m) north of Building 689. Academic Building B would alter the viewshed of these two historic resources. As it currently stands, the historic viewshed has already been greatly altered in the preceding two decades. In addition, the original design of Chennault Circle emphasized that the buildings should be viewed from the center with the most important viewsheds oriented to the interior of the circle (USAF 2017:158). For these reasons, it is unlikely that construction of Academic Building B would incur an adverse effect on historic properties. At this point, Academic Building B is still in an early stage of design. Once a design has been sufficiently developed for the new building, Maxwell-Gunter AFB would continue to consult with the SHPO concerning potential effects to the Chennault Circle Historic District and Building 689.
- *Construct Conference Center/Distinguished Visitors Quarters Facility at MAFB.*
  - Resources impacted by project: This project would occur within viewshed of both MAFB historic districts (Chennault Circle and the SOQ Historic Districts), in addition to individually eligible historic buildings dating to the 1930s (Buildings 117, 119, 121, and 144).
  - Project effects: The project is still in an early design stage. The project's visual impact through construction of both the parking garage and the conference center would likely affect the integrity of setting for the adjacent historic buildings, although other, more important aspects of integrity (design, workmanship, and materials) would be unaffected. This effect on building integrity, and any potential impacts to the integrity of the MAFB historic landscape, may be mitigated by the manner in which the design is executed, if the orientation, scale, setback, and materials used are in keeping with the historic character of the area. When plans become available, Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.

- *Construct Parking Garage C at MAFB.*
  - Resources impacted by project: This project would occur within viewshed of both MAFB historic districts (Chennault Circle and the SOQ Historic Districts), in addition to individually eligible historic buildings dating to the 1930s (Buildings 117, 119, 121, and 144).
  - Project effects: The project is still in an early design stage. The project's visual impact through construction of both the parking garage and the conference center would likely affect the integrity of setting for the adjacent historic buildings, although other, more important aspects of integrity (design, workmanship, and materials) would be unaffected. This effect on building integrity, and any potential impacts to the integrity of the MAFB historic landscape, may be mitigated by the manner in which the design is executed, if the orientation, scale, setback, and materials used are in keeping with the historic character of the area. When plans become available, Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.
- *Construct Lodging Building C at MAFB.*
  - Resources impacted by project: This project would be within viewshed of two NRHP-eligible buildings within the old flightline area, Buildings 689 and 841, and the Chennault Circle Historic District.
  - Project effects: The project is still in an early design stage. Additional design information is required prior to completing the assessment of adverse effects. Construction of Lodging Building C would occur within the viewshed of NRHP-eligible Buildings 689 and 841 and the Chennault Circle Historic District. However, construction of Lodging Building C is unlikely to incur an adverse effect to these buildings. The project is approximately 492 ft (150 m) away from Buildings 689 and 841 and 330 ft (100 m) away from the Historic District. There are existing non-historic buildings of equivalent or greater scale than the proposed new lodging building within viewshed of the historic buildings and located at a closer distance. Therefore, the visual effect of this project would likely be minimal and it is unlikely to incur an adverse effect on these historic buildings. When plans become available, Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.
- *Construct Enlisted Heritage Hall, construct new Visitor Center, and demolish Building 518, Visitor Center at MAFB.*
  - Resources impacted by project: Construction of the new Enlisted Heritage Hall and Visitor Center may be within viewshed of the SOQ Historic District, depending on the design of the new Historical Research Agency that would be constructed in Phase 1. Building 518 would also be demolished. Building 518 was constructed in 1975 and has not been evaluated for the NRHP. Although less than 50 years old, the building would

be a historic-period building at the time of its planned demolition and would require NRHP evaluation.

- Project effects: The project is in the early stages of design, so there are currently no plans available to review. Based on the location, however, it is unlikely this project would incur adverse effects to historic resources. When plans are available, MAFB will continue Section 106 consultation with the SHPO.

  The Enlisted Heritage Hall and Visitor Center project site is adjacent to and east of the MAFB main gate and is within viewshed of off-base, non-historic buildings in Montgomery. Construction of the Enlisted Heritage Hall and new Visitor Center may not visually impact the SOQ Historic District because a scheduled Phase 1 project, Construct Historical Research Agency Facility, would likely block the viewshed. This project also does not appear likely to affect any NRHP-eligible or listed resources off-base. In summary, this project is unlikely to incur adverse effects on historic properties. However, the project is still in an early design stage. Once project designs become available, MAFB will continue conducting Section 106 consultation for this project.

  Building 518 would be demolished to make way the new Visitor Center. Although demolition of Building 518 still requires completion of consultation with the SHPO, this resource has a preliminary recommended evaluation of not eligible for the NRHP.

- *Construct addition onto Building 1402.*
  - Resources impacted by project: Building 1402 is a contributing component of the Chennault Circle Historic District.
  - Project effects: The project is still in an early design stage. Additional work details are required to complete Section 106 review of Building 1402 renovations. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.

In conclusion, two Phase 4 projects, Construct Conference Center/Distinguished Visitors Quarters Facility and Construct Parking Garage C, may incur some adverse effects to the viewsheds of the Chennault Circle and SOQ Historic Districts. With consultation, it is anticipated these two projects and remaining projects under Alternative 1, Phase 4, would incur no adverse effects to cultural resources.

4.5.2.5 Phase 0

Phase 0 of Alternative 1 has some potential to incur adverse effects on cultural resources, primarily the Chennault Circle Historic District. Maxwell-Gunter AFB is currently conducting Section 106 consultation with the SHPO on all Phase 0 projects. A description of the individual effects on cultural resources for Phase 0 are presented below.

- *Renovate Buildings 1403, 1405, 1406, 1408, 1486, 1488, 1489, and 1491 at MAFB.*
  - Resources impacted by project: Buildings 1403, 1405, and 1406 are contributing components to the Chennault Circle Historic District. The other remaining buildings were constructed between 2000 and 2006 and are not eligible for the NRHP.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources. Renovation involves repair of fire alarm systems and installation of mass notification features. This work on a previously installed alarm system should have no adverse effects on cultural resources.
- *Renovate Buildings 1401, Air War College, and 1487, OTS, at MAFB.*
  - Resources impacted by project: Building 1401 is a contributing component of the Chennault Circle Historic District, and Building 1487 is a non-historic building constructed in 2000.
  - Project effects: The project is still in an early design stage. The current scope of this project consists of "miscellaneous renovations" to Buildings 1401 and 1487. There are no cultural resource concerns with these renovations to Building 1487, but additional work details are required to complete Section 106 review of Building 1401 renovations. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.
- *Renovate Building 1402, Air Command and Staff College, at MAFB.*
  - Resources impacted by project: Building 1402 is a contributing component of the Chennault Circle Historic District.
  - Project effects: The project is still in an early design stage. Additional work details are required to complete Section 106 review of Building 1402 renovations. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.
- *Renovate Building 1404, Eaker Center, at MAFB.*
  - Resources impacted by project: Building 1404 is a contributing component of the Chennault Circle Historic District.
  - Project effects: The project is still in an early design stage. Additional work details are required to complete Section 106 review of Building 1404 renovations. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.
- *Construct additions to Buildings 1400 and 1402 at MAFB.*
  - Resources impacted by project: Buildings 1400 and 1402 are both contributing components of the Chennault Circle Historic District.

- Project effects: The project is still in an early design stage. Additional work details are required to complete Section 106 review of Building 1400 and 1402 additions. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.

- *Renovate Building 714, Civil Air Patrol Headquarters, at MAFB.*
  - Resources impacted by project: Building 714 is an NRHP-eligible building.
  - Project effects: The project is still in an early design stage. based on the current description, the project would involve primarily repairing and replacing interior utility systems, such as communications, plumbing, and the fire alarm systems. This specified work should not incur an adverse effect to Building 714. However, there is a mention of potential additional repairs, therefore, this project does require additional consultation. When plans become available Maxwell-Gunter AFB will continue Section 106 consultation with the SHPO.

- *Modernize and expand the Vigilant Warrior Complex.*
  - Resources impacted by project: Building 6, constructed in 1968, has not been evaluated for the NRHP.
  - Project effects: The project is unlikely to incur adverse effects to cultural resources. The area has been previously surveyed for archaeological sites, and no NRHP-eligible sites were located. Construction of new classroom buildings may impact the viewshed of Building 6. Although it is unlikely Building 6 is eligible for the NRHP, Maxwell-Gunter AFB will evaluate NRHP eligibility of Building 6 and consult with the SHPO prior to implementation of this project.

Consultation with the SHPO is ongoing to determine whether any adverse effects to cultural resources will be incurred by implementation of Alternative 1, Phase 0.

4.5.3 Alternative 2

Implementation of Alternative 2 has the potential to incur some adverse effects on cultural resources, primarily visual effects to NRHP-eligible or listed buildings or historic districts. A description of the individual effects on cultural resources for individual phases and projects under Alternative 2 are presented below.

4.5.3.1 Phase 1

Phase 1 of Alternative 2 has some potential to incur adverse effects on cultural resources, primarily the Chennault Circle Historic District and Building 689. The following is a list of Phase 1 projects at Maxwell-Gunter AFB.

- *Renovate Building 1405, MSFRIC at MAFB.*
  - Resources impacted by project: Building 1405is contributing components to the Chennault Circle Historic District.

- Project effects: The project is still in an early design stage and it is unknown what the specific effects of these renovations would be. Maxwell-Gunter AFB will, to the maximum extent possible, design these renovations in keeping with the historic character of the resources, and consult with SHPO if required.

- *Construct Academic Building A and demolish Building 1450 at MAFB.*

  - Resources impacted by project: The new three-story tall academic building would be located west of and adjacent to the Historic District. Building 1450 would also be demolished. Building 1450 is a non-contributing resource northeast of the Chennault Circle Historic District.

  - Project effects: The project is still in an early design stage and it is unknown what the specific effects of this project would be. Building 1450 is a non-contributing resource, and the viewshed between Building 1450 and the Chennault Circle Historic District is obscured by cypress trees planted along the northeast quadrant of Chennault Circle.

    Regarding construction of Academic Building A west of the Chennault Circle Historic District, the building would be directly adjacent to and within viewshed of the Historic District. Academic Building A would be constructed in an area historically occupied by other buildings of similar scale so infilling this space would in a sense re-establish previous building patterns in the area. Regardless, additional design information is required prior to completing assessment of adverse effects.

- *Construct new AAFES and demolish Building 1420, AAFES, at MAFB.*

  - Resources impacted by project: Building 1420 is a non-contributing resource west of and adjacent to the Chennault Circle Historic District. The project would relocate its function (AAFES) to a new site west of and adjacent to the Historic District.

  - Project effects: The project is still in an early design stage and it is unknown what the specific effects of this project would be. It is likely that this project would have no adverse effect on cultural resources. Although the project would impact the viewshed west of the Chennault Circle Historic District, the new AAFES building would be constructed in an area historically occupied by other buildings of similar scale so infilling this space would in a sense re-establish previous building patterns in the area. Regardless, additional design information is required prior to completing assessment of adverse effects.

- *Construct Outdoor Running Track and Field and modernize Building 689, Maxwell Fitness Facility, at MAFB.*

  - Resources impacted by project: Building 689 is an NRHP-eligible building.

  - Project effects: The project is still in an early design stage and the specific effects of these renovations to Building 689 are unknown. Construction of the outdoor running track, however, would incur no adverse effect to historic properties. Although the

running track site is only 98 ft (30 m) to the north of the Chennault Circle Historic District, the viewshed from the project site to the Historic District is obscured by a screen of trees. The track site has been previously surveyed for archaeological sites with no NRHP-eligible resources located.

Regarding Building 689, once designs have been sufficiently developed for renovations, Maxwell-Gunter AFB will follow Section 106 requirements.

- *Construct Fitness Center; demolish Building 800, Gunter Annex Fitness Center, and Building 811, Gunter Annex Commissary, at Gunter Annex.*
  - Resources impacted by project: Building 800, constructed in 1943, has been previously determined not eligible for the NRHP. Building 811, constructed in 1973, is not yet 50 years old and has not been evaluated for the NRHP, but would require evaluation prior to its planned demolition in FY24–26.
  - Project effects: It is anticipated that this project would have no adverse effect on cultural resources.

    Demolition of Building 800 at Gunter Annex and construction of a fitness center would have no direct or visual impact to any NRHP-eligible buildings.

In conclusion, it is anticipated that implementation of Alternative 2, Phase 1, would incur no adverse effects to cultural resources. Maxwell-Gunter AFB would consult with SHPO as required in accordance with Section 106 requirements.

4.5.3.2 Phase 2

Phase 2 of Alternative 2 has potential to incur adverse effects on cultural resources, including the Chennault Circle Historic District, NRHP-listed Buildings 800 and 836 (the oldest building at MAFB), and NRHP-eligible Buildings 678, 689, 835, 842, 843, and 844. The following is a list of Phase 2 projects at Maxwell-Gunter AFB.

- *Construct Academic Building B; construct Parking Garage A; relocate surface parking; demolish parking lots; and demolish Building 1429, Barnes Center, at MAFB.*
  - Resources impacted by project: Building 1429, constructed in 1975, is not yet 50 years old and has not been evaluated for the NRHP, but would require evaluation prior to its planned demolition in FY24–26. Parking Garage A, Academic Building B, and Building 1429 would be within viewshed of the Chennault Circle Historic District. Construction of Parking Garage A and demolition of Building 1429 would also be within viewshed of NRHP-eligible flightline area (Buildings 842, 843, and 844). Construction of Academic Building B would also be within viewshed of Building 689.
  - Project effects: All components of this project are still in an early design stage, and adverse effects from this project are unlikely.

    The construction site for Academic Building B is adjacent to and southwest of the Chennault Circle Historic District and 705 ft (215 m) north of Building 689. Academic

Building B would alter the viewshed of these two historic resources. As it currently stands, the historic viewshed has already been greatly altered in the preceding two decades. The Academic Building B block, between Sycamore and Chestnut Streets, once held five three-story Cold War-era barracks buildings, identical to Buildings 1430 through 1434. Their demolition and the construction of four new visiting officers' quarters in the same location and viewshed in the 1990s and 2000s has already significantly altered viewsheds. In addition, the original design of Chennault Circle emphasized that the buildings should be viewed from the center, with the most important viewsheds oriented to the interior of the circle (USAF 2017:158). For these reasons, it is unlikely that construction of Academic Building B would incur an adverse effect on historic properties. At this point, Academic Building B is still in an early stage of design.

The construction site for Parking Garage A is, respectively, 820 ft (250 m) west of the Chennault Circle Historic District and 1,640 ft (500 m) north of Buildings 842, 843, and 844. Recent construction in the 1990s and 2000s incurred a greater impact on Chennault Circle and Building 842, 843, and 844 historic viewsheds than the potential impact of this project. Because of the project's distance from these resources, and previous viewshed effects, construction of Parking Garage A is unlikely to incur adverse effects. However, Parking Garage A is still in a preliminary design stage.

Building 1429 would be demolished to make way for Parking Garage A. It is anticipated that Building 1429 is not eligible for the NRHP.

- *Construct Dormitory Complex A at MAFB.*
  - Resources impacted by project: The Dormitory Complex A site is within viewshed of NRHP-eligible Buildings 842, 843, and 844.
  - Project effects: The project is still in an early design stage and it is unknown what the specific effects of this project would be to the viewshed of Buildings 842, 843, and 844. The project area is about 574 ft (175 m) away from these NRHP-eligible buildings. There are existing non-historic buildings of equivalent or greater scale than the proposed new dormitories built between the 1990s and the 2000s also within viewshed of the historic buildings and located at a closer distance. Therefore, the visual effect of this project would probably be minimal and unlikely to incur an adverse effect on these historic buildings.
- *Construct Dormitory Complex B at MAFB.*
  - Resources impacted by project: The Dormitory Complex B site is within viewshed of NRHP-eligible Buildings 842, 843, and 844.
  - Project effects: The project is still in an early design stage and it is unknown what the specific effects of this project would be to the viewshed of Buildings 842, 843, and 844. The project area is about 574 ft (175 m) away from these NRHP-eligible buildings.

There are existing non-historic buildings of equivalent or greater scale than the proposed new dormitories built between the 1990s and the 2000s also within viewshed of the historic buildings and located at a closer distance. Therefore, the visual effect of this project would probably be minimal and it is unlikely to incur an adverse effect on these historic buildings.

- *Construct Academic Building C including Heritage Plaza and Construct Parking Garage B at MAFB.*
  - Resources impacted by project: Construction of Academic Building C would alter the viewshed of the Chennault Circle Historic District to the northwest.
  - Project effects: Academic Building C is still in an early design stage and it is unknown what the specific effects of this project would be to the viewshed of the Chennault Circle Historic District.

    For construction of Parking Garage B, no buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project. It is anticipated that this component of the project would have no adverse effect on cultural resources.
- *Construct Lodging Building A at MAFB.*
  - Resources impacted by project: Construction of Academic Building A would be within viewshed of Buildings 842, 843, and 844.
  - Project effects: Lodging Building A is still in an early design stage and it is unknown what the specific effects of this project would be to the viewshed of Buildings 842, 843, and 844. The project is approximately 984 ft (300 m) away from this grouping of buildings and there are existing non-historic buildings of equivalent or greater scale than the proposed new lodging building also within viewshed of the historic buildings and located at a closer distance. Because of existing modern infill, the visual effect of the project would probably be minimal and it is unlikely this specific project would incur an adverse effect on these historic buildings.
- *Construct Administration Building at MAFB.*
  - Resources impacted by project: Construction of the Administration Building would be within viewshed of NRHP-eligible Buildings 678 and 835 and NRHP-listed Buildings 800 and 836 (the oldest building at MAFB).
  - Project effects: The Administration Building is still in an early design stage and it is unknown what the specific effects of this project would be to the viewshed of Buildings 678, 800, 835, and 836. The construction site is immediately south of Buildings 678, 835, and 836, and north of Building 800. An aerial from circa 1960-1970 shows the project site as occupied by a building of significant size, so construction of a building on this site would infill where buildings were already constructed historically.

However, construction of the building would still potentially affect integrity of setting for the adjacent historic buildings, although other, more important aspects of integrity (design, workmanship, and materials), would remain unaffected. This effect on building integrity, and any potential impacts to the integrity of the MAFB historic landscape, may be mitigated by the manner in which the design is executed, if the orientation, scale, setback, and materials used are in keeping with the historic character of the area.

In conclusion, Phase 2 will require additional design information to complete consultation with the SHPO, although most of these projects are anticipated to incur no adverse effects to cultural resources.

4.5.3.3 Phase 3

Phase 3 of Alternative 2 has some potential to adversely affect the landscape of the southern and western portions of the Chennault Circle Historic District. The following is a list of Phase 3 projects at Maxwell-Gunter AFB.

- *Construct Sycamore Street Promenade, renovate Circle Park/Library Plaza, and improve Chennault Circle streetscape at MAFB.*
    - Resources impacted by project: Sycamore Street has not been evaluated for NRHP eligibility. Building 1429 was constructed in 1975 and has not been evaluated for the NRHP. Although less than 50 years old, the building would be a historic-period building at the time of its planned demolition and will require NRHP evaluation. Circle Park/Library Plaza and the Chennault Circle streetscape are contributing components to the Chennault Circle Historic District.
    - Project effects: For construction of the Sycamore Street Promenade, based on current planning, this project would maintain existing curbs and road lanes, add more shade trees along the street, and feature multi-purpose green spaces. Currently, the streetscape design along Sycamore Street consists of sidewalks, streetlights, and scattered hardwoods (mostly oaks) lining the road on either side. The streetscape appears to hold no design or historical significance but the street and the project area abut the western edge of the Chennault Circle Historic District. The 2012 historic landscape study of MAFB (Tooker, Hartman and Smith 2012:166) included a recommendation that streets on the outskirts of historic districts be planted with trees, a recommendation consistent with the current plan for the Sycamore Street Promenade. The project is in the early stages of design, so there are currently no plans available to review. It is unlikely, however, that this project component would incur an adverse effect to Chennault Circle Historic District.
- *Construct Gateway Monument Park at MAFB.*
    - Resources impacted by project: Project site is an empty lot and is not within viewshed of NRHP-eligible or listed resources.

