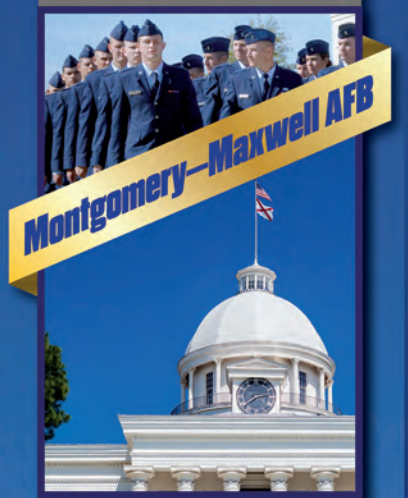
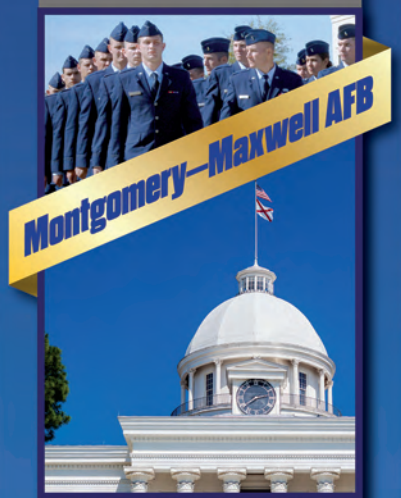
Background Report



JOINT LAND USE STUDY



This study was prepared under contract with the City of Montgomery, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the key JLUS partners involved in the development of this study and does not necessarily reflect the views of the Office of Economic Adjustment.

Montgomery-Maxwell Air Force Base

Background Report

Prepared Under Contract with:

City of Montgomery
25 Washington Avenue
Montgomery, AL 36106

Prepared by:

Matrix DESIGN GROUP

June 2017

This study was prepared under contract with the City of Montgomery, with financial support from the Office of Economic Adjustment, Department of Defense. The content reflects the views of the City of Montgomery and the jurisdictions, agencies and organizations participating in the JLUS program, and does not necessarily reflect the views of the Office of Economic Adjustment.

Acknowledgements

Policy Committee

The Policy Committee (PC) served an active and important role in providing policy direction during the development of the Maxwell Air Force Base (AFB) and Gunter Annex Joint Land Use Study. The Policy Committee was composed of the following individuals:

Elton Dean, *Chairman, Commissioner*
Montgomery County

Randy George, *Chief Executive Officer*
Montgomery Chamber of Commerce

Bill Gillespie, *Mayor*
City of Prattville

Connie Hand, *Mayor*
Town of Coosada

Paul Hankins, *Ret. General, Chair*
Alabama Military Stability Commission

Dan Harris, *Vice Chairman, Commissioner*
Montgomery County

Charles Jinright, *City Council President*
City of Montgomery

Al Kelley, *Mayor*
City of Millbrook

Lora McClendon, *Director, Military & Federal Strategies*
Montgomery Chamber of Commerce

Ron Sams, *Ret. General, Member*
Alabama Military Stability Commission

COL Eric Shafa, *Commander*
Maxwell Air Force Base

Todd Strange, *Mayor*
City of Montgomery

COL Andrea Tullos, *Commander (Former)*
Maxwell Air Force Base

COL Adam Willis, *Commander*
908th Airlift Wing

Technical Committee

The Technical Committee (TC) served a key role in the development of the Maxwell AFB and Gunter Annex Joint Land Use Study. They provided the overall technical support, review, and guidance of the study. The TC was composed of the following individuals:

Michael Allen
Maxwell Air Force Base

Anita Archie
City of Montgomery

Gary Arnold
Maxwell Air Force Base

Scott Baker
Defense Information Security Agency

Mark Barnhart
Maxwell Air Force Base Airfield Operations

Chris Blair
Maxwell Air Force Base Civil Engineering

Bubba Bowden
City of Montgomery

Kitty Chamberlain
City of Montgomery

Patrick Dunson
City of Montgomery

John Eagerton
Alabama Department of Transportation Aeronautics

Joe Green
Military & Government Affairs / Montgomery Area

BGen (Ret.) Paul Hankins
Alabama Military Stability Commission

Steve Jones
City of Montgomery

Mac McLeod
City of Montgomery

Scott Miller
City of Montgomery

Vincent Miranda
Maxwell Air Force Base 42 Operations Support Squadron

Phil Perry
Montgomery Regional Airport

Shawn Roberts
Federal Aviation Administration Air Traffic Control Tower (ATCT)

Kristi Rollins
Maxwell Air Force Base

LtGen (Ret.) Ron Sams
Alabama Military Stability Commission

Robert Smith
City of Montgomery

Will Sparrow
Maxwell Air Force Base 187th Fighter Wing

Matt Thomason
Goodwyn Mills & Cawood

Tommy Tyson
City of Montgomery

Max Vaughn
Goodwyn Mills & Cawood

Lynda Wool
City of Montgomery

City of Montgomery

The City of Montgomery served as the overall JLUS project management agency and the administrator of the Office of Economic Adjustment grant that helped to fund the study.

Robert Smith
Planning Director

JLUS Consultant / Technical Advisors

Matrix Design Group was the project consultant hired to conduct the JLUS project through coordination with and assistance from the City of Montgomery, the PC, the TC, the public, and other stakeholders.

Mike Hrapla
Project Manager

Celeste Werner, AICP
Deputy Project Manager

Rick Rust, AICP, GISP
Technical Manager

Michele Mora
Lead Planner

Please see the next page.

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Acronyms

A

ABW	Air Base Wing
AETC	Air Education Training Command
AF	Air Force
AFB	Air Force Base
AFI	Air Force Instruction
AFLCMC	Air Force Life Cycle Management Center
AFPD	Air Force Policy Directive
AFSPC	Air Force Space Command
AGL	above ground level
AICUZ	Air Installation Compatible Use Zone
ALDEM	Alabama Department of Environmental Management
ALDOT	Alabama Department of Transportation
AMSL	above mean sea level
APZ	Accident Potential Zone
APZ-LZ	Accident Potential Zone-Landing Zone
ATCT	Air Traffic Control Tower
AW	Airlift Wing

B

BAH	Basic Allowance for Housing
BASH	Bird Air Strike Hazard
BHWG	Bird Hazard Working Group

C

CAA	Clean Air Act
CDS	Container Delivery System
CEDS	Comprehensive Economic Development Strategy
CERCLA	Comprehensive Environmental Response Compensation, and Liability Act
CFR	Code of Federal Regulations
CP	Comprehensive Plan
CSXT	CSX Transportation
CWA	Clean Water Act
CZ	Clear Zone

D

dB	decibel
dBA	decibel A-weighted
DISA	Defense Information Systems Agency
DNL	Day Night Average A-weighted Sound Level
DOC	Alabama Department of Corrections
DOD	Department of Defense
DOI	U.S. Department of Interior
du	dwelling unit

E

e.g.	for example
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act

F

FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FLPMA	Federal Land Policy and Management Act
FONSI	Finding of No Significant Impact
FW	Fighter Wing
FY	fiscal year

H

HMP	Hazard Mitigation Plan
HUD	U.S. Department of Housing and Urban Development

I

I	Interstate
IBC	International Building Code
i.e.	in other words
ICEMAP	Installation Complex Encroachment Management Action Plan
ICRMP	Integrated Cultural Resources Management Plan
IDP	Installation Development Plan
IFT	Initial Flight Training
IGA	Intergovernmental Agreements
INRMP	Integrated Natural Resources Management Plan

J

JAG	Judge Advocate General
JLUS	Joint Land Use Study

M

M-3	Industrial Zoning District (City of Montgomery)
MAP	Montgomery Area Paratransit
MATS	Montgomery Area Transit System
MGM	Montgomery Regional Airport
MOA	Military Operating Area
MoADS	Montgomery Air Defense Sector
MOU	Memorandum of Understanding
MPO	Montgomery Metropolitan Planning Organization
MSA	Metropolitan Statistical Area
MSL	mean sea level
MTR	Military Training Route

N

NAAQS	National Ambient Air Quality Standards
NACo	National Association of Counties
NEPA	National Environmental Protection Act
NGO	Non-governmental Organization
NHPA	National Historic Preservation Act
NM	nautical mile
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NRP	Natural Resource Management Plan

O

OEA	Office of Economic Adjustment

P

P.L.	Public Law
P4	Public-Public, Public-Private Partnerships
PC	Policy Committee
PM2.5	Particulate Matter of particles less than 2.5 microns in size
PM10	Particulate Matter of particles between 2.5 and 10 microns in size

R

REPI	Readiness Environmental Protection and Integration

S

§	Section
SAGE	Semi-Automatic Ground Environment
SCADC	South Central Alabama Development Commission
SDWA	Safe Drinking Water Act
SEATC	Southeast Air Corps Training Center
SF	square feet
SIP	State Improvement Plan
SNCO	Air Force Senior Non-Commissioned Officer Academy
SR	Slow Route Military Training Route
STEM	Science, Technology, Engineering, and Math Program

T

TBD	to be determined
TC	Technical Committee

U

UAV	Unmanned Aerial Vehicle
US	United States
USAF	United States Air Force
USAHAS	United States Avian Hazard Advisory System
USFWS	United States Fish and Wildlife Service

V

VFR	Visual Flight Rules

Introduction

1

Please see next page.

Introduction 1

Inside Chapter 1...

Maxwell AFB and Gunter Annex are geographically separated by five miles, and are located in south central Alabama. They are situated approximately 82 miles south of Alabama's largest city, Birmingham, and 162 miles southwest of Atlanta, Georgia. Maxwell AFB comprises 2,239 acres in the northwestern portion of the City of Montgomery. Gunter Annex is about 378 acres, and is located within the City of Montgomery, approximately five miles east-northeast of downtown. The JLUS Study Area encompasses all land in the vicinity of Maxwell AFB and Gunter Annex that have actual or potential impacts on military operations at the installations.

The participating jurisdictions in this JLUS are the City of Montgomery, Montgomery County, and the City of Prattville. An organized communication effort between the military, the surrounding communities, and other stakeholder entities that own or manage land or resources in the region is needed to ensure that future growth around Maxwell AFB and Gunter Annex is coordinated and compatible with military training activities.

1.1. What Is a Joint Land Use Study?

A JLUS is a planning process accomplished through the collaborative efforts of a comprehensive list of stakeholders in a defined study area in order to identify compatible land uses and growth management practices in communities close to active military installations. These stakeholders include local jurisdictions, state, and federal officials, residents, business owners, non-governmental organizations, and the military.

The intent of the process is to establish and encourage a working relationship among military installations and their neighboring jurisdictions to act as a team to prevent and/or reduce compatibility issues associated with future mission expansion and local growth. Compatibility in relation to military readiness can be defined as the balance or compromise between community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both community and military can coexist successfully.

A JLUS results in a set of recommendations or potential strategies that can be implemented by identified stakeholders to promote compatible development and relationships between the military and neighboring communities for the present and future. As such, a JLUS may become an adopted plan for establishing compatible land use standards, but does not itself enact any new regulations or policies.

Although primarily federally funded by the Department of Defense (DOD), Office of Economic Adjustment (OEA), a JLUS is produced by and for local communities. The project management entity for the Montgomery-Maxwell AFB JLUS is the City of Montgomery.

This JLUS is important to preserve long-term land use compatibility between Maxwell AFB, Gunter Annex, and their surrounding jurisdictions, and to better protect the health, safety, and welfare of surrounding jurisdictions and the civilian and military community at Maxwell AFB. The JLUS is representative of collaboration between Maxwell AFB, the State of Alabama, and the County of Montgomery, and the Cities of Montgomery and Prattville for the purpose of planning for compatible land use, while ensuring the continued presence of the military.

1.2. JLUS Goal

The goal of the Montgomery-Maxwell AFB JLUS is to protect the viability of current and future military missions and operations, while simultaneously guiding community growth, sustaining the environmental and economic health of the region, and protecting public health, safety, and welfare.

1.3. JLUS Objectives

To achieve this goal, three primary JLUS objectives were identified.

- Understanding. Convene community and military representatives to identify, confirm, and understand compatibility issues and concerns in an open forum, considering both the community and military perspectives and needs. This includes increasing public awareness, education, and opportunities for input organized in a cohesive outreach program.
- Collaboration. Encourage cooperative land use and resource planning by Maxwell AFB, Gunter Annex, and surrounding communities so that future community growth and development are compatible with the Maxwell AFB missions and operations, while seeking ways to reduce operational impacts on land within the JLUS Study Area.
- Actions. Provide a set of mutually supported tools, activities, and procedures (strategies) that local jurisdictions, agencies, Maxwell AFB, and Gunter Annex can implement in order to avoid and reduce compatibility issues. The strategies proposed include both operational measures to mitigate installation impacts on surrounding communities, and local government and agency approaches to reduce community impacts on military operations. These strategies will help decision makers resolve compatibility issues and prioritize projects within the annual budgeting process of their respective entity / jurisdiction.

1.4. Why Prepare a Joint Land Use Study?

Although military installations and nearby communities may be separated by a fence line, they often share natural and manmade resources such as land, airspace, water, and infrastructure. Despite the many positive interactions among local jurisdictions, agencies, and the military, and because so many resources are shared, the activities or actions of one entity can pose unintended negative impacts on another, resulting in conflicts. As communities develop and expand in response to growth and market demands, land use approvals have the ability to locate potentially incompatible development closer to military installations and operational / training areas. The result can initiate new, or foster existing, land use and other compatibility issues, often referred to as encroachment, which can have negative impacts on community safety, economic development, and sustainment of military activities and readiness. This threat to military readiness activities is currently one of the military's greatest operational challenges.

The Montgomery–Maxwell AFB JLUS is a proactive approach to encourage increased communication and foster relationships among all JLUS stakeholders and partners.

Collaboration and joint planning among military installations, local communities, and agencies protects the long-term viability of existing and future military missions. Working together also enhances the health of local economies before incompatibility becomes an issue. Recognizing the close relationship that should exist between installations and adjacent communities, the OEA implemented the JLUS program in an effort to mitigate existing and future conflicts and enhance communication and coordination among all affected stakeholders. This program aims to preserve the sustainability of local communities within the JLUS Study Area while protecting current and future operations and training missions at Maxwell AFB and Gunter Annex.

1.5. Regional Economic and Local Importance

Maxwell AFB and Gunter Annex are both located in south central Alabama. Maxwell AFB is roughly five miles west of Gunter Annex. The two bases, together, cover over 2,600 acres in the City of Montgomery, Alabama. Maxwell AFB and Gunter Annex play an important role in the regional economy, employing over 12,000 people, which makes it the largest employer in the Montgomery Metropolitan Area. It is estimated that Montgomery also has a total military population of over 25,000 including active duty, retirees, dependents, and Guard and Reservist components. According to Maxwell AFB's Installation Development Plan, the impact on the local economy equates to approximately $1.2 billion dollars annually. Through indirect jobs created by the base, an additional annual value of nearly $270 million is also generated within the community.

Source: Maxwell AFB Installation Development Plan, 2015; Maxwell AFB AICUZ Report, 2009

1.6. Military Strategic Importance

Aside from being a significant economic generator for the region, Maxwell AFB and Gunter Annex are strategic assets in the nation's defense. Maxwell AFB is home to Air University, the intellectual and leadership center of the Air Force. Air University is a significant capability in the Air Education Training Command (AETC); it includes Air War College and Officer Training School and Air Command and Staff College. The University provides the full spectrum of military education from pre-commissioning to the highest levels of professional military education, including degree granting and continuing education for officers, and enlisted and civilian personnel worldwide. In addition to Maxwell AFB's role in professional military education, the base is home to the 908th Airlift Wing (AW) Reserve Unit. The 908th AW operates eight C-130 aircraft at the base in support of various air capabilities including

refueling and cargo transport and U.S. Humanitarian and Peacekeeping efforts.

The 42nd Air Base Wing, headquartered at Maxwell AFB, operates the Gunter Annex. The Gunter Annex is home to the Business and Enterprise Systems Directorate, a leader in Information Technology.

Maxwell AFB also serves as a hurricane evacuation center for southern US Air Force aircraft for bases under threat, and is a critical FEMA partner in hurricane relief efforts.

Figure 1-1 illustrates the location of Maxwell AFB and Gunter Annex within the region. Additional details on Maxwell AFB's missions and activities are described in Chapter 3, Military Profile.

C-130 Hercules, Maxwell AFB

1.7. Local Communities Working Together

Maxwell AFB contributes to the local community much more than just economically. The Secretary of the Air Force for Installations, Environment, and Logistics named Maxwell as an Air Force Prototype for the Public-Public Private-Public Partnerships (P4) initiative, which identifies ways for installations, local governments, and community leaders to utilize their combined resources and capabilities to share the cost for services and / or enhancements that benefit the entire community. Maxwell and the City of Montgomery have partnered on many projects since the commencement of this initiative, and a sampling of these current and proposed partnerships are provided below.

- **STARBASE STEM Program:** STARBASE is a science, technology, engineering, and math (STEM) program, sponsored by the DOD and overseen by the Montgomery Education Foundation. It provides fifth graders from the local community the unique opportunity to engage in hands-on activities focused on science and technology. The Air University Foundation and state grant funding have been supporting this effort since 2004, and as of 2015 has plans to expand the program to include area sixth graders. The DOD provides $346,000 per year to support the STARBASE STEM Program.
- **Gunter Annex Joint Use Fitness Center:** A proposal for the construction of a fitness center through a partnership between the base and either the City of Montgomery or the YMCA of Greater Montgomery is currently under consideration.
- **Freedom Park:** Freedom Park was developed by the River Region Partners at Maxwell AFB to provide a place for fitness activities and recreation to personnel with base access.

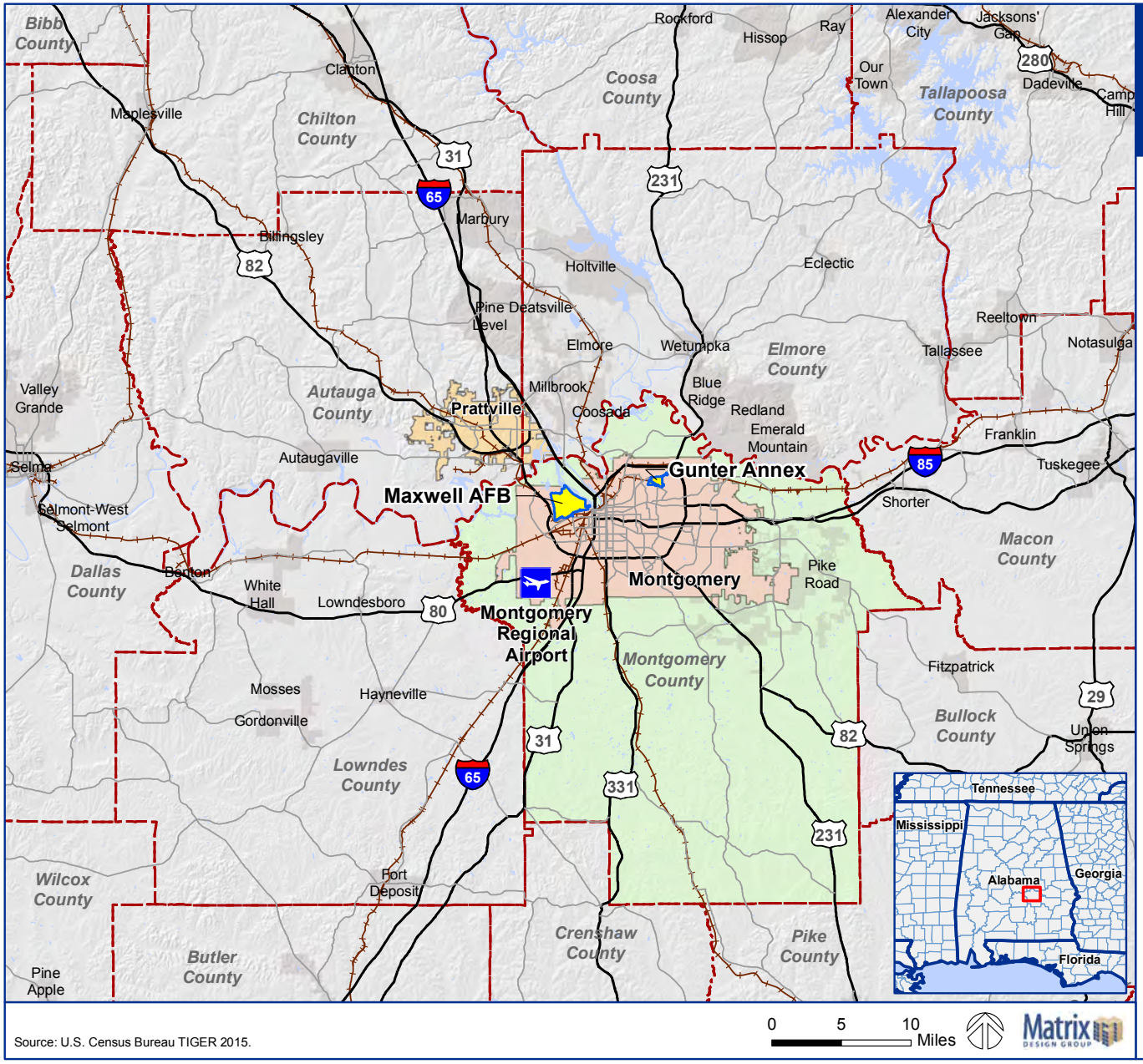


Figure 1-1

Regional Map

Legend

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport

- **Alabama Goodwill Ambassadors:** The Alabama Goodwill Ambassadors (AGAs) are a group of volunteers that assist and sponsor international military officers and their families that are attending Air War College and other professional and educational courses at Maxwell AFB
  Air University. The AGAs ease the family's transition into the community through friendship by welcoming the officers and their families, fostering international relations, and creating lasting, positive impressions.

Alabama Goodwill Ambassadors honored at Maxwell AFB, January 2015
Photo credit: Montgomery Advertiser

In addition to the various community improvements and sponsorship program, Maxwell AFB is an active participant in the Montgomery community and regularly engages with community members through programs, many of which have been instituted by the Montgomery Chamber of Commerce. These programs include the following:

- Military Affairs Branch of the Chamber of Commerce has been instrumental in building and maintaining support for Maxwell AFB within the Montgomery business community.
- Maxwell-Gunter Montgomery (MGM) Forum helps to educate members of the Chamber on the various activities and missions of Maxwell AFB.
- MGM Partners Program is a program designed to pair Maxwell personnel with their counterparts from the business community for social and business interactions.
- Project Interface is a program that partners civilian families with Air War College seminar leaders, where they engage the seminar leaders in social outings and events during their stay in Montgomery.

Source: Maxwell AFB Installation Development Plan

1.8. Stakeholder and Public Outreach

As highlighted in the objectives stated previously, the JLUS process was designed to create a locally relevant plan that builds consensus and obtains support from the various stakeholders involved. To achieve the JLUS goal and objectives, the JLUS process utilized a stakeholder and public outreach program that included a variety of opportunities for interested parties to contribute to its development.

Stakeholders

An early step in any planning process is the identification of stakeholders. Stakeholders include individuals, groups, organizations, and governmental entities interested in, affected by, or affecting the outcome of the JLUS project. Informing and involving them early in the project is essential in identifying their compatibility issues so that they can be resolved through the development of integrated strategies and actions.

Stakeholders identified for the Montgomery-Maxwell AFB JLUS included, but were not limited to:

- Local jurisdictions (City of Montgomery, City of Prattville, and Montgomery County);
- DOD officials (including OEA representatives) and military installation personnel;
- Local, regional, and state planning, regulatory, and land management agencies;
- Landholding and regulatory federal agencies;
- The public (including residents and landowners);
- Environmental advocacy organizations;
- Native American Tribes;
- Nongovernmental organizations (NGOs); and
- Other special interest groups (including local educational institutions and school districts).

Policy and Technical Committees

The development of the Montgomery-Maxwell AFB JLUS was guided by two committees made up of city, county, state and federal agencies, Maxwell AFB and Gunter Annex personnel, resource agencies, and other stakeholders. The two committees were the Policy Committee (PC) and the Technical Committee (TC).

JLUS Policy Committee (PC): The PC consisted of elected officials from participating jurisdictions, Maxwell AFB and Gunter Annex leadership, and representatives from other interested and affected agencies. The PC was responsible for the direction of the JLUS, preparation and approval of the study design, approval of policy recommendations, and approval of draft and final JLUS documents.

Technical Committee (TC): The TC was responsible for identifying and studying technical issues, providing feedback on report development, and assisting in the development and evaluation of implementation strategies and tools. Membership included area planners, military base planners, business and development community representatives, and other subject matter experts as needed to assist in the development and evaluation of implementation strategies and tools. Items discussed by the TC were brought before the PC for consideration and action.

The PC and TC served as liaisons to their respective stakeholder groups. PC and TC members were charged with conveying committee activities and information to their organizations and constituencies and relaying their organization's comments and suggestions to both committees for consideration. PC members were encouraged to set up meetings with their organizations and / or constituencies to facilitate this input. The list of participants and their responsibilities for the JLUS sponsors, the PC, and the TC are identified in Tables 1-1, 1-2, and 1-3, respectively.

Table 1-1. JLUS Sponsor Responsibilities and Participants

Responsibilities	Participants
■ Coordination ■ Accountability ■ Grant management ■ Financial contribution	■ City of Montgomery ■ Office of Economic Adjustment

Table 1-2. JLUS Policy Committee Responsibilities and Participants

Responsibilities	Participants
■ Policy direction ■ Study oversight ■ Monitoring ■ Report adoption	■ Alabama Military Commission ■ City of Montgomery ■ City of Prattville ■ Maxwell AFB / Gunter Annex ■ Montgomery Area Chamber of Commerce ■ Montgomery County

Table 1-3. JLUS Technical Committee Responsibilities and Participants

Responsibilities	Participants
■ Identify issues ■ Provide expertise to address technical issues ■ Evaluate and recommend implementation actions to the PC ■ Provide draft and final report recommendations to the PC	■ Alabama Department of Transportation ■ Alabama Military Commission ■ City of Montgomery ■ City of Prattville ■ Defense Information Systems Agency (DISA) ■ Federal Aviation Administration Air Traffic Control Tower ■ Goodwyn Mills & Cawood ■ Maxwell AFB / Gunter Annex ■ Montgomery County ■ Montgomery Regional Airport

Committee meetings were held throughout the process to ensure the JLUS identified and appropriately addressed local issues. The meetings conducted are highlighted as follows.

- **Project Kick-Off / Meeting #1 (August 20, 2015).** This meeting served as the initial kick-off for the committees and provided an overview of Maxwell AFB's mission. The JLUS process and participants were introduced and information on the 25 compatibility factors evaluated in this JLUS was presented with the first public brochure.
- **Technical Committee Meeting #2 (June 2, 2016).** The second meeting conducted with the TC included a review of potential data gaps, review of issues identified to date, and presentation of draft findings. Any additional issues were added and summarized along with general notes on issues, goals, and concerns identified to date.

- **Policy Committee Meeting #2 (June 3, 2016).** The second PC meeting included a presentation of the project status, an explanation and discussion of the military operational footprints, and a brief discussion on the identified compatibility issues, which required action and acceptance by the PC. The presentation also covered a brief overview of the public meeting and next steps.
- **Technical Committee Meeting #3 (November 14, 2016).** The third TC meeting was held in the morning and the PC meeting was held in the afternoon. The second TC meeting included a presentation of the project status, an explanation on the military compatibility areas, and an open discussion about the draft recommendations. The purpose of this meeting was to garner input from the TC on potential strategies.
- **Policy Committee Meeting #3 (November 14, 2016).** The third PC meeting included a presentation of the project status, an explanation on the military compatibility areas, which required action and acceptance by the PC. The PC also received information about next steps in the project.
- **Meeting #4 (February 2, 2017).** The fourth meeting was held to present the Draft JLUS and recommendations. The JLUS Team developed the Draft JLUS based on committee comments and revisions. The JLUS Team provided information regarding the public comment period and solicited input from the PC and TC members.
- **Meeting #5 (June 14, 2017).** The fifth meeting was held to present the Final JLUS Report and gain acceptance from the PC. The JLUS Team prepared the final report to include all comments and revisions as outlined in the previous tasks and as deemed appropriate to incorporate by the PC. The presentation of the Final JLUS Report discussed the overall findings, major changes and revisions to the report that were incorporated based on comments received from the committee members and the public.

Public Workshops

In addition to the PC and TC meetings, a series of public workshops were held throughout the development of the JLUS. These workshops provided an opportunity for the exchange of information with the greater community, assisted in identifying the issues to be addressed in the JLUS, and provided input on the strategies proposed. Each workshop included a traditional presentation and a facilitated exercise providing a "hands on," interactive opportunity for the public to participate in the development of the study. The public workshops that were conducted are highlighted as follows:

- **Public Workshop #1 (June 2, 2016), City of Montgomery City Hall, 5:30 pm.** This initial public workshop provided an explanation of the purpose of a JLUS, an overview of the military operations at Maxwell AFB and Gunter Annex (Including military training areas), an introduction to project participants, and the JLUS approach and goals. A user-friendly JLUS Overview Fact Sheet was distributed at this workshop. The workshop opened with a formal presentation to the public regarding the overview of compatibility factors and the public involvement plan, and was followed by an interactive working session where attendees were invited to share their input on potential compatibility issues. The workshop concluded with an opportunity for questions and answers.
- **Public Workshop #2 (April 26, 2017).** The second public workshop was held to present the Public Draft JLUS and recommendations to attendees. Attendees were encouraged to provide feedback either during the meeting via comment cards or submission of comments via the project website and designated Montgomery City JLUS Project Manager.

Public Outreach Materials

JLUS Overview Fact Sheet. At the beginning of the JLUS project, a fact sheet was developed describing the JLUS program, objectives, methods for the public to provide input into the process, an overview of the 25 compatibility factors that would be analyzed throughout the project, and the proposed Montgomery-Maxwell AFB JLUS Study Area. This fact sheet was made available at the public workshops for review by interested members of the public, as well as posted on the website for download.

Website. A project website was developed and maintained to provide stakeholders, the public, and media representatives with access to project information. This website was maintained for the entire duration of the project to ensure information was easily accessible. Information on the website included program points of contact, schedules, documents, maps, public meeting information, and downloadable comment forms. The project website is located at www.montgomerymaxwellafbjlus.com.