- Project effects: It is anticipated that this project would have no adverse effect on cultural resources.

- *Improve Maxwell Boulevard streetscape at MAFB.*
  - Resources impacted by project: Maxwell Boulevard streetscape components do not possess any significance under NRHP criteria but the project involves a partial landscape redesign for the southern portion of the Chennault Circle Historic District landscape.
  - Project effects: It is expected the new landscape design would be in keeping with the historic character of Chennault Historic District and would have no adverse effect on cultural resources. However, the project is in the early stages of design, so there are currently no plans available to review.
- *Improve Air Park at MAFB.*
  - Resources impacted by project: The Air Park is not 50 years old and is not eligible for the NRHP. Redesign of the Air Park, however, would involve a partial landscape redesign for the southern portion of the Chennault Circle Historic District landscape.
  - Project effects: It is expected that the new landscape design would be in keeping with the historic character of Chennault Historic District and would have no adverse effect on cultural resources. However, the project is in the early stages of design, so there are currently no plans available to review.
- *Improve/Implement Riverfront Trail at MAFB.*
  - Resources impacted by project: The project would not affect and is not within viewshed of any NRHP-eligible or listed buildings. The project footprint is within 23 ft (7 m) of MAFB's only NRHP-eligible archaeological site, Site 1MT200.
  - Project effects: It is anticipated this project would have no adverse effect on cultural resources. The current proposed action in the vicinity of the site would be improvements to riverfront trails. No impervious areas would be created as part of these improvements and no changes to the functional characteristics are anticipated. Actions would involve minor improvements such as mulching of recreational trails to improve the trail experience. Given the minor ground disturbing nature of the undertaking, and the fact that the cultural assemblage was recovered below the uppermost strata at depths exceeding 0.5 ft (15 cm), no adverse impacts to this NRHP-eligible property would occur as a result of the proposed project.
- *Improve Stormwater Landscape Corridor at MAFB.*
  - Resources impacted by project: No buildings would be demolished and no NRHP-eligible or unevaluated historic period resources would be affected by this project.

- Project effects: It is anticipated that this project would have no adverse effect on cultural resources.

In conclusion, with required consultation, it is anticipated that implementation of Alternative 2, Phase 3, would incur no adverse effects to cultural resources.

4.5.3.4 Phase 4

With exception of the construction of the Historical Research Agency Facility, impacts to cultural resources from Phase 4 projects under Alternative 2 would be the same as discussed for Alternative 1 (refer to Section 4.5.2.4). Two Phase 4 projects, Construct Conference Center/Distinguished Visitors Quarters Facility and Construct Parking Garage C, may incur some adverse effects to the viewsheds of the Chennault Circle and SOQ Historic Districts. With consultation, as required, it is anticipated these two projects and remaining projects under Phase 4 would incur no adverse effects to cultural resources.

With regards to the Historical Research Agency Facility, the new facility would be located just south of and within the viewshed of the SOQ Historic District. The project is still in an early design stage and it is unknown what the specific effects of these renovations would be. It is probable that this project would have no adverse effect on cultural resources. An existing screen of trees north of Magnolia Boulevard should obscure the viewshed between the new Enlisted Heritage Hall and Visitor Center to the SOQ Historic District to the north. However, the extent of viewshed effect would be determined by both the height of the building and its setback from Magnolia Boulevard.

4.5.3.5 Phase 0

Impacts to cultural resources from Phase 0 projects under Alternative 2 would the same as discussed for Alternative 1 (refer to Section 4.5.2.5). Consultation would be required to determine whether any adverse effects to cultural resources will be incurred by implementation of Alternative 2, Phase 0.

4.6 FACILITIES AND INFRASTRUCTURE

4.6.1 No Action Alternative

Under the No Action Alternative, the relocation, consolidation, and modernization of school buildings and associated landscape would not occur. As such, existing cultural resource conditions described in Section 3.5 would continue, and no significant impacts to cultural resources would be anticipated.

4.6.2 Alternative 1

Alternative 1 includes the relocation, consolidation, and modernization of school buildings and associated landscape. A short-term increase in demand for water, sanitary sewer, electricity, solid waste, and transportation would occur as a result of construction and demolition activities; however, since no increase in students is anticipated from implementation of Alternative 1, no long-term adverse impacts are anticipated.

No other past, present, or future projects at or near Maxwell-Gunter AFB are anticipated to directly or indirectly interact with the Proposed Action. In addition, the Proposed Action includes BMPs (refer to Table 2-3) that would reduce nonpoint source pollution, as well as stormwater pollution via pollution prevention. In addition, contractors would be required to obtain a NPDES permit for discharges from construction activities that result in a total land disturbance of 1 acre (0.004 km^2) or greater, and sites less than 1 acre (0.004 km^2) but part of a common plan of development. Therefore, there would be negligible impacts to the water supply, sanitary sewer and wastewater treatment, communications, solid waste management, or transportation at MAFB and Gunter Annex from the implementation of Alternative 1.

4.6.3 Alternative 2

Alternative 2 includes the relocation, consolidation, and modernization of school buildings and associated landscape. A short-term increase in demand for water, sanitary sewer, electricity, solid waste, and transportation would occur as a result of construction and demolition activities; however, since no increase in students is anticipated from implementation of Alternative 1, no long-term adverse impacts are anticipated.

No other past, present, or future projects at or near Maxwell-Gunter AFB are anticipated to directly or indirectly interact with the Proposed Action. In addition, the Proposed Action includes BMPs (refer to Table 2-3) that would reduce nonpoint source pollution, as well as stormwater pollution via pollution prevention. In addition, contractors would be required to obtain a NPDES permit for discharges from construction activities that result in a total land disturbance of 1 acre (0.004 km^2) or greater, and sites less than 1 acre (0.004 km^2) but part of a common plan of development. Therefore, there would be negligible impacts to the water supply, sanitary sewer and wastewater treatment, communications, solid waste management, or transportation at MAFB and Gunter Annex from the implementation of Alternative 2.

5.0 LIST OF PREPARERS

This EA has been prepared under the direction of Maxwell AFB by LG2 Environmental Solutions, Inc. The individuals that contributed to the preparation of this EA are listed below.

Table 5-1. List of Preparers

Name	*Education*	*Resource Area*	*Years of Experience*
Stephen Berry	B.S., Environmental Engineering B.S., Ecology and Biology	Purpose and Need Proposed Action and Alternatives Facilities and Infrastructure	42
Chrystal Everson	M.S., Environmental and Occupational Health B.S., Environmental and Occupational Health	Purpose and Need Proposed Action and Alternatives Facilities and Infrastructure	21
Leesa Gerald	B.S., Environmental Science	Air Quality	31
Pete Johnson	B.S., Limnology	Water Resources Biological Resources	22
Paul Maggioni	MBA M.A., Historic Preservation B.A., Historic Preservation	Cultural Resources SHPO Consultation	21

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Appendix A: Public and Stakeholder Coordination List

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Federal Agencies

Mr. Larry O. Gissentanna
DoD and Federal Agency Project Manager
NEPA Program Office
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street SW
Atlanta, GA 30303-8960

Mr. Craig J. Litteken, Chief
Regulatory Division
U.S. Army Corps of Engineers
Mobile District
PO Box 2288
Mobile, AL 36628-0001

Mr. Bill Pearson, Daphne Field Supervisor
U.S. Fish and Wildlife Service, Region 4
Alabama Ecological Services Field Office
1208-B Main Street
Daphne, AL 36526

State Agencies

Ms. Lee Anne Wofford
Deputy
Historic Preservation Division Director
Alabama Historical Commission
468 South Perry Street
Montgomery, AL 36130-0900

Mr. Lance LeFleur, Director
Alabama Department of Environmental Management (ADEM)
1400 Coliseum Boulevard
Montgomery, AL 36110-2400

Mr. Chuck Sykes, Director
Alabama Department of Conservation and Natural Resources
Division of Wildlife and Freshwater Fisheries
64 North Union Street
Montgomery, AL 36130

Local Agencies

The Honorable Steven L. Reed
Mayor, City of Montgomery
City Hall, Room 206
103 North Perry Street
Montgomery, AL 36104

Mr. Robert E. Smith
Director of Planning
City of Montgomery Planning Department
103 North Perry Street
Montgomery, AL 36104

Mr. Trent Edwards
Military and Community Development
Montgomery Area Chamber of Commerce
P.O. Box 79
Montgomery, AL 36101

Cultural/Tribal Contacts

Ms. Martha C. Williams
Commission Chairperson
Alabama Indian Affairs Commission
771 S Lawrence St, Ste 106
Montgomery, AL 36130

Mr. Bryant Celestine
Tribal Historic Preservation Officer
Alabama-Coushatta Tribe of Texas
571 State Park Road 56
Livingston, TX 77351
celestine.bryant@actribe.org
936-563-1181

Ms. Samantha Robinson
Alabama-Quassarte Tribal Town of the Creek Nation
101 East Broadway
Wetumka, OK 74883
AQhpo@mail.com
405-452-3881

Mr. David Cook
Kialegee Tribal Town of the Creek Nation of Oklahoma
PO Box 332
Wetumka, OK 74883
david.cook@kialegeetribe.net
405-452-3262

Mr. Kenneth H. Carleton
Tribal Archaeologist
Mississippi Band of Choctaw Indians
PO Box 6257
Choctaw, MS 39350
601-650-7316

Ms. Corain Lowe-Zepeda
Cultural Preservation Manager
Muscogee (Creek) Nation
PO Box 580
Okmulgee, OK 74447
clowe@mcn-nsn.gov

Mr. Larry Haikey
Tribal Historic Preservation Officer
Poarch Band of Creek Indians
5811 Jack Spring Rd
Atmore, AL 36502
lhaikey@pci-nsn.gov
251-368-9136, ext. 2072

Dr. Ian Thompson
Director, Historic Preservation Department
Choctaw Nation of Oklahoma
PO Box 1210
Durant, OK 74702
ithompson@choctawnation.com
580-924-8280

Mr. Terry Clouthier
Tribal Historic Preservation Officer
Thlopthlocco Tribal Town
PO Box 188
Okemah, OK 74859
thpo@tttown.org
405-221-6790

Libraries
Air University Library
Building 1405
600 Chennault Circle
Montgomery, AL 36112

Juliette Hampton Morgan Memorial Library
245 High Street
Montgomery, AL 36104

Appendix B: Record of Air Analysis

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AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA) – ALTERNATIVE 1

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 Manual 32-7002, Environmental Compliance and Pollution Prevention; 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.

Action Location:
Base: Maxwell Air Force Base and Gunter Annex (Maxwell-Gunter AFB)
State: Alabama
County(s): Montgomery
Regulatory Area(s): Not in a regulatory area

Action Title: The Implementation of the Air University (AU) Campus Plan at Maxwell-Gunter AFB, Montgomery, Alabama

Project Number/s (if applicable): Not Applicable

Projected Action Start Date: 1 / 2025

Action Description:
The purpose of Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Specifically, the Proposed Action would accomplish the following:

- Co-locate Officer and Enlisted PME at MAFB,
- Provide modern space and dedicated space for officer pipeline,
- Provide Eaker Center space for key leadership development growth, and
- Provide modern space and capabilities for Air Force's e-learning capability and growth.

Alternative 1 Description:
The AU Campus Plan would be implemented in four phases, as follows:

- Phase 1: Eaker Center and International Officer School Modernization on both the MAFB and Gunter Annex campuses (construction expected to start in FY 2024);
- Phase 2: Consolidate Officer and Enlisted Professional Military Education on the MAFB and Gunter Annex campuses (construction expected to start in FY 2025);
- Phase 3: AU Park and Green Space Modernization on the MAFB campus (construction expected to start in FY 2026);
- Phase 4: AU Transformation Capstone on the MAFB campus (construction expected to start in FY 2027).

In addition to the four phases comprising the AU Campus Plan, construction projects occurring concurrently under the Air Force's Facility Sustainment, Restoration, and Modernization program (referred to as "Phase 0 projects") are also included in the Proposed Action since these projects would occur within the Proposed Action area. Phase 0 projects are expected to start in FY 23 and continue through FY28.

As part of Alternative 1, 30,700 linear ft (9,357.4 meters [m]) of streets would be improved, 61.9 acres (0.25 square kilometers [km^2]) of landscape would be renovated, 2,478,068 gross square feet (gsf) (230,220.1 square meters [m^2]) of buildings and parking lots would be constructed, 1,385,698 gsf (128,735.6 m^2) of buildings would be renovated (interior renovations only), and 615,230 gsf (57,156.7 m^2) of buildings would be demolished. For the purposes of air quality, indoor air emissions resulting from interior renovations is not applicable and were therefore not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the United States Air Force maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was modeled.

No Action Alternative:
Under the No Action Alternative, AU would not be transformed and would be unable to meet its stated mission of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy. As a result, Airmen would not have the specialized education needed to meet the needs of the Air Force or achieve national security objectives.

Point of Contact:
Name: Leesa N. Gerald
Title: Senior Air Quality
Organization: LG2 Environmental Solutions, Inc.
Email: leesagerald@lg2es.com
Phone Number: 1-800-435-0072

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	31.717	250	No
NOx	19.205	250	No
CO	18.966	250	No
SOx	0.061	250	No
PM 10	93.352	250	No
PM 2.5	0.710	250	No
Pb	0.000	25	No
NH3	0.049	250	No
CO2e	6284.5		

2026 - Steady State

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

_____ _____

LEESA N. GERALD, SENIOR AIR QUALITY/PRESIDENT DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT – ALTERNATIVE 1

1. General Information

Action Location:
Base: Maxwell Air Force Base and Gunter Annex (Maxwell-Gunter AFB)
State: Alabama
County(s): Montgomery
Regulatory Area(s): Not in a regulatory area

Action Title: The Implementation of the Air University (AU) Campus Plan at Maxwell-Gunter AFB, Montgomery, Alabama

Project Number/s (if applicable): Not Applicable

Projected Action Start Date: 1 / 2025

Action Purpose and Need:
The purpose of the Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. The Proposed Action is needed to meet AU's mission requirement of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy, and accommodating training needs of the Air Force. Project construction is expected to start in Fiscal Year (FY) 2023 and end in FY 2029. It is assumed each phase includes one year for design and two years for construction.

Action Description:
The purpose of Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Specifically, the Proposed Action would accomplish the following:

- Co-locate Officer and Enlisted PME at MAFB,
- Provide modern space and dedicated space for officer pipeline,
- Provide Eaker Center space for key leadership development growth, and
- Provide modern space and capabilities for Air Force's e-learning capability and growth.

Alternative 1 Description:
The AU Campus Plan would be implemented in four phases, as follows:

- Phase 1: Eaker Center and International Officer School Modernization on both the MAFB and Gunter Annex campuses (construction expected to start in FY 2024);
- Phase 2: Consolidate Officer and Enlisted Professional Military Education on the MAFB and Gunter Annex campuses (construction expected to start in FY 2025);
- Phase 3: AU Park and Green Space Modernization on the MAFB campus (construction expected to start in FY 2026);
- Phase 4: AU Transformation Capstone on the MAFB campus (construction expected to start in FY 2027).

In addition to the four phases comprising the AU Campus Plan, construction projects occurring concurrently under the Air Force's Facility Sustainment, Restoration, and Modernization program (referred to as "Phase 0 projects") are also included in the Proposed Action since these projects would occur within the Proposed Action area. Phase 0 projects are expected to start in FY 23 and continue through FY28.

As part of Alternative 1, 30,700 linear ft (9,357.4 meters [m]) of streets would be improved, 61.9 acres (0.25 square kilometers [km^2]) of landscape would be renovated, 2,478,068 gross square feet (gsf) (230,220.1 square meters [m^2]) of buildings and parking lots would be constructed, 1,385,698 gsf (128,735.6 m^2) of buildings would be renovated (interior renovations only), and 615,230 gsf (57,156.7 m^2) of buildings would be demolished. For the

purposes of air quality, indoor air emissions resulting from interior renovations is not applicable and were therefore not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the United States Air Force maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was modeled.

No Action Alternative:
Under the No Action Alternative, AU would not be transformed and would be unable to meet its stated mission of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy. As a result, Airmen would not have the specialized education needed to meet the needs of the Air Force or achieve national security objectives.

Point of Contact:
Name: Leesa N. Gerald
Title: Senior Air Quality
Organization: LG2 Environmental Solutions, Inc.
Email: leesagerald@lg2es.com
Phone Number: 1-800-435-0072

Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Implementation of the Air University Campus Plan at Maxwell Air Force Base and Gunter Annex, Alabama

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

Activity Location:
County: Montgomery
Regulatory Area(s): Not in a regulatory area

Activity Title: Implementation of the Air University Campus Plan at Maxwell Air Force Base and Gunter Annex, Alabama

Activity Description:
The purpose of the Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Project construction is expected to start in Fiscal Year (FY) 2023 and end in FY 2029. It is assumed each phase includes one year for design and two years for construction.

Activity Start Date:
Start Month: 1
Start Month: 2025

Activity End Date:
Indefinite: False
End Month: 12
End Month: 2025

Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	31.717172
SO_x	0.060799
NO_x	19.205468
CO	18.965866
PM 10	93.352196

Pollutant	Total Emissions (TONs)
PM 2.5	0.709790
Pb	0.000000
NH_3	0.049452
CO_2e	6284.5

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.1.2 Demolition Phase Assumptions

General Demolition Information:
Area of Building to be demolished (ft^2): 615,230
Height of Building to be demolished (ft): 30

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
Excavators Composite	3	8
Rubber Tired Dozers Composite	2	8
Tractors/Loaders/Backhoes Composite	2	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

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	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

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: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

General Site Grading Information
Area of Site to be Graded (ft^2): 495,614
Amount of Material to be Hauled On-Site (yd^3): 18,356
Amount of Material to be Hauled Off-Site (yd^3): 9,178

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
Rollers Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	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

2.2.3 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**

Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

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 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.3.2 Trenching / Excavating Phase Assumptions

General Trenching/Excavating Information
Area of Site to be Trenched/Excavated (ft^2): 247,806
Amount of Material to be Hauled On-Site (yd^3): 9,178
Amount of Material to be Hauled Off-Site (yd^3): 4,589

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

2.3.3 Trenching / Excavating 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.3.4 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

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

General Building Construction Information
Building Category: Office or Industrial
Area of Building (ft^2): 2,478,068
Height of Building (ft): 30
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	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders 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

2.4.3 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	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0287	0.0006	0.2329	0.2666	0.0080	0.0080	0.0025	61.057
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0214	0.0003	0.1373	0.1745	0.0051	0.0051	0.0019	25.650

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.4.4 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

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

General Architectural Coatings Information
Building Category: Non-Residential
Total Square Footage (ft^2): 2,478,068
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

2.5.3 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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.5.4 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

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

- Phase Start Date
Start Month: 1
Start Quarter: 1
Start Year: 2025

- Phase Duration
Number of Month: 12
Number of Days: 0

2.6.2 Paving Phase Assumptions

General Paving Information:
Paving Area (ft^2): 368,400

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
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6

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

2.6.3 Paving 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.6.4 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)

AIR CONFORMITY APPLICABILITY MODEL REPORT RECORD OF AIR ANALYSIS (ROAA) – ALTERNATIVE 2

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 Manual 32-7002, Environmental Compliance and Pollution Prevention; 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.

Action Location:
Base: Maxwell Air Force Base and Gunter Annex (Maxwell-Gunter AFB)
State: Alabama
County(s): Montgomery
Regulatory Area(s): Not in a regulatory area

Action Title: The Implementation of the Air University (AU) Campus Plan at Maxwell-Gunter AFB, Montgomery, Alabama

Project Number/s (if applicable): Not Applicable

Projected Action Start Date: 1 / 2025

Action Description:
The purpose of Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Specifically, the Proposed Action would accomplish the following:

- Co-locate Officer and Enlisted PME at MAFB,
- Provide modern space and dedicated space for officer pipeline,
- Provide Eaker Center space for key leadership development growth, and
- Provide modern space and capabilities for Air Force's e-learning capability and growth.

Alternative 2 Description:
The AU Campus Plan would be implemented in four phases, as follows:

- Phase 1: Eaker Center and International Officer School Modernization on both the MAFB and Gunter Annex campuses (construction expected to start in FY 2024);
- Phase 2: Consolidate Officer and Enlisted Professional Military Education on the MAFB campus (construction expected to start in FY 2025);
- Phase 3: AU Park and Green Space Modernization on the MAFB campus (construction expected to start in FY 2026);
- Phase 4: AU Transformation Capstone on the MAFB campus (construction expected to start in FY 2027).

In addition to the four phases comprising the AU Campus Plan, construction projects occurring concurrently under the Air Force's Facility Sustainment, Restoration, and Modernization program (referred to as "Phase 0 projects") are also included in the Proposed Action since these projects would occur within the Proposed Action area. Phase 0 projects are expected to start in FY 23 and continue through FY28.

As part of Alternative 2, 30,700 linear ft (9,357.4 meters [m]) of streets would be improved, 38.5 acres (0.16 square kilometers [km^2]) of landscape would be renovated, 2,155,350 gross square feet (gsf) (200,238.6 square meters [m^2]) of buildings and parking lots would be constructed, 1,438,888 gsf (133,677.1 m^2) of buildings would be renovated (interior renovations only), and 371,430 gsf (34,507.0 m^2) of buildings would be demolished. For the purposes of air quality, indoor air emissions resulting from interior renovations is not applicable and were therefore not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the United States Air Force maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was modeled.

No Action Alternative:
Under the No Action Alternative, AU would not be transformed and would be unable to meet its stated mission of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy. As a result, Airmen would not have the specialized education needed to meet the needs of the Air Force or achieve national security objectives.

Point of Contact:
Name: Leesa N. Gerald
Title: Senior Air Quality
Organization: LG2 Environmental Solutions, Inc.
Email: leesagerald@lg2es.com
Phone Number: 1-800-435-0072

2. Air Impact Analysis: Based on the attainment status at the action location, the requirements of the General Conformity Rule are:

_____ applicable
__X__ not applicable

Total net direct and indirect emissions associated with the action were estimated through ACAM on a calendar-year basis for the start of the action through achieving "steady state" (i.e., net gain/loss upon action fully implemented) emissions. The ACAM analysis used the latest and most accurate emission estimation techniques available; all algorithms, emission factors, and methodologies used are described in detail in the USAF Air Emissions Guide for Air Force Stationary Sources, the USAF Air Emissions Guide for Air Force Mobile Sources, and the USAF Air Emissions Guide for Air Force Transitory Sources.

"Insignificance Indicators" were used in the analysis to provide an indication of the significance of potential impacts to air quality based on current ambient air quality relative to the National Ambient Air Quality Standards (NAAQSs). These insignificance indicators are the 250 ton/yr Prevention of Significant Deterioration (PSD) major source threshold for actions occurring in areas that are "Clearly Attainment" (i.e., not within 5% of any NAAQS) and the GCR de minimis values (25 ton/yr for lead and 100 ton/yr for all other criteria pollutants) for actions occurring in areas that are "Near Nonattainment" (i.e., within 5% of any NAAQS). These indicators do not define a significant impact; however, they do provide a threshold to identify actions that are insignificant. Any action with net emissions below the insignificance indicators for all criteria pollutant is considered so insignificant that the action will not cause or contribute to an exceedance on one or more NAAQSs. For further detail on insignificance indicators see chapter 4 of the Air Force Air Quality Environmental Impact Analysis Process (EIAP) Guide, Volume II - Advanced Assessments.

The action's net emissions for every year through achieving steady state were compared against the Insignificance Indicator and are summarized below.

Analysis Summary:

2025

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	26.103	250	No
NOx	18.053	250	No
CO	18.542	250	No
SOx	0.058	250	No
PM 10	80.217	250	No
PM 2.5	0.671	250	No
Pb	0.000	25	No
NH3	0.042	250	No
CO2e	5907.5		

2026 - Steady State

Pollutant	Action Emissions (ton/yr)	INSIGNIFICANCE INDICATOR	
		Indicator (ton/yr)	Exceedance (Yes or No)
NOT IN A REGULATORY AREA			
VOC	0.000	250	No
NOx	0.000	250	No
CO	0.000	250	No
SOx	0.000	250	No
PM 10	0.000	250	No
PM 2.5	0.000	250	No
Pb	0.000	25	No
NH3	0.000	250	No
CO2e	0.0		

None of estimated annual net emissions associated with this action are above the insignificance indicators, indicating no significant impact to air quality. Therefore, the action will not cause or contribute to an exceedance on one or more NAAQSs. No further air assessment is needed.

_____ _____

LEESA N. GERALD, SENIOR AIR QUALITY/PRESIDENT DATE

DETAIL AIR CONFORMITY APPLICABILITY MODEL REPORT – ALTERNATIVE 2

1. General Information

Action Location:
Base: Maxwell Air Force Base and Gunter Annex (Maxwell-Gunter AFB)
State: Alabama
County(s): Montgomery
Regulatory Area(s): Not in a regulatory area

Action Title: The Implementation of the Air University (AU) Campus Plan at Maxwell-Gunter AFB, Montgomery, Alabama

Project Number/s (if applicable): Not Applicable

Projected Action Start Date: 1 / 2025

Action Purpose and Need:
The purpose of the Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. The Proposed Action is needed to meet AU's mission requirement of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy, and accommodating training needs of the Air Force. Project construction is expected to start in Fiscal Year (FY) 2023 and end in FY 2029. It is assumed each phase includes one year for design and two years for construction.

Action Description:
The purpose of Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Specifically, the Proposed Action would accomplish the following:

- Co-locate Officer and Enlisted PME at MAFB,
- Provide modern space and dedicated space for officer pipeline,
- Provide Eaker Center space for key leadership development growth, and
- Provide modern space and capabilities for Air Force's e-learning capability and growth.

Alternative 2 Description:
The AU Campus Plan would be implemented in four phases, as follows:

- Phase 1: Eaker Center and International Officer School Modernization on both the MAFB and Gunter Annex campuses (construction expected to start in FY 2024);
- Phase 2: Consolidate Officer and Enlisted Professional Military Education on the MAFB campus (construction expected to start in FY 2025);
- Phase 3: AU Park and Green Space Modernization on the MAFB campus (construction expected to start in FY 2026);
- Phase 4: AU Transformation Capstone on the MAFB campus (construction expected to start in FY 2027).

In addition to the four phases comprising the AU Campus Plan, construction projects occurring concurrently under the Air Force's Facility Sustainment, Restoration, and Modernization program (referred to as "Phase 0 projects") are also included in the Proposed Action since these projects would occur within the Proposed Action area. Phase 0 projects are expected to start in FY 23 and continue through FY28.

As part of Alternative 2, 30,700 linear ft (9,357.4 meters [m]) of streets would be improved, 38.5 acres (0.16 square kilometers [km^2]) of landscape would be renovated, 2,155,350 gross square feet (gsf) (200,238.6 square meters [m^2]) of buildings and parking lots would be constructed, 1,438,888 gsf (133,677.1 m^2) of buildings would be renovated (interior renovations only), and 371,430 gsf (34,507.0 m^2) of buildings would be demolished. For the purposes of air quality, indoor air emissions resulting from interior renovations is not applicable and were therefore

not modeled. In addition to the construction and demolition activities, anticipated emissions from temporary emissions from heavy-duty diesel-powered construction equipment, vehicular traffic, and fugitive dust emissions generated during construction was also considered.

To provide the United States Air Force maximum flexibility, it was assumed all construction could occur during a one-year, or 12-month, period. This provided an envelope in which the worst case scenario was modeled.

No Action Alternative:
Under the No Action Alternative, AU would not be transformed and would be unable to meet its stated mission of educating and developing air, space, and cyberspace warrior leaders in support of the National Defense Strategy. As a result, Airmen would not have the specialized education needed to meet the needs of the Air Force or achieve national security objectives.

Point of Contact:
Name: Leesa N. Gerald
Title: Senior Air Quality
Organization: LG2 Environmental Solutions, Inc.
Email: leesagerald@lg2es.com
Phone Number: 1-800-435-0072

Activity List:

Activity Type		Activity Title
2.	Construction / Demolition	Implementation of the Air University Campus Plan at Maxwell Air Force Base and Gunter Annex, Alabama

Emission factors and air emission estimating methods come from the United States Air Force's Air Emissions Guide for Air Force Stationary Sources, Air Emissions Guide for Air Force Mobile Sources, and Air Emissions Guide for Air Force Transitory Sources.

2. Construction / Demolition

2.1 General Information & Timeline Assumptions

Activity Location:
County: Montgomery
Regulatory Area(s): Not in a regulatory area

Activity Title: Implementation of the Air University Campus Plan at Maxwell Air Force Base and Gunter Annex, Alabama

Activity Description:
The purpose of the Proposed Action is to implement AU's Campus Plan, which includes the relocation, consolidation, and modernization of school buildings and associated landscape at Maxwell-Gunter AFB. Project construction is expected to start in Fiscal Year (FY) 2023 and end in FY 2029. It is assumed each phase includes one year for design and two years for construction.

Activity Start Date:
Start Month: 1
Start Month: 2025

Activity End Date:
Indefinite: False
End Month: 12
End Month: 2025

Activity Emissions:

Pollutant	Total Emissions (TONs)
VOC	26.102645
SO_x	0.057529
NO_x	18.052960
CO	18.541539
PM 10	80.216925

Pollutant	Total Emissions (TONs)
PM 2.5	0.671073
Pb	0.000000
NH_3	0.042399
CO_2e	5907.5

2.1 Demolition Phase

2.1.1 Demolition Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.1.2 Demolition Phase Assumptions

General Demolition Information:
Area of Building to be demolished (ft^2): 371,430
Height of Building to be demolished (ft): 30

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
Excavators Composite	3	8
Rubber Tired Dozers Composite	2	8
Tractors/Loaders/Backhoes Composite	2	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

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	0.0336	0.0006	0.2470	0.3705	0.0093	0.0093	0.0030	58.539
Excavators Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

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: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.2.2 Site Grading Phase Assumptions

General Site Grading Information:
Area of Site to be Graded (ft^2): 431,070
Amount of Material to be Hauled On-Site (yd^3): 15,965
Amount of Material to be Hauled Off-Site (yd^3): 7,982

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
Rollers Composite	1	8
Rubber Tired Dozers Composite	1	8
Scrapers Composite	2	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

2.2.3 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

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 Trenching/Excavating Phase

2.3.1 Trenching / Excavating Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.3.2 Trenching / Excavating Phase Assumptions

General Trenching/Excavating Information:
Area of Site to be Trenched/Excavated (ft^2): 215,535
Amount of Material to be Hauled On-Site (yd^3): 7,982
Amount of Material to be Hauled Off-Site (yd^3): 3,991

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

2.3.3 Trenching / Excavating 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.3.4 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

2.4 Building Construction Phase

2.4.1 Building Construction Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.4.2 Building Construction Phase Assumptions

General Building Construction Information:
Building Category: Office or Industrial
Area of Building (ft^2): 2,155,350
Height of Building (ft): 30
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	7
Forklifts Composite	3	8
Generator Sets Composite	1	8
Tractors/Loaders/Backhoes Composite	3	7
Welders 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

2.4.3 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	0.0680	0.0013	0.4222	0.3737	0.0143	0.0143	0.0061	128.77
Forklifts Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0236	0.0006	0.0859	0.2147	0.0025	0.0025	0.0021	54.449
Generator Sets Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0287	0.0006	0.2329	0.2666	0.0080	0.0080	0.0025	61.057
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872
Welders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0214	0.0003	0.1373	0.1745	0.0051	0.0051	0.0019	25.650

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.4.4 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

2.5 Architectural Coatings Phase

2.5.1 Architectural Coatings Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.5.2 Architectural Coatings Phase Assumptions

General Architectural Coatings Information:
Building Category: Non-Residential
Total Square Footage (ft^2): 2,004,000
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

2.5.3 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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
LDDV	000.101	000.003	000.131	002.585	000.004	000.004		000.008	00316.802
LDDT	000.237	000.004	000.371	004.398	000.007	000.006		000.008	00448.891
HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.5.4 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

2.6 Paving Phase

2.6.1 Paving Phase Timeline Assumptions

Phase Start Date:
Start Month: 1
Start Quarter: 1
Start Year: 2025

Phase Duration:
Number of Month: 12
Number of Days: 0

2.6.2 Paving Phase Assumptions

General Paving Information:
Paving Area (ft^2): 368,400

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
Pavers Composite	1	8
Paving Equipment Composite	2	6
Rollers Composite	2	6

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

2.6.3 Paving 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	0.0559	0.0013	0.2269	0.5086	0.0086	0.0086	0.0050	119.70
Graders Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0676	0.0014	0.3314	0.5695	0.0147	0.0147	0.0061	132.89
Other Construction Equipment Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0442	0.0012	0.2021	0.3473	0.0068	0.0068	0.0039	122.60
Rollers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0409	0.0007	0.2500	0.3762	0.0122	0.0122	0.0036	67.123
Rubber Tired Dozers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1671	0.0024	1.0824	0.6620	0.0418	0.0418	0.0150	239.45
Scrapers Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.1495	0.0026	0.8387	0.7186	0.0334	0.0334	0.0134	262.81
Tractors/Loaders/Backhoes Composite								
	VOC	**SO_x**	**NO_x**	**CO**	**PM 10**	**PM 2.5**	**CH_4**	**CO_2e**
Emission Factors	0.0335	0.0007	0.1857	0.3586	0.0058	0.0058	0.0030	66.872

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	000.294	000.002	000.221	003.370	000.006	000.006		000.023	00325.374
LDGT	000.376	000.003	000.389	004.772	000.008	000.007		000.024	00418.504
HDGV	000.739	000.005	000.983	014.997	000.018	000.016		000.045	00770.173
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HDDV	000.458	000.013	004.584	001.678	000.167	000.154		000.028	01498.941
MC	002.697	000.003	000.706	013.124	000.026	000.023		000.054	00394.164

2.6.4 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)

Appendix C: Preliminary Jurisdictional Waters of the United States and Wetlands Survey

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Wetlands and Waters of the United States
Final Report

Air University Vision 2030 Plan
Maxwell Air Force Base
Montgomery County, Alabama

LG^{2}ES Project Number: 2020-264

Prepared for:

Vectrus Systems Corporation
42d Civil Engineer Squadron/Base Environmental Office
400 Cannon Street, Bldg.1060
Maxwell AFB, Al 36112

Prepared by:

LG^2 Environmental Solutions, Inc.
10475 Fortune Parkway, Suite 201
Jacksonville, Florida, 32256
(904) 363-1686
www.lg2es.com

February 2021

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LIST OF ACRONYMS

ADEM	Alabama Department of Environmental Management
EPA	U.S. Environmental Protection Agency
GIS	Geographical Information Systems
MAFB	Maxwell Air Force Base
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands Inventory
TNW	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey
WOTUS	Waters of the United States

1.0 INTRODUCTION

LG^2 Environmental Solutions (LG^2ES) conducted a preliminary jurisdictional waters of the United States (WOTUS) wetlands survey at the Maxwell Air Force Base (MAFB) within the proposed Air University (AU) Vision 2030 Plan project area in Montgomery County, Alabama. The MAFB installation location, boundaries and AU Vision 2030 Plan project area boundaries are depicted on Figures 1 and 2.

MAFB is located within the northwest section of the City of Montgomery, approximately one quarter mile west of downtown. The installation is bordered on the east and south by the City of Montgomery and northeast by the Alabama River (Figure 2a). MAFB consists of approximately 2,527 acres of improved or developed land. Main features of the installation include 700 acres of buildings, structures, pavements and landscaped buildings and 880 acres of runways, taxiways, and adjacent infield. The remaining area consists of a golf course, playgrounds, picnic areas, and a few recreational lakes.

Gunter Annex, formerly Gunter AFB, is located approximately 10 miles east of MAFB (Figure 2b). Gunter Annex consists of approximately 377 acres of land that is fully developed with buildings and structures supporting Air University, combat information services, and network operations.

The survey was conducted to identify and confirm any federally jurisdictional WOTUS, including traditional navigable waters (TNW), tributaries and directly adjacent wetlands, found within the AU Vision 2030 Plan project area (Figure 2A). MAFB jurisdictional WOTUS were previously delineated by others and described in a 1994 Wetland Inventory report and 2009 Wetlands Inventory Update document, which identified 16 wetlands within MAFB of which 10 of them appear to be within the Air University 2030 Vison Plan project area (Woolpert 1994, 2009). Jurisdictional WOTUS were not previously found to occur within the Gunter Annex (Woolpert 1994, 2009).

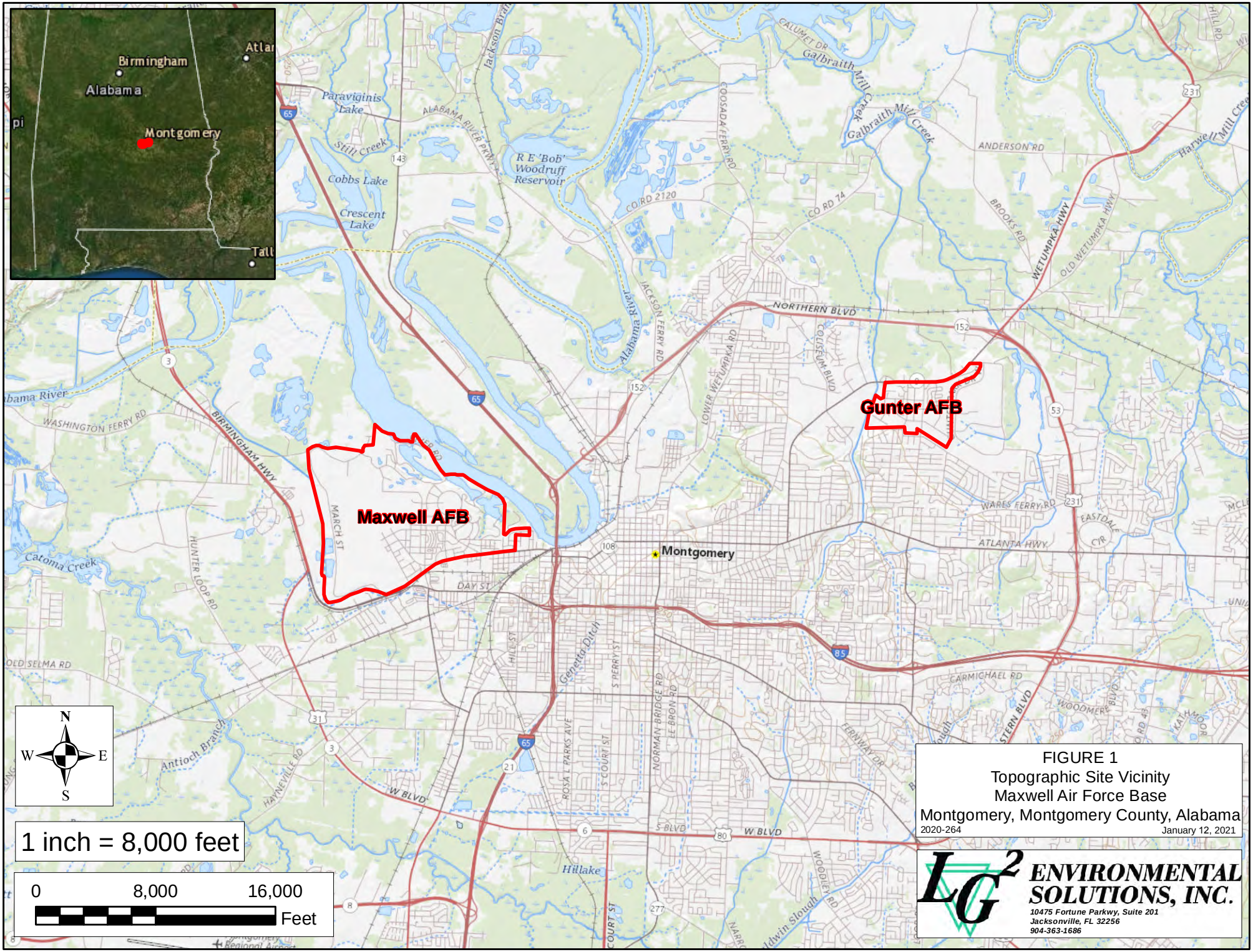

FIGURE 1
Topographic Site Vicinity
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