Strategy Tools Brochure. The Strategy Tools Brochure was prepared for the second public workshop. JLUS strategies constitute a variety of actions that local governments, military installations, agencies, and other stakeholders can take to promote compatible land use planning. This brochure provides an overview of the strategy types that could be applied to address compatibility issues around Maxwell AFB and Gunter Annex.

1.9. JLUS Study Area

The Montgomery-Maxwell AFB JLUS Study Area, as depicted on Figure 1-2, is designed to address all lands near Maxwell AFB and Gunter Annex, where community uses and activities may impact current or future military operations or where such uses and activities may be impacted by operations. Maxwell AFB and Gunter Annex are both located in southern Alabama and are situated within the Montgomery city limits in Montgomery County. Maxwell AFB is located in the northwestern portion of the city, while Gunter Annex is located in the northeastern portion of the city.

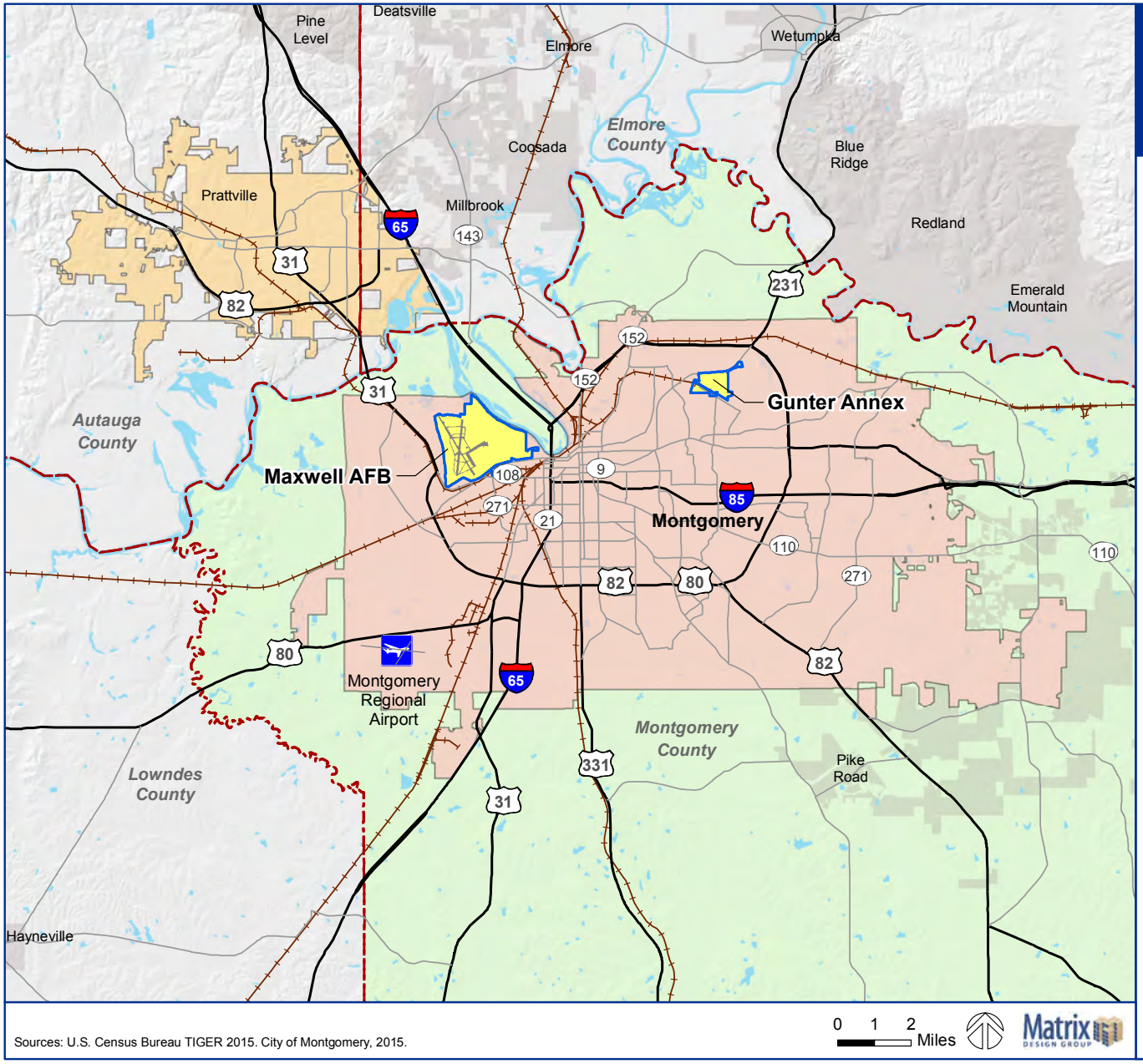


Figure 1-2

Study Area Map

Legend

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

1.10. JLUS Implementation

It is important to note that once the JLUS process is completed, the final document is not an adopted plan, but rather a set of strategies to be used by local jurisdictions, agencies, and organizations in the Montgomery-Maxwell AFB JLUS Study Area to guide their future planning efforts. Acceptance of the study by stakeholders (e.g., committees, jurisdictions, and the public) will confirm their collective support for identified implementation efforts. For instance, local jurisdictions may use the strategies in this JLUS to guide future subdivision regulation, growth policy, and zoning updates, and to assist in the review of development proposals in the Study Area. Maxwell AFB and Gunter Annex can use the JLUS to guide their interaction with local jurisdictions on future projects, and to manage internal planning processes with a compatibility-based approach.

1.11. JLUS Organization

The following is a brief overview of the organization of the Maxwell AFB JLUS, including the contents of the Executive Summary brochure, the main JLUS Report, and each of the chapters of the Background Report.

JLUS Executive Summary Brochure

An Executive Summary Brochure was prepared in conjunction with the Final JLUS Report. This high-level graphical brochure provides a brief overview of the JLUS project and process and highlights the major compatibility issues and recommended strategies to address them. It also includes Maxwell AFB operational footprint maps and their descriptions.

JLUS Report

The JLUS Report is a graphic portfolio of the key issues and strategies identified through the Montgomery-Maxwell AFB JLUS process. The report includes a user-friendly reference of the JLUS that is accessible and easy-to-use for all stakeholders. This report provides a brief discussion on the purpose and objectives of a JLUS, describes the overall benefit of a JLUS, and provides an overview of the various JLUS partners that assisted in developing the Montgomery-Maxwell AFB JLUS. Finally, this document outlines the relevant compatibility issues identified, accompanied by recommended key strategies developed through the Montgomery-Maxwell AFB JLUS process to address each issue. The JLUS Report is the action plan for addressing compatibility and provides recommended strategies for each participant.

Background Report

The JLUS Background Report is a detailed document that includes information about the communities within the Study Area, the military, the tools available to both the communities and military, and a compatibility assessment for all identified compatibility issues. This report is fairly voluminous and provides supporting and supplementary information to the JLUS Report. It is intended to serve as a reference tool for the JLUS Report.

Chapter 1: Introduction. Chapter 1 provides an introduction and overview of the Montgomery-Maxwell AFB JLUS. This chapter describes the strategic and local importance of Maxwell AFB and Gunter Annex, the working relationships among the base and local communities, the background and intent of the JLUS, the Study Area, the objectives used to guide development of the JLUS, the stakeholders involved in developing the JLUS, public outreach methods, implementation premise, and the organization of the document.

Chapter 2: Community Profile. This chapter introduces the communities that are within the JLUS Study Area and gives an overview of their history and current statistics, including population, housing characteristics, economic outlook, and past, present, and future trends of growth and development. The chapter also provides an overview of the transportation system within the JLUS Study Area.

Chapter 3: Military Profile. This chapter describes the military presence within the JLUS Study Area. An overview of Maxwell AFB and Gunter Annex is provided, as well as the military operations that take place there. A brief

history and discussion of Maxwell AFB and Gunter Annex include information on the units and schools that operate out of the bases. It is important to identify the military operating areas and current and possible future missions that take place in the Study Area to understand how the military operations could potentially impact, or be impacted by, the surrounding communities. For this reason, Chapter 3 includes a discussion and maps describing the military footprints of Maxwell AFB and Gunter Annex.

Chapter 4: Existing Compatibility Tools. This chapter provides an overview of relevant plans, programs, and studies that are tools to address compatibility issues in the JLUS Study Area. The applicable tools are reviewed in order to set a baseline for the evaluation of the effectiveness of each plan or program relative to addressing the compatibility issues that are identified and described in Chapter 5.

Chapter 5: Compatibility Assessment. Compatibility, in relation to military readiness, can be defined as the balance or compromise between community needs and interests and military needs and interests. In this chapter, the JLUS presents the compatibility issues identified for the Montgomery-Maxwell AFB JLUS. These issues were identified based on input from the PC and TC, members of the public, existing plans and technical reports, and evaluation by the project team. This chapter categorizes the issues into the following 25 compatibility factors. The grayed out factors were not applicable in the Montgomery-Maxwell AFB JLUS.

Table 1-4. Compatibility Factors

- Air Quality
- Anti-terrorism / Force Protection
- Biological Resources
- Climate Adaptation
- Coordination / Communication
- Cultural Resources
- Dust / Smoke / Steam
- Energy Development
- Frequency Spectrum Capacity
- Frequency Spectrum Impedance / Interference
- Housing Availability
- Infrastructure Extensions
- Land / Air / Sea Spaces
- Land Use
- Legislative Initiatives
- Light and Glare
- Marine Environment
- Noise
- Public Trespassing
- Roadway Capacity
- Safety Zones
- Scarce Natural Resources
- Vertical Obstructions
- Vibration
- Water Quality / Quantity

Please see the next page.

Community Profiles 2

Please see next page.

Community Profiles 2

Inside Chapter 2...

This chapter provides a profile about the communities within the Montgomery-Maxwell AFB Joint Land Use Study (JLUS) Study Area. These profiles provide a summary of the history and trends that influence the growth and land use planning of each jurisdiction. This chapter also provides general setting information about the JLUS Study Area.

Capturing and describing certain demographic and economic characteristics of the participating JLUS communities provides a baseline context to support the development of feasible compatibility strategies. The goal is to provide information that enables stakeholders to understand population and development trends that have the potential to affect the future missions and operations at Maxwell AFB and Gunter Annex. Further, this chapter is designed to foster an understanding by the military about the types of activities occurring "outside the fence" when considering future missions and operations.

2.1. Regional Overview

Maxwell AFB and Gunter Annex are both located within the city limits of Montgomery, in south central Alabama. Both are approximately 82 miles south of Alabama's largest city of Birmingham, and 162 miles southwest of Atlanta, Georgia. The JLUS Study Area includes the northern portion of Montgomery County and southern portions of Autauga and Elmore counties, and the Cities of Montgomery and Prattville. There are other incorporated towns and unincorporated communities within these counties also within the Study Area, though not JLUS partners. Autauga County and the City of Prattville are located northwest of Maxwell AFB and Elmore County is located northeast of Maxwell AFB. Montgomery, Autauga, and Elmore counties and the cities of Montgomery and Prattville are part of the Montgomery Metropolitan Statistical Area (MSA), which has a population of approximately 374,536 people.

The JLUS Study Area is characterized by urban development, agriculture, riverfront and recreational areas, and industrial land uses. Majority of the urban development, industrial uses, and some riverfront and recreational uses are located within the cities, while the counties are characterized by agricultural land uses, riverfront and some recreational areas.

The following is a description of each of the partnering jurisdictions in the JLUS Study Area.

Community Profiles

Montgomery County Courthouse

Montgomery County

Montgomery County was created in December 1816 by the Mississippi Territory General Assembly, and named in honor of Major Lemuel Putnam Montgomery killed in the Battle of Horseshoe Bend, 1814.

Montgomery County covers 800 square miles in south central Alabama, of which 784 square miles is land and 16 square miles is water. The county is situated within the Gulf Coastal Plain, and has northern boundaries defined by the Alabama and Tallapoosa Rivers. Montgomery County is bordered by Elmore, Macon, and Autauga counties to the north, Bullock County to the east, Lowndes County to the west, and Pike and Crenshaw counties to the south.

Cotton production was one of the county's most enduring industries as its operations in the county continued for over 100 years. However, cotton production and its distributors ceased business operations several years ago correlative to the cotton industry leaving the area. Today, Montgomery County has a diverse economic base including agriculture-related, defense-related industry, and manufacturing.

Montgomery County is largely rural characterized by approximately 93 percent, or 471,726 of its 505,446 acres, of its land used for farmland or timberland. In 2013, Montgomery County's agricultural, forestry, and other related industries created a total of 24,575 jobs within the county, which represents 14.2 percent of the county's total workforce. The leading commodities in the county are eggs and poultry; cattle; and greenhouse, nursery, and floriculture. In addition to agriculture and forestry, manufacturing, government-related services, and finance and insurance make up the top four industries. The City of Montgomery is the main urban center within the county, and is where the majority of non-agricultural industries are located. The majority of urban development occurs within the City of Montgomery, with most development taking place along the major transportation corridors.

City of Montgomery

The Alabama state capitol in downtown Montgomery
Source: Downtown Montgomery Plan, http://www.montgomeryal.gov/, http://www.choosemontgomery.com/; www.encyclopediaofalabama.org

The City of Montgomery was incorporated in 1819 as a merger of two towns situated along the Alabama River. The City of Montgomery covers approximately 156.2 square miles of which 155.4 is land and 0.8 is water, and is located in south-central Alabama in the Gulf Coastal Plain. The City is surrounded by unincorporated Montgomery County in all directions, and the nearest city is the City of Prattville located approximately 14 miles northwest of the City of Montgomery.

Due to the expanding cotton industry and its central location relative to transportation connectivity, the City of Montgomery grew quickly as an economic center for commerce and was named the state capital in 1846. Montgomery played a large role in the Civil War, serving as the first capital of the Confederate States in 1861. In 1886, the city installed the first electric street car system in the US, known as the "Lightning Route." The street car

system and the Wright Brothers' civilian flying school in 1910 put the city on the map as a center of technology.

Montgomery became the center of the civil rights movement. In the 1950s, Dr. Martin Luther King, Jr. gained national attention for civil rights issues during his tenure as pastor at the Dexter Avenue Baptist Church, located four miles east of Maxwell AFB. In December 1955, Rosa Parks was arrested for refusing to give up her bus seat to a white man, sparking the Montgomery Bus Boycott. In 1965, as part of the voting rights movement, marches from Selma to Montgomery took place, ending at the State Capitol Building.

The City of Montgomery is the second largest city in Alabama, with a 2010 population of 205,764. The city continues to grow and diversify. It is known for its historic downtown, redevelopment of the riverfront, and numerous cultural landmarks and events. The city has been home to Alabama State University Historical Black Colleges and Universities (HBCU) since 1887, which has more than 5,600 students in attendance each year. In 2004, Hyundai Motors built a 1.4 billion dollar automotive plant, one of the biggest economic development projects in the city's history. Employment indicators for 2006 showed nearly 25 percent of the Montgomery work force being employed by government agencies. Much of the new development is occurring in the southwestern portion of the city along Interstate 65 and US Highway 80 near the Montgomery Regional Airport. Some redevelopment projects are also planned for the revitalization of the downtown area, especially along the Alabama River which is a popular sports and entertainment destination.

Montgomery operates under a mayor–council government system. The mayor and council members are elected to four-year terms. The city is served by a nine-member city council, elected from nine districts of equal size. As the seat of Montgomery County, the city is the location of county courts and the county commission. Montgomery also hosts numerous state government offices, including the Office of the Governor, the Alabama Legislature, and the Alabama Supreme Court.

City of Prattville

Historic Bell House in the City of Prattville, AL

The City of Prattville is located in south-central Alabama and is bifurcated between Autauga County and Elmore County, with the majority of the city located in Autauga County. The city was named after its founder, Daniel Pratt, who was a successful industrialist and cotton gin manufacturer in the nineteenth century. Prattville received its nickname as the "Fountain City" because of its numerous artesian wells, which still supply many drinking and decorative fountains throughout the city. The city serves as the county seat of Autauga County and had a 2010 population of 33,960 people.

The community began with Mr. Pratt's establishment of the Daniel Pratt Gin Company along the banks of Autauga Creek in order to provide a water supply to power his factory. Another early Prattville business was Boggs Pottery which was founded in 1830 and continues operations under the same family today.

Mr. Pratt modeled his company town after a New England mill town, and in 1868, Autauga County relocated the county seat from Kingston to Prattville to recognize the city's growth in population, wealth, and business activity. In 1972 the city was incorporated by the legislature.

In 1883, Mr. Pratt purchased nearly 2,000 acres of land for $20,000 that would officially become the site of Prattville. In addition to the cotton gin factory, Mr. Pratt also founded the Pratt Manufacturing Company, No. 1 and the Prattville Male and Female Academy, which operated for more than 50 years, educating the children of the people employed in his mills.

Today the city is known for its numerous historical sites, including the Daniel Pratt Historic District, which includes more than 150 buildings and is on the National Register of Historic Places. Recreation is also popular in Prattville, and the city has many sports facilities, parks, golf courses, and recreational trails.

The City of Prattville operates under a mayor–council government system. The mayor and council members are elected to four-year terms. The city is served by a seven-member city council, elected from seven districts.

Source: http://www.encyclopediaofalabama.org/article/h-2937

2.2. Study Area Growth Trends

The following section provides a profile of the Study Area's population growth, housing trends, and median home values. This information assists in understanding the regional context and growth potential for the JLUS Study Area.

Population

Population data is based on the 2010 data provided by the US Census. Population numbers show the growth or decline in people in a geographical area. Population is a major factor for the economy of the Study Area and ultimately supports employment and housing opportunities. The following information provides a comparison of the changes in population in the Montgomery-Maxwell AFB JLUS Study Area from 2000 to 2010.

The population figures represent the permanent population in the Study Area, but do not consider the temporary population surges associated with the tourism industry and migration from seasonal employment or transient workers in the Alabama metropolitan region. Table 2-1 shows the 2000 and 2010 census totals and

Table 2-1. Study Area Population, 2000-2010

Jurisdiction	2000	2010	Number Change	Percent Change
State of Alabama	4,447,100	4,779,736	332,636	7%
❖Autauga County	43,671	54,571	10,900	25%
❖Elmore County	65,874	79,303	13,429	20%
Montgomery County	223,510	229,363	5,853	3%
City of Montgomery	201,911	205,764	3,853	2%
City of Prattville	24,303	33,960	9,049	40%

❖Autauga and Elmore counties are not participating JLUS communities.
Sources: 2000 and 2010 US Census Bureau data

percent change in populations of the state, and of the jurisdictions within the JLUS Study Area.

The populations in both Montgomery County and the City of Montgomery increased slightly from 2000 to 2010. However, population growth in the city and county of Montgomery was lower than the state's population growth overall. There has been substantial population growth in the City of Prattville during this timeframe. According to stakeholder interviews, many military families from Maxwell AFB reside within the City of Prattville and commute to and from the base. The quality of life attractants, such as, quality education and coveted school sports programs, could be contributors to the large population increase in City of Prattville, which is located north of Maxwell AFB.

Figure 2-1 illustrates the population densities in the JLUS Study Area in 2000 and Figure 2-2 shows the change in densities in 2010. These figures are both presented to show the change in growth and density within the JLUS Study Area. A comparison of the two maps confirms the greatest changes in population density within the Study Area between 2000 and 2010 occurred in the City of Prattville, between US Highway 31 and Interstate 65, and outside of the central portion of the City of Montgomery. In the areas east of the Montgomery Regional Airport, and in the southeastern sections of the City of Montgomery, population increases can also be observed. Populations in the central areas of the City of Montgomery, north of Interstate 85, experienced a decrease. The largest percent increase in population within the Study Area during this timeframe was in the City of Prattville, where the city's population grew by 40 percent.

Future Population Projections

Although Montgomery County's overall growth rate from 2010 to 2030 (7 percent) is projected to be less than the statewide rate (12 percent), it is anticipated that Montgomery County will continue to grow at moderate levels for the next two decades. Projections for population growth in the counties of Autauga (21 percent) and Elmore (19 percent) are expected to continue to out-pace the population growth in Montgomery County

Future population growth is predicated on continued employment of the major job centers within the City of Montgomery, which includes State of Alabama and Maxwell AFB and Gunter Annex. According to the 2014 State Comptroller's Comprehensive Annual Financial Report, the State Government supports over 34,000 jobs. Maxwell AFB and Gunter Annex support a large concentration of jobs with over 12,000 personnel. These two government organizations make the areas surrounding Maxwell AFB and Gunter Annex attractive for the future population of the City of Montgomery.

Table 2-2 indicates the forecasted population between 2010 and 2030 for counties within the JLUS Study Area. These projected populations are not exact; however, they are projections to help cities and counties develop land use priorities to reduce impacts of future growth challenges.

Table 2-2. JLUS Study Area Population Projections from 2010 to 2030

Jurisdiction	2010	20210	2030	Percent Change
Alabama	4,779,736	5,096,521	5,373,294	12%
❖Autauga County	54,571	60,715	68,883	21%
❖Elmore County	79,303	88,942	98,374	19%
Montgomery County	229,363	237,348	245,423	7%

❖Autauga and Elmore counties are not participating JLUS communities.
Sources: University of Alabama Center for Business & Economic Research

Source: Maxwell AFB Installation Development Plan, 2015

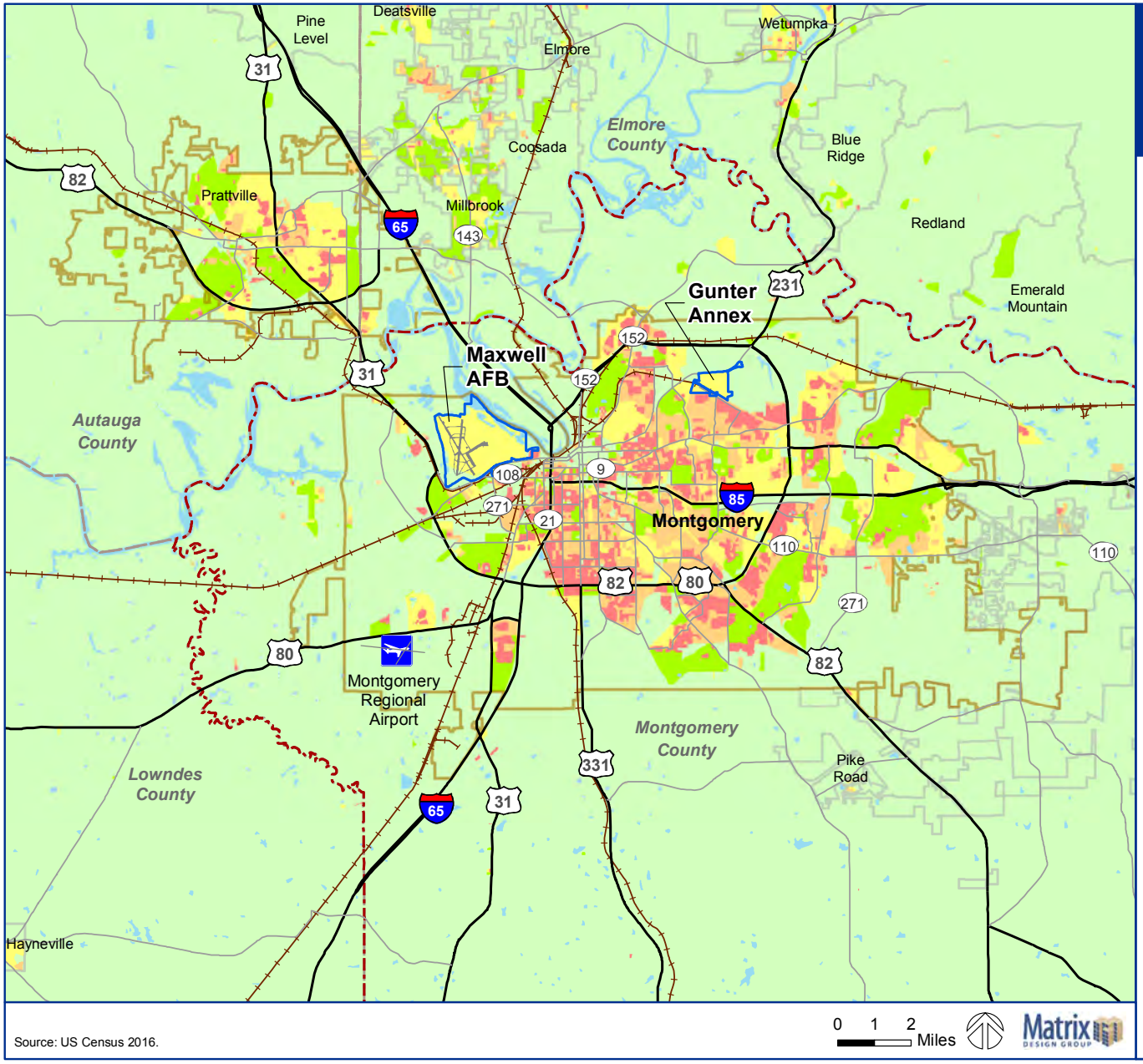


Figure 2-1

JLUS Study Area Population Density, 2000

Legend

Population Per Square Mile

- 0 - 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- > 4,000

- Installation
- JLUS Participating City
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

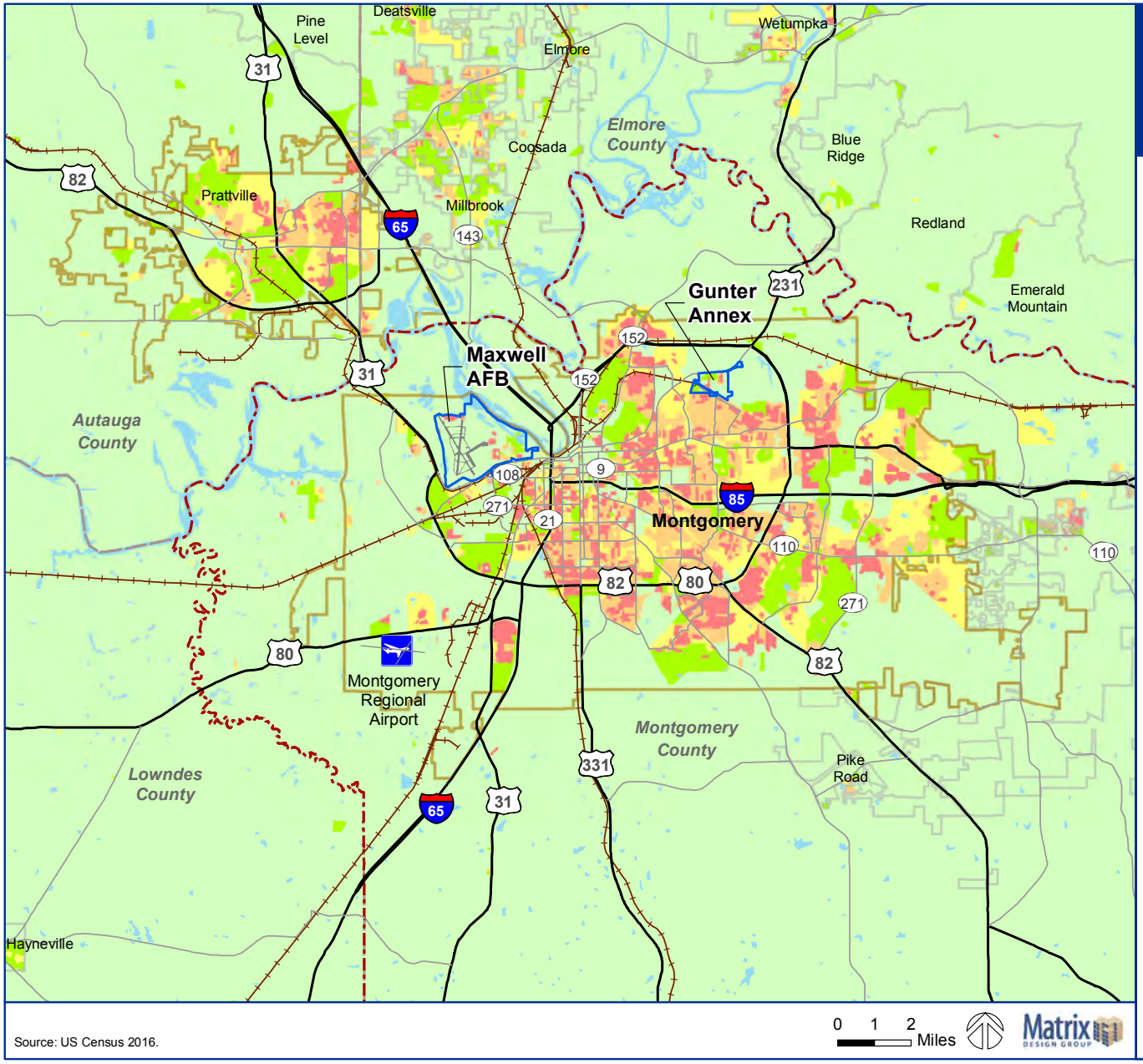


Figure 2-2

JLUS Study Area Population Density, 2010

Legend

Population Per Square Mile

- 0 - 500
- 501 - 1,000
- 1,001 - 2,000
- 2,001 - 4,000
- > 4,000

- Installation
- JLUS Participating City
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

Housing Trends

Housing trends are an important indicator of economic activity and vitality, in an area through the representation of population growth. In slower growing areas, housing data may reveal abandonment or migration. These trends also represent market decisions relating to home ownership or rental properties. The rate of housing development is a strong indicator of the overall rate of development taking place in a region, which may result in potential incompatible land uses in conjunction with operations at Maxwell AFB.

Essentially, housing trends have the potential to indicate future types of residential and commercial development. The following information portrays housing market trends, median monthly gross rents, percentage of basic allowance for housing (BAH) and median home values within the JLUS Study Area.