LG² ENVIRONMENTAL SOLUTIONS, INC.
10475 Fortune Parkway, Suite 201
Jacksonville, FL 32256
904-363-1686

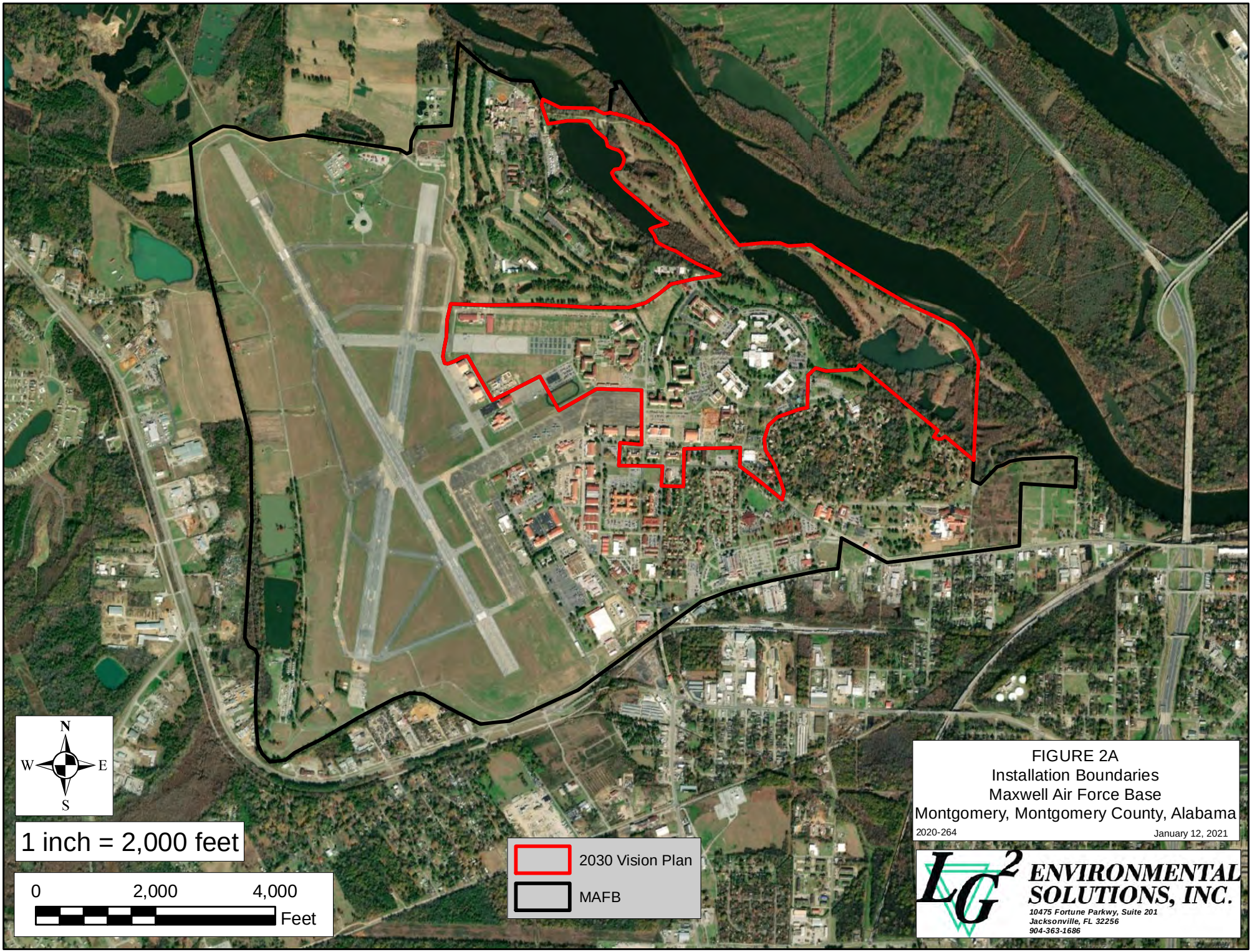

FIGURE 2A
Installation Boundaries
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

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Jacksonville, FL 32256
904-363-1686

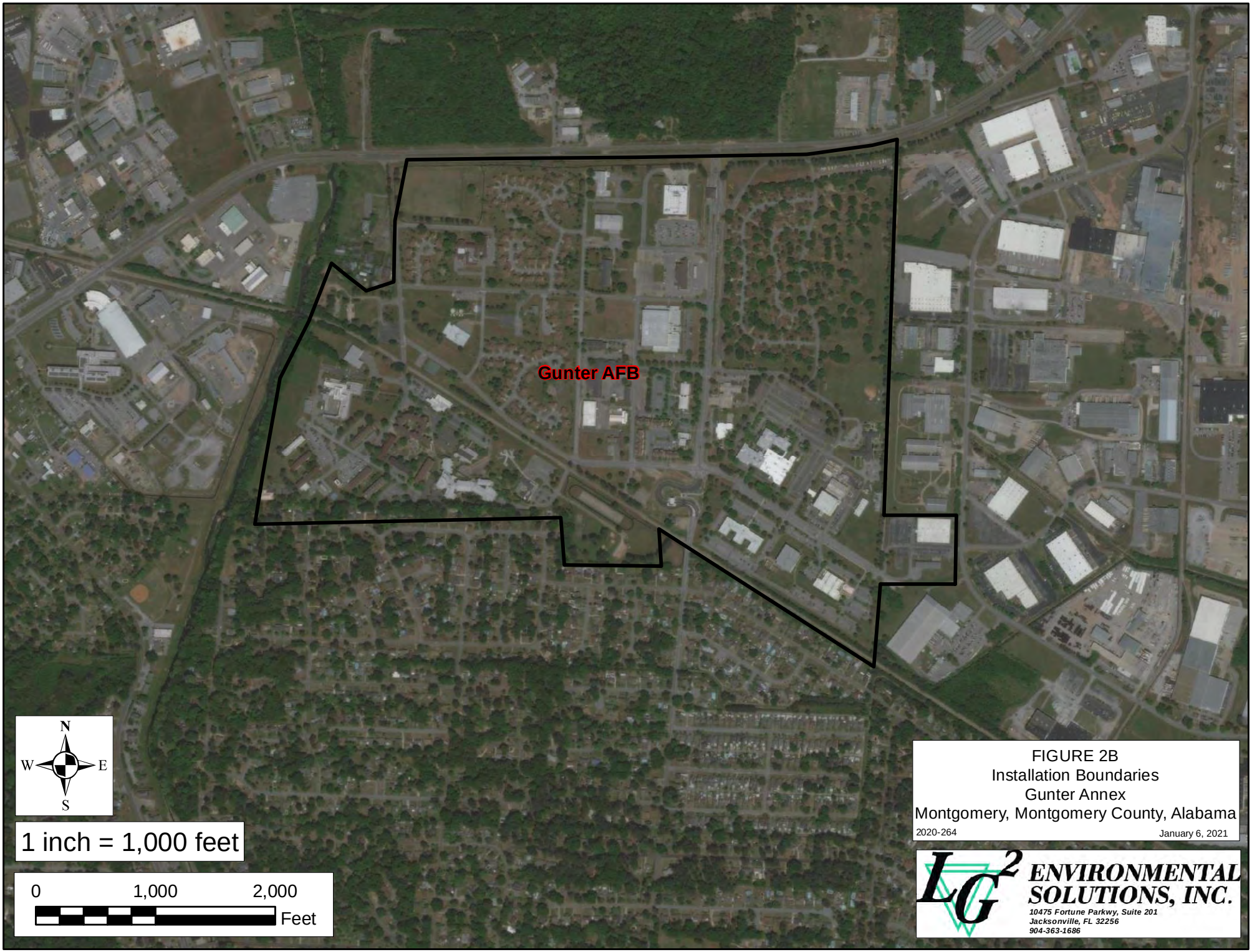

FIGURE 2B
Installation Boundaries
Gunter Annex
Montgomery, Montgomery County, Alabama
2020-264
January 6, 2021

LG² ENVIRONMENTAL SOLUTIONS, INC.
10475 Fortune Parkwy, Suite 201
Jacksonville, FL 32256
904-363-1686

2.0 OBJECTIVES AND METHODS

The survey objective was to identify and reconfirm any jurisdictional WOTUS found within the AU Vision 2030 Plan project area (Figure 3). Gunter Annex was included in this report only because it has been included in the AU Vision 2030 Plan; however, the site is a completely developed urban campus and does not contain any jurisdictional WOTUS (Woolpert 1994, 2009).

Observational data such as identified plant species, soil descriptions, hydrology indicators, vegetative communities, weather conditions, time assessment commenced and terminated, and anthropogenic activity was collected in field notes and data forms. Survey methods generally followed standard USACE methodologies for wetland delineation, although an actual wetland delineation was not conducted. The survey areas reviewed by LG^2ES were completely accessible by foot and vehicle. Surveys were conducted over 100 percent of the approximately 489 acres within the proposed AU Vision 2030 Plan boundaries at MAFB.

2.1 Background Research and Literature Review

Prior to conducting the on-site WOTUS determination, Geographical Information Systems (GIS) were used to review aerial orthophoto satellite images, while U.S. Geological Survey (USGS) topographic maps, and U.S. Department of Agriculture (USDA) soil survey maps were used to determine potential wetlands (mapped hydric soils, mapped streams and water bodies) likely to occur in the project area. The soil survey for Montgomery County was reviewed to evaluate for the presence of mapped hydric soils (USDA-Natural Resources Conservation Service [NRCS] 2020). The USGS National Wetlands Inventory (NWI) mapping data from the site was also reviewed to screen for potential wetlands or surface waters previously identified on site by the USGS using aerial interpretation (USGS-NWI 2020). A previous wetland inventory report and update were also reviewed (Woolpert 1994 and 2009 Update).

2.2 Data Collection

Data was collected while traversing meandering transects in addition to visits to specific sites of interest identified through interview and/or background research. Data collected consisted of field notes recorded in field notebooks and photographs taken with digital cameras. USACE wetland data forms for recording wetland/upland data from jurisdictional wetlands or WOTUS were printed and on hand for the survey. Data forms were collected from several representative, potentially jurisdictional wetland features and from adjacent uplands at several locations. Hand-held global positioning system units were also carried in the field and used to record geospatial data on any data points taken or other notable features.

2.2.1 On-Site Interview

Biologists met with the MAFB Environmental Chief, Jon “Bo” Sawyer, at his office on November 3, 2020. Bo Sawyer had two previous surveys that identified WOTUS being located within MAFB, and no previous evidence of wetlands being identified within Gunter Annex (Woolpert 1994 and 2009 Update). Mr. Sawyer indicated that there was an ongoing project by others to conduct an installation wide jurisdictional WOTUS

delineation in 2021. This delineation project by others will be the first formal wetland delineation to be conducted at MAFB under the new Navigable Waters Protection Rule (NWPR) which became effective June 22, 2020. The NWPR provided new guidelines as to which waters and wetlands are "jurisdictional" and which are "non-jurisdictional" under the federal Clean Water Act Section 404 and Rivers and Harbors Act Section 10.

Mr. Sawyer provided copies of the existing wetland delineation reports for review and use during the survey described in this report. There were no wetlands previously delineated within the AU Vision 2030 Plan project area above the river bluff. There were 10 wetlands previously delineated below the river bluff.

Since the portion of the AU Vision 2030 Plan project area located below the river bluff had not been clearly defined at the time of this survey, it was assumed that all the property below the river bluff was included in the survey. The areas below the river bluff included an abandoned golf course and several impoundment lakes within the floodplain of the Alabama River. Mr. Sawyer indicated that the only activities identified in the AU Vision 2030 Plan for this area were recreational trails and that they could easily be designed to avoid wetlands and utilize existing trail roads and abandoned cart paths. According to Mr. Sawyer, there are no plans to construct impervious areas or fill for the recreational trails that may become part of the AU Vision 2030 Plan project area located below the river bluff.

2.2.2 Survey Methods

Wetland survey methodologies utilized included the following:

1. Environmental Laboratory, (1987). "Corps of Engineers Wetlands Delineation Manual," Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS. http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/

2. U.S. Army Corps of Engineers, 2010. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain (AGCP) Region (Version 2.0), ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-10-20. Vicksburg, MS: U.S. Army Engineer Research and Development Center. http://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/reg_supp/

Meandering pedestrian transects and vehicle access covered 100 percent of the survey areas. These pedestrian and vehicle transects did not follow a specific layout but covered the survey areas by utilizing available roadways, trails, and traversing open areas. This approach was used because of the highly developed nature of proposed project locations. Vehicle transects were conducted through the highly open and easily drivable areas. Pedestrian transects were conducted wherever vehicle access was not possible. Pedestrian transects were spaced at least approximately 50 feet apart and used visual landmarks such as buildings, roadways, riverbanks and lakes to achieve 100 percent coverage of the survey areas. There were no overgrown or difficult to access portions of the survey areas that could be considered natural ecosystems,

which would require more systematic, recorded transects through heavily vegetated areas.

Surveys were conducted by biologists with training and experience in wetland delineation, plant identification, hydric soils identification, and hydrologic indicators identification. Wetland delineation equipment included appropriate plant identification guides and manuals, drain spade shovel, soils knife, Munsell Soil Color Chart, and printed copy of the 2010 AGCP Region Supplement to the Corps of Engineers Wetland Delineation Manual.

3.0 RESULTS AND FINDINGS

3.1 On-Site Interview Results

Bo Sawyer was interviewed regarding the presence of WOTUS within the AU Vision 2030 Plan project area, both at MAFB and Gunter Annex. Previous surveys were conducted in 1994 and updated in 2009, delineating 16 wetlands within MAFB and no wetlands within Gunter Annex. Mr. Sawyer was not aware of any wetlands or WOTUS within or directly adjacent to Gunter Annex. Mr. Sawyer escorted biologists throughout MAFB to several areas of interest regarding possible WOTUS on November 3, 2020. He did not accompany the biologists during their survey conducted on November 4, 2020.

3.2 WOTUS Determination Results

There were ten (10) potential WOTUS identified within the proposed AU Vision 2030 Plan project area at MAFB on November 3 and 4, 2020 (Figures 3 and 4). The ten (10) potentially jurisdictional WOTUS identified within the AU Vision 2030 Plan project area at MAFB were located below the river bluff and within the floodplain of the Alabama River (see Figure 3). Representative USACE data forms for the two types of wetlands (bottomland forest and floodplain marsh) identified have been attached in Appendix A. Data forms were collected in pairs of wetland and upland data points to document conditions on either side of the potential jurisdictional WOTUS boundary.

Due to the completely developed nature of Gunter Annex, as well as previous documentation that WOTUS were not found to occur there in 1994 and 2009, Gunter Annex was not surveyed for WOTUS in the field. A thorough desktop review of available information including aerial photographs confirmed that there had not been any changes to the site conditions at Gunter Annex since 2009.

The ten (10) potential WOTUS wetlands were identified as one of either two types of wetlands, as depicted on Figure 4 and described below:

1 – Bottomland/Floodplain Forest

This is a deciduous forested wetland, that primarily supports trees greater than 20 feet in height. The dominant vegetation species present included sycamore *(Plantaus occidentalis),* green ash *(Fraxinus pennsylvanica),* hackberry *(Celtis levigata),* sweetgum *(Liquidambar styraciflua)* Chinese tallow *(Triadica sebifera),* American elm (*Ulmus americana*), black willow (*Salix nigra*), southern dewberry (*Rubus*

trivialis), and poison ivy (*Toxicodendron radicans*). Data forms Wet 3 and Up 3 document the typical conditions above and below the potential jurisdictional boundary along this wetland type (Appendix A).

2 – Floodplain Marsh

Wetland A currently supports an herbaceous vegetative community which is subject to periodic mowing by the ground maintenance crews. The dominant vegetation species present included, swamp smartweed (*Persicaria hydropiperoides*), Alligatorweed (*Alternanthera philoxeroides*), cutgrass *(Leersia lenticularis, L. virginica),* warty panicgrass (*Panicum verrucosum*) and scattered Chinese tallow, red maple *(Acer rubrum),* and buttonbush *(Cephalanthus occidentalis)*. Data forms Wet 1 and Up 1 document the typical conditions above and below the potential jurisdictional boundary along this wetland type (Appendix A).

Upland Data Points (Up 2, Up 4, and Up 5)

A thorough search was conducted along existing roads and paths at MAFB while traversing survey transects and investigating several pre-identified areas of interest. Data forms from Up 2, Up 4, and Up 5 document the typical conditions observed during the site visit (Appendix A). Upland points were collected from areas that are primarily mowed/maintained grassy areas or the abandoned golf course near the river. Data form Up2 documents the typical conditions found to occur along the grassy shoulder of a trail road in the abandoned golf course. Data form Up 4 documents the typical conditions found to be present on the upper river bluff above the drop-off to the floodplain, lakes and rivers. Data form Up 5 documents the typical conditions found to be present on the upper river bluff above the drop-off to the floodplain, lakes, and rivers behind Building 1450.

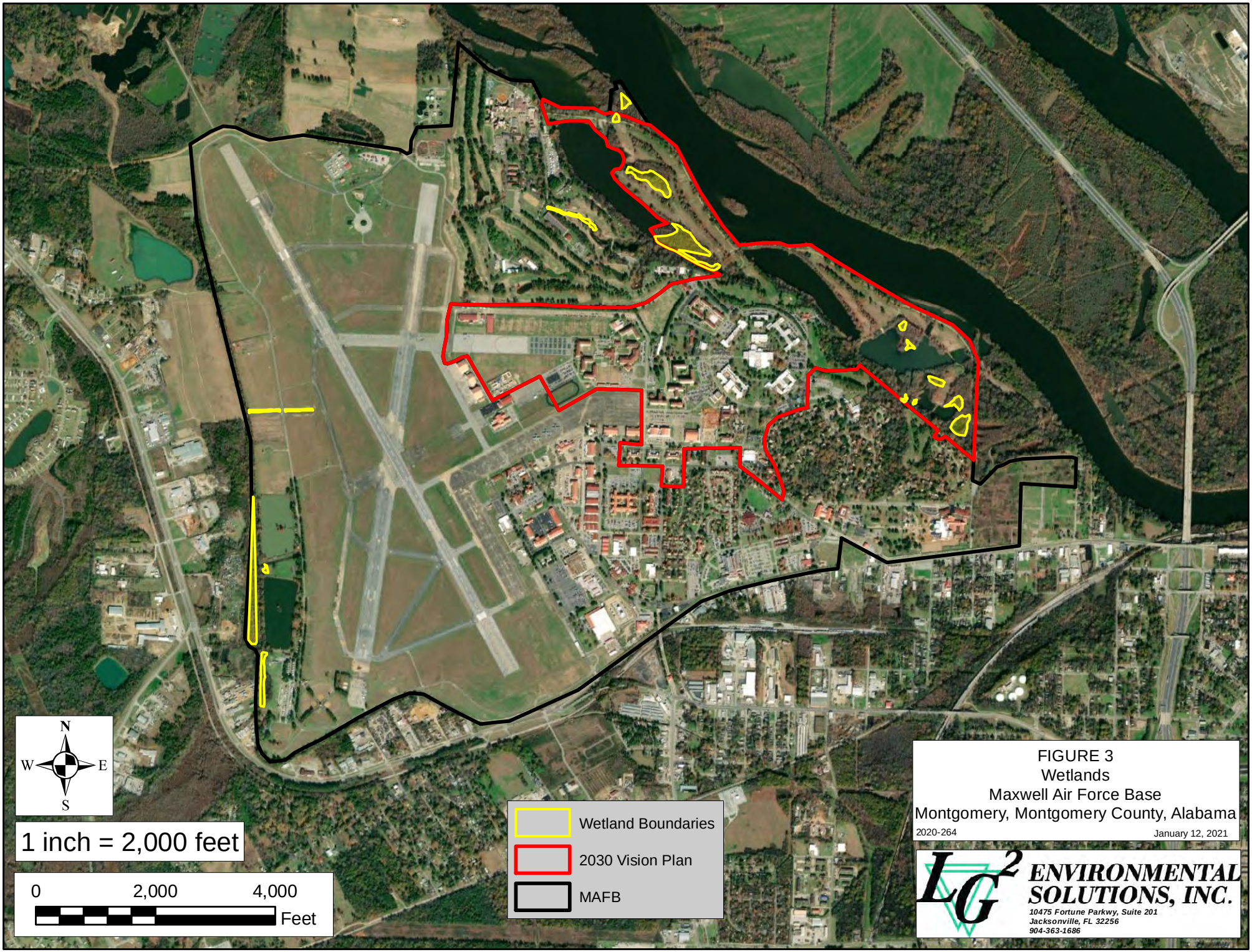

FIGURE 3
Wetlands
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

LG² ENVIRONMENTAL SOLUTIONS, INC.
10475 Fortune Parkway, Suite 201
Jacksonville, FL 32256
904-363-1686

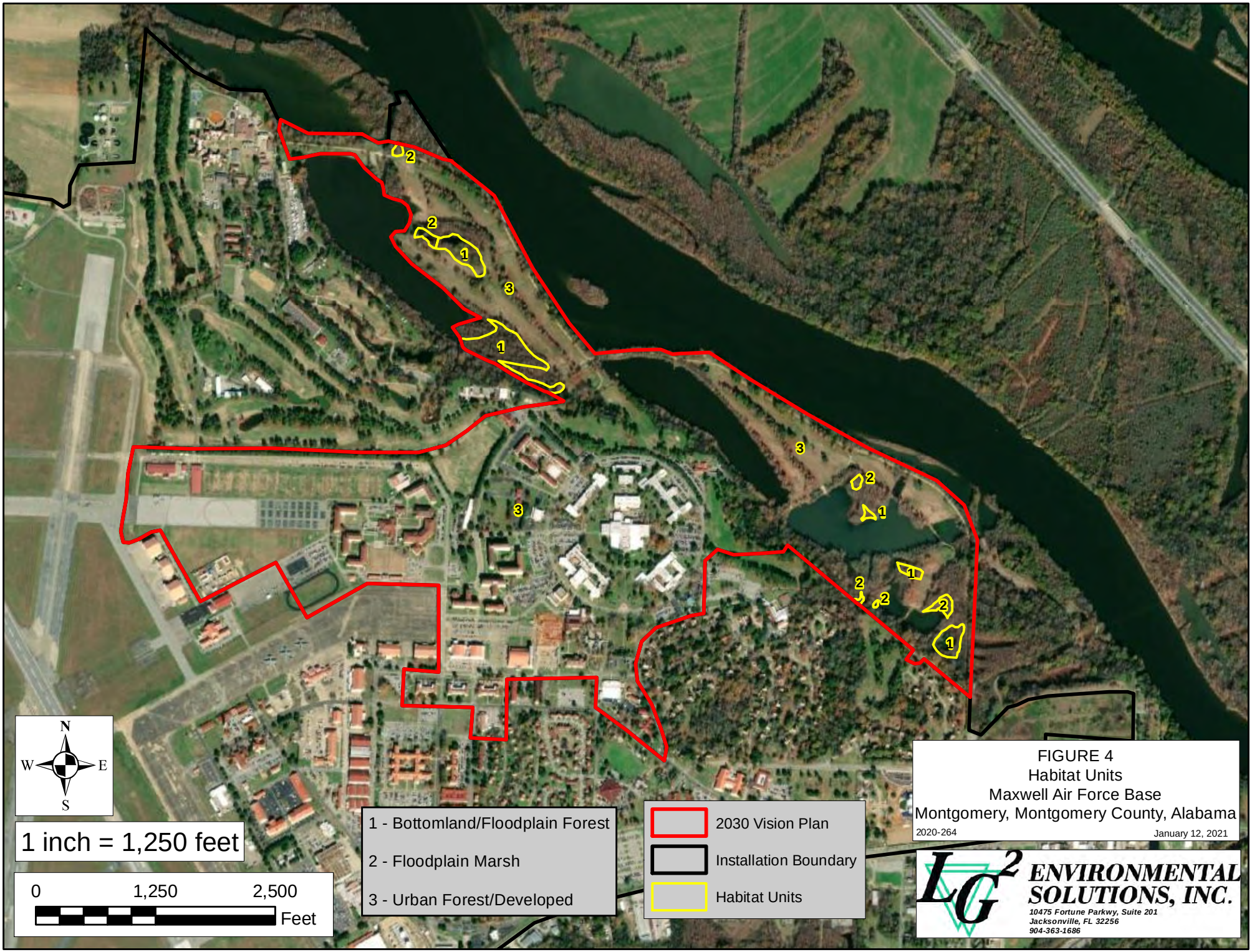

FIGURE 4
Habitat Units
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

LG² ENVIRONMENTAL SOLUTIONS, INC.
10475 Fortune Parkwy, Suite 201
Jacksonville, FL 32256
904-363-1686

4.0 CONCLUSIONS

There were ten (10) potentially jurisdictional WOTUS identified within the AU Vision 2030 Plan project area at MAFB. All of these potential jurisdictional WOTUS were located below the river bluff within the abandoned golf course in the floodplain of the Alabama River. The AU Vision 2030 Plan did include language indicating that recreational trails would be developed in the abandoned golf course. Mr. Bo Sawyer, Environmental Director MAFB, indicated that the proposed recreational trails will be designed to avoid or minimize impacts to jurisdictional WOTUS.

An ongoing jurisdictional WOTUS delineation is currently being conducted by others in 2021. The potential jurisdictional WOTUS are not likely to change much from the previously identified wetlands outlined in this report. All of the potentially jurisdictional WOTUS wetlands outlined in this report are likely to be jurisdictional because they exist within the floodplain of and are connected to the Alabama River, which is a jurisdictional Traditional Navigable Water (TNW).

The State of Alabama does not have separate wetlands permitting regulations from the federal Clean Water Act Section 404 regulations implemented by the USACE and U.S. Environmental Protection Agency (EPA). Applications for permits to dredge or place fill material within jurisdictional WOTUS (including TNW's, tributaries and adjacent wetlands) should be made directly to the USACE Montgomery Field Office with copies to the Alabama Department of Environmental Management's (ADEM) Field Operations Division in Montgomery for water quality certification.

5.0 REFERENCES

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APPENDIX A

USACE Wetland and Upland Data Forms

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Up 1

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-2

Subregion (LRR or MLRA): LRR T Lat: 32.393395 Long: -86.353137 Datum: WGS84

Soil Map Unit Name: Roanoke silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** x
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Photos 20201104_0092410 AND 092415

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up 1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 30)			
1. *Triadica sebifera*	5	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 =Total Cover		
50% of total cover: 3	20% of total cover: 1		
Herb Stratum (Plot size: 30)			
1. *Paspalum notatum*	50	Yes	FACU
2. *Persicaria hydropiperoides*	5	No	OBL
3. *Cynodon dactylon*	50	Yes	FACU
4. *Commelina communis*	3	No	FAC
5. *Digitaria ciliaris*	5	No	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	113 =Total Cover		
50% of total cover: 57	20% of total cover: 23		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	8	x 3 =	24
FACU species	105	x 4 =	420
UPL species	0	x 5 =	0
Column Totals:	118 (A)		449 (B)
Prevalence Index = B/A =			3.81

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Up 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/3	100					Sandy	Clayey

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:
Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Up 2

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Lake Levee Road Local relief (concave, convex, none): Convex Slope (%): 15-35

Subregion (LRR or MLRA): LRR T Lat: 32.395776 Long: -86.355552 Datum: WGS84

Soil Map Unit Name: Luverne-Smithdale complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** x
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Photos 20201104_093638 to 094203. Up_2 documents uplands on +/- 50 feet of either side of the existing trail road on top of lake levee.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Up_2 - top of levee with lake on one side and river on other.

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up 2

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Herb Stratum (Plot size: 30)			
1. *Paspalum notatum*	50	Yes	FACU
2. *Cynodon dactylon*	50	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
50% of total cover:	20% of total cover:		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	100	x 4 =	400
UPL species	0	x 5 =	0
Column Totals:	100 (A)		400 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Up 2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/3	100					Sandy	Clayey

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Up 3

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T Lat: 32.393607 Long: -86.351133 Datum: WGS84

Soil Map Unit Name: Roanoke silt loam NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** x
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Photos 20201104_103809 to 103817

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15) **(LRR U)**
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes ____	No X	Depth (inches): ____
Saturation Present? (includes capillary fringe)	Yes ____	No X	Depth (inches): ____

Wetland Hydrology Present? **Yes** ____ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up 3

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix nigra*	20	Yes	OBL
2. *Ulmus americana*	20	Yes	FAC
3. *Acer rubrum*	10	No	FAC
4. *Taxodium distichum*	20	Yes	OBL
5. *Triadica sebifera*	10	No	FAC
6.			
7.			
8.			
	80	=Total Cover	
50% of total cover: 40	20% of total cover:	16	
Sapling/Shrub Stratum (Plot size: 30)			
1. *Ilex ambigua*	15	Yes	UPL
2. *Celtis occidentalis*	15	Yes	FACU
3. *Acer negundo*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
	35	=Total Cover	
50% of total cover: 18	20% of total cover:	7	
Herb Stratum (Plot size: 30)			
1. *Chasmanthium latifolium*	10	No	FAC
2. *Viola walteri*	25	Yes	FACU
3. *Rubus trivialis*	25	Yes	FACU
4. *Ligustrum vulgare*	5	No	UPL
5. *Cynodon dactylon*	20	Yes	FACU
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
50% of total cover: 43	20% of total cover:	17	
Woody Vine Stratum (Plot size: 30)			
1. *Toxicodendron radicans*	15	Yes	FAC
2.			
3.			
4.			
5.			
	15	=Total Cover	
50% of total cover: 8	20% of total cover:	3	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 44.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	85	x 4 =	340
UPL species	20	x 5 =	100
Column Totals:	215 (A)		690 (B)

Prevalence Index = B/A = 3.21

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Up 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/3	100					Loamy/Clayey	Loamy

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Up 4

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 15-35

Subregion (LRR or MLRA): LRR T Lat: 32.387471 Long: -86.342633 Datum: WGS84

Soil Map Unit Name: Luverne-Smithdale complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** x
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Upper bluff above drop-off to Floodplain / lakes / river

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up 4

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Melia azedarach*	25	Yes	UPL
2. *Taxodium distichum*	25	Yes	OBL
3. *Celtis occidentalis*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
	55	=Total Cover	
50% of total cover: 28		20% of total cover:	11
Sapling/Shrub Stratum (Plot size: 30)			
1. *Ligustrum sinense*			FAC
2. *Ligustrum lucidum*			UPL
3. *Triadica sebifera*			FAC
4.			
5.			
6.			
7.			
8.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 30)			
1. *Cynodon dactylon*	80	Yes	FACU
2. *Trifolium repens*	20	Yes	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
50% of total cover: 50		20% of total cover:	20
Woody Vine Stratum (Plot size: 30)			
1. *Smilax auriculata*	10	Yes	FACU
2. *Decumaria barbara*	10	Yes	FACW
3. *Lonicera japonica*	10	Yes	FACU
4.			
5.			
	30	=Total Cover	
50% of total cover: 15		20% of total cover:	6

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 28.6% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	10	x 2 =	20
FAC species	0	x 3 =	0
FACU species	125	x 4 =	500
UPL species	25	x 5 =	125
Column Totals:	185 (A)		670 (B)

Prevalence Index = B/A = 3.62

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Up 4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 5/4	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Up 5

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Convex Slope (%): 0-1

Subregion (LRR or MLRA): LRR T Lat: 32.387609 Long: -86.343112 Datum:

Soil Map Unit Name: Luverne-Smithdale complex NWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** x
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Soil Photo: 20201104_111000 to 111011, Veg: 111017 to 111023

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes	No X	Depth (inches):

Wetland Hydrology Present? **Yes** **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Upper bluff above drop-off to Floodplain / lakes / river

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Up 5

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
50% of total cover:	20% of total cover:		
Sapling/Shrub Stratum (Plot size: 30)			
1. *Ligustrum lucidum*	15	Yes	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	15 =Total Cover		
50% of total cover: 8	20% of total cover: 3		
Herb Stratum (Plot size: 30)			
1. *Paspalum notatum*	90	Yes	FACU
2. *Plantago lanceolata*	10	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100 =Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size: 30)			
1. *Lygodium japonicum*	15	Yes	FAC
2.			
3.			
4.			
5.			
	15 =Total Cover		
50% of total cover: 8	20% of total cover: 3		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	15	x 3 =	45
FACU species	100	x 4 =	400
UPL species	15	x 5 =	75
Column Totals:	130 (A)		520 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** ___ **No** X

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Up 5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					Loamy/Clayey	Loamy

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** x

Remarks:

Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Wet 1

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): Concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T Lat: 32.393431 Long: -86.353150 Datum: WGS84

Soil Map Unit Name: Roanoke silt loam NWI classification: PEM/PSS

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	

Remarks:
Photos 20201104_092350 to 092355; Floodplain marsh between lake and Bottomland/Floodplain Forest in abandoned golf course near Alabama River.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- X FAC-Neutral Test (D5)
- Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes X	No	Depth (inches): 6
Water Table Present?	Yes X	No	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface Water Present at 2-6 inches

VEGETATION (Four Strata) – Use scientific names of plants.

Sampling Point: Wet 1

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Taxodium distichum*	3	Yes	OBL
2. *Triadica sebifera*	3	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	6	=Total Cover	
50% of total cover: 3		20% of total cover:	2
Sapling/Shrub Stratum (Plot size: 30)			
1. *Triadica sebifera*	15	Yes	FAC
2. *Acer rubrum*	1	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	16	=Total Cover	
50% of total cover: 8		20% of total cover:	4
Herb Stratum (Plot size: 30)			
1. *Alternanthera philoxeroides*	20	Yes	OBL
2. *Panicum verrucosum*	20	Yes	FACW
3. *Persicaria hydropiperoides*	35	Yes	OBL
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	75	=Total Cover	
50% of total cover: 38		20% of total cover:	15
Woody Vine Stratum (Plot size: 30)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
50% of total cover:		20% of total cover:	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	58	x 1 =	58
FACW species	20	x 2 =	40
FAC species	19	x 3 =	57
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	97 (A)		155 (B)

Prevalence Index = B/A = 1.60

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Wet 1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-2	10YR 4/2	100					Sandy	Clayey Sand, Saturated
2-18	10YR 6/2	75	10YR 5/8	25	C	PL	Sandy	Clayey Sand, Saturated

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- X Sandy Redox (S5)
- X Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Standing Water

WETLAND DETERMINATION DATA FORM – Atlantic and Gulf Coastal Plain Region

Project/Site: Maxwell AFB City/County: Montgomery Sampling Date: 11/4/20

Applicant/Owner: State: AL Sampling Point: Wet 3

Investigator(s): Pete Johnson, Hayley Torkos Section, Township, Range:

Landform (hillside, terrace, etc.): Floodplain Local relief (concave, convex, none): concave Slope (%): 0-1

Subregion (LRR or MLRA): LRR T Lat: 32.393536 Long: -86.351080 Datum: WGS84

Soil Map Unit Name: Roanoke silt loam, occassionally flooded NWI classification: Hydric

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No	**within a Wetland?** **Yes** X **No**
Wetland Hydrology Present?	Yes X	No	

Remarks:
Photos 20201104_100920-100930

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- Surface Water (A1)
- High Water Table (A2)
- X Saturation (A3)
- Water Marks (B1)
- Sediment Deposits (B2)
- Drift Deposits (B3)
- Algal Mat or Crust (B4)
- Iron Deposits (B5)
- Inundation Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)
- Aquatic Fauna (B13)
- Marl Deposits (B15) **(LRR U)**
- Hydrogen Sulfide Odor (C1)
- Oxidized Rhizospheres on Living Roots (C3)
- Presence of Reduced Iron (C4)
- Recent Iron Reduction in Tilled Soils (C6)
- Thin Muck Surface (C7)
- Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- Surface Soil Cracks (B6)
- Sparsely Vegetated Concave Surface (B8)
- X Drainage Patterns (B10)
- Moss Trim Lines (B16)
- Dry-Season Water Table (C2)
- Crayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)
- Sphagnum Moss (D8) **(LRR T,U)**

Field Observations:

Surface Water Present?	Yes	No X	Depth (inches):
Water Table Present?	Yes	No X	Depth (inches):
Saturation Present? (includes capillary fringe)	Yes X	No	Depth (inches): 8

Wetland Hydrology Present? **Yes** X **No**

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Four Strata) – Use scientific names of plants. Sampling Point: Wet 3

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Triadica sebifera*	20	Yes	FAC
2. *Ulmus americana*	15	Yes	FAC
3. *Salix nigra*	10	Yes	OBL
4. *Quercus lyrata*	5	No	OBL
5. *Acer negundo*	5	No	FAC
6. *Celtis occidentalis*	5	No	FACU
7. *Acer saccharinum*	10	Yes	FAC
8.			
	70	=Total Cover	
50% of total cover: 35		20% of total cover:	14
Sapling/Shrub Stratum (Plot size: 30)			
1. *Ligustrum sinense*			FAC
2. *Triadica sebifera*			FAC
3.			
4.			
5.			
6.			
7.			
8.			
		=Total Cover	
50% of total cover:		20% of total cover:	
Herb Stratum (Plot size: 30)			
1. *Toxicodendron radicans*	55	Yes	FAC
2. *Rubus trivialis*	25	Yes	FACU
3. *Chasmanthium latifolium*	5	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	85	=Total Cover	
50% of total cover: 43		20% of total cover:	17
Woody Vine Stratum (Plot size: 30)			
1. *Toxicodendron radicans*	25	Yes	FAC
2.			
3.			
4.			
5.			
	25	=Total Cover	
50% of total cover: 13		20% of total cover:	5

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 85.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	15	x 1 =	15
FACW species	0	x 2 =	0
FAC species	135	x 3 =	405
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	180 (A)		540 (B)

Prevalence Index = B/A = 3.00

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Four Vegetation Strata:

Tree – Woody plants, excluding vines, 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants, excluding vines, less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (If observed, list morphological adaptations below.)