Table 2-3. JLUS Study Area Total Housing Units, 2000-2010

Jurisdiction	2000	2010	Number Change	Percent Change
Alabama	1,963,711	2,171,853	208,142	11%
❖Autauga County	17,662	22,135	4,473	20%
❖Elmore County	25,733	32,657	6,924	21%
Montgomery County	95,437	101,641	6,204	7%
City of Montgomery	86,787	92,115	5,328	6%
City of Prattville	9,562	13,541	3,979	29%

❖Autauga and Elmore counties are not participating JLUS communities
Source: US Census Bureau, Housing Units, 2000, 2010

Although the total housing units for the City of Montgomery and Montgomery County were lower than the 11 percent increase reported by the State, the data provided in Table 2-3 indicates that there has been more than two times the amount of total housing units within the City of Prattville from 2000 to 2010, than in the state.

Table 2-4. Median Monthly Gross Rent in Surrounding Jurisdictions, 2000 – 2010

Jurisdiction	2000	2010	Number Change	Percent Change
Alabama	$447	$644	$197	31%
❖Autauga County	$537	$769	$232	30%
❖Elmore County	$486	$685	$199	29%
Montgomery County	$526	$760	$234	44%
City of Montgomery	$528	$761	$233	44%
City of Prattville	$557	$809	$252	31%

❖Autauga and Elmore counties are not participating JLUS communities.
Source: US Census Bureau, Median Gross Rent (Dollars) 2000, 2010

An increasing number of potential renters lead to a higher demand for rental units. A demand-driven rise in cost of rent affects both the local economy and the housing market. Understanding trends in rent costs can account for certain housing trends. Table 2-4 shows the change in median monthly gross rents for communities in the JLUS Study Area from 2000 to 2010.

During this timeframe, the median monthly rent increased in both the City of Montgomery and Montgomery County by 44 percent. The cost of rent in the City of Prattville experienced increases in median rent that are similar to the increase for the state of Alabama. The rent in Montgomery County is higher than the median gross rent for the state by $116.

For military personnel who seek off-base accommodation, a BAH is provided to support housing affordability. The BAH is a stipend given to military personnel who choose to live off-base or cannot be accommodated in

Table 2-5. 2016 Basic Allowance for Housing Rates for the Montgomery Area

Rank	BAH Rate (with dependents)	BAH Rate (without dependents)
Enlisted Rates		
E1	$1182.00	$984.00
E2	$1182.00	$984.00
E3	$1182.00	$984.00
E4	$1182.00	$984.00
E5	$1233.00	$1080.00
E6	$1323.00	$1137.00
E7	$1365.00	$1185.00
E8	$1413.00	$1254.00
E9	$1503.00	$1275.00
Warrant Officer Rates		
W1	$1326.00	$1167.00
W2	$1386.00	$1251.00
W3	$1446.00	$1281.00
W4	$1524.00	$1329.00
W5	$1620.00	$1374.00
Officer Rates		
O1E	$1374.00	$1233.00
O2E	$1437.00	$1272.00
O3E	$1539.00	$1320.00
O1	$1245.00	$1134.00
O2	$1320.00	$1218.00
O3	$1443.00	$1287.00
O4	$1656.00	$1365.00
O5	$1812.00	$1392.00
O6	$1827.00	$1440.00
O7	$1842.00	$1470.00

Source: http://www.dodhousingnetwork.com /air-force/maxwell-afb/bahrates

on-base housing. The intent of the BAH is to augment the costs of living associated with private sector housing, including home or apartment rent, utilities, and renter's insurance.

While BAH rates for Maxwell AFB military personnel vary by rank and dependent status, the rate for an E-1, the lowest rank, ranges from $984 (single) to $1,182 (with dependents). Table 2-5 lists the 2016 BAHs associated with ranks for the Montgomery Area. Excluding the cost of utilities and renter's insurance, this figure is more than the median monthly rate in all Study Area jurisdictions, meaning an enlisted service member has the financial resources to reside off-base in housing within the JLUS Study Area. Although rents are still affordable to military personnel within the community, the continued increase of monthly rent could begin to impact military housing patterns with on-base housing being near capacity at 95 percent. Furthermore, there are 513 privatized family home units; however, according to Maxwell AFB's Installation Development Plan, only 12 of the 513 units are currently available. With military housing nearing capacity, a 25 percent increase in rent costs from 2010 to 2020 could begin to exceed the BAH for single, lower ranking personnel, especially in the City of Prattville, which is home to many military families and is identified as having the highest rents of the jurisdictions included in the table.

Housing Value Trends

Housing value trends assist in indicating future growth potential. These trends can be indicative of development activity or inactivity as well as the location or migration patterns of populations. Table 2-6 provides the median housing value trends in the Study Area from 2000 to 2010.

Table 2.6 Median Housing Values, 2000 - 2010

Jurisdiction	2000	2010	Percent Change
Alabama	$85,100	$117,600	38%
❖Autauga County	$82,500	$133,900	38%
❖Elmore County	$88,300	$136,500	35%
Montgomery County	$87,700	$121,000	38%
City of Montgomery	$86,800	$118,100	36%
City of Prattville	$89,000	$144,300	62%

❖Autauga and Elmore counties are not participating JLUS communities.

Source: US Census Bureau, Median Value ACS 5-yr 2000, 2010

The median housing values have experienced some growth throughout the JLUS Study Area, especially in the City of Prattville, where median housing values experienced a positive growth slightly more than that of the State of Alabama. The increasing values translate into higher rents and mortgages as well as an increase in the cost of living for area residents. Greater housing values can cause a challenge to the affordability of housing near Maxwell AFB and Gunter Annex, which can result in military personnel pursuing home ownership further from Maxwell AFB and Gunter Annex. However,

while there are increases in median housing values, these increases are fairly reasonable for this geography compared to other geographies across the nation.

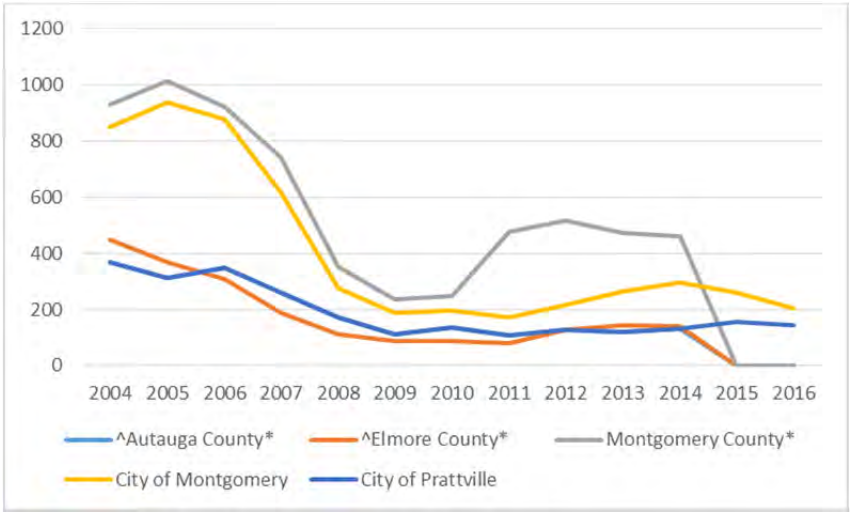
Building Permits

An analysis of the number of building permits issued can be a good indicator of the growth of a community. Records since 2004 show how the construction of housing in the JLUS Study Area responded to growth and economic recession during the last decade. The US Census State of the Cities Data Systems Building Permits Database, 2004 – 2016 provided the data for the following building permit evaluation.

Figure 2-3 shows the trend in the issuance of building permits for new single family housing units from 2004-2016. This graph shows how the construction of single-family homes in the City of Montgomery and in Montgomery County responded to the economic recession from 2007-2010. The chart shows that although the issuance of housing permits in the City of Montgomery were impacted by the recession, falling from roughly 900 permits being issued in 2005 to less than 200 permits being issued in 2009. The years between 2011 and 2014 showed a steady increase in permit activity for single-family housing for the City of Montgomery. Following the same decline in single-family permits, Montgomery County experienced an increase in activity from 2010 to 2011 and continued to rise slightly in 2012, and then remained around 500 per year from 2013-2014. However, in the last two years the County experienced a steep decline in the issuance of single-family permits.

Permits for single-family construction in the City of Prattville exhibited a similar, though less dramatic decline between 2004 and 2009, with 347 permits being issued in 2006 and 110 being issued in 2009. The permits issued between 2011 through 2014 have gradually increased with 131 permits issued for single-family construction in 2014.

Figure 2-3 Single-Family Building Permits, 2004-2016



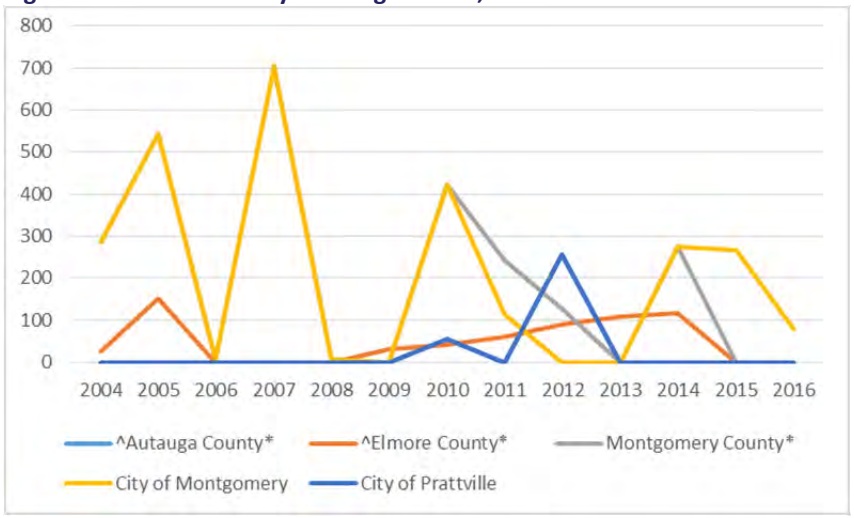
Source: State of the Cities Data Systems, Building Permits Database, 2004 – 2016
^Autauga and Elmore counties are not participating JLUS partners; however, they are shown here to provide context for the surrounding area.

Multi-family housing (housing with two or more units) is another component of housing type and availability in the Study Area. Figure 2-4 illustrates the trend in multi-family building permits at the city and county levels from 2004-2016.

While the growth and decline is much more sporadic than the single family permit trend, there has been an overall decline in multi-family permits over the past decade within the City of Montgomery. In recent years, however, there has been a slight resurgence in the issuance of permits for multi-family units in the City of Montgomery. Multi-family permits in the City of Prattville spiked in 2010 with 56 permits, and in 2012 with 256; however, no multi-family housing permits were issued between 2004 and 2009, or from 2013 to 2014. Montgomery County mirrored the City of Montgomery until 2010, where there was a decline in multi-family permits being issued in the

county and in the city; however, it was a slight decline, compared to the city which ended in 2013. No permits for multi-family construction were issued from 2014-2015. County permit activity followed the trend of the City of Montgomery again between 2013 and 2014, where the numbers spiked at 274 permits being issued during that final year of reporting.

Figure 2-4 Multi-Family Building Permits, 2004-2016



Source: State of the Cities Data Systems Building Permits Database, 2004 – 2016
^Autauga and Elmore counties are not participating JLUS partners; however, they are shown here to provide context for the surrounding area.

Multi-family dwellings provide an affordable alternative to single-family housing, and their availability is an important factor to consider for military compatibility. The majority of renter households live in multi-family housing, so the availability of these units is essential to more mobile residents within the Study Area. Because military personnel at Maxwell AFB may need to obtain affordable short- to mid-term housing off-base, ensuring that there is adequate housing stock to meet the needs of the civilian residents as well as military personnel is important for communities within the JLUS Study Area.

As shown in Figures 2-3 and 2-4, the issuance of building permits for multi-family housing is appears to be more volatile than that of single-family housing. As such, multi-family housing units appear to be still in an uptick within the JLUS Study Area.

2.3. Economic Overview

The primary economic activity throughout the Study Area is centered on the agriculture industry dating back to the early colonial period. Efforts to diversify Montgomery's economy with new sectors have brought substantial growth to the region in manufacturing, heavy commercial development, and tourism. These economic sectors now represent the largest industries in the city, in addition to hospitality and food services. Much effort has been placed on promoting regional tourism through the expansion of recreational facilities, and the development of new cultural and recreational districts.

Source: South Central Alabama Development Commission Comprehensive Economic Development Strategy, 2009

Alabama

Agriculture is Alabama's top industry, generating $70.4 billion annually. Agriculture produces 580,295 jobs in the state, with forestry leading the count at 122,020 direct and support jobs. There are more than 48,500 farms in the state, covering nine million acres, and 22 million acres covered by forest land. The top five commodities in the state are poultry; cattle and calves; greenhouse, sod and nursery products; cotton; and peanuts. The state exports more than one billion dollars in agricultural goods each year, with poultry making up one-third of that total.

Source: http://www.montgomeryadvertiser.com/

Montgomery County

Montgomery County has long been known for cotton production, and was even home to the first commercial cotton gin during the early nineteenth century. Though the county has experienced diversification of its

agricultural industry, it still remains an important hub for processing and shipping textiles and farm products. With the twentieth century came the rise of governmental influence within the county, with nearly 25 percent of the county's workforce being employed by local, state, and federal agencies.

The top employer for Montgomery County is Maxwell AFB / Gunter Annex, employing over 12,000 people, followed by Hyundai, who recently constructed an automotive plant, south of the City of Montgomery, which provides for more than 3,000 high-paying jobs. The influence of the new Hyundai plant was significant in attracting 72 new manufacturing support businesses.

While Maxwell AFB / Gunter Annex and the Hyundai Plant comprise the County's largest employers, the County's economy is composed of the following economic industry sectors. The sector and its percentage that it accounts for is designated beside the sector.

- Educational services, and health and social assistance (20.8%)
- Retail trade (11.8%)
- Public administration (11.4%)
- Manufacturing (10.4%)
- Professional, scientific, management, and administrative and waste management services (9.7%)
- Arts, entertainment, recreation, and accommodation and food services (9.2%)

Source: Encyclopedia of Alabama, Montgomery County; Economic Overview and Outlook for the Montgomery Metropolitan Area, College of Business Administration, Alabama State University, Issue I; Maxwell AFB Installation Development Plan, 2015

City of Montgomery

Montgomery's central location in Alabama's Black Belt makes it a processing hub for crops such as cotton, peanuts, and soybeans. Montgomery has large metal fabrication and lumber production sectors. Due to its location along the Alabama River and extensive rail connections, Montgomery has been and continues to be a regional distribution hub for a wide range of commodities and recently diversified its economy with increased employment in healthcare, business, government, and manufacturing. Today, the city's Gross Metropolitan Product is $12.15 billion, representing 8.7 percent of the Gross State Product of Alabama.

According to Bureau of Labor Statistics data, the top sectors of non-agricultural employment that compose the city's economic industries are:

- Government, 24.3%;
- Trade, transportation, and utilities, 17.3%;
- Professional and business services, 11.9%;
- Manufacturing, 10.9%; and
- Education and health services, 10.0%.

Unemployment for the same period was 5.7 percent. The city also draws in workers from the surrounding area increasing Montgomery's daytime population by 17.4 percent, which totals 239,101.

Montgomery's largest employers are Maxwell AFB and Gunter Annex, Hyundai Motor Manufacturing Alabama, the State of Alabama, Montgomery Public Schools, Baptist Health, Alfa Insurance, and the City of Montgomery.

Source: http://www.montgomeryal.gov/, http://www.choosemontgomery.com/

City of Prattville

The City of Prattville was established as a manufacturing town in the early 1800s, and is the county seat of Autauga County. Manufacturing within the City is still strong, employing roughly 10 percent of the workforce.

Though the city still has a strong manufacturing component, the economic industries that compose the employment in the city are:

- Educational services, and health care and social assistance (18.2%);
- Public administration (14.4%);
- Retail trade (12.5%); and
- Arts, entertainment, recreation, accommodation, and food services (10.6%).

Source: http://www.encyclopediaofalabama.org/article/h-2937; http://www.prattvilleal.gov/business/employment-demographics.html

2.4. Current Development Overview within the Study Area

Land uses throughout the JLUS Study Area range from open space and agriculture in unincorporated Montgomery County, to the residential and urban population center in the City of Montgomery. This section discusses the setting in the immediate vicinities of Maxwell AFB and Gunter Annex.

Maxwell AFB

North

The Alabama River and its floodplain are located in Elmore County, to the north and east of the base, which limits development in this area. This area is composed mainly of waterways, including the Alabama River, and numerous small ponds. The remaining land in this area comprises of agricultural and forested areas. Northwest of Maxwell AFB is the City of Prattville. Interstate 65 is a main thoroughfare that runs north of Maxwell AFB.

South

The majority of the land south of Maxwell AFB is low density development consisting mainly of large industrial and commercial developments, including trucking and automotive related industries and wholesale and supply stores. Technical schools and public institutions, as well as low density residential, characterized by suburban residential developments are also found in this area. There are on-going discussions and marketing efforts to develop the land to the east and west of the Montgomery Regional Airport.

Aerial view of Maxwell Air Force Base

East

To the east of Maxwell AFB are several Montgomery neighborhoods and districts, including: Cottage Hill, Western Hills, Centennial Hill, Washington Park, and the Garden District. These areas include a mix of single-family residential, multi-family residential, and components of historic buildings and homes. Some neighborhood commercial and institutional facilities are also located within the area east of Maxwell AFB, including government buildings, churches, and schools. Though the majority of the land to the east of Maxwell AFB is residential, there are some recreational and entertainment facilities along the Alabama River, and there are on-going discussions within the City for additional recreational development in this area.

West

West of Maxwell AFB, commercial and industrial development has been established along the Birmingham Highway, with some scattered residential developments; however, the area still remains largely rural and undeveloped.

Gunter Annex

Aerial view of Gunter Annex

The following information provides an overview of the current development trends for the areas surrounding Gunter Annex.

North

The area north of Gunter Annex is largely forested with some agriculture and recreation areas, including the Montgomery Motorsports Park. Northwest of Gunter Annex are some industrial areas, including a truck rental facility and a distribution center.

South

The area south of Gunter Annex consists of low density suburban development—a mix of mostly residential with some neighborhood commercial uses.

East

Areas east of Gunter Annex can be characterized as commercial and industrial, with recreational facilities including a golf course and baseball fields beyond the industrial areas. In addition, the Lagoon Park Trails recently opened as an added recreation amenity to Lagoon Park located approximately 2.5 miles east of Gunter Annex.

West

The area west of Gunter Annex comprises large public facilities, such as the Montgomery State Farmer's Market and Garrett Coliseum, with the Mann Wildlife Museum and Montgomery Zoo to the northwest. The remaining area consists mostly of single-family residential and forested open space.

2.5. Transportation

Transportation planning for the region is performed by the Montgomery Metropolitan Planning Organization (MPO). The Montgomery MPO consists of a group of elected officials who make transportation decisions for the Montgomery MPO Planning Area, which encompasses portions of Autauga, Elmore, and Montgomery counties. The Montgomery MPO has developed a Long Range Transportation Plan, a Bicycle and Pedestrian Plan, a Transportation Improvement Program, a Public Participation Plan, and a Congestion Management Process to assist in access and mobility for the area. The transportation network for the Study Area is illustrated on Figure 2-5.

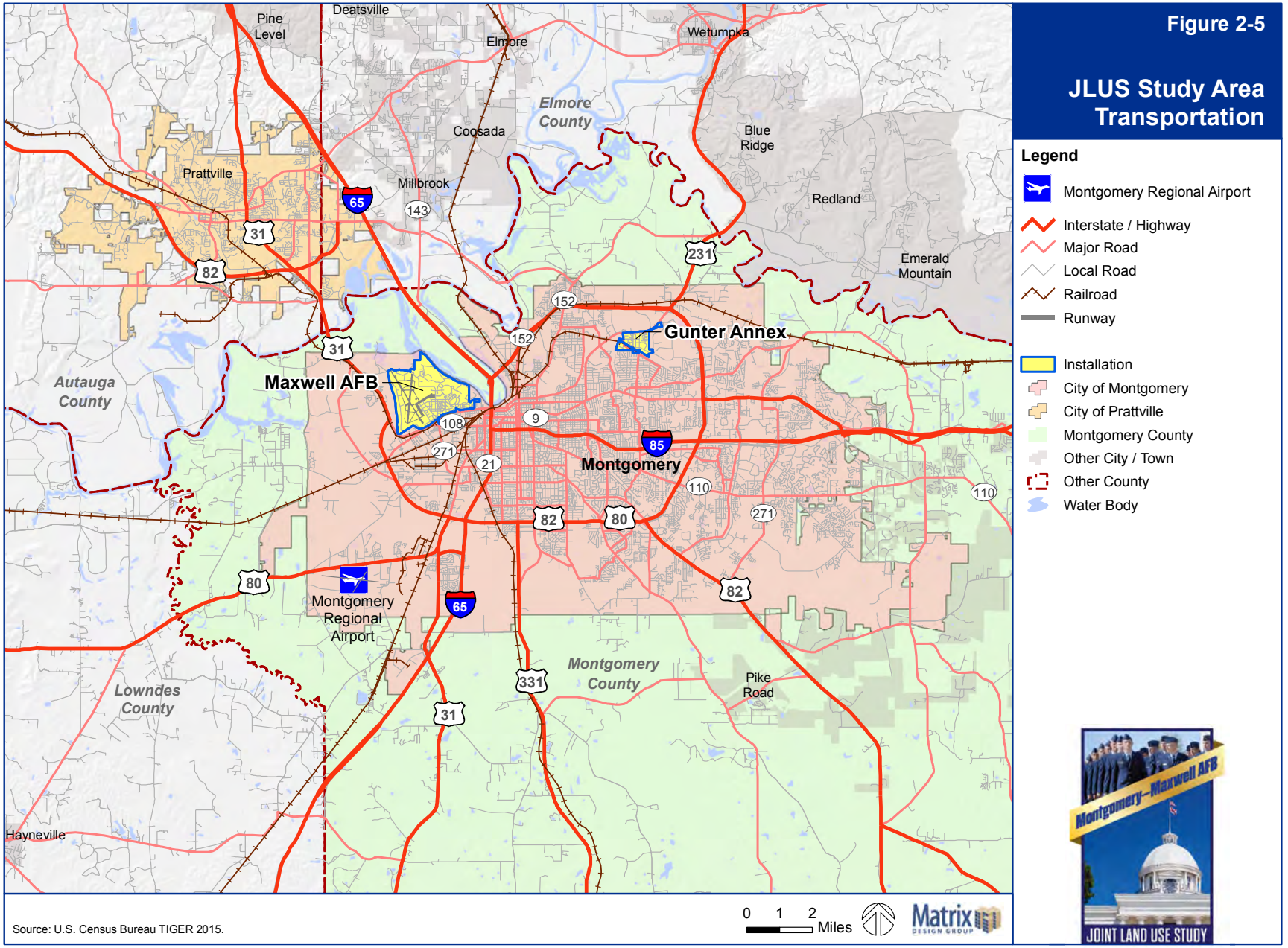


Figure 2-5

JLUS Study Area Transportation

Legend

- Montgomery Regional Airport
- Interstate / Highway
- Major Road
- Local Road
- Railroad
- Runway
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body

Highways

Two interstate highways run through Montgomery County. Interstate 65 (I-65) is the primary north–south freeway through the City of Montgomery connecting the city to Birmingham in the north and Mobile in the south. I-65 also passes through Autauga County, east of the City of Prattville. The entrance to Maxwell AFB is located along Maxwell Boulevard, which turns into Bell Street. Maxwell Boulevard is accessible from I-65, and Bell Street is accessible from US Highway 31.

Montgomery is at the southern end of Interstate 85 (I-85), another north-south freeway which runs east–west in the City of Montgomery, and runs northeast to Atlanta, Georgia. The major surface street in the city is a loop consisting of State Route 152 in the north, US Highway 231 and US Highway 80 in the east, US Highway 82 in the south, and US Highway 31 along the west of the city.

The Alabama Department of Transportation is planning the Outer Montgomery Loop to ease traffic congestion in the city. It is planned to connect I-85 near Mount Meigs to US Highway 80 southwest of the city. Upon completion of the loop, it will use the I-85 designation while the original I-85 will be re-designated as the I-685 in the city center.

Public Transit

Montgomery Area Transit System (MATS) operates within the city limits of Montgomery, and is owned by the City of Montgomery. The First Transit Group manages MATS under a contract with the city. MATS operates a fixed route system with 20 bus routes and three trolley routes. Fixed route services operate Monday through Saturday from 5:00 a.m. to 9:30 p.m., depending on the route. The frequency of service varies by route from 20-minute to 45-minute headways. MATS also operates Montgomery Area Paratransit for the disabled, MATS Route 8. Maxwell AFB is served by Route 7 while Gunter Annex is served by Route 8.

Montgomery Area Transit Bus
Photo credit: http://www.mtransitplan.com

The National Transit Database indicated MATS provided a daily average of 4,870 trips Monday through Friday, and a daily average of 2,005 trips on Saturday in 2009. Ridership has grown steadily since the system was revamped in 2000. The MATS is funded through fare revenue, the City of Montgomery, the State of Alabama, and Federal Transit Administration.

Greyhound operates a terminal in the City of Montgomery for intercity bus travel. Megabus also operates low cost express intercity bus services from the City of Montgomery city center to Mobile, Atlanta, and New Orleans.

Source: Montgomery Study Area 2040 Long Range Transportation Plan

Rail

Montgomery County has two major rail lines traversing it: Norfolk Southern and CSX Transportation (CSXT). CSXT has the greatest rail presence with three major lines: Montgomery-Flomaton, Montgomery-West Point,

Georgia, and Parkwood-Montgomery. CSX has major rail yards in Montgomery, Mobile, and Birmingham.

Source: Montgomery Study Area 2035 Long Range Transportation Plan

Air

The Montgomery Regional Airport (MGM), also known as Dannelly Field, is located five nautical miles (NM) south of Maxwell AFB and provides air carrier, air taxi, and general aviation services for the region. The MGM service area comprises 20 counties in south central Alabama, which includes a population greater than 900,000. Of the total service population, it is estimated that 460,000 people make up the airport's primary service area. MGM has two runways. The main runway (Runway 10 / 28) is 9,020 feet long, and the secondary runway (Runway 3 / 21) is 4,011 feet long. The need to extend Runway 3 / 21 to the southwest by 3,989 feet in order to achieve a total length of 8,000 feet was identified in the MGM Master Plan in order to accommodate general and occasional commercial operations.

MGM is the major airport serving Montgomery. It completed a $40 million renovation and upgrade in 2006 that expanded the terminal and added new gates, a new customer service center, flight information displays, new restrooms and elevators, and new jet bridges to increase the airport's ability to compete with the larger international airports. The airport is governed by the Montgomery Airport Authority, and managed by an Executive Director and staff.

Airport facilities include two runways, a terminal building, a parking area, a fixed base operator, ten corporate hangars, an aircraft rescue and firefighting facility, a rental car service facility, an airport authority maintenance facility, fueling areas, and an air traffic control tower. Delta Airlines is the main commercial passenger operator, along with American Eagle. Service is offered to Atlanta, Charlotte, Dallas-Fort Worth, and Memphis.

The MGM Master Plan indicated that enplanements at the airport have decreased at an average annual rate of two percent from 2000 to 2010, with 193,780 enplanements reported for 2010. Future projections estimate an average annual growth in passenger enplanements of 1.2 percent from 2010 to 2020 and 1.3 percent from 2010 to 2030. The most recent airport activity numbers provided in the MGM Master Plan were from 2010, and indicated that there were 79 based aircraft, which completed 69,142 operations during the year. This number did not include the additional 57 military aircraft that are also based at MGM, which belong to the Alabama Air National Guard's 187th Fighter Wing (FW). The Air National Guard's 187th FW operates a squadron of F-16C aircraft at MGM.

The City of Prattville has a public airport, known as Grouby Field, which is located three NM southwest of the city. The airport has a single (Runway 9 / 27) which is 5,400 feet in length and 100 feet in width. The airport covers 82 acres, and averaged 60 aircraft operations per day in 2014.

The City of Wetumpka, in Elmore County, has a public airport known as Wetumpka Municipal Airport which is located six nautical miles (NM) southwest of the city. The airport has two runways: Runway 9 / 27 is 3,011 feet long and 80 feet wide, and Runway 18 / 36 is 2,600 feet long and 130 feet wide. The airport covers 312 acres, and averaged 108 aircraft operations per day in 2014.

Source: Montgomery Study Area 2035 Long Range Transportation Plan; http://www.airnav.com/airport/1A9

Military Profile

3

Please see next page.

Military Profile 3

Inside Chapter 3...

This chapter provides an overview of Maxwell Air Force Base (AFB) and Gunter Annex. This military profile describes the installation's history, its setting in the JLUS Study Area, the economic and strategic importance of Maxwell AFB, and provides a general description of the military operations conducted at Maxwell AFB and Gunter Annex.

Identifying and describing the various activities performed within the operating areas and in the surrounding airspace provides valuable insight into the importance of Maxwell AFB and Gunter Annex as a national strategic asset and as a part of the fabric of the surrounding communities including the Montgomery Metropolitan Area. The purpose of providing this information is to enable decision-makers to make informed decisions about future development and economic growth within communities and institutions near Maxwell AFB and Gunter Annex that could potentially impact the viability and future role of the installations.

3.1. History of Maxwell Air Force Base and Gunter Annex

Maxwell AFB

In February 1910, the Wright Brothers opened one of the world's earliest flying schools at the site that would later become Maxwell AFB. The Wrights taught the principles of flying, including take-offs, balancing, turns, and landings. However, the flying school was short-lived and the brothers closed the facility in May 1910.

The airfield later served as an engine and repair depot, designated Depot No. 3, during World War I. In 1922, the War Department designated it an operations base and assigned it the 22nd Observation Squadron, which was Maxwell AFB's first official flying mission, and was instrumental in establishing permanent airmail service. In November 1922, the base was renamed Maxwell Field in honor of Lieutenant William C. Maxwell, a native Alabama resident killed in an aircraft accident. The 22nd Squadron's primary mission was reconnaissance support for Army ground units. In 1929, the squadron delivered aid after massive flooding in southern Alabama, performing one of the first airdrops in aviation history. In 1931, the Air Corps Tactical School was moved from Virginia to Maxwell Field. Maxwell Field helped the City of Montgomery through the Great Depression by serving as a major employer.