SOIL

Sampling Point: Wet 3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-3	10YR 5/4	100					Loamy/Clayey	
3-18	10YR 5/2	40	10YR 7/1	60	D	M	Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Organic Bodies (A6) **(LRR, P, T, U)**
- ___ 5 cm Mucky Mineral (A7) **(LRR P, T, U)**
- ___ Muck Presence (A8) **(LRR U)**
- ___ 1 cm Muck (A9) **(LRR P, T)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Coast Prairie Redox (A16) (**MLRA 150A)**
- ___ Sandy Mucky Mineral (S1) **(LRR O, S)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR P, S, T, U)**
- ___ Polyvalue Below Surface (S8) **(LRR S, T, U)**
- ___ Thin Dark Surface (S9) **(LRR S, T, U)**
- ___ Barrier Islands 1 cm Muck (S12) **(MLRA 153B, 153D)**
- ___ Loamy Mucky Mineral (F1) **(LRR O)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) **(LRR U)**
- ___ Depleted Ochric (F11) **(MLRA 151)**
- ___ Iron-Manganese Masses (F12) **(LRR O, P, T)**
- ___ Umbric Surface (F13) **(LRR P, T, U)**
- ___ Delta Ochric (F17) **(MLRA 151)**
- ___ Reduced Vertic (F18) **(MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149A)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 149A, 153C, 153D)**
- ___ Very Shallow Dark Surface (F22) **(MLRA 138, 152A in FL, 154)**

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR O)**
- ___ 2 cm Muck (A10) **(LRR S)**
- ___ Coast Prairie Redox (A16) **(outside MLRA 150A)**
- ___ Reduced Vertic (F18) **(outside MLRA 150A, 150B)**
- ___ Piedmont Floodplain Soils (F19) **(LRR P, T)**
- ___ Anomalous Bright Floodplain Soils (F20) **(MLRA 153B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22) **(outside MLRA 138, 152A in FL, 154)**
- ___ Barrier Islands Low Chroma Matrix (TS7) **(MLRA 153B, 153D)**
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Standing Water

APPENDIX B

Photographic Record of Typical Jurisdictional Wetlands and Waters of the US

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 1 – Bottomland/Floodplain Forest

Typical Habitat Unit 1 – Bottomland/Floodplain Forest

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 2 – Floodplain Marsh

Typical Habitat Unit 2 – Floodplain Marsh

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 3 – Urban Forest in abandoned golf course areas

Typical Habitat Unit 3 – Urban Forest/Developed

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 3 – Urban Forest/Developed

Typical Habitat Unit 3 – Urban Forest/Developed

Appendix D: Plant and Animal Species Within the Region of Influence

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Table D-1. Plant and Animal Species Within the Region of Influence

Common Name	*Scientific Name*	*Habitat Unit*[b]
Box elder	*Acer negundo*	1, 2
Japanese maple[a]	*Acer palmatum*	3
Red maple	*Acer rubrum*	1
Silver maple	*Acer saccharinum*	1, 3
Sugar maple	*Acer saccharum*	3
Silktree[a]	*Albizia julibrissin*	1, 2, 3
Alligatorweed[a]	*Alternanthera philoxeroides*	2
River birch	*Betula nigra*	1, 3
Pindo palm[a]	*Butia capitata*	3
Hickory	*Carya aquatica*	1, 3
Pecan	*Carya illinoinensis*	3
Shagbark hickory	*Carya ovata*	3
Deodar cedar[a]	*Cedrus deodara*	3
Hackberry	*Celtis occidentalis*	1, 2, 3
Buttonbush	*Cephalanthus occidentalis*	2
Redbud	*Cercis canadensis*	3
Northern wood oats	*Chasmanthium latifolium*	1
White fringetree	*Chionanthus virginicus*	3
Camphor	*Cinnamomum camphora*	3
Asiatic dayflower	*Commelina communis*	3
Flowering dogwood	*Cornus florida*	3
Hawthorn	*Crataegus spp.*	3
Bermuda grass	*Cynodon dactylon*	3
Slender crabgrass	*Digitaria filiformes*	3
Loquat[a]	*Eriobotrya japonica*	3
White ash	*Fraxinus americana*	3
Ginkgo[a]	*Ginkgo biloba-male*	3
Honey locust	*Gleditsia triacanthos*	3
Climbing hydrangea	*Hydrangea anomala sp. Petiolaris*	1, 3
Carolina holly	*Ilex ambigua*	1, 3
Chinese holly[a]	*Ilex cornuta*	3
American Holly	*Ilex opaca*	3
Yaupon holly	*Ilex vomitoria*	3
Eastern Red cedar	*Juniperus virginiana var. virgniana*	3
Crape myrtle[a]	*Lagerstroemia indica*	3
cutgrass	*Leersia lenticularis*	2
Glossy privet[a]	*Ligustrum lucidum*	3
Chinese privet[a]	*Ligustrum sinense*	1, 3
Common privet	*Ligustrum vulgare*	3
American sweetgum	*Liquidambar styraciflua*	1, 3
Japanese honeysuckle[a]	*Lonicera japonica*	3
Japanese climbing fern[a]	*Lygodium japonicum*	1, 3
Osage orange	*Maclura pomifera*	3
Southern magnolia	*Magnolia grandiflora*	3
Sweetbay magnolia	*Magnolia virginiana*	1, 3
Saucer magnolia[a]	*Magnolia x soulangeana*	3
Crabapple	*Malus sps.*	3
Chinaberry tree[a]	*Melia azedarach*	3
Mullberry	*Morus alba*	3

Table D-1. Plant and Animal Species Within the Region of Influence

Common Name	*Scientific Name*	*Habitat Unit*[b]
Black gum	*Nyssa sylvatica*	3
Sourwood	*Oxydendrum arboreum*	3
Warty panicgrass	*Panicum verrucosum*	2
Bahia grass	*Paspalum notatum*	3
Swamp smartweed	*Persicaria hydropiperoides*	2
Loblolly pine	*Pinus taeda*	1, 3
English plantain	*Plantago lanceolata*	3
American sycamore	*Plantanus occidentalis*	1, 3
Black cherry	*Prunus serotina*	3
White oak	*Quercus alba*	3
Southern red oak	*Quercus falcata*	3
Swamp laurel oak	*Quercus laurifolia*	1, 3
Overcup oak	*Quercus lyrata*	1
Water oak	*Quercus nigra*	1, 3
Pin oak	*Quercus palustris*	3
Willow oak	*Quercus phellos*	3
Northern red oak	*Quercus rubra*	3
Post oak	*Quercus stellata*	3
Southern live oak	*Quercus virginiana*	3
Black locust	*Robinia pseudoacacia*	3
Southern dewberry	*Rubus trivialis*	1, 3
Black willow	*Salix nigra*	1, 2, 3
Common greenbrier	*Smilax rotundifolia*	3
Bald cypress	*Taxodium distichum*	1, 3
White cedar	*Thuja occidentalis*	3
Poison Ivy	*Toxicodendron radicans*	1, 2, 3
Windmill palm[a]	*Trachycarpus fortunei*	3
Chinese tallow[a]	*Triadica sebifera*	1, 2, 3
White clover	*Trifolium repens*	3
American Elm	*Ulmus americana*	1, 3
Siberian elm[a]	*Ulmus pumila*	3
Blue marsh violet	*Viola cucullata*	2, 3
American alligator	*Alligator mississippiensis*	2
Great egret	*Ardea alba*	2
Great blue heron	*Ardea herodias*	2
Tufted titmouse	*Baeolophus bicolor*	1, 3
Canada goose	*Branta canadensis*	2, 3
Northern cardinal	*Cardinalis cardinalis*	1, 3
Northern flicker	*Colaptes auratus*	1, 3
Rock pigeon	*Columba livia*	3
Fish crow	*Corvus ossifragus*	1, 2, 3
Blue jay	*Cyanocitta cristata*	1, 3
Bald eagle	*Haliaeetus leucocephalus*	1,2, 3
Eastern mud turtle	*Kinosternon subrubrum*	1, 2
Belted kingfisher	*Megaceryle alcyon*	1, 2, 3
Red-headed woodpecker	*Melanerpes erythrocephalus*	3
Swamp sparrow	*Melospiza georgiana*	1, 2
Northern mockingbird	*Mimus polyglottos*	3

Table D-1. Plant and Animal Species Within the Region of Influence

Common Name	*Scientific Name*	*Habitat Unit*[b]
Double-crested cormorant	*Phalacrocorax auritus*	2
Ruby-crowned kinglet	*Regulus calendula*	1, 3
Golden-crowned kinglet	*Regulus satrapa*	1, 3
Eastern phoebe	*Sayornis phoebe*	1, 2, 3
Fox squirrel	*Sciurus niger*	3
Eastern bluebird	*Sialis sialis*	3
American goldfinch	*Spinus tristis*	1, 3
Chipping sparrow	*Spizella passerina*	3
European starling	*Sturnus vulgaris*	3

Notes: [a] demotes invasive species plants.

[b] Habitat Units: 1 – Bottomland/Floodplain Forest; 2 – Floodplain Marsh; and 3 – Urban Forest/Developed Areas.

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Appendix E: Flora and Fauna Survey

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Flora and Fauna Survey
Final Report

Air University 2030 Vision Plan
Maxwell Air Force Base and Gunter Annex

Montgomery County, Alabama

LG²ES Project Number: 2020-264

Prepared for:

Vectrus Systems Corporation
42d Civil Engineer Squadron/Base Environmental Office
400 Cannon Street, Bldg.1060
Maxwell AFB, Alabama 36112

Prepared by:

LG² Environmental Solutions, Inc.
10475 Fortune Parkway, Suite 201
Jacksonville, Florida, 32256
(904) 363-1686
www.lg2es.com

February 2021

TABLE OF CONTENTS

LIST OF ACRONYMS

ADCNR	Alabama Department of Conservation and Natural Resources
BGEPA	Bald and Golden Eagle Protection Act
GIS	Geographical Information Systems
GPS	Global Positioning System
INRMP	Integrated Natural Resources Management Plan
MAFB	Maxwell Air Force Base
MBTA	Migratory Bird Treaty Act
RTE	Rare, Threatened and Endangered Species
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WOTUS	Waters of the United States

1.0 INTRODUCTION

This report provides the details of a flora and fauna documents review and field survey for common, rare, threatened, endangered & protected (RTE) species. The survey was conducted by LG^2 Environmental Solutions (LG^2ES) at Maxwell Air Force Base and Gunter Annex in Montgomery County, Alabama (Figure 1).

Maxwell Air Force Base (MAFB) is located within the northwest section of the City of Montgomery, approximately one quarter mile west of downtown. The installation is bordered on the east and south by the City of Montgomery and northeast by the Alabama River (Figure 2a). MAFB consists of approximately 2,527 acres of improved or developed land. Main features of the installation include 700 acres of buildings, structures, pavements and landscaped buildings and 880 acres of runways, taxiways, and adjacent infield. The remaining area consists of a golf course, playgrounds, picnic areas, and a few recreational lakes.

Gunter Annex, formerly Gunter AFB, is located approximately 10 miles east of MAFB (Figure 2b). Gunter Annex consists of approximately 377 acres of land that is fully developed with buildings and structures supporting Air University, combat information services and network operations.

The on-site flora and fauna surveys were conducted to identify, locate, and verify vegetative habitat types, as well as flora and fauna species present or likely to be within MAFB and Gunter Annex. The on-site survey was conducted on the approximately 489- acre Air University (AU) 2030 Vision Plan project area within the MAFB installation boundaries (buildings, structures, pavements and landscaped buildings golf course, playgrounds, picnic areas, Alabama Riverbank and recreational lakes) (Figure 3). Gunter Annex was not surveyed on-site, because it was determined that the likelihood for RTE species to be present was very low, due to the urban, fully developed condition of the property. Information on Gunter Annex for this report was obtained from the Integrated Natural Resources Management Plan (INRMP) and other existing reports.

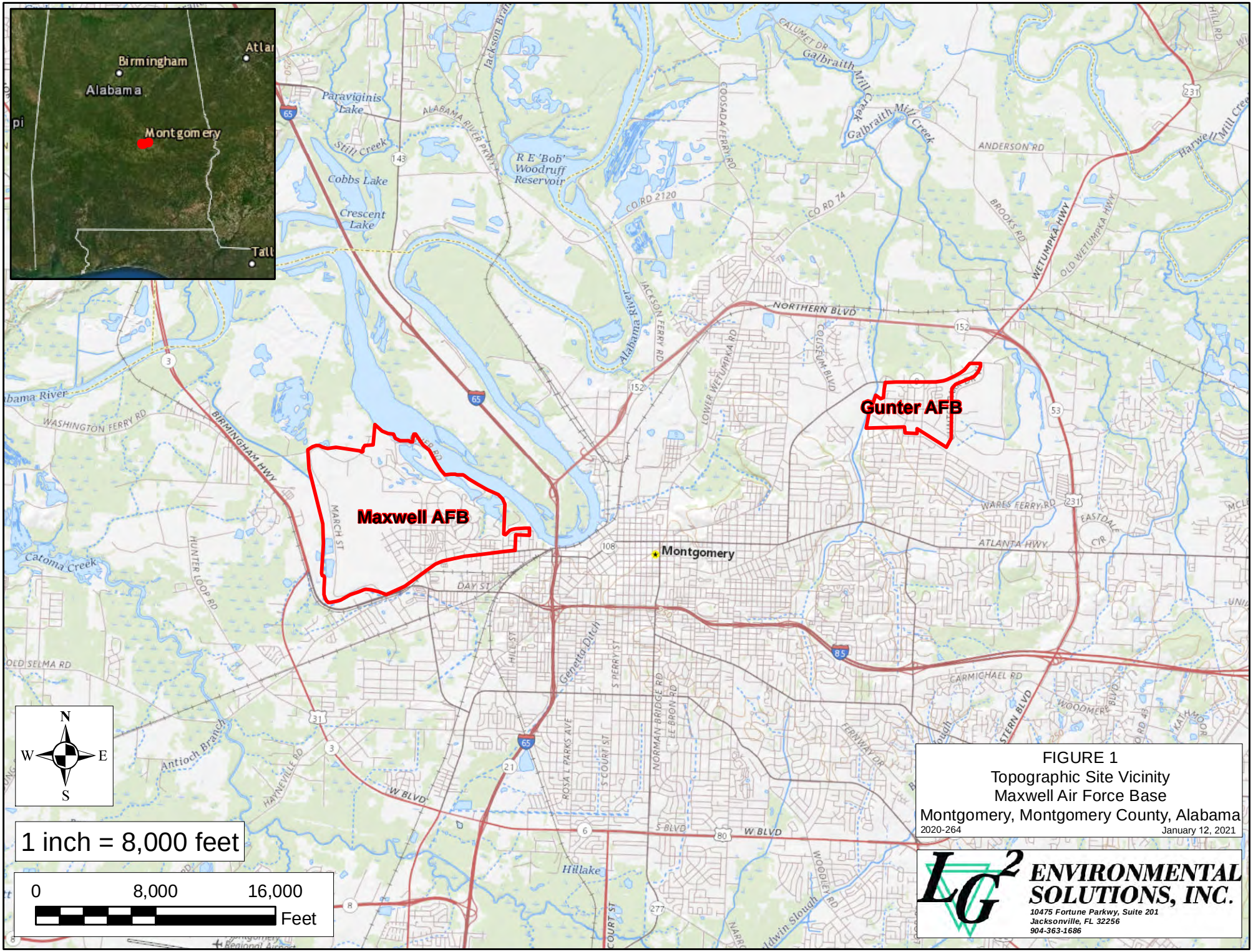

FIGURE 1
Topographic Site Vicinity
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

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904-363-1686

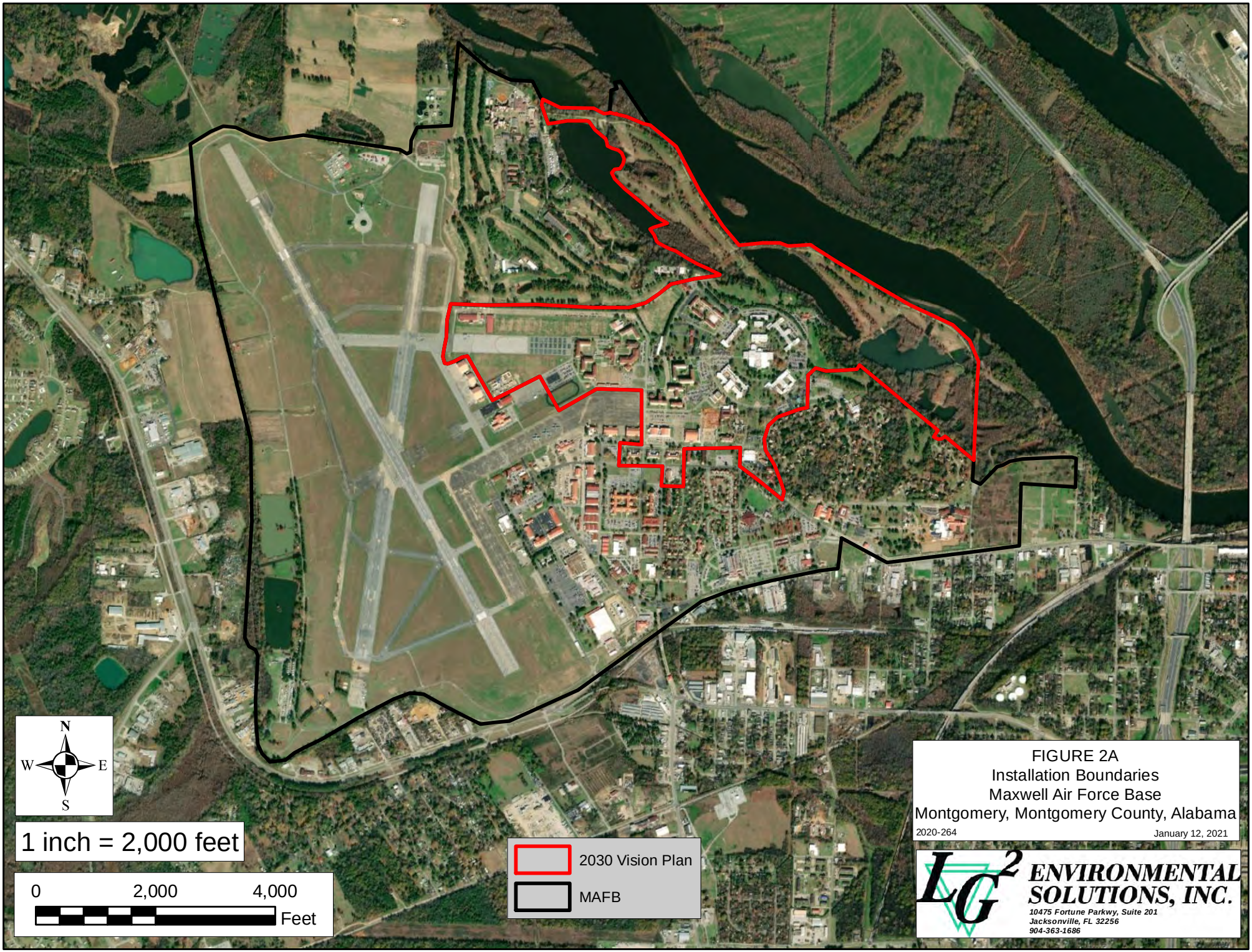

FIGURE 2A
Installation Boundaries
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021

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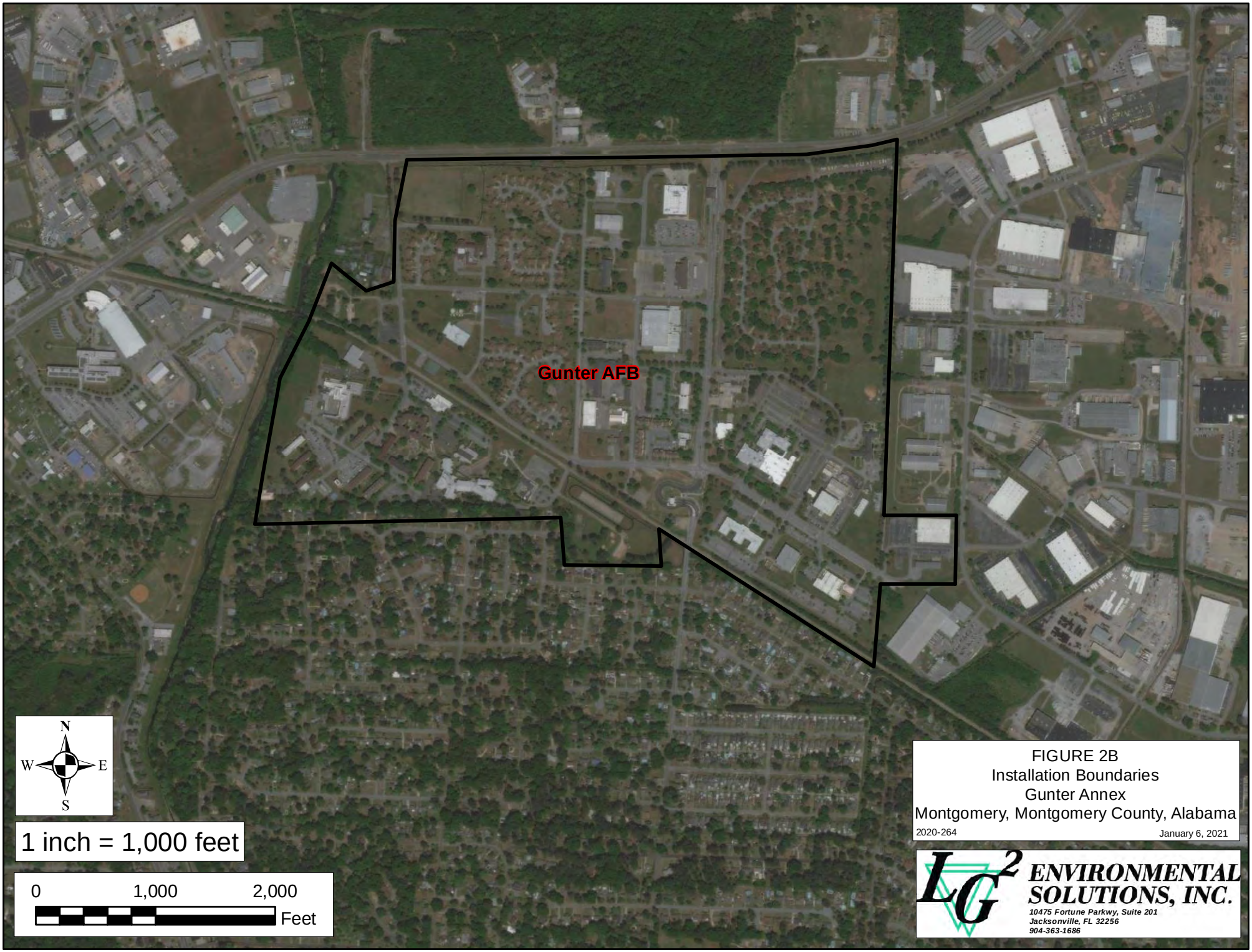

FIGURE 2B
Installation Boundaries
Gunter Annex
Montgomery, Montgomery County, Alabama
2020-264
January 6, 2021

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Jacksonville, FL 32256
904-363-1686

2.0 OBJECTIVES AND METHODS

The objectives were to describe the existing flora and fauna, as well as identify the presence of, or likelihood of, RTE species within the installation.

Observational data such as identified plant species, wildlife species, tracks, scat, calls, nests or refugia, vegetative communities, weather conditions, time assessment commenced and terminated, and anthropogenic activity was collected. Survey methods followed standard U.S. Army Corps of Engineers (USACE) and U.S. Fish and Wildlife Service (USFWS) methodologies for general flora and fauna surveys. The survey areas were completely accessible by foot and vehicle. Surveys were conducted over approximately 100 percent of the 489 acres within the AU 2030 Vision Plan project area (Figure 2a).

2.1 Background Research and Literature Review

Prior to conducting on-site flora and fauna and RTE survey, all available plans, reports and natural resource information on MAFB was reviewed. Geographical Information Systems (GIS) were used to review aerial orthophoto satellite images, U.S. Geological Survey (USGS) topographic maps, and U.S. Department of Agriculture (USDA) soil survey maps to determine potential wildlife and plant habitats (natural and semi-natural areas) likely to occur on-site. The soil survey for Montgomery County was reviewed to evaluate suitable habitat for sensitive species depending on soil substrate requirements (USDA-NRCS 2019).

The following plans and reports were obtained from the MAFB Natural Resource Manager for review:

- MAFB Integrated Natural Resources Management Plan (INRMP)
- Wetland Inventory of MAFB and Gunter Annex 1994
- Wetland Inventory Update January 2009
- Natural Community & Rare Plant & Animal Survey for MAFB September 2002
- Historic Landscape Survey MAFB November 2012

Databases from the Alabama Inventory List (Alabama Natural Heritage Program 2019), the USACE Mobile District, and the USFWS Threatened and Endangered Species System (TESS) (USFWS 2017) were also accessed to determine potential RTE species known to occur in Montgomery County, Alabama.

Threatened and endangered species listed by USFWS and species listed as protected by the Alabama Department of Conservation and Natural Resources (ADCNR) were considered the primary species of concern.

2.2 Data Collection

Data was collected while traversing meandering transects in addition to visits to specific sites of interest

identified through interview and/or background research. Data collected consisted of field notes recorded in field notebooks and photographs taken with digital cameras. Data forms and field forms were not developed or considered necessary for recording flora and fauna survey data. Global positioning system (GPS) units were also carried in the field to record geospatial data on significant features of interest, such as rare or listed species, if encountered.

2.2.1 On-Site Interview

LG^{2}ES biologists met with the Environmental Chief, Jon "Bo" Sawyer at 0900 on November 3, 2020. He was interviewed to obtain information regarding the possible presence of any wetlands, WOTUS, and RTE species known to occur within or adjacent to the survey areas. He indicated that he did not have any knowledge of RTE species that are confirmed to occur or have occurred within MAFB or Gunter Annex. Bo Sawyer then accompanied the LG^{2}ES biologists for a preliminary site visit through the proposed AU 2030 Vision Plan project area.

2.2.2 Survey Methods

Meandering pedestrian transects and vehicle access covered 50 percent of the survey area. These pedestrian and vehicle transects did not follow a specific layout but covered the survey areas by utilizing available roadways, trails, and traversing open areas. This approach was used because of the generally developed nature of proposed AU 2030 Vision Plan project location. Vehicle transects were conducted through the highly open and easily drivable areas (River Road and other roadways and parking lots around buildings). Pedestrian transects were conducted wherever vehicle access was not possible. Pedestrian transects were spaced at least 100 feet apart and used visual landmarks such as buildings, roadways, riverbanks and lakes to traverse and achieve approximately 50 percent coverage of the survey areas. There were no dense, heavily overgrown portions of the survey areas that were difficult or impossible to access by pedestrian transect.

Surveys were conducted by biologists with training and experience in identification of flora and fauna and equipped with binoculars, spotting scope, and appropriate plant and animal identification guides and manuals. Ziplock^{TM} bags were kept on hand (if needed) for collecting plant specimens in the field for later identification in the office or voucher specimen identification by botanists at the University of West Alabama herbarium.

3.0 RESULTS AND FINDINGS

3.1 On-Site Interview Results

Bo Sawyer was interviewed regarding the presence of RTE species both within MAFB and Gunter Annex. He was not aware of any confirmed threatened or endangered species or other flora and fauna species of interest in these areas of interest. Mr. Sawyer also escorted biologists throughout MAFB to all areas of interest regarding possible RTE flora and fauna species. There were no RTE species identified during the survey.

3.2 Habitat Unit Plant Survey Results

The proposed MAFB AU 2030 Vision Plan Campus area contained two natural plant communities and one non-natural plant community. The natural plant communities consisted of: (1) bottomland and floodplain forests; and (2) floodplain marsh. Vegetation within these wetland plant communities generally consisted of native and invasive trees, shrubs, grasses and flowering herbaceous plants which are adapted to grow in wetlands.

The non-natural plant community consisted of urban forest that existed around buildings, housing, roads, and parks within developed areas. Vegetation within urban forests typically consisted of ornamental trees, shrubs, grasses, and flowering plants within managed landscapes in uplands.

Gunter Annex was completely developed and consisted primarily of buildings, roadways, maintained grassy areas, and other manmade infrastructure. Because of this development, it was found to contain the non-natural plant community urban forest.

TABLE 1
Habitat Units within the MAFB AU 2030 Vision Plan **Campus Area**

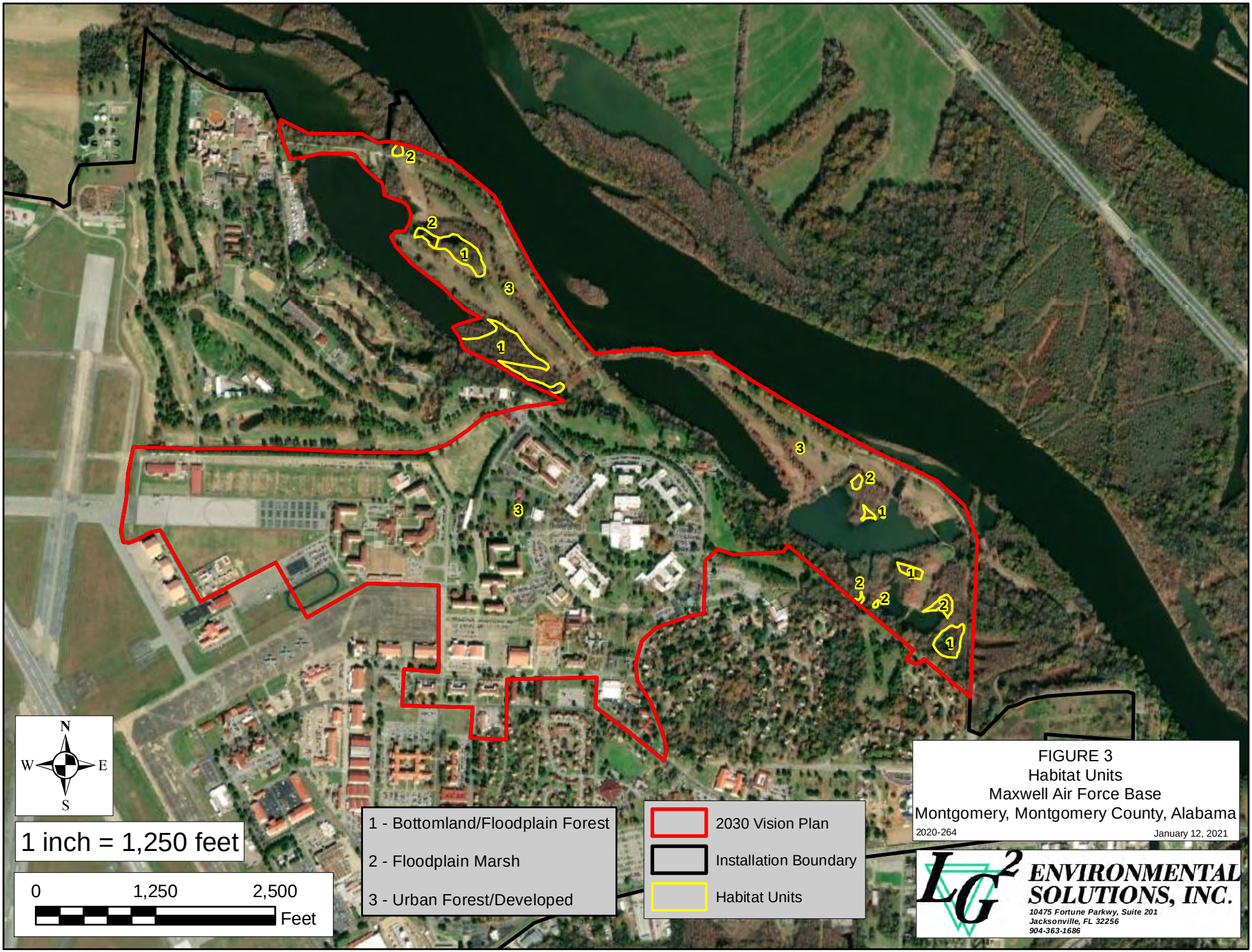
		Status
1	Bottomland and Floodplain forests	Natural Community
2	Floodplain Marsh	Natural Community
3	Urban Forest/Developed Areas	Non-Natural Community

3.2.1 Habitat Unit 1

Habitat Unit 1 Bottomland and Floodplain Forests was a wetland community generally dominated by large trees in the canopy and scattered shrubs in the understory. This habitat was found to occur in a few locations within an abandoned golf course within the floodplain of the Alabama River (Figure 3). Native and invasive plant species were observed growing within these forested wetlands. The dominant canopy tree species included sycamore *(Plantaus occidentalis),* green ash *(Fraxinus pennsylvanica),* hackberry *(Celtis levigata),* sweetgum *(Liquidambar styraciflua),* and Chinese tallow *(Triadica sebifera).*

3.2.2 Habitat Unit 2

Habitat Unit 2 Floodplain Marsh was a wetland community in the Alabama River floodplain dominated by herbaceous vegetation and shrubs. This habitat was also found within the abandoned golf course along the river adjacent to several lakes (Figure 3). The dominant plant species observed in these wetlands included smartweed *(Persicaria hydropiperoides, P. punctatum),* cutgrass *(Leersia lenticularis, L. virginica),* alligatorweed *(Alternanthera philoxeroides)* and panic grass *(Panicum verricosum).* Scattered shrubs and sapling trees included Chinese tallow, red maple *(Acer rubrum)* and buttonbush *(Cephalanthus occidentalis).*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1 inch = 1,250 feet
0
1,250
2,500
Feet
1 - Bottomland/Floodplain Forest
2 - Floodplain Marsh
3 - Urban Forest/Developed
2030 Vision Plan
Installation Boundary
Habitat Units
FIGURE 3
Habitat Units
Maxwell Air Force Base
Montgomery, Montgomery County, Alabama
2020-264
January 12, 2021
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904-363-1686

3.2.3 Habitat Unit 3

Habitat Unit 3 Urban Forest/Developed Areas was an upland community that consisted of the landscaped, maintained open space throughout the existing development within the proposed MAFB AU 2030 Vision Plan Campus area. This habitat unit also includes upland river margins, hedge rows, thickets and abandoned golf course areas. Some of the more common trees observed included loblolly pine *(Pinus taeda),* white oak *(Quercus alba),* southern live oak *(Quercus virginiana),* southern red oak *(Quercus falcata),* willow oak *(Quercus phellos),* hackberry, sycamore, sweetgum, flowering dogwood *(Cornus florida),* redbud *(Cercis canadensis),* southern magnolia *(Magnolia grandiflora),* bald cypress *(Taxodium distichum),* and black cherry *(Prunus serotina).* Other vegetation included various ornamental shrubs and lawn grasses such as crape myrtle *(Lagerstroemina indica),* Chinese holly *(Ilex cornuta),* yaupon holly *(Ilex vomitoria),* bahiagrass *(Paspalum notatum),* and bermudagrass *(Cynodon dactylon).*

3.3 Plant Species Survey Results

During the survey, 81 plant species were observed and identified. All plant species identified were later reviewed in the Alabama Plant Atlas to verify accepted species taxonomy and range likely to occur in Montgomery County (Keener, et. al. 2017). Table 2 details observations made on the property.

TABLE 2

Plant Species Observed within the MAFB AU 2030 Vision Plan Campus Area by Habitat Unit

Common Name	Scientific Name	Habitat Unit
Box elder	*Acer negundo*	1, 2
Japanese maple*	*Acer palmatum*	3
Red maple	*Acer rubrum*	1
Silver maple	*Acer saccharinum*	1, 3
Sugar maple	*Acer saccharum*	3
Silktree*	*Albizia julibrissin*	1, 2, 3
Alligatorweed*	*Alternanthera philoxeroides*	2
River birch	*Betula nigra*	1, 3
Pindo palm*	*Butia capitata*	3
Hickory	*Carya aquatica*	1, 3
Pecan	*Carya illinoinensis*	3
Shagbark hickory	*Carya ovata*	3
Deodar cedar*	*Cedrus deodara*	3
Hackberry	*Celtis occidentalis*	1, 2, 3
Buttonbush	*Cephalanthus occidentalis*	2
Redbud	*Cercis canadensis*	3
Northern wood oats	*Chasmanthium latifolium*	1
White fringetree	*Chionanthus virginicus*	3

Common Name	Scientific Name	Habitat Unit
Camphor	*Cinnamomum camphora*	3
Asiatic dayflower	*Commelina communis*	3
Flowering dogwood	*Cornus florida*	3
Hawthorn	*Crataegus spp.*	3
Bermuda grass	*Cynodon dactylon*	3
Slender crabgrass	*Digitaria filiformes*	3
Loquat*	*Eriobotrya japonica*	3
White ash	*Fraxinus americana*	3
Ginkgo*	*Ginkgo biloba-male*	3
Honey locust	*Gleditsia triacanthos*	3
Climbing hydrangea	*Hydrangea anomala sp. Petiolaris*	1, 3
Carolina holly	*Ilex ambigua*	1, 3
Chinese holly*	*Ilex cornuta*	3
American Holly	*Ilex opaca*	3
Yaupon holly	*Ilex vomitoria*	3
Eastern Red cedar	*Juniperus virginiana var. virgniana*	3
Crape myrtle*	*Lagerstroemia indica*	3
cutgrass	*Leersia lenticularis*	2
Glossy privet*	*Ligustrum lucidum*	3
Chinese privet*	*Ligustrum sinense*	1, 3
Common privet	*Ligustrum vulgare*	3
American sweetgum	*Liquidambar styraciflua*	1, 3
Japanese honeysuckle*	*Lonicera japonica*	3
Japanese climbing fern*	*Lygodium japonicum*	1, 3
Osage orange	*Maclura pomifera*	3
Southern magnolia	*Magnolia grandiflora*	3
Sweetbay magnolia	*Magnolia virginiana*	1, 3
Saucer magnolia*	*Magnolia x soulangeana*	3
Crabapple	*Malus sps.*	3
Chinaberry tree*	*Melia azedarach*	3
Mullberry	*Morus alba*	3
Black gum	*Nyssa sylvatica*	3
Sourwood	*Oxydendrum arboreum*	3
Warty panicgrass	*Panicum verrucosum*	2
Bahia grass	*Paspalum notatum*	3
Swamp smartweed	*Persicaria hydropiperoides*	2
Loblolly pine	*Pinus taeda*	1, 3
English plantain	*Plantago lanceolata*	3
American sycamore	*Plantanus occidentalis*	1, 3
Black cherry	*Prunus serotina*	3
White oak	*Quercus alba*	3

Common Name	Scientific Name	Habitat Unit
Southern red oak	*Quercus falcata*	3
Swamp laurel oak	*Quercus laurifolia*	1, 3
Overcup oak	*Quercus lyrata*	1
Water oak	*Quercus nigra*	1, 3
Pin oak	*Quercus palustris*	3
Willow oak	*Quercus phellos*	3
Northern red oak	*Quercus rubra*	3
Post oak	*Quercus stellata*	3
Southern live oak	*Quercus virginiana*	3
Black locust	*Robinia pseudoacacia*	3
Southern dewberry	*Rubus trivialis*	1, 3
Black willow	*Salix nigra*	1, 2, 3
Common greenbrier	*Smilax rotundifolia*	3
Bald cypress	*Taxodium distichum*	1, 3
White cedar	*Thuja occidentalis*	3
Poison Ivy	*Toxicodendron radicans*	1, 2, 3
Windmill palm*	*Trachycarpus fortunei*	3
Chinese tallow*	*Triadica sebifera*	1, 2, 3
White clover	*Trifolium repens*	3
American Elm	*Ulmus americana*	1, 3
Siberian elm*	*Ulmus pumila*	3
Blue marsh violet	*Viola cucullata*	2, 3

*Non-native species

3.4 Wildlife Species Survey Results

During the survey there were 22 avian species, two reptile species, and one mammal species observed within the proposed MAFB AU 2030 Vision Plan Campus area. All were common species for the central Alabama region. Table 3 has been provided below as a summary of the wildlife species observed and the respective habitat units where they were observed and likely to occur.