After the beginning of World War II in 1939, Maxwell Field became home of the Headquarters Southeast Air Corps Training Center (SEATC), which was responsible for all Army Air Forces operational training in the eastern US. In 1940, SEATC began leasing the City of Montgomery's municipal airport, which was named Gunter Field. The new facility allowed Maxwell Field to become a basic flight-training field for aviation cadets. Training at Maxwell Field continued until December 1945, when it was inactivated.

Photo credit: United States Air Force – 908th Air Wing at Maxwell AFB

After the end of World War II, the Air University, an institution providing continuing military education for personnel, was established at Maxwell AFB in 1946. Today, it remains the main focus of base activities. In 1992, the 3800th Air Base Wing (ABW) was disbanded and the 502nd ABW took over as the host wing at Maxwell AFB, which two years later gave way to the current 42d ABW.

Source: Cradle of Airpower Education, A Short History of the Air University, Maxwell AFB, and the 42nd Air Base Wing, by the Air University Directorate of History; http://www.encyclopediaofalabama.org/article/h-1337; www.mybaseguide.com/air_force/52-1099/maxwell_gunter_afb_our_military

Gunter Annex

In 1940, the Montgomery Municipal Airport was selected as the location for a preliminary flying school to expand the Air Corps Training Program. The Army began leasing the 189-acre municipal airport and purchased an additional 300 acres for the cantonment area, establishing Gunter Field. There were four 3,500-foot long hard surfaced runways added to Gunter Field in 1943, capable of accommodating nearly 400 assigned aircraft by 1944. Gunter Field was established by the Southeastern Training Center as the first training facility created specifically for Basic Flight Training.

Hangar at the municipal airport in Montgomery Alabama, now Gunter Annex (circa 1933-4)

After World War II, flight training had come to an end, at Gunter Field, and by early 1946 all remaining aircraft had been transferred to Maxwell Army Air Base, and Gunter Field was placed in 'stand by' status.

Gunter Field was redesignated Gunter AFB in 1948, and in 1950, the Extension Course Institute of Air University as well as a branch of the School of Aviation Medicine was established at the base.

In 1958 a Semi-Automatic Ground Environment (SAGE) Data Center was established at Gunter AFB. Gunter AFB was home to one of 22 center locations across the US, whose purpose was to establish a link between Air Force general air surveillance radar stations and a centralized center for continental air defense. The Data Center was initially under the Montgomery Air Defense Sector, and remained active until December 1969, when it was eventually deactivated due to advances in technology.

In 1971 the Air Force Data Systems Design Center moved to Gunter AFB, followed by the Senior Noncommissioned Officer Academy in 1972. Gunter AFB was redesignated again in 1973 as Gunter Air Force Station, and after undergoing major construction, in 1988 Gunter Air Force Station was reestablished as an AFB.

Gunter AFB now falls under the command of Maxwell AFB, which was redesignated as Maxwell Air Force Base, Gunter Annex in 1991.

Today, Gunter Annex no longer possesses active runways for flight training, but is home to several major support groups including the Air Force Life Cycle Management Center (AFLCMC), Air Force Space Command (AFSPC), and the Defense Information Systems Agency (DISA).

Source: Air Force Historical Research Agency; Maxwell AFB Integrated Cultural Resource Management Plan, 2011;www.airfields-freeman.com/AL/Airfields_AL_Montgomery; www.worldlibrary.org/articles/gunter_air_force_station

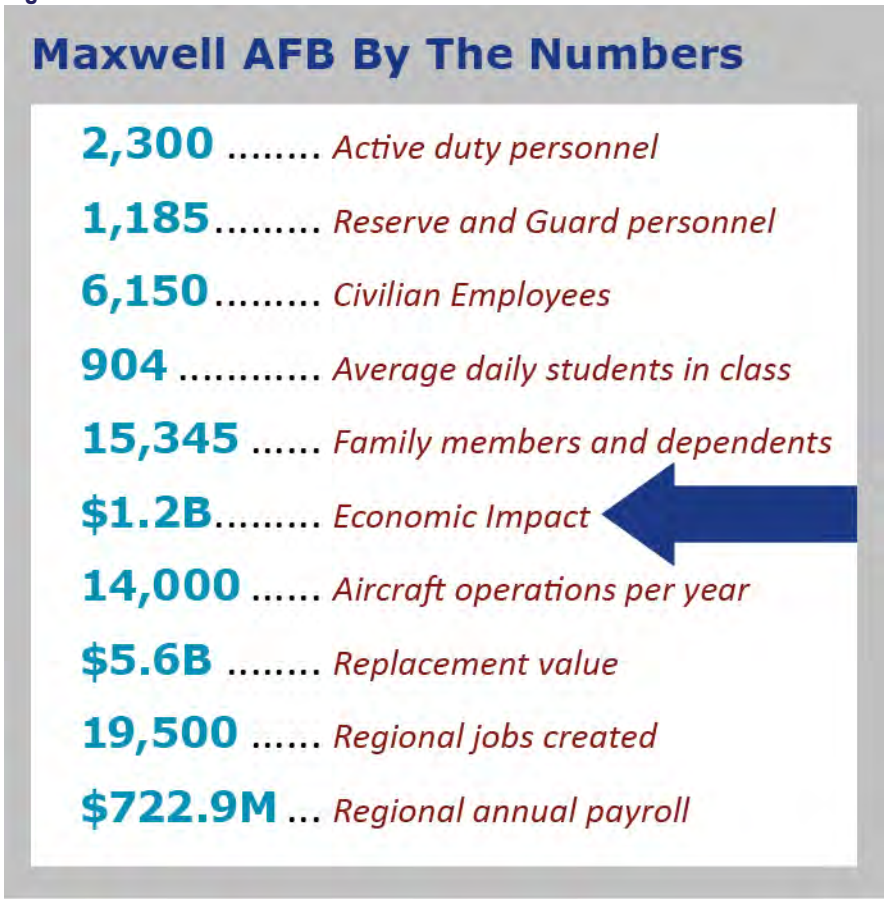
Vigilant Warrior Training Area

The Vigilant Warrior Training Area is a 200-acre parcel of land located at Lake Jordan, approximately 20 miles north of Maxwell AFB. The land is leased by the Air Force from the Alabama Power Company. The training area supports the Officer Training School and provides temporary housing, obstacle courses, office spaces, and classrooms for students.

3.2. Maxwell AFB Economic Benefit

The Maxwell AFB economic region of influence extends outward 50 miles and stretches across a three-county and 12-city area. Maxwell AFB and Gunter Annex are significant employers in the region with over 12,000 personnel (military, DOD, civilian, and contractors) that work at, or are stationed on the base. Through the purchase of goods and services and payment of salaries (payroll), Maxwell AFB and Gunter Annex have a combined economic benefit on the local and regional economy of approximately $1.2 billion per year. Figure 3-1 shows the local and regional economic benefit for the Maxwell AFB-Gunter Annex Complex including employee and student numbers and aircraft operations.

Figure 3-1. 2015 Maxwell AFB-Gunter Annex Economic Benefit



Source: Maxwell Air Force Base Installation Development Plan, July 20, 2015

3.3. Military Strategic Importance

Maxwell AFB is not only important to the local communities through its economic benefit, but also for the superior educational and leadership assets provided by the Maxwell AFB mission components. Due to its physical location within the US, the base serves as a place of refuge for military aircraft during extreme weather conditions and as a staging area in support of the Federal Emergency Management Agency (FEMA) operations in the southeastern portion of the country.

Maxwell AFB is under the Air Education and Training Command, and is the headquarters for the 42d ABW and Air University. Air University is the educational branch of the Air Force that promotes creative thought on air and space power. Supporting the university is the primary mission of Maxwell AFB. Other major organizations at Maxwell AFB include the Air Force Reserve Command's 908th Airlift Wing (AW) and the Judge Advocate General's (JAG) school.

Gunter Annex is home to the DISA, AFSPC, and the AFLCMC. These mission support organizations provide information technology support; total life cycle management of Air Force weapon systems; and assure information sharing capabilities and globally accessible enterprise information infrastructure for joint warfighters, national leaders, and coalition partners.

Source: Maxwell Air Force Base Installation Development Plan, July 20, 2015

3.4. Installation Setting

Maxwell AFB

Maxwell AFB is located in the northwest portion of the City of Montgomery in Montgomery County, Alabama and is bordered to the northeast by the Alabama River. Gunter Annex, a geographically separated unit, is located approximately five miles northeast of Maxwell AFB in north central Montgomery.

Maxwell AFB encompasses 2,239 acres of land with 217 buildings totaling over 4.7 million square feet (SF). It should be noted that the Maxwell AFB-Gunter Annex Complex have a combined total of 276 buildings. The installation setting of Maxwell AFB is illustrated on Figure 3-2. The combined Maxwell AFB – Gunter Annex Complex comprises 10 planning districts, which are split between Maxwell AFB, Gunter Annex, and the Vigilant Warrior Training Area. The distribution of land uses on Maxwell AFB is illustrated on Figure 3-3. The five planning districts associated with Maxwell AFB are identified as:

- District 1 – Airfield
- District 2 – Recreation
- District 3 – University
- District 4 – West Administration
- District 5 – West Community
  - 5A – Privatized Housing I
  - 5B – West Community Core
  - 5C – Historic Housing

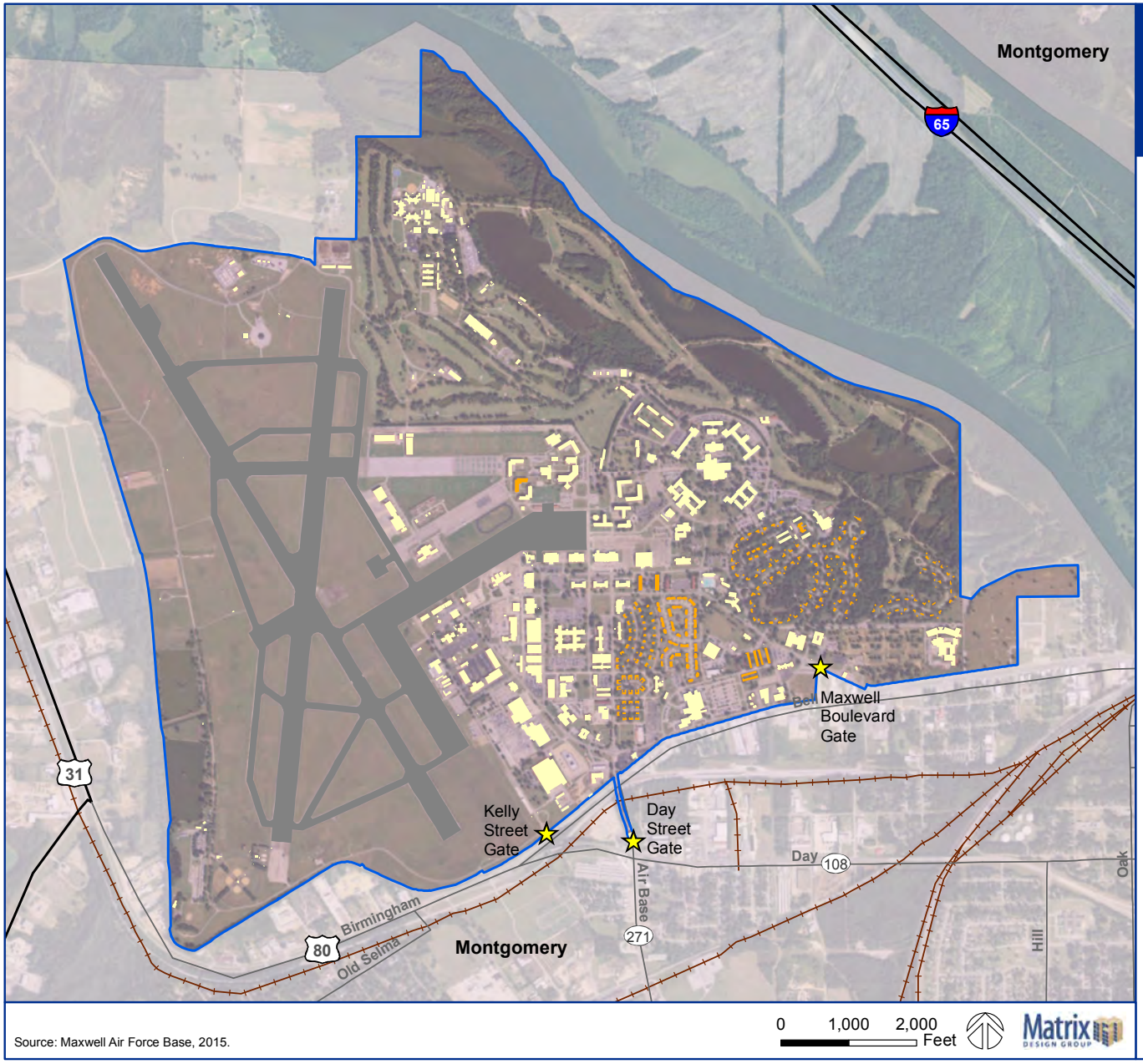


Figure 3-2

Maxwell AFB Installation Setting

Legend

- Gate

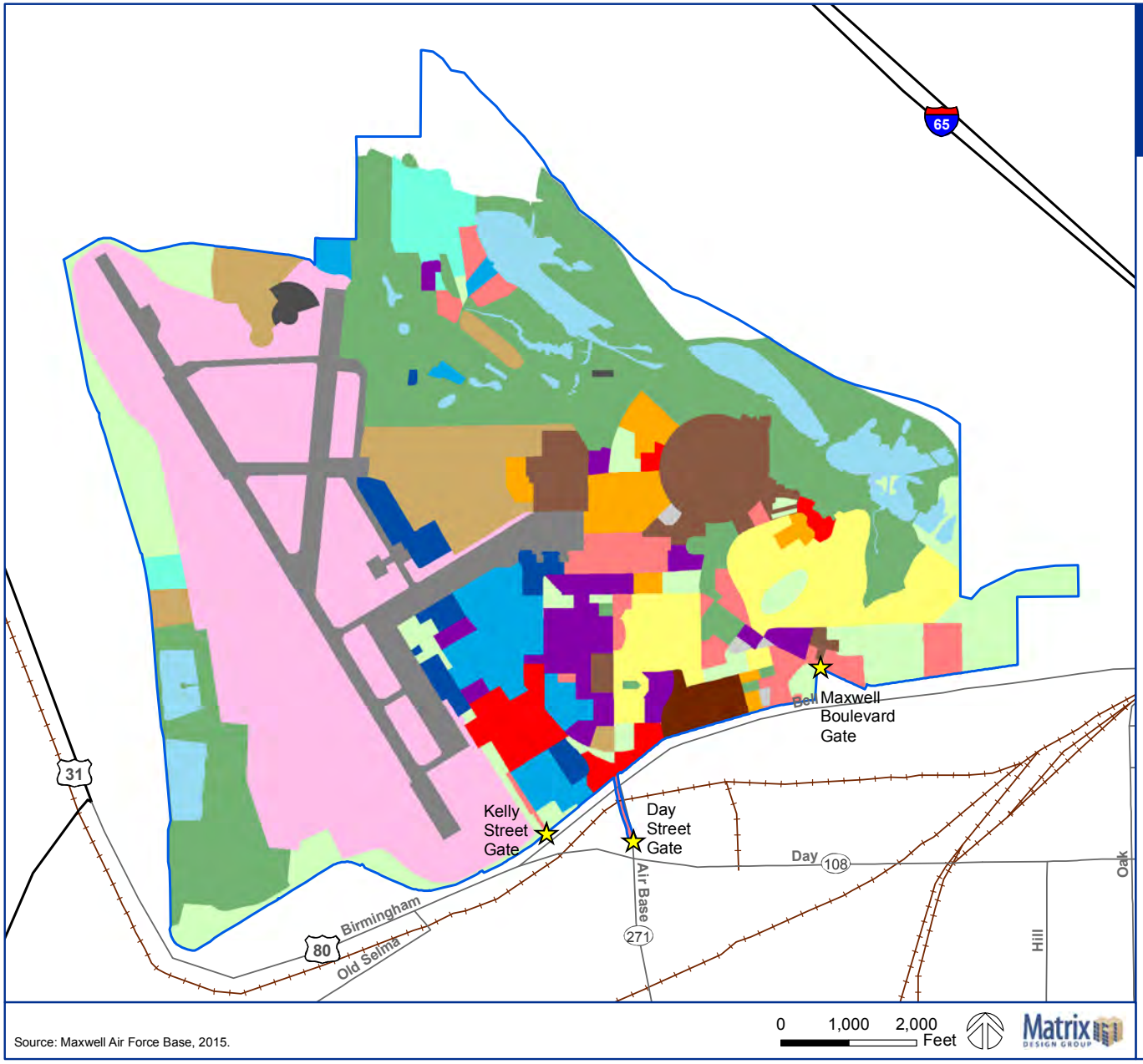
Installation Building

- Housing / Lodging
- Other

- Installation
- City of Montgomery
- Interstate / Highway
- Major Road
- Railroad
- Runway

Figure 3-3

Maxwell AFB Installation Land Use



Legend

Land Use

- Family Housing
- Unaccompanied Housing
- Commercial Services
- Commercial Commerce
- Medical Dental
- Industrial
- Air Ops Maintenance
- Governmental
- Administration
- Academic
- Training
- Airfield Pavement
- Ammo Storage
- Open Buffer Zone
- Outdoor Recreation
- Airfield Clear
- Utility
- WATER
- Gate
- Installation

Note: White areas have no land use information

District 1, the Airfield District, is the predominant district of Maxwell AFB, and occupies most of the western portion of the installation. In addition to the runways, taxiways, and aprons, it includes aircraft hangars, maintenance facilities, and conservation areas.

District 2, the Recreation District, is located in the northern portion of the property, and follows the edge of the Alabama River. This district includes a minimum security Federal Prison facility, and two base golf courses, which are located to the east of the prison. The golf course along the far eastern edge of the installation is no longer utilized.

District 3, the University District, is located on the central portion of the installation and includes the Academic Circle Historic District, lodging, and the Officer Training School.

District 4, the West Administration District, is in the south-central portion of the installation. This district includes the base community center, light industrial and commercial uses, as well as the administrative headquarters buildings.

District 5, the West Community District, is in the southeast portion of the installation. This district accommodates the majority of community services, including the elementary school, medical facility, youth center, community pool, fitness center, and community center.

Historic Buildings

There are 152 buildings at Maxwell AFB on the National Register of Historic Places (NRHP), including some of the Senior Officers Quarters which were constructed between 1921 and 1939. In addition to the 152 NRHP listed buildings, 100 buildings are individually eligible for the NRHP. There is one NRHP eligible archeological site that, due to the site's sensitivities and accessibility, is not identified by location. Most of the NRHP buildings are located in Districts 4 and 5.

Source: Maxwell Air Force Base Installation Development Plan, July 20, 2015

Gunter Annex

Gunter Annex, the 378-acre sub-installation of Maxwell AFB, contains 59 buildings consisting of approximately 1.7 million SF. Figure 3-4 illustrates the installation setting of Gunter Annex, and Figure 3-5 provides an illustration of the distribution of existing land uses. The planning districts for Gunter Annex are identified as:

- District 6 – Academy District
- District 7 – East Community District
- District 8 – East Administration District
- District 9 – Technology District

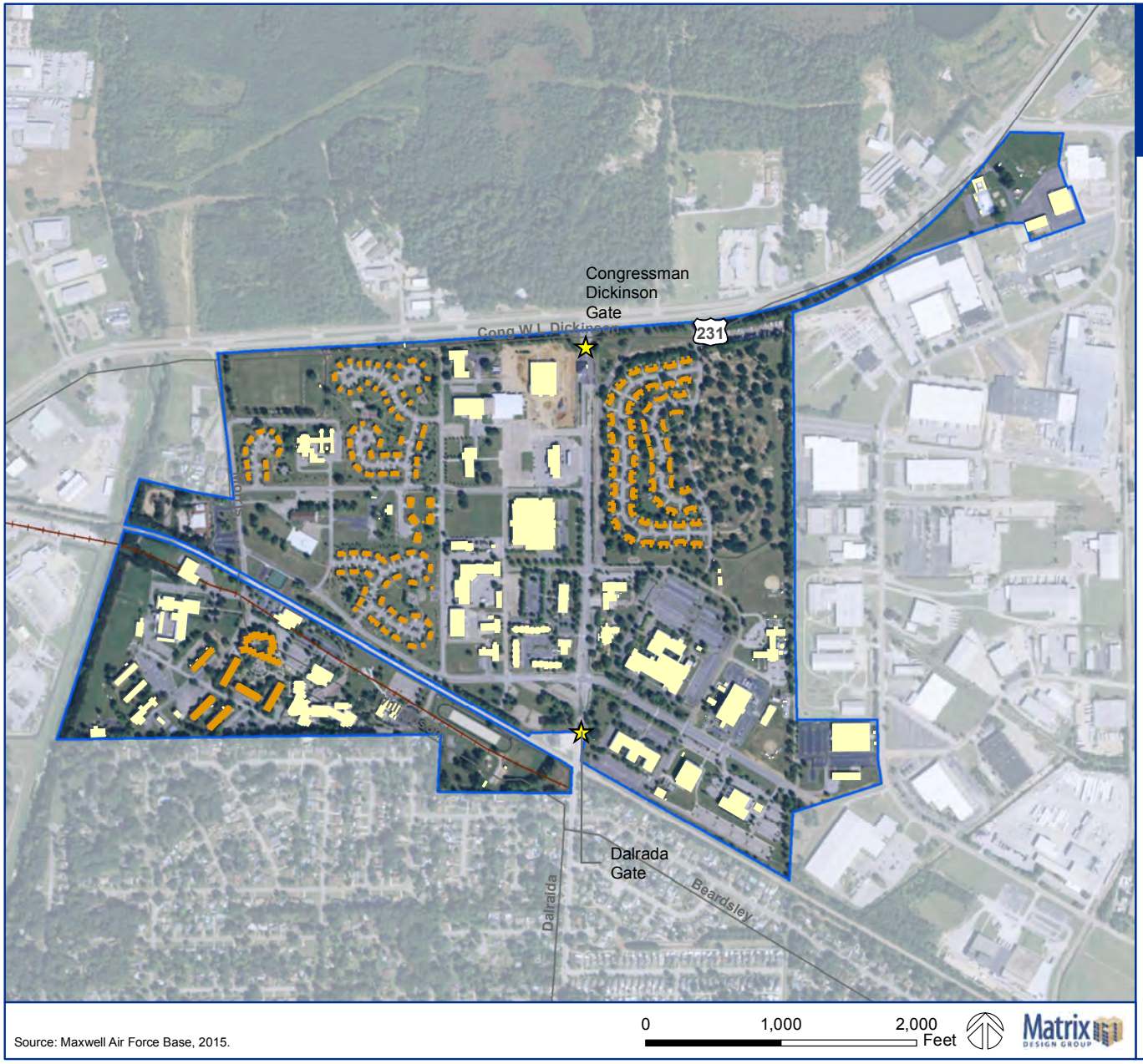
District 6, the Academy District is in the southwest portion of Gunter Annex, and is separated from the other districts by railroad tracks that that cross in a northwest to southeast direction. District 6 includes a well-developed educational campus environment, with major functions focusing on the Air Force Senior Non-Commissioned Officer (SNCO) Academy. In addition to academic facilities, lodging, parking and recreational facilities are located in this district.

District 7, the East Community District is the largest district and spans the entire northern portion of the Annex. This district includes a diverse mix of uses, such as family housing, community support, and educational facilities. The district comprises three distinct sub-areas, two of the sub-areas are associated with privatized housing, and the third area is the community core, which includes a market, commissary, fitness center, and bowling center.

District 8, the East Administrative District is located in the south-central portion of Gunter Annex, and includes obsolete industrial and administration facilities.

Figure 3-4

Gunter Annex Installation Setting



Legend

- Gate

Installation Building

- Housing/Lodging
- Other

- Installation
- Major Road
- Railroad

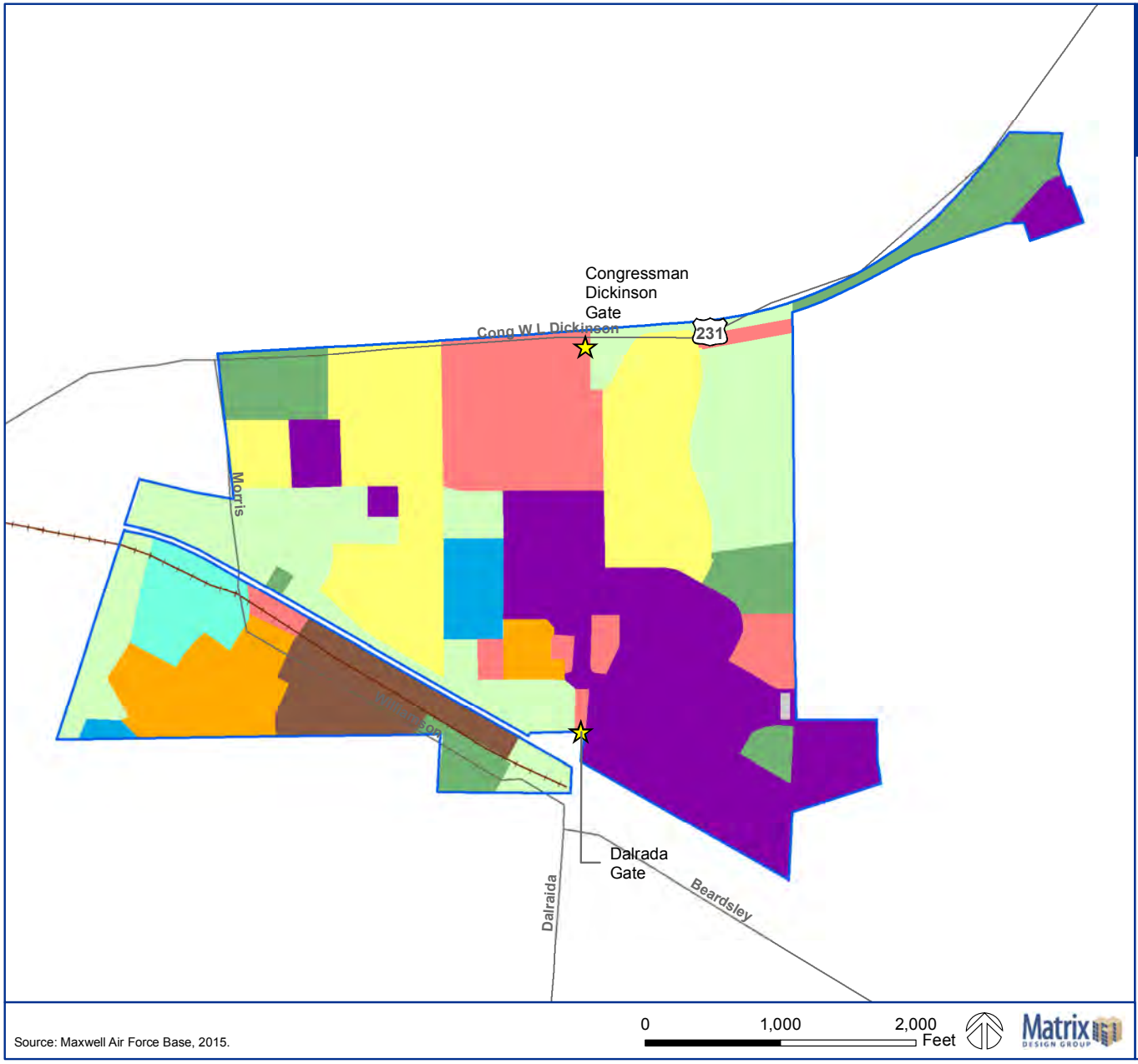


Figure 3-5

Gunter Annex Installation Land Use

Legend

Land Use

- Family Housing
- Unaccompanied Housing
- Commercial Services
- Industrial
- Governmental
- Administration
- Academic
- Open Buffer Zone
- Outdoor Recreation
- Utility
- Gate
- Installation

District 9, the Technology District located in the southwestern portion of Gunter Annex is a technological hub, accommodating computing and information technology facilities, as well as the Air Force enterprise management. Much of the anticipated growth at Maxwell AFB stems from the Gunter Annex Installation Setting.

Historic Buildings

It has been determined that that there are no archeological sites at Gunter Annex. However, there are two historic buildings at Gunter Annex: Buildings 205 and 857.

Vigilant Warrior Training Area

The Vigilant Warrior Training Area is a 200-acre tract of land leased by the Air Force, which is located at Lake Jordan and is used by the Officer Training School. It is located approximately 20 miles north of Maxwell AFB. The Vigilant Warrior Training Area has one planning district, but due to the remote location and low development expectations for the site, planning district information is not included in this JLUS.

Other Facilities

Other properties leased by the Air Force and used by Maxwell AFB personnel are a 40-acre tract at Lake Martin, located about 30 miles northeast of the installation, and a 34-acre tract at Eglin AFB in northwest Florida. The tracts at Lake Martin and Eglin AFB are used for recreational purposes.

Maxwell AFB also controls over 1,000 acres in easements, right of ways, and clear zones associated with its properties to ensure a measure of compatibility.

Source: Maxwell Air Force Base Installation Development Plan, 2015

3.5. Current Mission Operations

Air University

Air University, established in 1946, is the primary mission of Maxwell AFB- Gunter Annex. Air University supports education for planners and leaders in air and space power for the Air Force, other branches of the US armed forces, federal government civilians and many international organizations. Today, Air University's reach spans the careers of every Air Force member.

Air University provides the full spectrum of Air Force education, from pre-commissioning to all levels of professional military education, including degree-granting and professional continuing education for officers, enlisted, and civilian personnel throughout their careers. The university's professional military education programs educate airmen on the capabilities of air, space, and cyberspace power and their role in national security. These programs focus on the knowledge and abilities needed to develop, employ, command and support air and space power at the highest levels.

Air University's mission is to recruit, organize, and train Air Force reservists for active duty in time of war, national emergency or when otherwise required. When mobilized, the mission of the 908th Airlift Wing is to provide theater airlift forces to the supported theater commander.

Source: Maxwell AFB Installation Development Plan, 2015

42d Air Base Wing

As the host unit for Maxwell AFB-Gunter Annex, the 42d ABW's mission is crucial to national security. It provides support to Air University while also ensuring that airmen are ready to deploy in support of US military operations worldwide, and takes a proactive approach to promoting their professional and personal growth. The 42d ABW is also responsible for the safety and security of the base, which it accomplishes through force protection, maintaining and modernizing facilities and infrastructure, and seeking efficient new ways of conducting operations. The 42d ABW staff agencies include the offices of the Chaplin, Equal Opportunity, Financial Management, the Inspector General, Plan and Programs, Safety, and the Staff Judge Advocate.

Source: Maxwell AFB Installation Development Plan, 2015

The 42d ABW's mission is to develop mission-ready airmen and to operate a world-class installation

Air Force Reserve: 908th Airlift Wing

The 908th Airlift Wing is Alabama's only Air Force Reserve unit. It contributes to national defense by delivering airlift and related services through the efforts of more than 1,200 reservists and eight C-130 Hercules aircraft. Unit reservists fly approximately one million miles annually, engaging in training operations and support missions.

The 908th Airlift Wing is composed of the 908th Operations Group, the 908th Maintenance Group, the 908th Mission Support Group, and the 908th Aeromedical Staging Squadron.

Source: Maxwell AFB Installation Development Plan, 2015

The 908th Airlift Wing's mission is to acquire and support war-winning capabilities.

Air Force Life Cycle Management Center

The AFLCMC is responsible for the total life cycle management of all Air Force weapon systems. The Business Enterprise Group is a large group within the AFLCMC, which serves as the information technology leader for the Air Force and the DOD.

Source: Maxwell AFB Installation Development Plan, 2015

The AFLCMC's mission is to produce the future. To launch leaders of character; educate to think critically, strategically, and jointly to master and deliver superior Airpower in support of national security objectives.

Defense Information Systems Agency

The DISA is a combat support agency of the DOD. DISA maintains a data center at Gunter Annex, and its Maxwell AFB mission is expected to continue growing in its physical size, as well as its responsibilities. The agency provides important support for the security of the nation's technology infrastructure, and strives to ensure command and control of valuable information sharing capabilities, both nationally and globally.

Source: Maxwell AFB Installation Development Plan, 2015; DISA Strategic Plan

DISA's, a Combat Support Agency, provides, mission is to operate, and assure command and control, information-sharing capabilities, and a globally accessible enterprise information infrastructure in direct support to joint warfighters, national-level leaders, and other mission and coalition partners across the full spectrum of operations.

US Judge Advocate General's Corps

The US Judge Advocate General's (JAG) Corps delivers professional, independent counsel and full-spectrum legal capabilities to the command and the warfighter. The JAG Corps is associated with three primary missions at Maxwell AFB: the Air Force Legal Operations Agency, the Air Force JAG School, and Legal Information Systems.

Source: Maxwell AFB Installation Development Plan, 2015

The JAG's mission is to deliver professional, candid, independent counsel and full-spectrum legal capabilities to command and the warfighter

Air Force Space Command

The AFSPC is another Maxwell AFB unit with facilities at Gunter Annex that is expected to experience mission growth in the future. The AFSPC is responsible for providing network operations, defense, and information technology support.

Source: Maxwell AFB Installation Development Plan, 2015

The AFSPC's mission is to provide resilient and affordable space and cyberspace capabilities for the Joint Force and the Nation

3.6. Future Mission Operations

Currently, there are no new missions planned for Maxwell AFB or Gunter Annex. However, the base has indicated that new missions and possible expansions are actively being sought, which could potentially include one or more of the following scenarios.

- Expand mission to bring on more C-130s
- New Unmanned Aerial Vehicle (UAV) mission
- New Initial Flight Training (IFT) School – East

Maxwell AFB is exploring various opportunities for expansion, and the improvements that would better position the base for new mission opportunities. Maxwell AFB's Installation Development Plan (IDP) identified 501 acres of developable land between Maxwell AFB and Gunter Annex, though some challenges were identified with some of the areas, like the large area of undeveloped land along the western portion of Maxwell AFB, which may be limited by the flood plain.

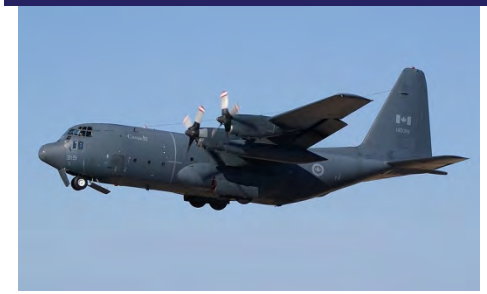
The IDP recommends several priority improvement projects, including:

- Replacement of the Air Traffic Control Tower, which is the oldest in the Air Force;
- Construction of a new fitness center at Gunter Annex to improve quality of life and physical fitness;
- Construction of a new commercial vehicle inspection facility at Maxwell AFB to improve security and reduce risk;
- Construction of a new dormitory for the Officer Training School;
- Construction of an addition to the JAG School / Air Force Legal Operations Agency building to increase teaching ability and capacity;
- Demolition of surplus facilities and / or facilities in poor condition;
- Construction of utility and communications system upgrades and improvements to efficiency;
- Construction of the 908th Airlift Wing hangar and operations facilities.

Source: Maxwell AFB Installation Development Plan, 2015

Table 3-1 provides an overview of the aircraft assigned to and frequently utilize Maxwell AFB. Currently, the C-130 Hercules is only utilized by the military, while the GA-8 Airvan and C-182 Skylane airframes are utilized by the Civil Air Patrol. All airframes are housed at Maxwell AFB.

Table 3-1 Overview of Aircraft Assigned to Maxwell AFB in Fiscal Year 2007

Aircraft	*Description / Capabilities*
 C-130 Hercules	As of FY 2007, there were eight C-130 aircraft stationed at Maxwell AFB. The C-130 Hercules primarily performs the tactical portion of the airlift mission. The aircraft is capable of operating from a rough dirt strip. Airframe statistics are: ■ Length: 97 feet 9 inches ■ Height: 38 feet 10 inches ■ Wingspan: 132 feet 7 inches ■ Speed: 366 mph ■ Range: 2,050 nautical miles ■ Crew: 5 (2 pilots, navigator, flight engineer, and loadmaster) ■ Max Load: 92 combat troops, 64 paratroopers, 6 pallets, or 16 Container Delivery System (CDS), bundles (42,000 pounds)
 C-182 Skylane	The C-182 Skylane is a light utility aircraft, often used for cross-country travelers. There is one C-182 stationed at Maxwell AFB. Airframe statistics are: ■ Length: 25 feet 2 inches ■ Height: 8 feet 6 inches ■ Wingspan: 36 feet ■ Speed: 201 mph ■ Range: 930 nautical miles ■ Crew: 1 crew and 3 passengers ■ Max. Load: 3,100 pounds
 GA-8 Airvan	The GA-8 Airvan is a popular charter airplane used by the US Civil Air Patrol for search and rescue operations. There is one GA-8 stationed at Maxwell AFB. Airframe statistics are: ■ Length: 29 feet 4 inches ■ Height: 12 feet 9 inches ■ Wingspan: 40 feet 3 inches ■ Speed:150 mph ■ Range: 730 nautical miles ■ Crew: 1 crew, 7 passengers ■ Max. Load: 3,999 pounds

Source: www.af.mil/AboutUs/FactSheets; www.aopa.org

3.7. Maxwell AFB Mission Footprint

Mission activities conducted on and around Maxwell AFB can generate potential impacts on, or face potential impacts from surrounding communities. Examples of potential mission impacts on surrounding communities include noise and vibration from overhead flights and the risk of an aircraft accident. Conversely, the military mission is susceptible to hazards and other incompatibilities created by certain types of civilian development or activities, such as obstructions to airspace or location of noise sensitive uses in high noise zones. Understanding the overlapping spatial patterns of these compatibility zones, or "mission footprint" is essential for promoting compatible and informed land use decisions, and developing the recommended strategies presented in Chapter 6 of the JLUS Report.

There are several elements that make up the mission footprint that extend outside the boundaries of Maxwell AFB. These essential elements play a key role in the installation's viability for sustaining current and future mission operations. These elements are listed below and described in more detail on the following pages.

Maxwell AFB Footprint Elements

- Accident Potential Zones
- Aircraft Noise Contours
- Airfield Approach and Departure Flight Tracks
- Part 77 Vertical Obstruction Compliance
- Imaginary Surfaces
- Airspace
- Military Training Routes
- Military Notification Area
- Bird / Wildlife Aircraft Strike Hazard (BASH) Relevancy Area

Accident Potential Zones

Accident Potential Zones (APZs) per Air Force regulations are developed to assist military and community planners in planning land uses that are compatible with airfield operations, thereby protecting health and safety. Within these zones, there are recommended types, densities, and intensities of land uses. While the likelihood of an aircraft mishap occurring is remote, the identified APZs provide the best practical solution for public safety.

There are typically three safety zones that extend from the ends of runways: Clear Zone (CZ), APZ I, and APZ II. The landing zone (LZ) has two safety zones: the CZ and APZ-Landing Zone (APZ-LZ). The safety zones associated with the LZ are smaller because of their limited use and the lower probability of accidents. The LZ does not have correlating APZ IIs. These safety zones are illustrated on Figure 3-6.

The main runway CZ begins at each end of the runway and measures 3,000 feet wide by 3,000 feet long. It is recommended that no development occur in the CZs unless it is a use that is needed for the safe operation of aircraft.

The main runway APZ I is an area beginning at the end of each CZ at a width of 3,000 feet and a length of 5,000 feet.

The main runway APZ II is an area that begins at the end of each APZ I and measures 3,000 feet wide by 7,000 feet long. As aircraft move further away from the ends of the runway, the risk of accidents are reduced thus allowing for some low-density / intensity developments.

The LZ CZ begins at each end of the runway and measures an inner width of 135 feet on each side of the strip's centerline, and tapers out to a width of 250 feet on each side. The LZ CZ extends out 500 feet along the extended runway centerline.

The APZ- LZ for the LZ begins at the far end of the CZ and extends out for 250 feet on each side of the centerline for 2,500 feet along the extended LZ centerline. This area has a lower potential for accidents and therefore has less restrictions recommended for development.

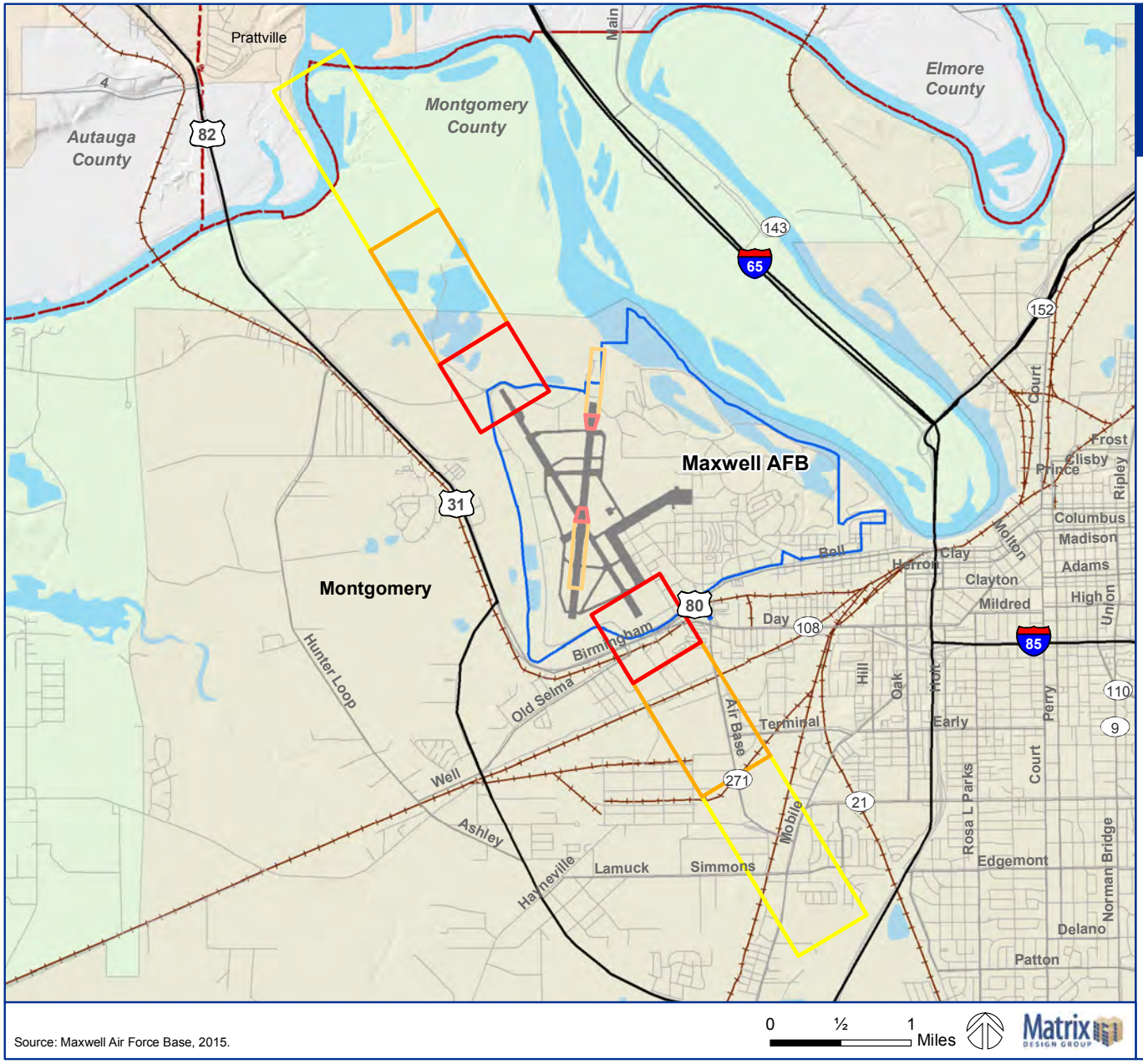


Figure 3-6

Accident Potential Zones

Legend

Accident Potential Zones

- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II
- Landing Zone (LZ) Clear Zone
- Landing Zone (LZ) Accident Potential Zone

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Local Road
- Railroad
- Runway

The Maxwell AFB AICUZ Report provides a complete listing of the land uses that are not recommended for use in the CZ, APZ I and APZ II for the main runway. In these recommendations, some land uses also have recommended limits on density and intensity of use. For a more detailed analysis about land uses within the CZs and APZs, see Chapter 5, Compatibility Assessment.

Source: Air Installation Compatible Use Zone Report, Maxwell Air Force Base, November 2009

Aircraft Noise Contours

Aircraft noise is produced from flight operations (overflight, take-offs, landings, touch-and-go operations) and engine maintenance run-ups. The Air Force considers how its operations impact the local community by calculating an average-weighted noise level measured as a day-night average A-weighted sound level (DNL). The Maxwell AFB AICUZ uses the DOD NOISEMAP program to develop noise contours indicating noise exposure levels from aircraft operations.

The contour lines developed in the model range from 65 decibel (dB) DNL to 80 dB DNL and increase in increments of 5 dB. The 80 dB DNL is the "loudest" contour line computed and the 65 dB DNL is the "quietest". The DNL measure has been determined to be a reliable measure of community sensitivity to aircraft noise and has become a standard metric used to map aircraft noise impacts. These noise contours are typically generated during the AICUZ Report process. Maxwell AFB's AICUZ was updated in 2009 to reflect a change in aircraft equipment and mission operations. The 2009 noise contours are depicted on Figure 3-7.

In reviewing noise contours, it should be noted that these are annual averages, and noise does not stop at the line of the noise contours. Noise exposure at any given time will vary based on a number of factors including weather and aircraft type.

In efforts to minimize noise for citizens in surrounding communities, engine run-up locations have been placed in areas that are less likely to impact daily life. Maxwell AFB does not operate late night engine run-ups, but there is the potential for unpredicted contingencies that could require nighttime engine run-ups.

Source: Air Installation Compatible Use Zone Report, Maxwell Air Force Base, November 2009

Airfield Approach and Departure Flight Tracks

Flight tracks are developed to provide guidance on the average area of standard operations that may occur at and around the airfield. These are created using information gathered from air traffic controllers, pilots, and other sources. When flight tracks are developed they attempt to avoid urban development as much as possible to reduce impacts and risk to the general public and commercial or general aviation activities. Safety of operations is paramount in the design of these tracks. Maxwell AFB has one runway (15 / 33) and one landing zone (009 / 189).

Figures 3-8 through 3-11 illustrate the primary flight tracks used by Maxwell AFB aircraft. Other flight tracks may also be used depending on variables such as weather or mission.

The closed pattern flight tracks utilized at Maxwell AFB are isolated to areas surrounding the installation and consist of low-level altitude flights. The operation performed by the aircraft using these flight tracks can potentially create noise and vibration impacts on land uses under these paths. In order to deconflict traffic arriving and departing at MGM, closed traffic patterns are generally kept to the north and east side of the runway complex.

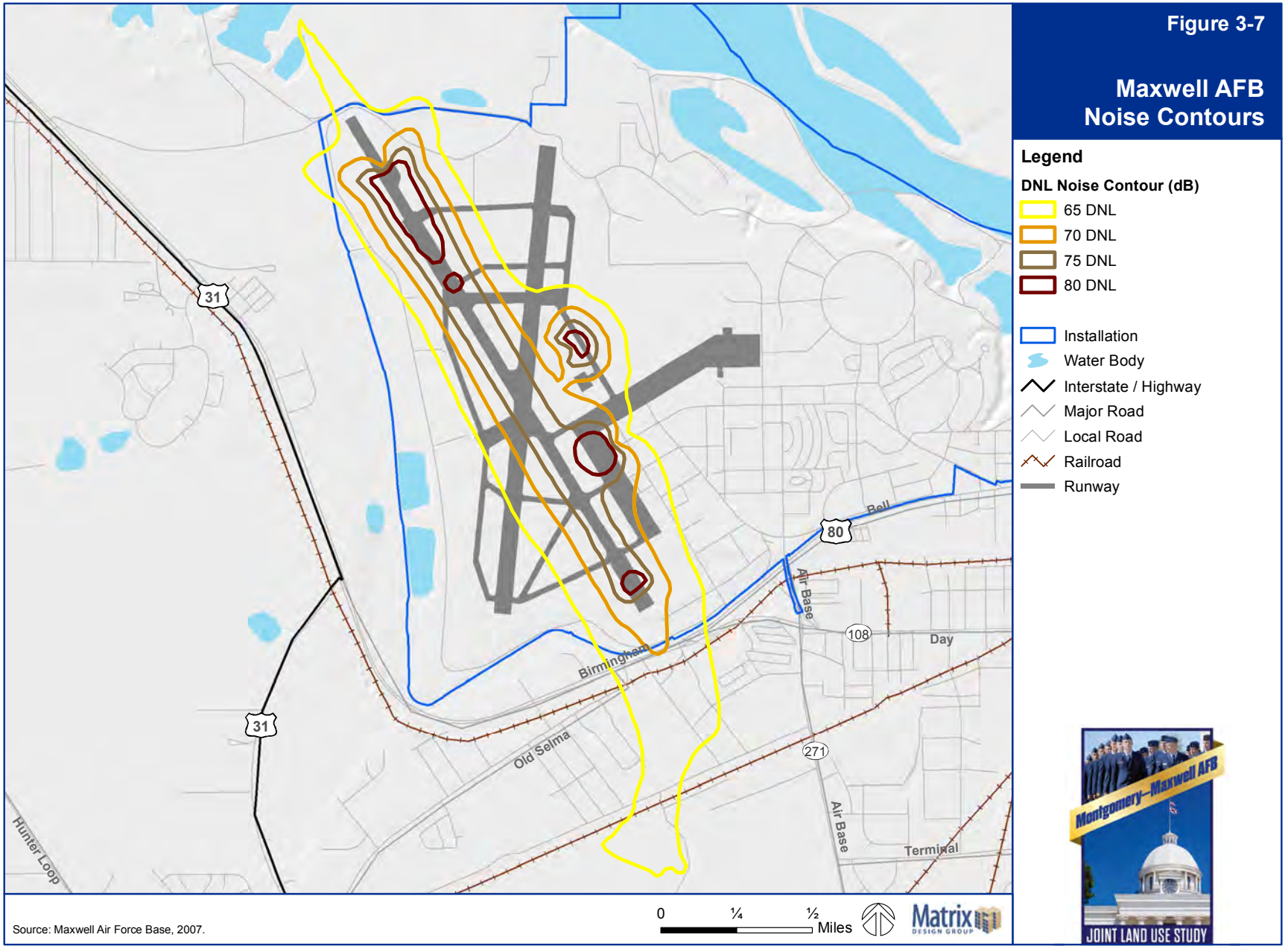


Figure 3-7
Maxwell AFB
Noise Contours
Legend
DNL Noise Contour (dB)
65 DNL
70 DNL
75 DNL
80 DNL
Installation
Water Body
Interstate / Highway
Major Road
Local Road
Railroad
Runway
31
31
80
Bell
Air Base
108
Day
Birmingham
Old Selma
271
Air Base
Terminal
Hunter Loop
Source: Maxwell Air Force Base, 2007.
0
¼
½
Miles
Matrix
DESIGN GROUP
Montgomery–Maxwell AFB
JOINT LAND USE STUDY

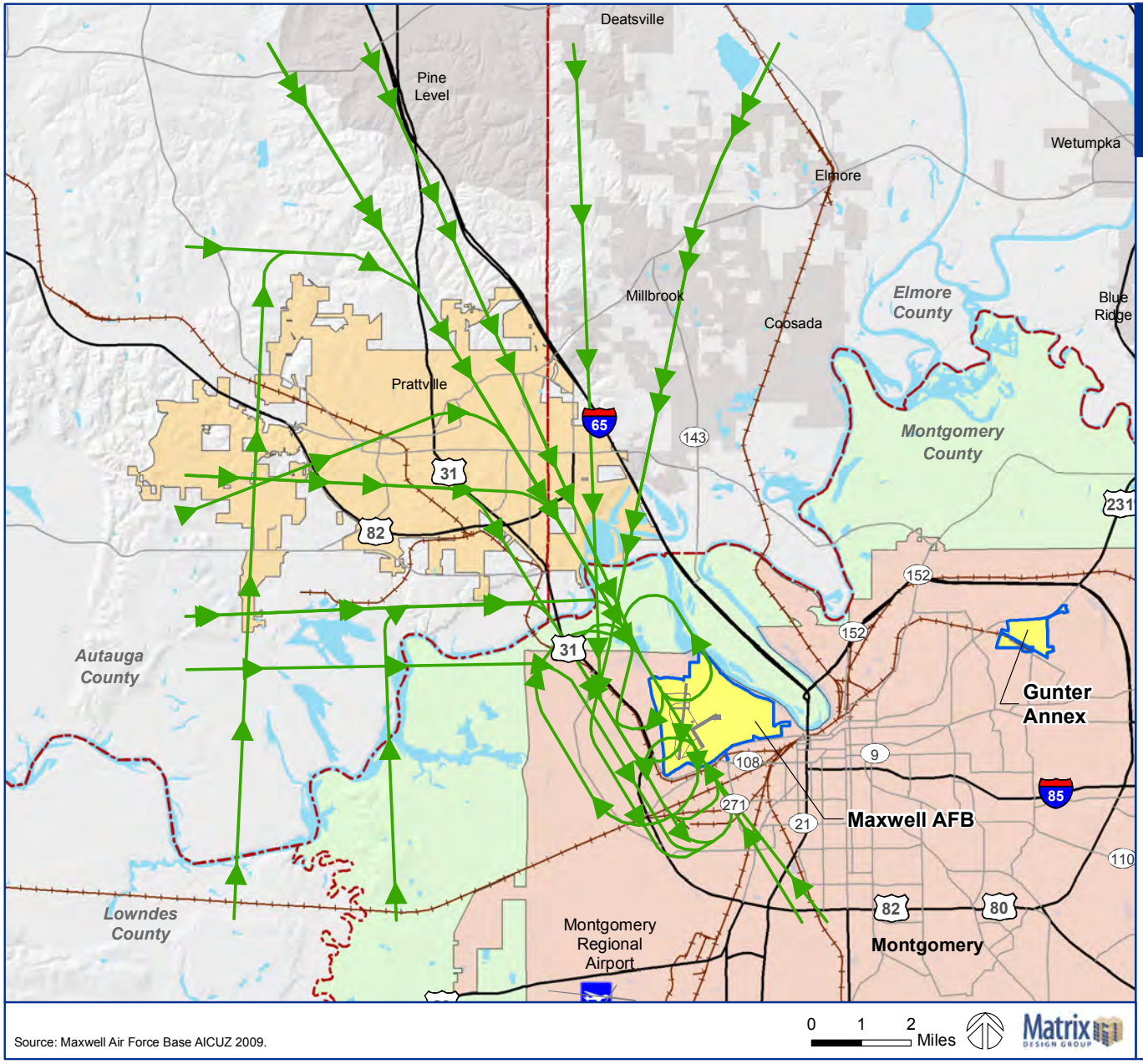


Figure 3-8

Maxwell Air Force Base Flight Tracks Main Runway Arriving

Legend

- Arriving Flight Tracks
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

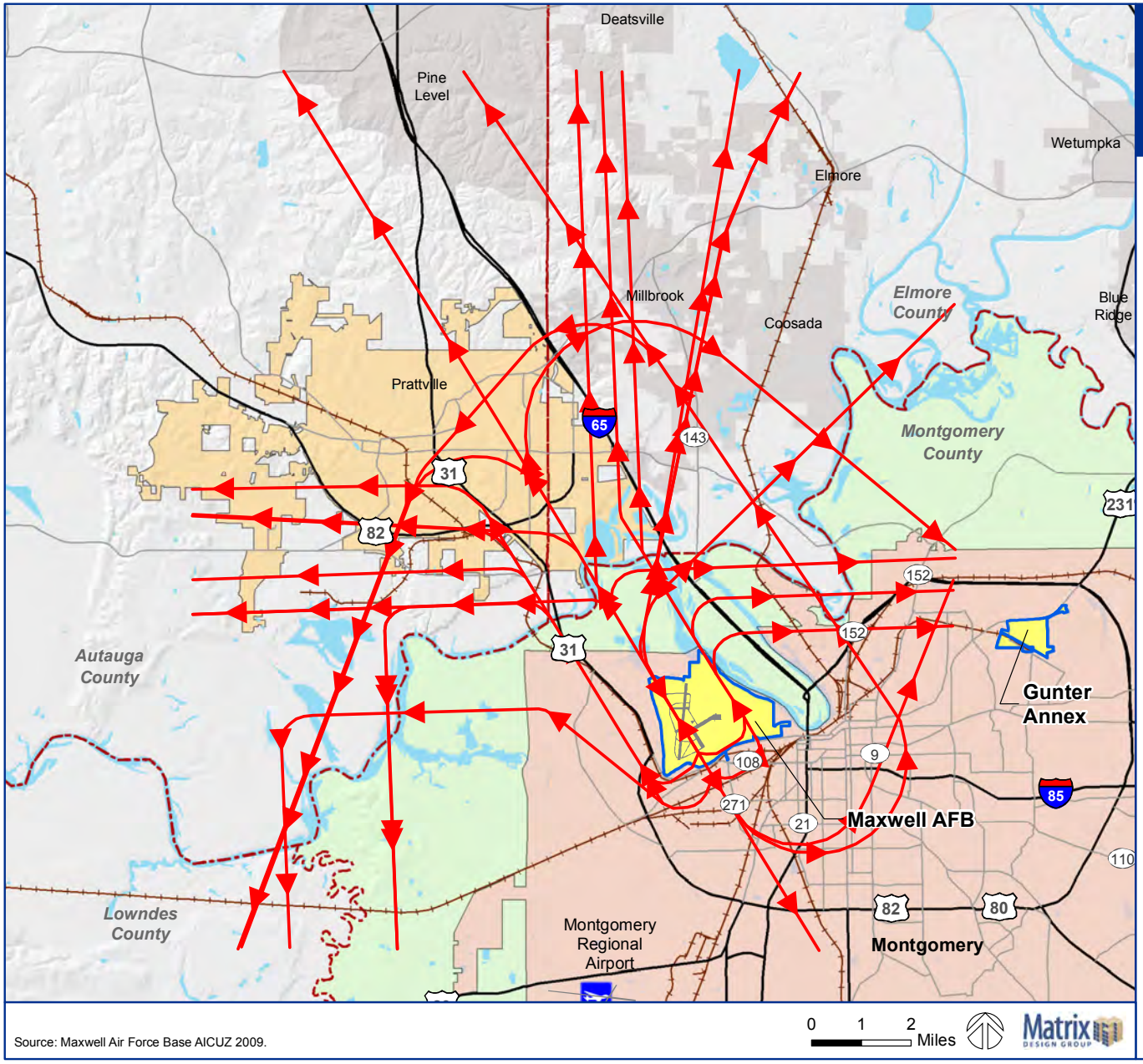


Figure 3-9

Maxwell Air Force Base Flight Tracks Main Runway Departing

Legend

- Departing Flight Tracks
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

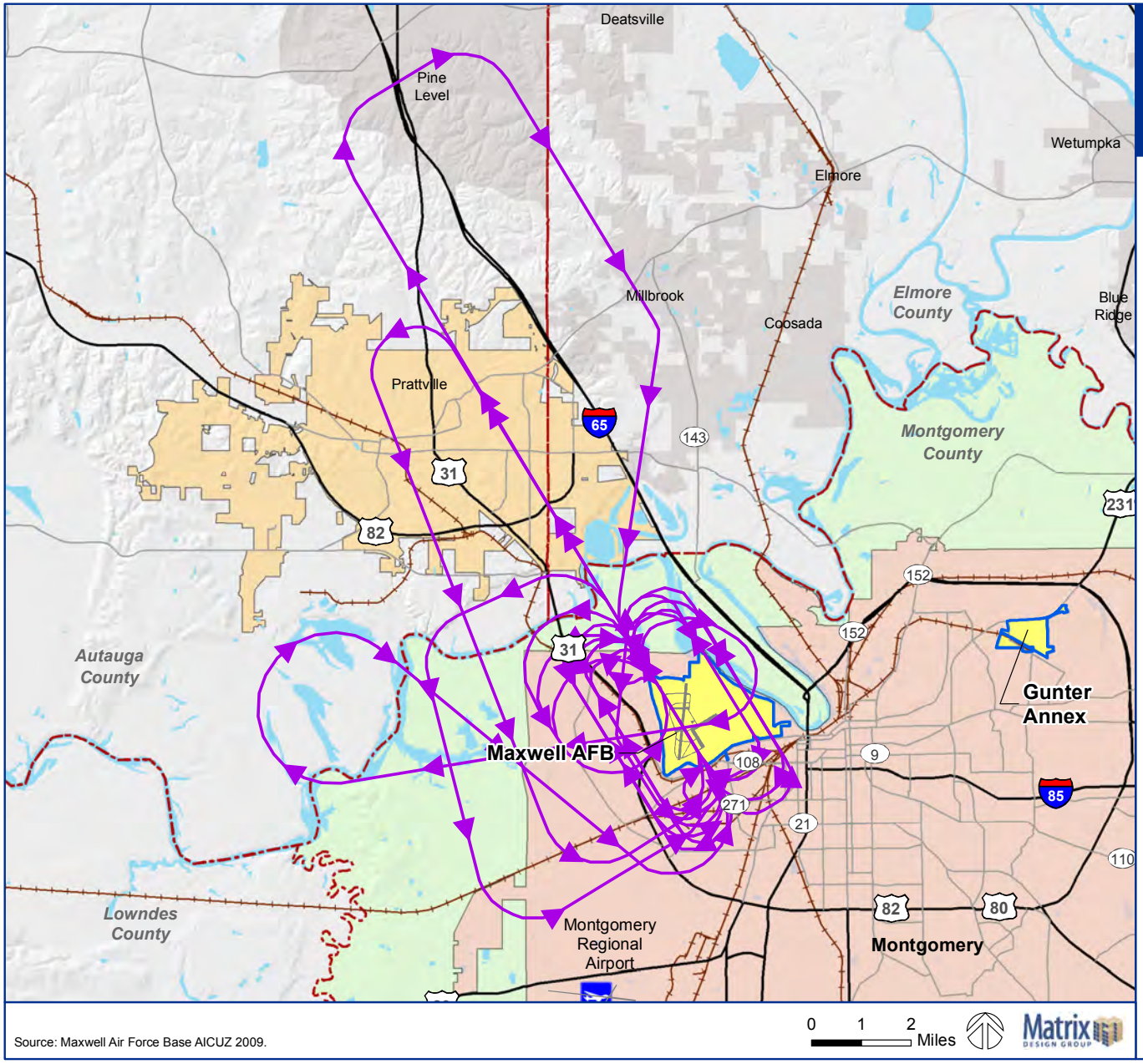


Figure 3-10

Maxwell Air Force Base Flight Tracks Closed Pattern

Legend

- Main Runway Closed Pattern
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