TABLE 3

Animal Species Observed within the Proposed MAFB AU 2030 Vision Plan Campus Area by Habitat Unit

Common Name	Scientific Name	Habitat Unit
American alligator	*Alligator mississippiensis*	2
Great egret	*Ardea alba*	2
Great blue heron	*Ardea herodias*	2
Tufted titmouse	*Baeolophus bicolor*	1, 3
Canada goose	*Branta canadensis*	2, 3
Northern cardinal	*Cardinalis cardinalis*	1, 3
Northern flicker	*Colaptes auratus*	1, 3
Rock pigeon	*Columba livia*	3
Fish crow	*Corvus ossifragus*	1, 2, 3
Blue jay	*Cyanocitta cristata*	1, 3
Bald eagle	*Haliaeetus leucocephalus*	1,2, 3
Eastern mud turtle	*Kinosternon subrubrum*	1, 2
Belted kingfisher	*Megaceryle alcyon*	1, 2, 3
Red-headed woodpecker	*Melanerpes erythrocephalus*	3
Swamp sparrow	*Melospiza georgiana*	1, 2
Northern mockingbird	*Mimus polyglottos*	3
Double-crested cormorant	*Phalacrocorax auritus*	2
Ruby-crowned kinglet	*Regulus calendula*	1, 3
Golden-crowned kinglet	*Regulus satrapa*	1, 3
Eastern phoebe	*Sayornis phoebe*	1, 2, 3
Fox squirrel	*Sciurus niger*	3
Eastern blue bird	*Sialis sialis*	3
American goldfinch	*Spinus tristis*	1, 3
Chipping sparrow	*Spizella passerina*	3
European starling	*Sturnus vulgaris*	3

3.5 Potential Federal and State Listed Species

Table 4 provides the state and federally listed species with potential to occur within the within the proposed MAFB AU 2030 Vision Plan Campus Area, based on database review of listed species known to occur within Montgomery County, Alabama. Federally listed threatened, endangered or recovery species that occur in Montgomery County include the bald eagle, wood stork, Georgia rockcress, Alabama canebrake pitcher-plant, gopher tortoise, and the Tulotoma snail. During the survey, federally threatened or endangered species were not observed within the proposed MAFB AU 2030 Vision Plan Campus Area. Neither evidence (tracks, scat, burrows, scrapes, nests, etc), nor suitable habitat, for federally threatened or endangered species were observed on the within the MAFB *AU* 2030 Vision Plan Campus Area.

There were several federally listed fish and clam species listed for Montgomery County; however, they were not included in this report due to lack of suitable aquatic habitat within the proposed MAFB AU 2030 Vision Plan Campus Area.

TABLE 4

State and Federally Listed Species Potentially Occurring in Montgomery County, Alabama

Group	Common Name	Scientific Name	Federal Status	State Status	Potential Habitat in MAFB	Potential Habitat in Gunter Annex
Amphibians	Smallmouth salamander	*Ambystoma texanum*	-	State Protected	Yes	No
Amphibians	Eastern tiger salamander	*Ambystoma tigrinum*	-	State Protected	Yes	No
Amphibians	Two-toed amphiuma	*Amphiuma means*	-	State Protected	No	No
Birds	Bald eagle	*Haliaeetus leucocephalus*	Recovery	-	Yes	No
Birds	Wood stork	*Mycteria americana*	Threatened	State Protected	Yes	No
Birds	White ibis	*Eudocimus albus*	-	State Protected	Yes	No
Birds	American kestrel	*Falco sparverius*	-	State Protected	Yes	Yes
Birds	King rail	*Rallus elegans*	-	State Protected	Yes	No
Birds	American woodcock	*Scolopax minor*	-	State Protected	Yes	No
Birds	Common ground-dove	*Columbina passerina*	-	State Protected	Yes	Yes
Birds	Short-eared owl	*Asio flammeus*	-	State Protected	Yes	No
Birds	Yellow warbler	*Setophaga petechia*	-	State Protected	Yes	No
Birds	Bachman's sparrow	*Peucaea aestivalis*	-	State Protected	No	No
Birds	Painted bunting	*Passerina ciris*	-	State Protected	Yes	No
Flowering Plants	Georgia rockcress	*Arabis georgiana*	Threatened	-	Yes	No

Group	Common Name	Scientific Name	Federal Status	State Status	Potential Habitat in MAFB	Potential Habitat in Gunter Annex
Flowering Plants	Alabama canebrake pitcher-plant	*Sarracenia rubra ssp. alabamensis*	Endangered	-	Yes	No
Mammals	Southern pocket gopher	*Thomomys umbrinus*	-	State Protected	No	No
Mammals	Black bear	*Ursus americanus*	-	State Protected	No	No
Reptiles	Gopher tortoise	*Gopherus polyphemus*	Candidate	State Protected	No	No
Reptiles	Eastern speckled kingsnake	*Lampropeltis getula holbrooki*	-	State Protected	Yes	No
Reptiles	Alligator snapping turtle	*Macrochelys temminckii*	Under Review	State Protected	Yes	No
Reptiles	Alabama map turtle	*Graptemys Pseudogeographica Kohni*	Under Review	State Protected	Yes	No
Snails	Tulotoma snail	*Tulotoma magnifica*	Threatened	-	Yes	No

The federally listed species determined to have potential to occur within the proposed MAFB AU 2030 Vision Plan Campus Area and discussion on their potential likelihood to occur within the project has been provided below. All of the potential habitats for federally protected species with potential to occur within MAFB have been determined not likely to be impacted by the proposed MAFB AU 2030 Vision Plan Campus Area project. This determination was made based on the scope and location of the project, which included mostly building upgrades within urban campus areas and recreational trails within the less developed floodplain area along the Alabama River. While detailed plans for the recreational trails were not yet available, MAFB staff have indicated that the trails will be designed to utilize existing roads and abandoned golf cart paths in order to minimize impacts to wetlands or undisturbed natural areas and no impervious surfaces will be used to construct those recreational trails.

Federally Listed Species

Bald eagle (*Haliaeetus leucocephalus*): Although the bald eagle is no longer protected under the Endangered Species Act, it is still afforded protection under the Bald and Gold Eagle Protection Act (BGEPA 1940) and the Migratory Bird Treaty Act (MBTA). The bald eagle is a large-bodied raptor that typically nest in forested areas adjacent to large bodies of water, staying away from heavily developed areas when possible. Bald eagles are tolerant of human activity when feeding, and may congregate around fish processing plants, dumps, and below dams where fish concentrate. For perching, bald eagles prefer tall, mature coniferous or deciduous trees that

afford a wide view of the surroundings. In winter, bald eagles can also be seen in dry, open uplands if there is access to open water for fishing (Cornell 2017).

One juvenile bald eagle was observed flying over the subject area but no nests were observed. The bald eagle has potential to occur on the installation within potential nesting and perching habitat. Habitat units 1 and 3 contain large loblolly pine trees that could potentially be used by eagles for nesting, as well as large deciduous trees with potential for perching. Habitat unit 3 also contains dry, open/grassy areas, in addition to open water for fishing, especially in the abandoned golf course area within the Alabama River floodplain. Additional potential bald eagle habitat nearby includes lakes and the Alabama River.

Wood stork (*Mycteria americana*): Wood storks are federally listed as a threatened species. They prefer to forage in both open and forested wetlands. Typical foraging habitats include freshwater marshes, cypress depressions, swamp sloughs, creeks and backwater pools. Wetlands that hold water at depths of 5 to 15 inches and support an assemblage of submerged and emergent aquatic vegetation are ideal for foraging. No wood storks were observed during the survey. Suitable habitat was observed within the proposed MAFB AU 2030 Vision Plan Campus Area including shorelines on ponds and lakes, marshes, and swamps associated within the Alabama River floodplain.

Georgia rockcress (*Arabis georgiana*): The Georgia rockcress is a perennial herb that grows up to 3 feet tall. The leaves are 1.5-3 inches long with toothed margins and bluntly pointed tips. Flowers have 4 white petals and are normally in a cluster at the top of the stem. The Georgia rockcress is usually found on the slopes above streams or rivers. There was potential habitat on MAFB consistent with habitat associated with the Gorgia rockcress, but none were observed on-site. This was likely due to historical disturbance and heavy infestations of invasive, exotic shrub species on the slopes above the Alabama River. There was no habitat on Gunter Annex consistent with habitat associated with the Georgia rockcress, and none were observed on-site.

Alabama canebrake pitcher-plant (*Sarracenia rubra ssp. Alabamensis*): The Alabama canebrake pitcher-plant is a carnivorous herb. It produces two types of pitchers and leaves, one in the spring and one in the summer. In the spring they appear with crimson flowers, are up to 16 inches tall, and are recurved. In the summer pitchers are up to 27 inches tall and erect. The plants are dormant in the winter. The plants grow in wet areas and seeps and are largely dependent on moist soil conditions. There was no habitat on the site consistent with habitat associated with the Alabama canebrake pitcher-plants, and none were observed on-site.

Gopher tortoise (*Gopherus polyphemus*): The gopher tortoise is a land turtle. They prefer upland habitats with open canopy and well drained soils for excavating underground burrows. There was no suitable habitat on MAFB or Gunter Annex for the gopher tortoise; neither tortoises nor their burrows were observed on-site or

off-site within adjacent, open field habitat.

Tulotoma snail (*Tulotoma magnifica*): The Tulotoma snail is a large freshwater snail. They are found under rocks in the flowing streams of the Alabama-Coosa river system. Neither MAFB nor Gunter Annex contain any suitable habitat for the Tulotoma snail and therefore none were observed.

State Listed Species

Alabama does not have a state law or act requiring protection for threatened or endangered species. However, through the ADCNR Nongame Species Regulation (Section 220-2-.92), some species receive regulatory protection which prohibits the capture, kill, possession, selling, or trading of species without a scientific collection permit or written permit from the ADCNR Commissioner.

ADCNR protected species listed above in Table 4 above were neither observed, nor evidence of their presence found within the installation. Several of these ADCNR protected species can reasonably be anticipated to occur with the installation, including American Kestrel, Common Ground-dove and several other migratory bird species. Most of the reasonably anticipated ADCNR protected species are birds, which would also be afforded protection under the federal MBTA. All of the potential habitats for ADCNR protected species with potential to occur within MAFB have been determined not likely to be impacted by the proposed MAFB AU 2030 Vision Plan Campus Area project. This determination was made based on the scope and location of the project, which included mostly building upgrades within urban campus areas and recreational trails within the less developed floodplain area along the Alabama River. While detailed plans for the recreational trails were not yet available, MAFB staff have indicated that the trails will be designed to utilize existing roads and abandoned golf cart paths in order to minimize impacts to wetlands or undisturbed natural areas.

3.6 Invasive Species Results

There are 17 Category 1 Invasive plant species listed in the state of Alabama. Category 1 invasive species have extensive and dense infestations throughout the state, category 2 species have scattered and localized infestations within the state. Table 5 lists the category 1 invasive plant species in Alabama according to the Alabama Invasive Plant Council.

TABLE 5

Category 1 Invasive Plant Species Potentially Occurring in Alabama

Common Name	Scientific Name
Silktree*	*Albizia julibrissin*
Alligatorweed*	*Alternanthera philoxeroides*
English ivy	*Hedera helix*
Common water hyacinth	*Hydrilla verticillata*
Cogongrass	*Imperata cylindrica*
Chinese lespedeza	*Lespedeza cuneata*
Chinese privet*	*Ligustrum sinense*
Japanese honeysuckle*	*Lonicera japonica*
Japanese climbing fern*	*Lygodium japonicum*
Japanese stiltgrass	*Microstegium vimineum*
Eurasian water milfoil	*Myriophyllum*
Common reed	*Phragmites australis*
Kudzu	*Pueraria montana var. lobata*
Multiflora rose	*Rosa multiflora*
Giant salvinia	*Salvinia molesta*
Chinese tallowtree*	*Triadica sebifera*
Chinese wisteria	*Wisteria sinensis*

*found within the installation

Six category 1 invasive plant species were observed within the MAFB AU 2030 Vision Plan Campus Area: Alligatorweed, Chinese privet, Chinese tallow, Japanese climbing fern, Japanese honeysuckle and silktree. Alligatorweed is a perennial herb that was observed along the edges of wetlands within the old golf course. Chinese privet, Chinese tallow, Japanese climbing fern, Japanese honeysuckle, and silktree were observed along the river bluff and slopes and along the edges of the riverbank, lakes and wetlands within the floodplain.

Japanese privet (*Ligustrum japonicum*) and Chinaberry tree (*Melia azedarach*) were category 2 invasive species observed along the river bluff and slopes and along the edges of the riverbank, lakes and wetlands. Additional category 2 invasive species that were previously observed by others within MAFB include: Johnson grass (*Sorghum halepense*), golden bamboo (*Phyllostachys aurea*), and Bradford pear (*Pyrus calleryana*) (Alabama Natural Heritage Program 2002).

4.0 CONCLUSIONS

Federally listed flora and fauna were not found to occur within the proposed MAFB AU 2030 Vision Plan Area but were determined to have potential to occur within MAFB, or directly adjacent, off-site lands. Federally listed flora and fauna species have been determined not likely to occur within the Gunter Annex or on directly adjacent, off-site lands, due to lack of suitable habitat from the complete development of the property. A consultation with the USFWS regional office was not conducted for this report, but a previous consultation in 2018 indicated that federally listed wood storks were a minor concern within an airfield drainage project (Department of the Air Force 2020). The USFWS stated that "transient wood storks have been documented in the area; therefore, we recommend that if wood storks are present, work will be suspended in the proximity to the wood storks until they depart the project area."

State protected wildlife species were not observed to occur within the proposed MAFB AU 2030 Vision Plan Area; however, several state protected bird species were determined to have potential to occur there, or on directly adjacent, off-site lands. These state protected bird species would also be protected under the federal MBTA. Prior to any new construction projects, the MAFB should assess the potential impacts to protected bird species and either avoid impacts or obtain necessary authorizations from the ADCNR and USFWS. Due to the level of existing development at MAFB and Gunter Annex, and relatively transitory nature of the anticipated protected bird species, it is likely that any potential future impacts can be easily avoided or authorized upon consultation with the ADCNR and USFWS.

5.0 REFERENCES

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APPENDIX A

Photographic Record for Flora and Fauna Survey

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 1 – Bottomland/Floodplain Forest

Typical Habitat Unit 1 – Bottomland/Floodplain Forest

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 2 – Floodplain Marsh

Typical Habitat Unit 2 – Floodplain Marsh

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 3 – Urban Forest in abandoned golf course areas

Typical Habitat Unit 3 – Urban Forest/Developed

Maxwell-Gunter AFB
AU Vision 2030 Plan
Typical Habitat Photographs

Typical Habitat Unit 3 – Urban Forest/Developed

Typical Habitat Unit 3 – Urban Forest/Developed

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Appendix F: Historic Buildings at Maxwell-Gunter AFB

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Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
100	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
101	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
102	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
103	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
104	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
105	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
106	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
107	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
108	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
109	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
110	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
111	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
112	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
113	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
114	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
115	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
116	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
117	1941		VOQ	VOQ		
119	1934		Brett Hall	VOQ		
121	1941		VOQ	VOQ		
122	1934		Garage	Garage		
123	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
125	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
126	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
127	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
129	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
130	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
131	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
132	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
133	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
134	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
142	1942		VOQ	VOQ		
143	1942		VOQ	VOQ		
144	1934		Officers Club	Officers Club		
200	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
201	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
202	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
203	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
204	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
205*	1940	NRHP Eligible	Hospital	Administration		Located at Gunter Annex
205	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
206	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
207	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
208	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
209	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
210	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
211	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
212	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
213	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
214	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
215	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
216	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
217	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
218	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
219	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
220	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
221	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
222	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
223	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
224	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
227	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
228	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
229	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
230	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
231	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
232	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
233	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
234	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
235	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
236	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
300	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
301	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
302	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
303	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
304	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
305	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
306	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
307	1933	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
308	1932	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
309	1934	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
310	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
311		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
312		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
313		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
314		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
315		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
316		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
317		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
318		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
319		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
320		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
321		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
322		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
323		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
324		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
325		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
326		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
327		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
328		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
329		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
330		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
332		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
333		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
334		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
335		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
336		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
337		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
339		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
340		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
341		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
342		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
344		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
345		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
346		Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
347		Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
400	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
401	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
402	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
403	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
404	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
405	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
406	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
407	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
408	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
409	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
410	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
411	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
412	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
413	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
414	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
415	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
416	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
417	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
418	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
419	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
420	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
421	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
422	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
423	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
424	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
425	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
426	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
427	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
428	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
429	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
430	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
431	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
432	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
433	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
434	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
435	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
436	1935	Contributing element, NRHP-listed historic district	Housing	Housing	SOQ	
437	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
438	1934	Contributing element, NRHP-listed historic district	Garage	Garage	SOQ	
629	1931	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
631	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
635	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
636	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
637	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
638	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
639	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
640	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
641	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
642	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
643	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
644	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
645	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
646	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
647	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
648	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
649	1928	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
650	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
651	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
653	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
654	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
655	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
656	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
657	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
658	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
659	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
661	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
663	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
664	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
665	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
669	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
670	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
671	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
672	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
673	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
674	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
675	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
676	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
678	1934	NRHP Eligible	Barracks	Education	No	
689	1945	NRHP Eligible	Hangar	Gymnasium	No	In proposed Flight Line Historic District
714	1931	NRHP Eligible	Hospital	Civil Air Patrol	No	
715	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
716	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
717	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
718	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
719	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
720	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
721	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
722	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
723	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
724	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
725	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
726	1931	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
727	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
728	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
729	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
730	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
731	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
732	1934	NRHP Eligible	Housing	Housing	No	In proposed NCO Historic District
733	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
734	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
735	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
736	1934	NRHP Eligible	Garage	Garage	No	In proposed NCO Historic District
800	1931	NRHP Listed	ACTS Headquarters	Air University Headquarters	No	
835	1931	NRHP Eligible	Barracks	Administration	No	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
836	1928	NRHP Listed	Barracks	Administration	No	
841	1934	NRHP Eligible	Hangar	Gymnasium	No	In proposed Flight Line Historic District
842	1931	NRHP Eligible	Hangar	Hangar	No	In proposed Flight Line Historic District
843	1931	NRHP Eligible	Hangar	Hangar	No	In proposed Flight Line Historic District
844	1931	NRHP Eligible	Base Operations	Base Operations	No	In proposed Flight Line Historic District
845	1931	NRHP Eligible	Hangar	Hangar	No	In proposed Flight Line Historic District
846	1931	NRHP Eligible	Hangar	Hangar	No	In proposed Flight Line Historic District
848	1932	NRHP Eligible	Hangar	Storage	No	In proposed Flight Line Historic District
849	1932	NRHP Eligible	Hangar	Storage	No	In proposed Flight Line Historic District
850	1931	NRHP Eligible	Storage	Storage	No	In proposed Flight Line Historic District
857*	1958	NRHP Eligible	SAGE Facility	IT Operations Facility	No	Located at Gunter Annex
1208	1945	NRHP Eligible	Barracks	Administration	No	In proposed Fourth Aviation Squadron Historic District
1209	1945	NRHP Eligible	Barracks	Administration	No	In proposed Fourth Aviation Squadron Historic District
1210	1945	NRHP Eligible	Barracks	Administration	No	In proposed Fourth Aviation Squadron Historic District
1211	1945	NRHP Eligible	Barracks	Administration	No	In proposed Fourth Aviation Squadron Historic District
1215	1945	NRHP Eligible	Administration	Administration	No	In proposed Fourth Aviation Squadron Historic District
1400	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	
1401	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	
1402	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	

Table F-1. Historic Buildings at Maxwell-Gunter AFB (*indicates Gunter Annex)

Building Number	*Build Date(s)*	*NRHP Status*	*Historic Use*	*Current Use*	*District*	*Other Notes*
1403	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	
1404	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	
1405	1956	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	
1406	1986	Contributing element, NRHP-eligible Historic District	Education	Education	Chennault Circle	

Notes: ACTS = Air Corps Tactical School; NCO = Non-Commissioned Officer; NRHP = National Register of Historic Places; SOQ = Senior Officer Quarters; and VOQ = Visiting Officers Quarters.

Appendix G: Alabama State Historic Preservation Office Consultation Letters

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