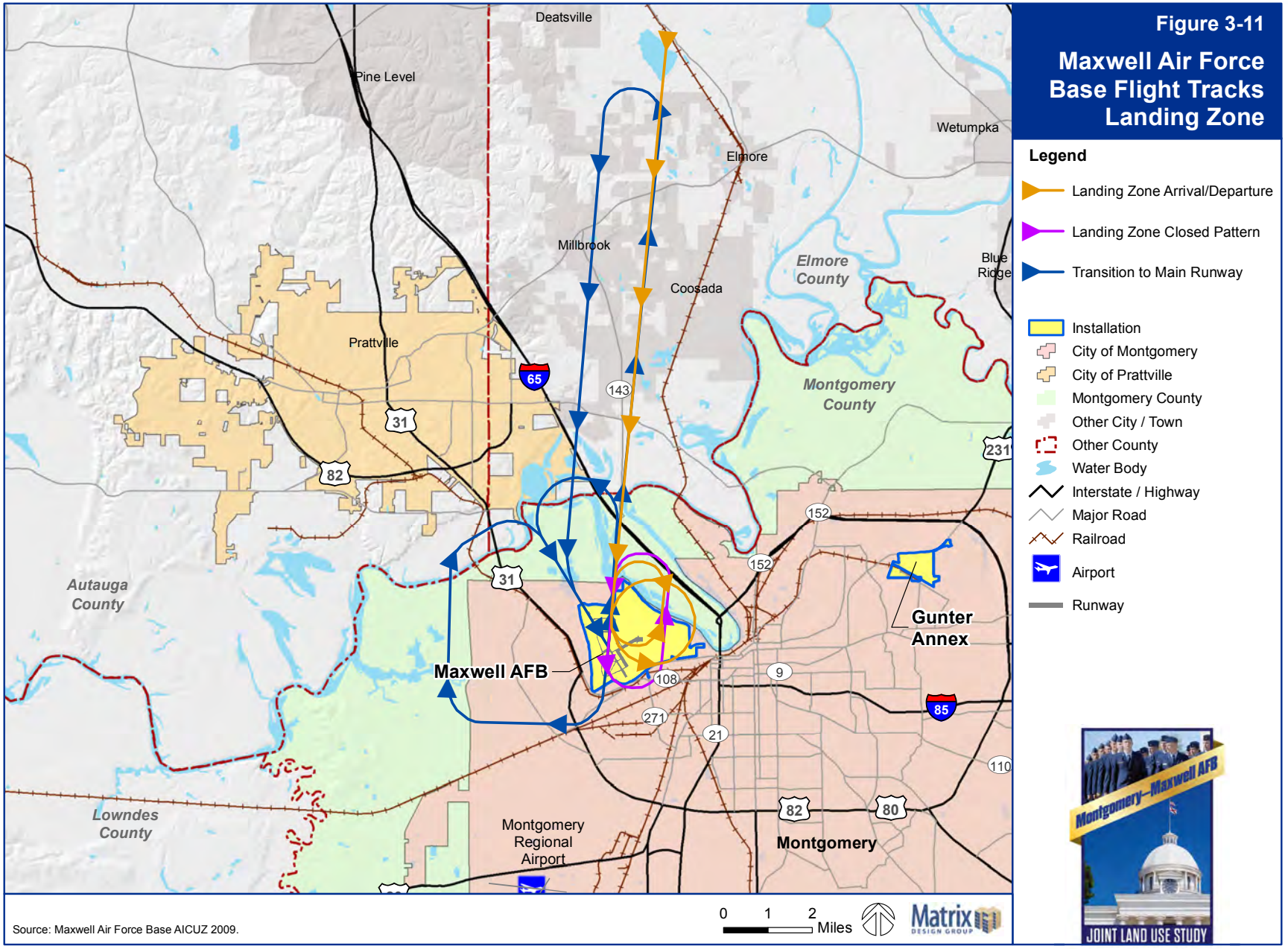


Figure 3-11

Maxwell Air Force Base Flight Tracks Landing Zone

Legend

- Landing Zone Arrival/Departure
- Landing Zone Closed Pattern
- Transition to Main Runway
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

Departures from Runway 33 head northwest to avoid traffic at MGM, and arrivals are typically from the north, via Runway 15. Runway 15 is generally preferred due to the prevailing winds, noise abatement, and other operational considerations. According to Maxwell AFB's 2009 AICUZ, aircraft operating at Maxwell AFB use the following basic flight patterns:

- Turning departures (departures on Runway 15 followed by a left turn to the east);
- Turning departures (departure on Runway 15 followed by a right turn to the west);
- Straight out departure off Runway 33;
- Straight in approach (typically used by transient aircraft; and
- Overhead landing pattern during which aircraft overfly the landing threshold at approximately 1,500 feet above ground level (AGL), turn 180 degrees, fly outbound briefly, and then begin a continuous turn and descent while intercepting the final approach course. The overhead landing pattern describes an oval racetrack shaped course with about a one-mile final approach segment. This arrival pattern is less common than the straight-in approach.

A typical sortie for a C-130 would include a departure, airwork (including practice approaches at nearby civilian airports), landing zone training, closed pattern touch and goes, and a full-stop landing.

Source: Air Installation Compatible Use Zone Report, 2009; Maxwell Air Force Base, November 2009; Montgomery Regional Airport Master Plan Update, 2013

Part 77 Vertical Obstruction Compliance

The Federal Aviation Act was enacted in 1958 to provide methods for overseeing and regulating civilian and military use of airspace over the US. It requires the Secretary of Transportation to make long range plans that formulate policy for the orderly development and use of navigable airspace. The intent is to serve the needs of both civilian aeronautics and national defense, but it does not specifically address the needs of military agencies. The Federal Aviation Administration (FAA) was created as a result of the Act for a variety of purposes, including the management of airspace over the US.

The 500-foot rule, promulgated by the FAA, states that every citizen of the United States has "a public right of freedom of transit in air commerce through the navigable air space of the United States." The rule was formally announced in the 1963 Court of Claims ruling in Aaron v. United States and declares that flights 500 feet or more AGL do not represent a compensable taking because they enjoy a free right-of-passage without liability to the owners below.

Another important outcome of the Act is Federal Aviation Regulation Title 14 Part 77 commonly known as Part 77, which provides the basis for evaluation of vertical obstruction compatibility. This regulation provides information to evaluate the potential for a vertical obstruction based on the elevation of the airfield, the height and resulting elevation of the new structure or facility, and the location of the structure or facility relative to the airfield in question. This regulation determines compatibility based on the height of proposed structures or natural features relative to their distance from the ends of a runway. Using a distance formula from this regulation, local jurisdictions can easily assess the height restrictions near airfields. Additional information on Part 77 is located on the FAA Internet site at http://www.faa.gov/.

As of January 29, 2013, the main focus of Part 77.17 is to establish standards to determine obstructions within navigable airspace, typically within a certain distance from an airport or airfield. It defines an obstruction to air navigation as an object that is of greater height than any of several measures. A key reference used for compatibility planning is the following:

> *A height that is 200 feet AGL or above the established airport elevation, whichever is higher, and within three nautical miles of the*

established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length is considered a

vertical obstruction. This height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 499 feet.

Figure 3-12 provides an illustration of this measure of vertical obstruction. Note that this is in addition to, not a replacement of, imaginary surfaces discussed later in this section.

Imaginary Surfaces

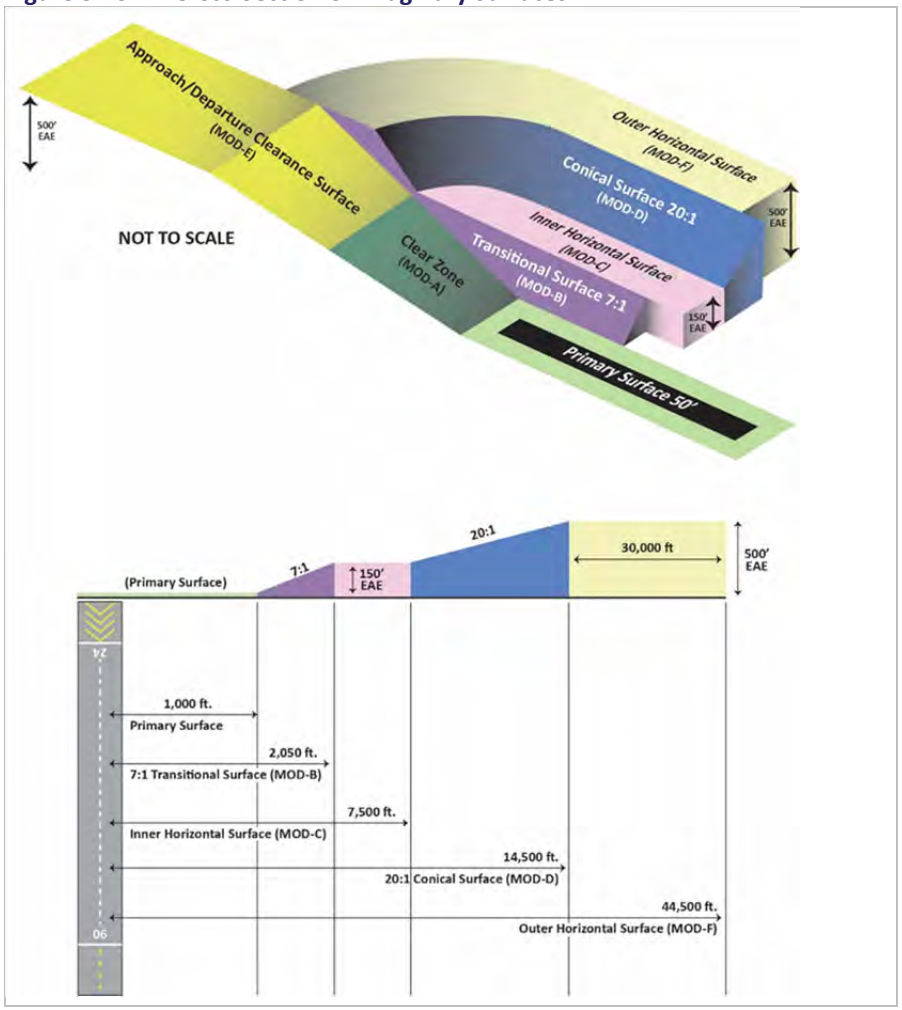
Federal Aviation Regulation, Part 77 specifies a series of imaginary height surfaces surrounding military and civilian airports. The imaginary surfaces of an active runway are used to define the required airspace that must remain free of vertical obstructions in the vicinity of aviation operations to ensure safe flight operations. Figure 3-13 shows a cross-section of the slope of the surfaces that help guide military and community planners in land use planning around an airfield. Structures on the ground should not exceed these heights to protect the navigable airspace associated with the airfield, the safety of pilots and people, and the land uses on the ground. This is especially important in the clear zone and the approach-departure surfaces.

The extent or size of an imaginary surface depends on the type of runway. Military runways are categorized as either Class A or Class B based on the type of aircraft that utilize them. Class A runways are for smaller or lighter aircraft. Class B runways are the category for the majority of military aircraft. Maxwell AFB runway is classified as a Class B runway and its relative imaginary surfaces are shown on Figure 3-14.

Proximity of MGM to Maxwell AFB creates an overlap of the imaginary surfaces associated with each individual airfield which are also illustrated on Figure 3-15. MGM is located within Maxwell AFB's outer horizontal surface which restricts height to 500 feet above the established airport elevation.

Currently, there is no issue with aviation operations between Maxwell AFB and MGM, and it should be noted that the overlap of the MGM imaginary surfaces protects the south-southwest area of Maxwell AFB due to the restrictions imposed by the MGM imaginary surfaces.

Figure 3-13. Cross-Section of Imaginary Surfaces



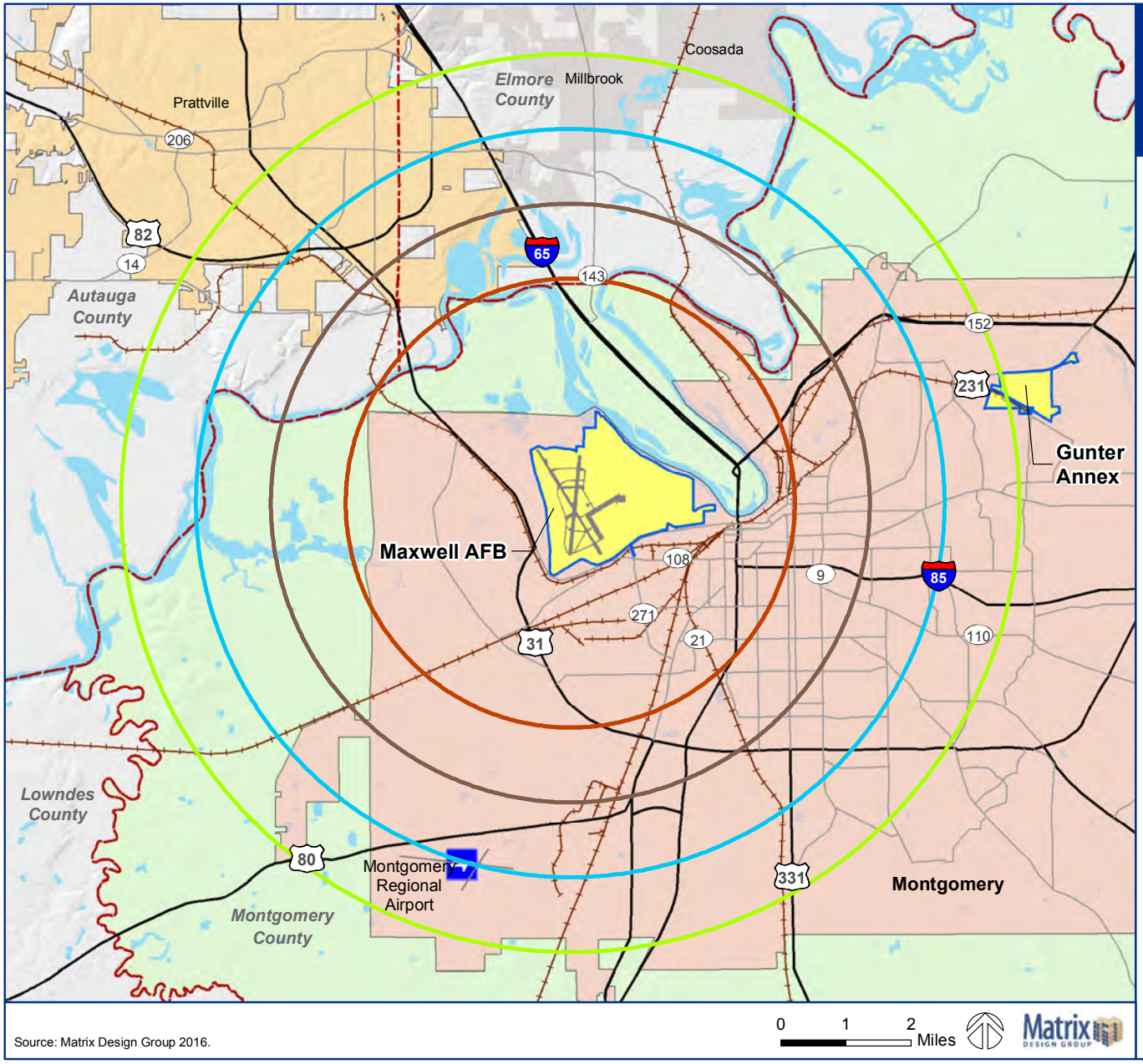


Figure 3-12

FAA Part 77

Legend

- Up to 200' @ 3NM
- Up to 300' @ 4NM
- Up to 400' @ 5NM
- Up to 500' @ 6NM
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

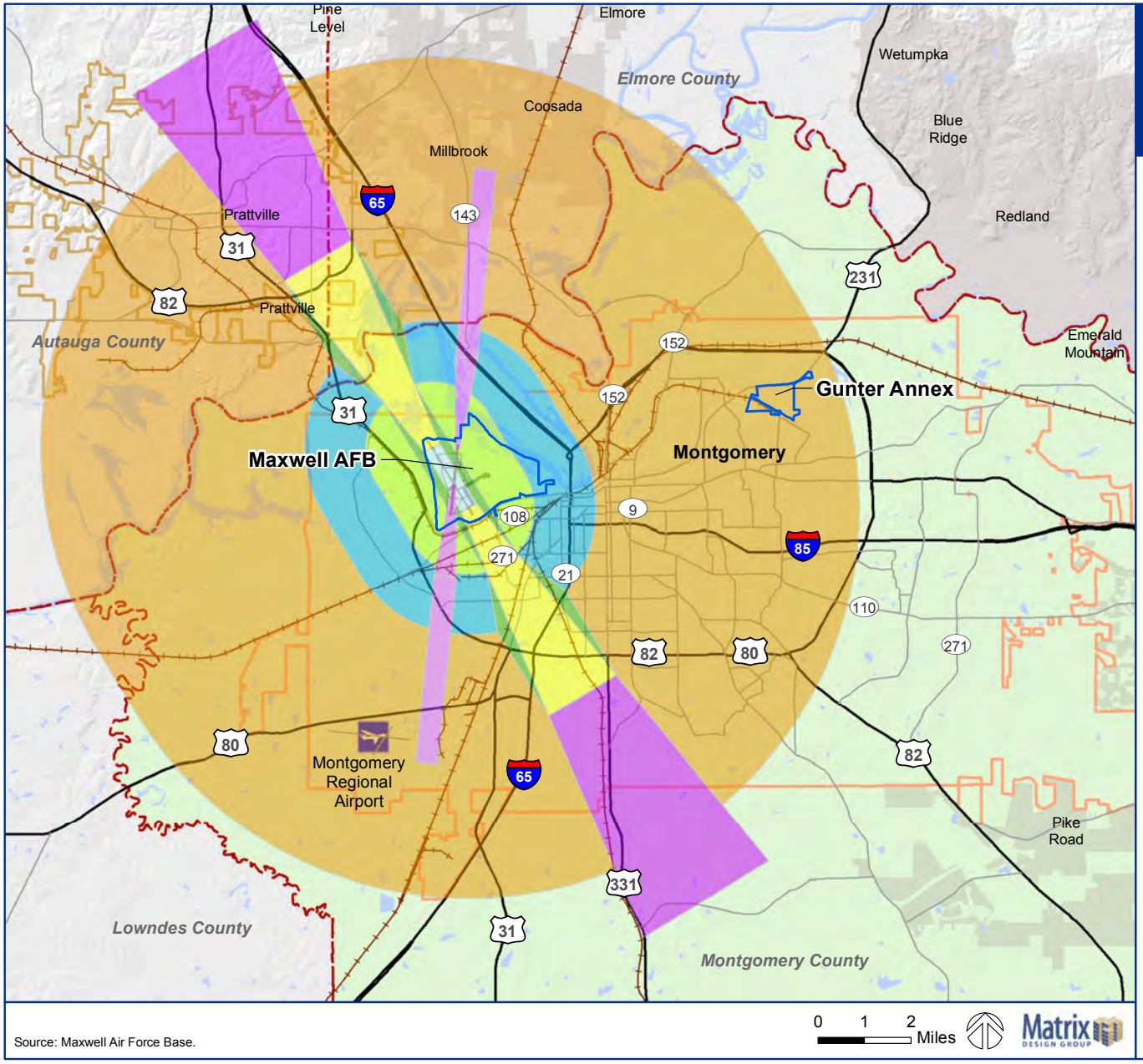


Figure 3-14

Maxwell AFB Imaginary Surfaces

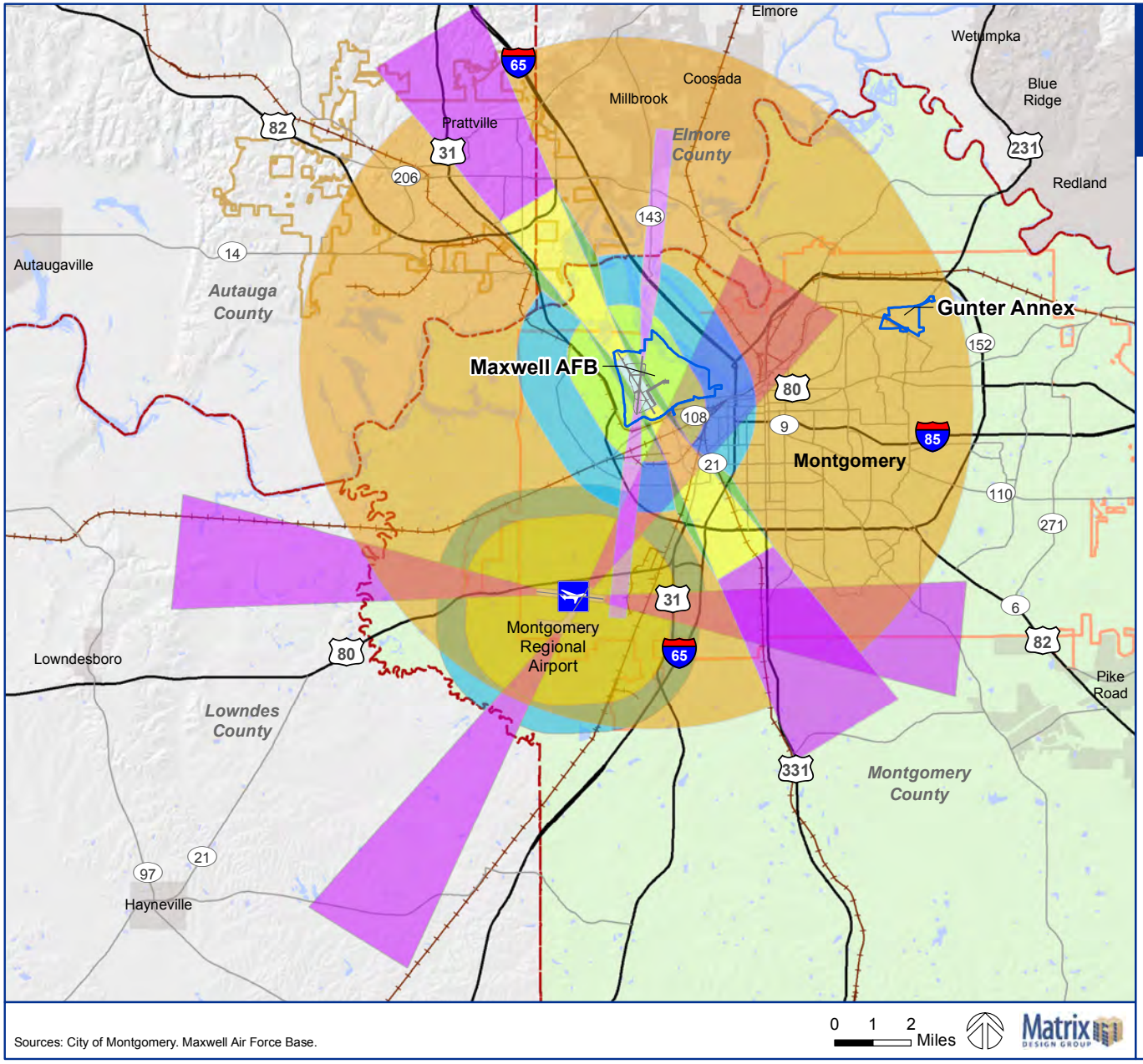
Legend

Airfield Imaginary Surface

- Primary Surface
- Approach/Departure Clearance Surface (50:1)
- Approach/Departure Clearance Surface (Horizontal) (Up to 500 feet)
- (LZ) Approach/Departure (35:1)
- Inner Horizontal Surface (150 feet)
- Conical Surface (20:1)
- Outer Horizontal Surface (500 feet)
- Transitional Surface (7:1)
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Montgomery Regional Airport
- Runway

Figure 3-15

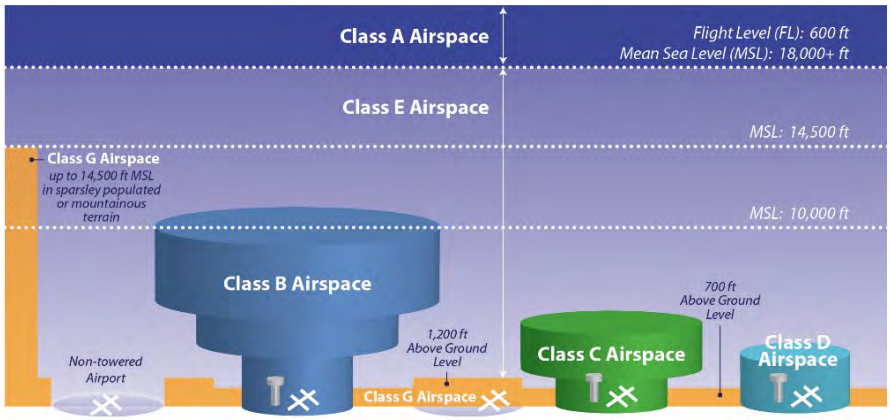
Imaginary Surfaces Comparison



Sources: City of Montgomery. Maxwell Air Force Base.

Airspace

To help controllers and pilots deal with varying traffic conditions in the sky, United States airspace has been divided into six different classes (A, B, C, D, E, and G), as illustrated in the graphic below. These different classes have different requirements for entry into the airspace, pilot qualifications, radio and transponder equipment, and Visual Flight Rules (VFR) weather minimums.



Airspace Classification in the United States Airspace System

Within the JLUS Study Area, Maxwell AFB and the MGM are surrounded by Class D airspace. This airspace classification requires an operational control tower, and that two-way communication is established prior to entry. Aircraft separation is maintained through a combination of the Montgomery Terminal Radar Approach Control, which is an FAA facility, and a control tower, located at Maxwell AFB.

Maxwell AFB's Class D airspace extends out five NM from the airfield and upward to 2,200 feet mean sea level (MSL). The proximity of MGM to Maxwell AFB is such that the southern portion of Maxwell AFB's Class D airspace and MGM's northern Class D air space overlap. Due to this overlap in airspace, the FAA designated a portion of the overlap to each airfield. Air operations are coordinated with the FAA and flight paths into and out of Maxwell AFB are integrated in order to minimize airspace conflicts at MGM. Figure 3-16 shows the Class D airspace as described above.

Source: Air Installation Compatible Use Zone Report, Maxwell Air Force Base, November 2009

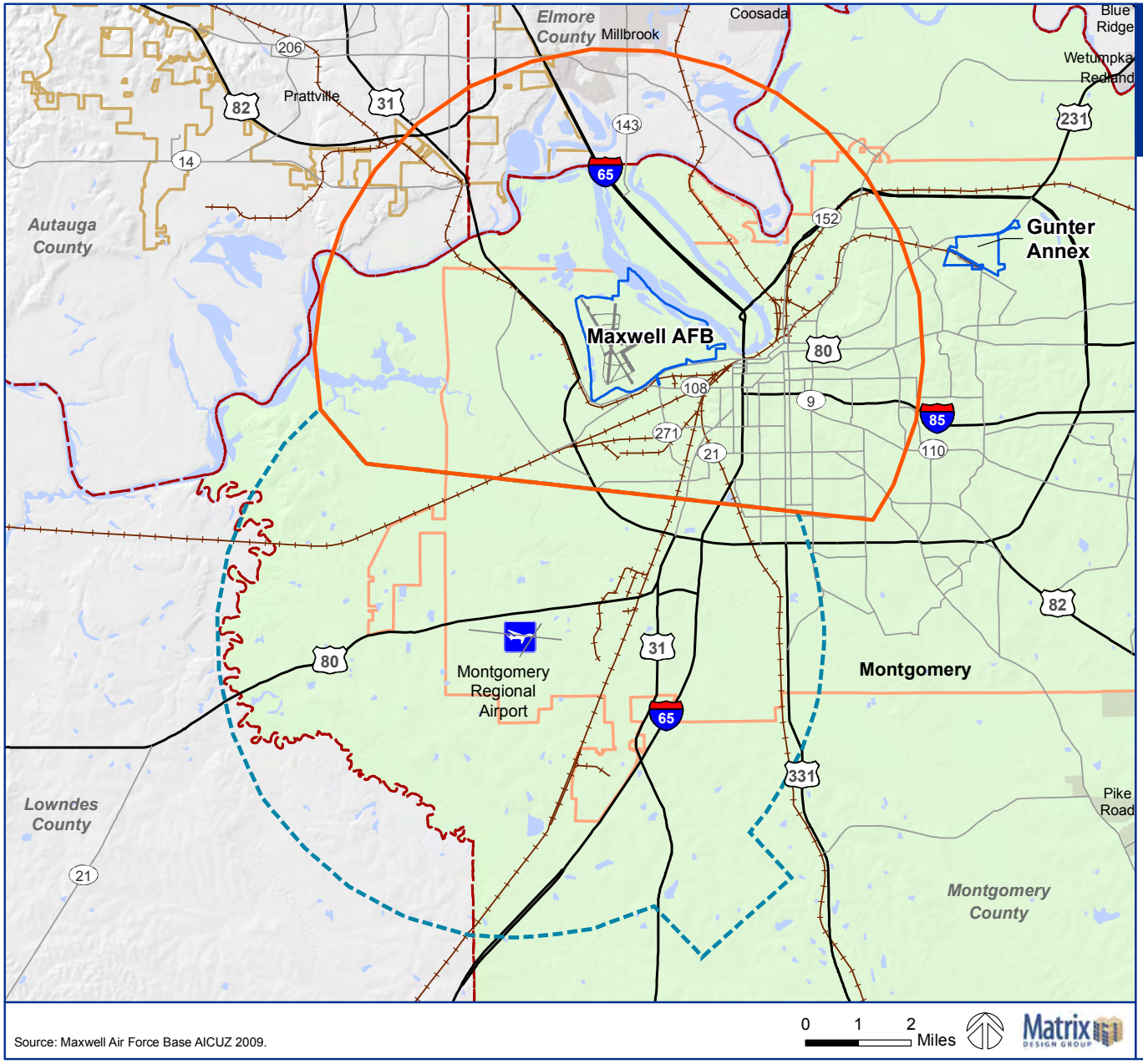
Military Training Routes

There are four military training routes (MTRs) for Maxwell AFB in the JLUS Study Area. MTRs are characterized by a centerline and a MTR corridor which can be anywhere from two NM to 10 NM wide, which equates to one to five NM on either side of the MTR centerline. The MTRs provide pilots that train within them the optimal space to perform the necessary mission operations in designated airspace with a separation between military and civilian activities. This is important to consider as adjacent land uses may be impacted. The degree of impact is dependent on many variables including weather, type of aircraft, and certain types of development. Table 3-2 provides information about the hours of operation, altitudes, and widths of Maxwell AFB's MTRs; Figure 3-17 illustrates the MTRs in the JLUS Study Area.

Four slow speed low altitude training routes (SR) are utilized near Maxwell AFB. SRs are low-level routes that are utilized at elevations at or below 1,500 feet AGL, at airspeeds of 250 knots or less. Mechanisms for communication with the military and civilian pilots regarding SR activity do not exist.

Figure 3-16

Maxwell Airspace Control



Legend

Class D Airspace Control

- Maxwell Air Force Base
- Montgomery Regional Airport

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Montgomery Regional Airport
- Runway

Table 3-2 Maxwell AFB Military Training Routes

Route	Hours	Altitude	Corridor Width
SR069	2:00 pm - 4:00 am	Day – at or above 500 feet AGL; Night – 1,000 feet AGL	Segments A – D are five NM on either side of centerline; Segment D - E is three NM left and five NM right of centerline; Segment E - F is five NM left and one NM right of centerline
SR070	2:00 pm - 4:00 am	Day – at or above 500 feet AGL; Night – 1,000 feet AGL	Segments A - B, C – F are three NM on either side of centerline; Segment B - C is three NM left and two NM right of centerline; Segment F - G is three NM left and one NM right of centerline
SR071	1:00 pm - 5:00 am	Segments A-E 300 feet to 1,500 feet AGL; Segments F, G 500 feet to 1,500 feet AGL	Segments A - B, D - E are five NM on either side of centerline; Segment B - C is five NM left and three NM right of centerline; Segment C - D is three NM left and five NM right of centerline; Segment E - F is three NM left and five NM right of centerline; Segment F - G is five NM left and one NM right of centerline
SR072	1:00 pm - 5:00 am	300 feet to 1,500 feet AGL	Segments C – D, E – H are five NM on either side of centerline; Segment A - B is one NM left and five NM right of centerline; Segment B - C is four NM left and three NM right of centerline; Segment D - E is five NM left and three NM right of centerline

Source: Area Planning, Military Training Routes Publication-North and South America, Effective 15 Nov 2012 – 9 Jan 2013.

Military Notification Area for Maxwell AFB and Gunter Annex

The Military Notification Area is an area that has been established and defined by the State of Alabama Military Land Use Planning Act. The City of Montgomery and Montgomery County are required to notify Maxwell AFB Gunter Annex of proposed adoptions and amendments of zoning ordinances, comprehensive master plans, or land development regulations that could impact any area or airspace within five miles of the boundaries of Maxwell AFB and two miles of the boundaries of Gunter Annex prior to a decision or approval.

This area has a dual purpose in that it is used for military notification, but for the purposes of this JLUS this is also the anti-terrorism / force protection area.

Bird / Wildlife Aircraft Strike Hazard Relevancy Area

Birds and animals can present a significant hazard to military flight operations known as the Bird / Wildlife Air Strike Hazard (BASH). Bird or animal strikes since 1980 have approached approximately 20,000 events that have resulted in two deaths, 25 aircraft destroyed and over $300 million in damage for the DOD.

According to the United States Avian Hazard Advisory System, there have been 175 bird strikes reported for Maxwell AFB since 2004. More recently, there were seven strikes in 2015, six strikes in 2014, and six strikes in 2013, respectively. Certain types of land uses attract birds and wildlife, such as open water areas, standing water, and other natural areas. The location of Maxwell AFB is not within a major flyway for migratory birds, but is in a suburban area that has numerous bodies of water both on- and off-base including the Alabama River, timbered areas, and farmland, all which increase the risk for BASH incidents.

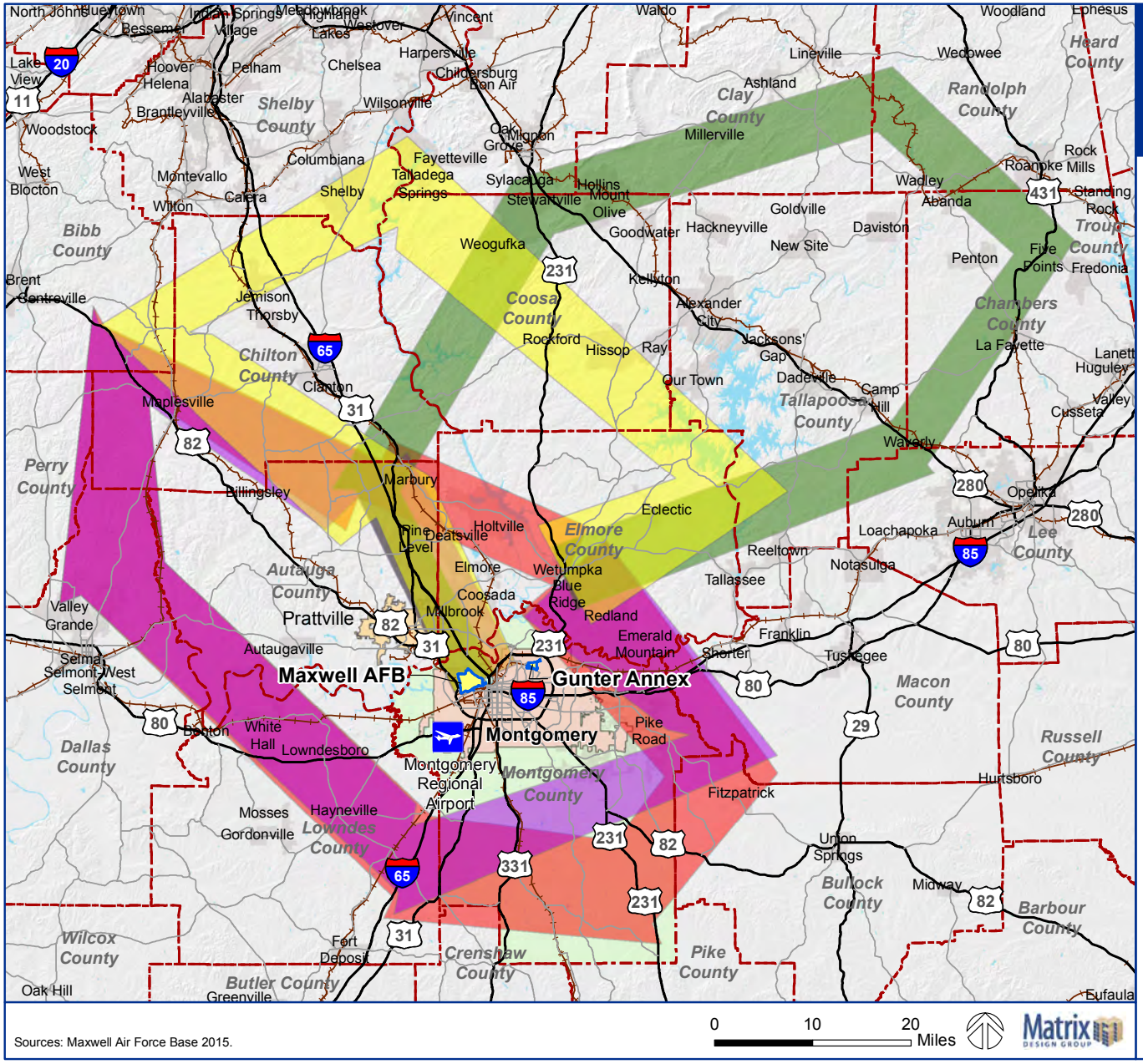


Figure 3-17
Maxwell AFB Military Training Routes

Legend

Military Training Routes
- SR069
- SR070
- SR071
- SR072

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

A BASH program has already been adopted by Maxwell AFB to reduce the impact of birds on aircraft operations. Figure 3-18 shows a five-mile radius around the Maxwell AFB airport operations area. Based on FAA statistical analysis, this is the primary area of concern for BASH incidents to occur, and the primary focus of compatibility planning for this issue.

Sources: Maxwell AFB BASH Plan, 2013; www.usahas.com

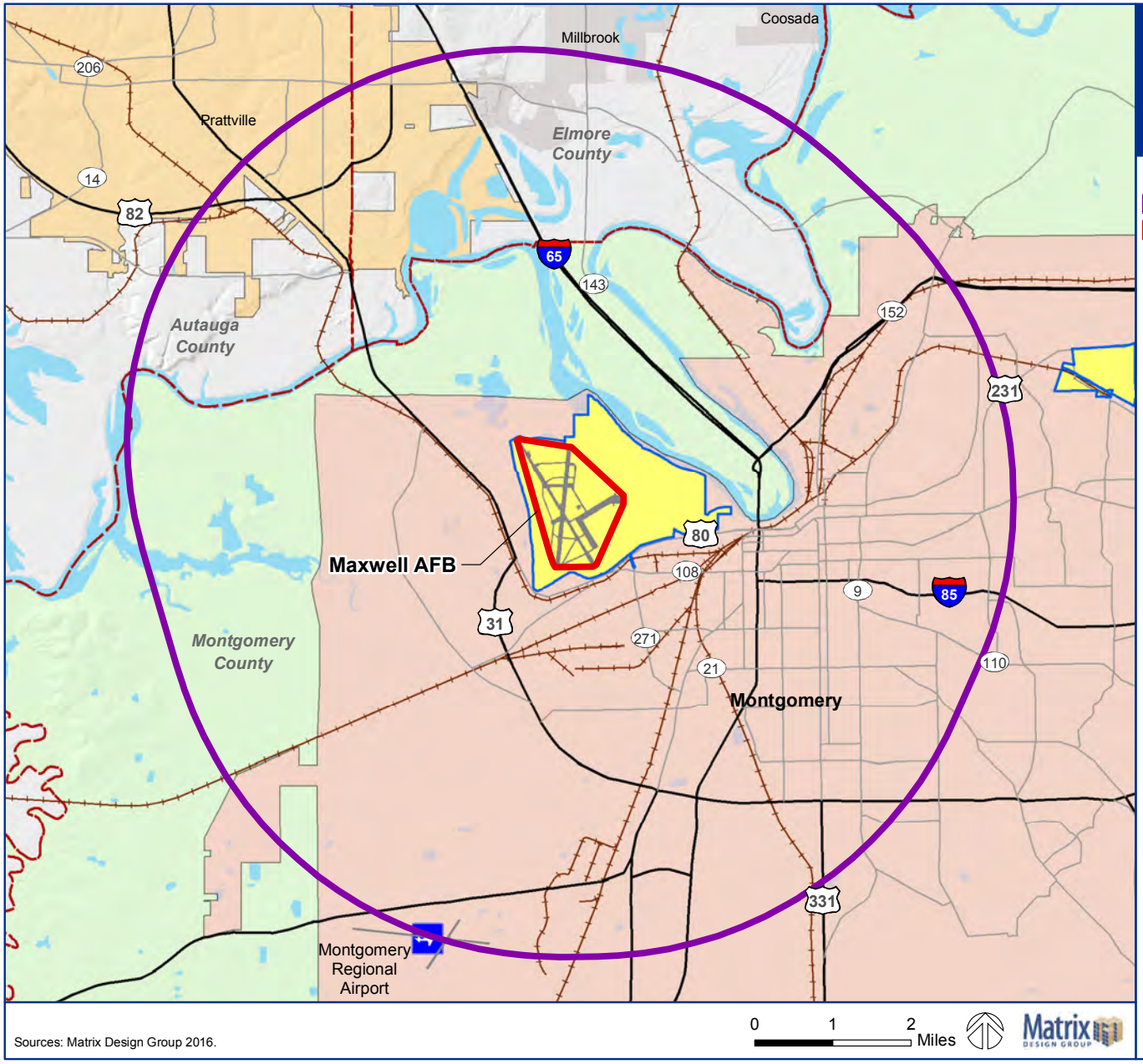


Figure 3-18

Bird Wildlife Aircraft Strike Hazard

Legend

- 5-mile BASH Relevancy Area
- Airport Operations Area
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

Please see the next page.

Compatibility Tools

4

Please see next page.

Compatibility Tools 4

Inside Chapter 4...

There are numerous existing tools that can be used to encourage, promote, and manage compatibility between military installations and their neighboring communities. These tools exist at the federal, installation, state, regional, and local levels and are used for compatibility purposes to guide every day land use and operational decisions in communities and on military installations. This chapter provides an overview of existing compatibility tools currently used in evaluating and addressing compatibility issues in the Montgomery-Maxwell AFB JLUS Study Area.

Three types of planning tools are evaluated relative to their applicability for addressing compatibility: permanent, semi-permanent, and conditional. Permanent planning tools include acquisition programs, for either fee simple purchase of property, or the purchase of development rights. Semi-permanent tools include regulations such as zoning or adopted legislation. Conditional tools include memorandums of understanding (MOUs), intergovernmental agreements (IGAs), and other policy documents such as comprehensive plans that can be periodically modified. This chapter is intended to identify applicable planning tools and to determine how each may apply to compatibility, as presented under the compatibility factors discussed in Chapter 5.

4.1. Federal Programs and Policies

The federal programs and policies are provided for by the various branches of the federal government. These tools authorize other federal, state, and local agencies to implement regulatory measures and policies to protect the multiple resources that are involved in land use and military compatibility planning. The intent of these regulatory measures and policies include the protection and preservation of the quality of life and general welfare of the public and the myriad of natural resources including land, water, and airspace.

These tools assist land use decision makers and planners of all levels of government to make informed decisions that enable compatible land use development between the military and the communities that benefit from the military's operations.

The following federal programs and policies were evaluated in the Maxwell AFB JLUS to assist in determining where areas of improvement could enable enhanced land use planning at the local level.

Air Force Instruction 10-707

Air Force Instruction 10-707 was published in June 2005 to implement the Spectrum Interference Resolution Program. The focus of the program is to resolve all electromagnetic interference at the lowest organizational level. It provides guidance on how to investigate and report interference from DOD, non-DOD, and other sources. The instruction establishes electromagnetic interference resolution, types of reports, and roles and responsibilities within the Air Force.

Air Force Instruction 90-2001

Air Force Instruction 90-2001 was published in September 2014 to implement the Encroachment Management Program. The Instruction applies to all Air Force installations to address encroachment issues and prevent or reduce the impacts of encroachment. The Instruction includes Encroachment Management Framework, which has four elements (Organize, Assess, Act, and Monitor) to address the variety of challenges. Organization involves leadership involvement, a cross-functional management structure, an issue evaluation structure, a designated Executive Director at the installation level, and a geographic scope. Assessment includes studying internal and external relationships and developing encroachment studies, such as an Installation Complex Encroachment Management Action Plan (ICEMAP). Acting involves the implementation of programs established to mitigate or minimize encroachment issues, and monitoring relates to maintaining an awareness, both on and off installation, of mission needs and encroachment issues. A draft internal ICEMAP was completed for Maxwell AFB in July of 2015; a date for the final has not been provided.

Clean Air Act

The Clean Air Act (CAA) of 1970, 42 U.S.C. 7401 et seq., amended in 1977 and 1990, is the primary federal statute governing air pollution. The CAA designates six pollutants as criteria pollutants, for which National Ambient Air Quality Standards (NAAQS) have been promulgated to protect public health and welfare. The six criteria pollutants are particulate matter ($PM_{2.5}$ and PM10), carbon monoxide, sulfur dioxide, nitrogen dioxide, lead, and ozone.

The CAA also gives EPA the authority to limit emissions of air pollutants originating from sources such as chemical plants, utilities, and steel mills. Individual states may have more stringent air pollution laws, but they may not have weaker pollution limits than those set by EPA. Under the law, states have to develop State Implementation Plans (SIPs) that outline how each state will control air pollution under the CAA.

States or regions may experience issues with elevated contaminant concentrations which could place them in a status of nonattainment for particular contaminants. There are many different contributors associated with the criteria pollutants, and some conditions can be exacerbated by vehicle exhaust, making it important for military bases with flying missions

to monitor the air quality conditions in their state and region. Areas that are in nonattainment may be impacted by restrictions placed on driving and air operations, as well as economically by restrictions placed on federal funding opportunities.

Clean Water Act

The Clean Water Act (CWA) governs the management of water resources and controls and monitors water pollution in the US. The CWA establishes the goals of eliminating the release of toxic substances and other sources of water pollution to ensure that surface waters meet high quality standards. In so doing, the CWA prevents the contamination of nearshore, underground, and surface water sources.

The CWA's scope is extensive and relates not only to drinking water but also to stormwater. Some states have rigorous regulatory programs, while others may have programs which meet only the minimum CWA requirements. In addition, the application of standards and requirements will vary in relationship to the physical setting (climate, topographic and soil conditions, etc.). Implementation of the CWA in and around a military facility can be either a hindrance to compatibility, a beneficial element, or perhaps even both simultaneously, depending upon the specific circumstances.

Per the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into US waters. Point sources are discrete conveyances such as pipes or man-made ditches. According to the law, individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters.

Comprehensive Environmental Response, Compensation, and Liability Act

This law was designed to assist in the clean-up of sites with hazardous contaminants in order to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):

- established prohibitions and requirements concerning closed and abandoned hazardous waste sites,
- provided for liability of persons responsible for releases of hazardous waste at these sites, and
- established a trust fund to provide for cleanup when no responsible party could be identified.

The CERCLA has relevance as a potential JLUS tool through the Superfund environmental program, established to address hazardous waste sites. Hazardous waste is sometimes present in or around military installations, particularly where munitions and ordnance are stored and used for training purposes, and if not disposed of properly could potentially be harmful to the installation tenants and surrounding communities. While the Superfund cleanup process may be complex, it protects communities and the environment from further contamination

Department of Defense Conservation Partnering Initiative

In 2003, Congress amended Title 10 U.S.C. §2684a and §2692a (P.L. 107-314), the National Defense Authorization Act, to add authority to the Department of Defense (DOD) to partner with other federal agencies, states, local governments, and conservation-based Non-Governmental Organizations (NGOs) to set aside lands near military bases for conservation purposes and to prevent incompatible development from encroaching on, and interfering with, military missions.

This law provides an additional tool to support smart planning, conservation, and environmental stewardship on and off military installations. The purpose of the program is to acquire real property interests, such as conservation easements or development rights to address current and potential encroachment or compatibility threats to an installation's mission.

Readiness and Environmental Protection Integration

To implement the authority provided by the Department of Defense Conservation Partnering Initiative, the DOD established the Readiness and Environmental Protection Integration (REPI). This initiative enables the DOD to work with state and local governments, NGOs, and willing landowners to limit encroachment and incompatible land use.

REPI funds are used to support a variety of DOD partnerships that promote compatible land use. By relieving encroachment pressures, the military is able to test and train in a more effective and efficient manner. By preserving the land surrounding military installations, habitats for plant and animal species are conserved and protected.

The REPI gives local agencies the opportunity to partner with the military and other local agencies. This could allow for the establishment of buffers around the base to assist in the protection of the military mission. Currently, Maxwell AFB does not have any REPI projects in process.

Department of Defense Operational Noise Manual

The Operational Noise Manual provides a practical reference for military and civilian personnel with duties and responsibilities in operational noise management. The manual assists personnel to understand and implement current DOD environmental policy and guidance. The majority of the manual is devoted to the following subjects: Characteristics of Sound; Effects of Noise; Military Noise Sources; Noise Monitoring; Reduction of Noise Conflicts and more.

Department of Defense Energy Siting Clearinghouse

Section 358 of the 2011 National Defense Authorization Act pertains to studying the impacts of the development of new energy production facilities on military operations and readiness. The Energy Siting Clearinghouse serves to coordinate the DOD review of existing applications for energy projects. Several key elements of Section 358 include designation of a senior official and lead organization to conduct the review of energy project applications, a specific time frame for completion of a hazard assessment associated with an application (30 days), specific criteria for DOD objections to projects and a requirement to provide an annual status report to Congress. This legislation facilitates procedural certainty and a predictable process that promotes compatibility between energy independence and military capability.

Department of Housing and Urban Development Noise Regulation

The United States Department of Housing and Urban Development (HUD) has instituted policies through section 24 Code of Federal Regulations (CFR) Part 51 that are designed to promote the creation of controls and standards for community noise abatement by state and local governments. The focus of these regulations is to reduce noise levels within residential developments funded by HUD. Included among the various policies are:

1. A requirement that noise exposure and sources of noise be given adequate consideration as an integral part of urban environment in connection with all HUD programs, which provide financial support to planning;
2. A withholding of HUD assistance for the construction of new dwelling units on sites (which have or are projected to have unacceptable noise exposure), or are in runway Clear Zones or incompatible uses in Accident Potential Zones; and
3. Encouragement of modernization efforts for existing buildings in noise environments; and

4. Grants and allowances to state and local governments to provide acoustical privacy in multifamily dwellings through building design and acoustical treatment.

New housing construction assisted or supported by HUD must meet the exterior noise standards outline in the regulation. HUD funds may also be available to encourage noise abatement planning and acoustical treatment for proposed and existing incompatible land uses.

Approvals of mortgage loans from the Federal Housing Administration and the Veterans Administration are subject to this HUD circular. The circular sets forth a discretionary policy to withhold funds for housing projects when noise exposure is in excess of prescribed levels. Residential construction may be permitted within certain noise contours, provided sound attenuation is accomplished. The added construction expense of sound attenuation, however, may make siting in these noise exposure areas financially less attractive. Because the HUD policy is discretionary, variances may also be permitted, depending on regional interpretation and local conditions. These new structures could then incorporate noise-inhibiting features into their design and construction when using these loans.

Endangered Species Act

The Endangered Species Act (ESA) establishes a program for the conservation of threatened and endangered plants and animals and their habitats. The US Fish and Wildlife Service (USFWS) and National Oceanic and Atmospheric Administration (NOAA) are the lead implementing agencies of the ESA. The ESA requires federal agencies, in consultation with the USFWS and/or the NOAA Fisheries Service, to ensure that actions they "authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species." The law also prohibits any action that causes a taking of any listed species of endangered fish or wildlife. ESA provides a platform for the protection of critical habitat and species that may be at risk of extinction.

The Federal Government, through Maxwell AFB, must comply with this law including modifying training operations to protect endangered species on the installation.

EPA Climate Change Adaptation Plan

The Climate Change Adaptation Plan uses expert judgment, combined with information from peer-reviewed scientific literature on the impacts of climate change, to identify potential vulnerabilities. It presents priority actions that the Agency will take to begin integrating climate adaptation planning into its activities.

Federal Land Policy and Management Act of 1976

The Federal Land Policy and Management Act (FLPMA) established the authority for public agencies that possess public lands to manage and plan according to national and local interests. The law mandates that public lands identified for development shall uphold and protect the scientific, scenic, historical, ecological, environmental, and other values unique to specific geographies. This law provides the impetus for the various resource management plans developed and prepared for public agencies.

Federal Aviation Act

The Federal Aviation Act was enacted in 1958 to provide methods for overseeing and regulating the use of airspace over the United States. The Act requires the Secretary of Transportation to make long-range plans that formulate policy for the orderly development and use of navigable airspace. The intent is to serve the needs of both civilian aeronautics and national defense, but does not specifically address the needs of military agencies. Military planning strives to work alongside local, state, and federal aviation law and policies but sometimes must supersede these and other levels of government due to national security interests. The Federal Aviation Administration (FAA) was created as a result of the Act for a variety of purposes, including the management of airspace over the US.

Federal Aviation Act, Title 14, Part 77

FAA Regulation Title 14 Part 77, commonly known as Part 77, provides the basis for evaluation of vertical obstruction compatibility. This regulation determines compatibility based on the height of proposed structures or natural features in relation to their distance from the ends of a runway. Using the distance formula from this regulation, local jurisdictions can easily assess height restrictions near airfields.

Additional information on Part 77 is located on the Federal Aviation Administration Internet site at http://www.faa.gov/.

As of January 29, 2013, the main focus of Part 77.17 is to establish standards to determine obstructions within navigable airspace, typically within a certain distance from an airport or airfield. It defines an obstruction to air navigation as an object that is of greater height than any of the following heights or surfaces in the following manner:

- A height of 499 feet AGL at the site of the object.
- A height that is 200 feet AGL or above the established airport elevation, whichever is higher, within 3 nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length. This height increases in the proportion of 100 feet for each additional nautical mile of distance from the airport up to a maximum of 499 feet.
- A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.
- A height within an enroute obstacle clearance area, including turn and termination areas, of a federal airway or approved off-airway route that would increase the minimum obstacle clearance altitude.
- The surface of a takeoff and landing area of a civilian airport or any imaginary surface established under 77.19, DOD: 77.21, and heliports: 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.
- Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:
    - 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.
    - 15 feet for any other public roadway.
    - 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.
- 23 feet for a railroad.
    - For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

The FAA has also identified certain imaginary surfaces around runways that are used to determine how structures and facilities are evaluated. The levels of imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made. The dimension or size of an imaginary surface depends on the runway classification.

Integrated Cultural Resources Management Plan

Department of Defense Instruction 4715.3 and Air Force Instruction (AFI) 32-7065 require installations to develop an Integrated Cultural Resources Management Plan (ICRMP) as an internal compliance and management tool integrating the entirety of the cultural resources program with ongoing mission activities. As a component of the installation master plan, the ICRMP is the Base Commander's decision document for conducting cultural resources management actions and specific compliance procedures. It also allows for ready identification of potential conflicts between the US Air Force (USAF) mission and cultural resources, and identifies compliance actions necessary to maintain the availability of mission-essential properties and acreage.

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 is a federal law establishing a US national policy to promote the protection and enhancement of the environment and requiring federal agencies to analyze and consider the potential environmental impact of their actions. The purpose of NEPA is to promote informed decision-making by federal agencies by making detailed information concerning significant environmental impacts available to both agency leaders and the public.

All projects receiving federal funding, requiring a federal permit, or occurring on federal property require NEPA compliance and documentation. NEPA is applicable to all federal agencies, including the military. Not all federal actions require a full Environmental Impact Statement (EIS). In some cases, an action may not cause a significant impact, whereby an agency is only required to prepare an Environmental Assessment (EA).

A NEPA document can serve as a valuable planning tool for local planning officials. An EA or EIS can assist in the determination of potential impacts that may result from changing military actions or operations and their effect on municipal policies, plans and programs, and the surrounding community. Public hearings are required for all EIS documents released under NEPA.

NEPA requires publishing a draft EA and subsequent Finding of No Significant Impact (FONSI) and allowing public comment for a period of 30 days. An EA may result in a FONSI or Record of Decision concluding that the action will have a significant impact and an EIS is required. The information obtained by the EA / EIS is valuable in planning coordination and policy formation at the local government level.

The NEPA mandates that the military analyze the impact of its actions and operations on the environment, including surrounding civilian communities. Inherent in this analysis is an exploration of methods to reduce any adverse environmental impact. The EIS is a public process that encourages community participation by all stakeholders.

National Pollutant Discharge Elimination System

Pursuant to the CWA, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources such as pipes or man-made ditches that discharge pollutants into US waters. According to the law, individual homes that are connected to a municipal system, use a septic system, or do not have a surface discharge do not need an NPDES permit; however, industrial, municipal, and other facilities must obtain permits if their discharges go directly to surface waters. Traditionally, NPDES focused on point sources; however, more recently the focus has shifted to nonpoint sources. Nonpoint sources generally include street flow runoff from pavement, agricultural fields and lawn areas, which by their nature, are more difficult to regulate.

Noise Control Act of 1972

The Noise Control Act of 1972 identified that noise not adequately controlled has the potential of endangering the health and welfare of people. It states that all Americans are entitled to an environment free from noise that can jeopardize their general health and quality of life. Along with state, local, and territorial governments, actions from the federal government were needed to ensure that the objectives of the Act were met.

Concurrently, military installations were experiencing the impacts from encroaching urban development located adjacent to the installation and the resulting complaints regarding noise from military flight operations. The DOD responded by establishing the AICUZ program which was subsequently adopted by the Air Force as AFI 32-7063.

The Noise Control Act and the AICUZ program are important because encroaching development and increased population near military installations often creates compatibility concerns. As communities grow, it is important that the military installation, developers, and the communities work together to mitigate the issue of noise and develop ways to coexist.

National Historic Preservation Act of 1966

The National Historic Preservation Act (NHPA) of 1966 requires federal agencies to consider the effects of a proposed project on properties listed in, or eligible for listing in, the National Register of Historic Places (NRHP). Because no specific action is being proposed as part of this planning process, the review of cultural resources is focused on the identification of existing resources and not potential effects that would result from a specific proposed action.

Partners in Flight Program

The DOD has implemented a program entitled Partners in Flight that sustains and enhances the military testing, training, and safety mission through habitat-based management strategies. The program assists natural resource managers in monitoring, inventory, research, and management of birds and their habitats. As part of the Partners in Flight program, a strategic plan is created that can be incorporated into a Bird/Wildlife Aircraft Strike Hazard (BASH) plan. This program reaches beyond the boundaries of the installation to facilitate community partnerships and determine the current status of bird populations to prevent the further endangerment of birds.

Safe Drinking Water Act

The Safe Drinking Water Act (SDWA) is the main federal law that ensures the quality of drinking water in the United States. The SDWA authorizes the EPA to set national health-based drinking water standards to protect against both naturally-occurring and man-made water contaminants. The SDWA applies to every public water system in the US.

The Sikes Act

The Sikes Act requires the DOD to develop and implement Integrated Natural Resources Management Plans (INRMPs) for military installations, which was last updated in 2015 for Maxwell AFB. The INRMPs are prepared in cooperation with the USFWS and state fish and wildlife agencies to ensure proper consideration of fish, wildlife, and habitat needs. The Sikes Act requires INRMPs to be reviewed at least every five years by the military and the states. Air Force Instruction 32-7064, Integrated Natural Resources Management, guides the Air Force implementation of the Sikes Act.

US Avian Hazard Advisory System

The US Avian Hazard Advisory System (USAHAS) is a geographic information system-based bird avoidance model developed by the US Air Force used for "analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and manmade geospatial data." The model provides up-to-date information – "near real-time" – about bird activity and movements to assist pilots and flight planners in the scheduling and use of flight routes. The model can also be used as a forecasting tool to estimate bird strike risk. Information from the North American Breeding Bird Survey, Audubon Christmas Bird Count, bird refuge databases, and the US Air Force Bird-Aircraft Strike database as well as public domain information regarding landfill locations is used to formulate the bird activity and movement data. The model is available for use by agencies and the general public, accessible from the USAHAS website at http://www.usahas.com/.

4.2. Maxwell AFB Plans and Programs

The Maxwell AFB installation tools provide guidance for land uses and development activities on the installation. They also establish measures for standard operating procedures during certain events, such as a bird air strike hazard conditions and / or the parameters for conducting missions within the military operating area (MOA). These tools govern land use decisions that occur within the boundaries of the base and its operating facilities.

Air Installation Compatible Use Zone

The United States DOD initiated the AICUZ program to assist government entities and communities in anticipating, identifying, and promoting compatible land use and development near military installations with aircraft activity. The AICUZ program involves coordinating the efforts of installation commanders and local community leaders and other government agencies to encourage compatible development of land in proximity to military airfields. It also serves to protect the health, safety, and welfare of civilians and military personnel by encouraging land development compatible with aircraft operations, while protecting the public investment in the installation. This program recommends compatibility measures and land uses that are compatible with specific elements of military airfields including elevated sound levels, accident potential zones, and obstruction clearance criteria.

The four primary elements of the AICUZ are:

1. Noise Zone Footprint. Noise zones are classified into three categories: Zone I - noise in this area is compatible with most noise sensitive land uses, Zone II - noise is usually incompatible with noise-sensitive land uses, and Zone III - noise is incompatible with noise-sensitive and other land uses.
2. Health, Safety, and Welfare. These factors seek to reduce the nuisance of excessive noise generated by aircraft operations and public danger by discouraging the development of incompatible land uses such as businesses and housing in Accident Potential Zones (APZs).
3. Public Investment. Promoting compatibility between a military installation and local communities safeguards military operations and protects the public's investment in the installation.
4. Public Awareness and Communication. By working with the community and informing local citizens of operations and safety measures, the military can promote safety for community residents. As local leaders work with military officials to adopt compatible development practices, their relationship is strengthened through the resolution of mutual concerns.

Noise Zone Profile

Noise is the cornerstone of the AICUZ Report. The noise generated by military aircraft operations and the effects of that noise on local communities are presented in a variety of ways in the report (e.g., written text, graphically, etc.). To fully appreciate the findings and recommendations presented in the AICUZ Report, it is beneficial to provide an understanding of how military aircraft noise is measured, evaluated, and graphically illustrated. The main sources of noise at airfields are flight operations, which include take-offs, landings, touch-and-go operations, and engine maintenance run-ups. The Air Force considers how its operations impact the local community by calculating the day night average sound level (DNL). The DNL is a measure of noise commonly used surrounding a military installation. The DNL averages the noise levels of all aircraft operations that occur within a 24-hour period. The DNL is depicted as a contour around a noise source connecting points of equal value, usually in 5-decibel (dB) increments.

Safety Zones

As part of the AICUZ program, and to aid in land use planning surrounding military bases, the DOD established safety zones. These are defined as the Clear Zone (CZ), Accident Potential Zone I (APZ I), and Accident Potential

Zone II (APZ II). These zones are determined using a statistical analysis of all DOD aircraft accidents. APZs follow departure, arrival, and pattern flight tracks and are based on historical data.

The 2009 Maxwell AFB AICUZ Report is an update to the 1998 Maxwell AFB AICUZ Report. It presents a description of the current noise environment around Maxwell AFB. It reaffirms the Air Force policy of promoting public health, safety, and general welfare in areas of close proximity to Air Force (AF) installations. This report identifies changes in flight operations that have occurred since the 1998 report, and provides current noise zones and compatible use guidelines for land areas adjacent to the installation. It is provided as a tool to assist local communities in future land use planning and zoning activities. Changes that required an update of the AICUZ report include:

- number and type of aircraft at Maxwell AFB,
- installation of quieter aircraft engines,
- changes in the arrival and departure frequencies for all aircraft,
- changes in flight patterns with the additional aircraft and noise abatement procedures,
- operational mission requirements and AF reorganization, and
- improvements to the NOISEMAP program.

Bird / Wildlife Aircraft Strike Hazard Plan (BASH)

The purpose of a Bird / Wildlife Aircraft Strike Hazard (BASH) plan is to minimize wildlife and bird strike damage to military aircraft. A BASH plan is designed to alert aircrew and operations personnel and provide increased levels of flight safety, especially during the critical phases of flight, take-off, and landing operations. Specifically, the plan is designed to:

- Designate a Bird Hazard Warning Group (BHWG) and outline the members' responsibilities,
- Establish procedures to identify high hazard situations and establish aircraft and airfield operating procedures to avoid these situations,
- Ensure that all permanent and transient aircrews are aware of bird hazards and the avoidance procedures, and
- Develop guidelines to decrease the attractiveness of the airfield to birds and disperse the number of birds on the airfield.

Maxwell AFB last fully updated its BASH Plan in 2013 with revisions as recent as January 2015.

Installation Complex Encroachment Management Action Plan

Maxwell AFB's Installation Complex Encroachment Management Action Plan (ICEMAP) was developed to satisfy the Air Force Instruction 90-2001, Encroachment Management, which requires installations that do not have the resources available to conduct an external ICEMAP, to develop an internal ICEMAP during the interim. The draft internal ICEMAP was developed in July 2015. ICEMAPs are designed to assist AF installations to identify and mitigate existing encroachments, while also preventing the potential for future impacts associated with encroachment. ICEMAPs establish an action plan for reducing encroachment on AF installations and on the community. Maxwell AFB's ICEMAP identified fourteen current and one potential encroachment issue which impact, or could potentially impact Maxwell AFB's mission. Issues identified in the ICEMAP include: constrained airspace, on-base structures in APZ-LZ, the lack of permanent drop zones, increase in vertical obstructions, airspace competition, force protection, noise, flooding, and cultural resources constraints.

Installation Development Plan

The Installation Development Plan (IDP) is a long-term development vision for Maxwell AFB. The 2015 plan was designed to identify goals relating to land use planning, infrastructure, sustainably, growth, and modernization; reference constraints and opportunities to meeting these goals; envision the future of the installation; and establish a plan for implementation. The IDP was created through the efforts of multiple stakeholders.

Source: Installation Development Plan Maxwell Airforce Base, Alabama, 2015

Natural Resources Plan

Maxwell AFB is not required to maintain an integrated Natural Resource Management Plan, but is required to maintain a Natural Resource Plan (NRP) as a designated Category II installation. Category II installations lack significant natural resources and have limited natural resource land base, and as such are not required to develop a traditional integrated natural resources management plan. The main goals of the NRP are to promote the protection of natural resources at Maxwell AFB, to integrate all aspects of the management of natural resources, to maintain goals for the management of natural resources that are consistent with the military mission, and to ensure that there is no net loss in the capability of land within the installation to support the military mission The NRP provides management direction for environmental and natural resource programs at Maxwell AFB and Gunter Annex, and identifies activities that promote conservation and rehabilitation of natural resources. Maxwell AFB's NRP was last updated in 2015.

The NRP was created to ensure long range habitat protection and natural resource management at the installation. The NRP outlines various natural resources including threatened and endangered species and important habitat, management of noxious weeds, wildlife and riparian management, water resources, interagency responsibilities and coordination efforts, and the overall management plan for natural resources at Maxwell AFB and Gunter Annex to ensure no loss of capability for training exercises. The plan utilizes a no-net-loss approach to protect habitat and natural resource quality. The NRP is reviewed annually by the installation natural resources planner, and management programs and actions are updated as necessary.

Memorandum of Understanding Between the Cities of Millbrook, Montgomery, and Prattville, the Counties of Autauga, Elmore, and Montgomery and Maxwell Air Force Base for Zoning and Land Use Change Notifications

Pursuant to the Military Land Use Planning Act, the memorandum of understanding (MOU) establishes provisions for notification and coordination of proposed zoning changes, comprehensive master plans, or land development regulations that could impact military operations. The MOU would require notification from the participating jurisdictions of zoning and land use changes to the military with in five nautical miles of Maxwell AFB's runway centerline and two miles from the Gunter Annex boundary. The MOU would also require local governments to give a 30-day notice to the military of proposed land use and zoning changes prior to any public hearings or final decisions being rendered.

A review of the MOU has identified the following concerns related to military compatibility:

- Does not include all potential land use actions including transportation and utility expansion; and
- Does not provide phone numbers and email addresses for all points of contact.

4.3. State of Alabama Plans and Programs

The state tools provide further assistance and protection of land uses in the State of Alabama. The tools authorize or mandate local counties and cities to provide for the protection of the state's valuable industries including the DOD and agriculture. In addition, the state's plans and programs require communities and developers to protect and preserve the state's natural resources, including land and water, by establishing further regulatory measures to ensure the natural environment is preserved and protected from over- consumptive practices.

The following state tools were analyzed:

- Military Land Use Planning Act
- Land Division Hazardous Waste Program, Division 14
- Alabama Code Section 11-52-30, Territorial Jurisdictions
- State of Alabama Building Commission – Building Code

Military Land Use Planning Act

The Military Land Use Planning Act of 2014 is codified in Title 11, Article 3, Chapter 106, Sections 11-106-1 through 11-106-5 in the Code of Alabama. The Act states that local governments should "cooperate with military installations located within the state in order to encourage compatible land use, help prevent incompatible encroachment upon military installations, and facilitate the continued presence of major military installations within the state". The legislation requires local governments whose jurisdictional boundaries are within two miles of a military installation to notify affected installations of proposed land use changes and to allow installations 30 calendar days to comment on proposed land use changes and before any final action is taken or any public hearing is scheduled.

The Act was amended to add Section 11-52-8 of the Alabama Code, which requires municipalities to acknowledge and show military installations in any master plans and relevant maps that are adopted by municipal planning commissions.

Source: Military Land Use Planning Act, 2014

Alabama Code § 11-52-30, Territorial Jurisdictions

Alabama State Code Section (§) 11-52-30 requires that all municipalities in the state that have municipal planning commissions shall include all land within its corporate limits and all land within five miles of the corporate limits and not located in any other municipality. When two or more municipalities overlap each other, then each municipality shall terminate the boundary line equidistant from each municipality's corporate limits. This is important to the JLUS to understand the limits of authority for the cities of Montgomery and Prattville.

State of Alabama Building Commission – Building Code

The Alabama Building Commission is the statewide authority for building in the State of Alabama and as such administers and enforces the codes and standards for which the built community must comply with to ensure sound building construction practices in the state. The current building codes that have been adopted and are enforced by the State of Alabama are:

- 2009 International Building Code
- 2009 International Plumbing Code
- 2009 International Mechanical Code
- 2009 International Fuel Gas Code
- 2009 International Fire Code
- 2011 National Electric Code

The building codes are used by the cities of Montgomery and Prattville to assist in the orderly development of the area.

4.4. Regional Plans and Programs

Central Alabama Regional Planning and Development Commission

The Central Alabama Regional Planning and Development Commission (CARPDC) is the regional organization for the Counties of Autauga, Elmore, Montgomery and Tallassee, the Cities of Millbrook, Montgomery, Prattville, and Wetumpka, and the Towns of Coosada, Elmore, and Pike Road. The CARPDC studies regional issues of mutual interest with the objective of guiding the development of policy and making recommendations to carry out programs and projects to benefit the member governments. The CARPDC provides technical and planning assistance to the City and County and coordinates regional planning initiatives with all relevant levels of government.

Central Alabama Economic Development District Comprehensive Economic Development Strategy

The Comprehensive Economic Development Strategy (CEDS) for the Central Alabama Economic District, including Autauga, Elmore, and Montgomery counties was adopted in November of 2014. The purpose of the CEDS is to unite public and private sector partners at the regional level to develop goals to foster economic competitiveness within the region. The strategy looks at the demographic and socioeconomic trends, natural resources, regional infrastructure, and economic characteristics. The CEDS identifies several strategies for encouraging growth and development within the region that is consistent with the organizational vision, including:

- Promoting the transportation corridors along the I-65 and the I-85 for industrial recruitment and development;
- Supporting the planning and development of new industrial and commercial parks and sites within the region; and
- Enhancing the recreation and tourism through the continued development and expansion of the regional trails system, and other forms of recreational trails.

Several partners and resources for economic development were identified in addition to local jurisdictions, state agencies, and economic development organizations, including several private corporations.

Maxwell AFB was not included in the development of the regional strategy for economic development, even though it is identified as an asset needing protection, and as the top economic generator for the region.

South Central Alabama Development Commission Comprehensive Economic Development Strategy

The CEDS for the South Central Alabama Development Commission (SCADC), including Bullock, Butler, Crenshaw, Lowndes, Macon, Montgomery, and Pike counties was adopted in August 2012 and updated in August 2014. The CEDS provides an overview of the region's assets and economic development opportunities. The key issues identified for the region include:

- Need for workforce development and education to meet the higher demands of new industry;
- Improved transportation, including rural and public transportation;
- Housing and retail to support expected job growth; and
- Growth management in rural communities.

Some strategies for SCADC's goal to promote economic growth that is focused on industrial and commercial recruiting, tourism development, resident industry retention, and entrepreneurial development in the region include:

- Participate in rural development councils, conservation and development projects, and similar undertakings;
- Continue implementation, maintenance, upgrades, and expansion of regional GIS; continue acquisition, development, and updating of GIS data; and provide GIS services for the purposes of economic development;
- Coordinate with economic development organizations to support and foster economic development in the region;
- Promote Downtown and other growth center development, government facilities and tourism;
- Facilitate the development of growing clusters, including automotive, timber and agriculture products, higher education, and others.

Some strategies for SCADC's goal to balance and manage community and economic development with conservation in and orderly and efficient manner in the region include:

- Provide technical assistance and support to local planning, zoning, districting, and annexation efforts;
- Promote a framework for growth and development to include community, county and regional concepts for growth, development and revitalization; and
- Increase the use of new and innovative planning and zoning codes, including training and continued education for planning commissions and others.

Maxwell AFB was not included in the process of CEDS development, or identified as an entity that should be included in the strategies related to multi-jurisdiction or agency coordination.

4.5. Local Jurisdiction Plans and Programs

The planning tools used by the study area jurisdictions were analyzed and categorized as permanent, semi-permanent, or conditional. In Alabama, authority to regulate land use is delegated by the state to counties and municipalities. The nature of a jurisdiction's authority to regulate local land use depends on that jurisdiction's local government.

The following planning tools are discussed for each jurisdiction in the JLUS Study Area:

- comprehensive plan;
- zoning (including lighting and height);
- building codes;
- subdivision regulations; and
- other (additional tools, as applicable).

Table 4-1 provides a summary of the existing planning tools by jurisdiction and their ability to address military compatibility.

Table 4-1. County and City Planning Tools

Jurisdiction	Comprehensive Plan	Zoning Code Height Restrictions	Zoning Code Density	Zoning Code Sound Attenuation	Zoning Code Outdoor Lighting	Subdivision Regulations	Building Codes
Montgomery County	■	■	■	■	■	■	■
City of Montgomery	■	■	■	■	■	■	■
City of Prattville	■	■	■	■	■	■	■

Legend:

■ = The tool exists but does not address land use issue(s) related to military compatibility.

■ = The tool exists but only partially addresses land use issue(s) related to military compatibility.

■ = The jurisdiction does not employ this tool.

In Alabama, counties have land use authority that is limited to subdivision ordinances on unincorporated lands and zoning on unincorporated lands in areas that are prone to flooding. Municipalities have been granted the authority through state code to prepare and adopt a comprehensive plan, zoning ordinance, and subdivision regulations. Municipalities are not required by the State of Alabama to adopt zoning ordinances, but are permitted at the discretion of the municipality.

The primary tools used by the municipal governments in the Montgomery-Maxwell AFB JLUS Study Area are the comprehensive plan, and zoning ordinances.

These tools are supplemented in some jurisdictions by special area plans, where additional development guidelines are established unique to the special conditions or circumstances of a particular geographic area. Building codes provide building-specific regulations to ensure the health, safety and welfare of occupants within a structure and may include performance standards for sound attenuation between the exterior environment and interior spaces.

Montgomery County

The following is a review of the existing planning tools utilized by the County of Montgomery along with a brief analysis identifying their ability to address land use and military compatibility, and where potential improvements can be made.

Montgomery County Comprehensive Plan

Montgomery County has not adopted a Comprehensive Plan.

Zoning Ordinance

Montgomery County has not adopted a zoning ordinance.

Montgomery County Subdivision Regulations

Montgomery County has not adopted subdivision regulations.

Montgomery County Hazard Mitigation Plan

Montgomery County's draft Hazard Mitigation Plan (HMP) was updated in 2015. The HMP is a multi-jurisdictional, multi-hazard, mitigation plan which meets the requirements set forth by the Federal Disaster Mitigation Act of 2000, necessary for meeting the Federal Emergency Management Agency (FEMA) criteria for grant assistance in times of emergency. The HMP covers all incorporated and unincorporated land in Montgomery County, the City of Montgomery, and the Town of Pike Road, and identifies strategies to address hazards in the area. The HMP prioritized mitigations for flooding as the number one priority for all three jurisdictions. Flooding in this part of Alabama is identified by three types, including: general flooding, which is typically associated with developments that have encroached into flood-prone areas; stormwater runoff, which occurs where drainage systems are inadequate; and flash flooding, which generally occurs when large amounts of rain falls within a short period of time.

Several mitigation actions were identified in the HMP for flooding, including:

> *Investigate the potential for a land trust to acquire open space and purchase easements in vulnerable locations, such as flood plains;*
>
> *Evaluate the effectiveness of higher regulatory standards, regarding building elevations and limits on fill within flood plains, to be included in flood plain regulations;*
>
> *Feasibility study for a regional greenways demonstration project; and*
>
> *Support the establishment of a statewide technical assistance program to develop best management practices for channel and drainage system maintenance.*

A review of the HMP identified the following concern related to military compatibility:

- The Hazard Mitigation Planning Committee did not have representation from Maxwell AFB.

Source: Montgomery County Hazard Mitigation Plan (Draft), 2015

City of Montgomery

The following is a review of the existing planning tools utilized by the City of Montgomery along with a brief analysis identifying their ability to address land use and military compatibility, and where potential improvements can be made.

The Comprehensive City Plan of Montgomery

The Comprehensive City Plan of Montgomery was adopted in July 1963 and is organized into six different topics, they are:

- People & Economy,
- Economic Analysis Central Business District,
- Land Use,
- Community Facilities,
- Transportation, and
- Public Improvements.

While the comprehensive city plan serves as the guiding document for the city, it is over 50 years old and does not include guidance and a framework for the coexistence between the city and military.

The plan provided an initial foundation for the various land uses that are located in the city including residential, commercial, public facilities, industrial uses and undeveloped / agricultural uses. At the time the plan was prepared, there was a breakdown of how much of the land was developed and undeveloped separated into two categories including within the City of Montgomery and the Central City.

A review of the Comprehensive City Plan has identified the following concerns related to military compatibility:

- The city's plan does not incorporate the latest military compatibility guidelines for land use planning.
- The city's plan is over five decades old and does not reflect the current environment and growth of the city.

Zoning Ordinance of the City of Montgomery

The Zoning Ordinance of the City of Montgomery was initially adopted by the City Council in September 1963; however, the ordinance was last amended in August 1985. The zoning ordinance divides the land within the city into 28 districts comprised of traditional zoning districts including residential zones, business district zones and commercial, industrial, and agricultural zones.

The ordinance designates the area within two miles of Maxwell AFB to be an airport hazard area. Within this area, general district regulations apply with the addition of some modifications to height regulations. Generally, the airport hazard area recognizes that natural-made structures (trees) are a hazard to safe navigable airspace, and as such trees are incorporated into the height restrictions for these areas. No tree or structure is permitted to exceed 35 feet in the Agricultural 1 and 2 Districts. Additionally, structures in the Industrial District (M-3) including trees are not permitted to exceed a height of 45 feet. Finally, no exceptions to height restrictions in Article I (8) of the zoning ordinance are allowed in this airport hazard area without the approval of the Board of Adjustment.

A review of the zoning ordinance has identified the following concerns related to military compatibility:

- While the heights for the airport hazard area are typically compatible, the zoning ordinance does not incorporate the Imaginary Surfaces and the FAA Part 77 guidance.
- Densities for residential uses and intensities for non-residential uses are not delineated for the airport hazard area.

- The zoning ordinance does not incorporate the most recent AICUZ guidance from Maxwell AFB.
- The airport hazard area does not contain guidance for lighting standards.
- The airport hazard area does not contain regulations for mitigating noise.

Montgomery Subdivision Regulations

Adopted in February 1985, the City of Montgomery established its subdivision regulations. The city's subdivision regulations establish design standards for non-residential, residential, and industrial subdivisions. Typical components are incorporated including site plan, location of utilities, location, sizes, and orientation of signs, location, height, and material of all walks, fences, and traffic analysis of the effect of mobility on nearby streets.

A review of the subdivision regulations has identified the following concerns related to military compatibility:

- The subdivision regulations do not incorporate a lighting plan for the non-residential, residential, and industrial subdivision plans.
- There is no stipulated coordination with the military or Maxwell AFB.
- There are no measures for sound attenuation practices identified.

Building Code of the City of Montgomery

The City of Montgomery adopted the 2003 International Building Code (IBC), which does not contain provisions specific to military compatibility, such as sound attenuation requirements for noise from external building sources.

City of Montgomery Tree Ordinance

Chapter 12, Article IV of the Zoning Ordinance is the City's Tree Ordinance, and it establishes the regulations for planting, maintenance, and removal of public trees within the city limits. While this tree ordinance assists the city in enforcing regulations for tree maintenance, planting, and removal, the ordinance's primary focus is trees on public property. This ordinance does not address tree maintenance on private property within the airfield safety zones.

City of Prattville

The following is a review of the existing planning tools utilized by the City of Prattville along with a brief analysis identifying their ability to address land use and military compatibility, and where potential improvements can be made.

City of Prattville Comprehensive Plan

The City of Prattville's Comprehensive Plan, Project Prattville, was adopted in October 2009. The Plan is broken into two sections, a City-wide Plan, and a Planning District Plan. The City-wide Plan includes sections on future land use, economic development, housing, transportation and circulation, and community facilities. The planning districts are specific to areas or corridors that are expected to experience high levels of change over the next decade, have a large concentration of commercial uses, are underserved by the community, contain a large amount of vacant or underdeveloped land, or have a high concentration of aging retail. The Planning District portion of the plan identifies 11 focused planning districts, including the Historic District, Intron Neighborhood District, Rural Neighborhood District, North Neighborhood District, and Conservation and Green Space.

A review of the comprehensive plan identified the following concern related to military compatibility:

- The Comprehensive Plan does not include goals, objectives, or policies for coordinating with Maxwell AFB.

City of Prattville Zoning Ordinance

The City of Prattville's Zoning Ordinance was adopted in February of 1950, and was last amended in 1991. Height regulations in Prattville are defined by the zoning districts, but do not apply to:

"church steeples, hospitals, sanitariums, barns, silos, farm structures, chimneys, flagpoles, public utility poles, radio and television towers and aerials, cooling towers, water tanks, and industrial structures when required by manufacturing process but not to exceed twenty-five percent of the area of the lot."

A review of the zoning ordinance identified the following concerns related to military compatibility:

- The ordinance does require building permits for antennas and structures greater than 45 feet in height.

Light regulations included in the ordinance relate to outdoor signage, and require lighting within or directed toward outdoor signs to be mounted in a way that affords screening of the light, or in some way prevents illumination of surrounding property and public right-of-way.

- The zoning ordinance does not include requirements for including Maxwell AFB in zoning or review processes.

City of Prattville Subdivision Regulations

The City of Prattville's Subdivision Regulation requires a review by the subdivision committee for conformance with existing city policy and the city's master plan. The subdivision regulations do not include military compatibility guidance.

Building Code of the City of Prattville

The City of Prattville adopted the 2009 IBC, which does not contain provisions specific to military compatibility, such as sound attenuation requirements for noise from external building sources.

4.6. Other References

In the interest of land use compatibility between the military and the local community, the DOD Office of Economic Adjustment (OEA) and other public interest groups, such as the National Association of Counties (NACo), have prepared educational documents and videos that educate and inform the public about encroachment issues and methods that can be used to address existing or future compatibility concerns. Five resources that have been published to inform the public on land use compatibility are identified as follows.

Guides

The Practical Guide to Compatible Civilian Development near Military Installations (July 2007), OEA

This guide offers general information on community development and civilian encroachment issues. The guide can be found at: http://www.oea.gov/.

Joint Land Use Study Program Guidance Manual (November 2006)

This manual provides guidance on the JLUS program, process, and efforts to support compatible development. This manual can be obtained on the OEA internet site at the following address: http://www.oea.gov/.

Encouraging Compatible Land Use between Local Governments and Military Installations: A Best Practices Guide (April 2007), NACo

This guidebook presents case studies of best practices between the military and communities through communication, regulatory approaches, and Joint Land Use Studies. The guide can be accessed on the NACo internet site at the following address: http://www.naco.org/.

State Policy Options: A Report of the National Conference of State Legislatures Task Force on Military and Veterans Affairs (January 2012)

This report provides state legislators and staff information about the range of policy options available to them to sustain their neighboring military installations and the associated testing and training operations. It is designed to encourage a greater understanding of the roles that state legislators, local government officials, land conservation organizations, and the military play in managing development near military bases and protecting natural resources and the health and safety of citizens. This report can be accessed at the

following address: http://www.ncsl.org/documents/environ/NCSL_State_Policy_Options_020112_FINAL.pdf.

Collaborative Land Use Planning: A Guide for Military Installations and Local Governments, International City / County Management Association and the Metropolitan Institute at Virginia Tech

This guide provides essential observations about land use policy and procedures, discusses critical questions, and suggests model practices for military commanders to build stronger relationships with local policymakers and planning officials. This guide can be accessed at the following address: https://www.fedcenter.gov/_kd/Items/actions.cfm?action=Show&item_id=7667&destination=ShowItem.

Working with Local Governments: A Practical Guide for Installations, (May 2012), International City / County Management Association and the National Association of Counties

This guide provides a primer on how local governments operate and what installation personnel can do to engage state and local governments in dialogue on compatibility issues. The guide can be accessed from the following address: https://www.fedcenter.gov/_kd/Items/actions.cfm?action=Show&item_id=6203&destination=ShowItem.

Commander's Guide to Community Involvement (August 2012), Range Commanders Council Sustainability Group

This guide provides tools for proactively addressing compatibility concerns focusing on outreach, land use, urban sprawl and other sustainability areas. The guide includes the latest trends and approaches in community involvement best practices and highlights case studies. This guide can be accessed from the following address: http://www.repi.mil/Portals/44/Documents/Primers/Primer_CommunityInvolvement.pdf.

Local Sustainability Partnering Innovation Lab: Military-Community Partnering for Sustainability at the Local Level (February 2011), Association of Defense Communities (ADC)

This document presents the findings and lessons learned from an "innovation laboratory" conducted at the 2011 ADC Winter Conference. The document reports on this interactive facilitated discussion exercise, focusing on the case study of Camp Bullis, San Antonio, Texas and the collaborative community and military efforts to address local and regional sustainability. This document can be accessed from the following address: http://www.defensecommunities.org/wp-content/uploads/2011/03/ADC-Local-Sustainabilty-Innovation-Lab-Final-After-Action-Report.pdf.

Installation-Community Partnerships: A New Paradigm for Collaborating in the 21st Century, Journal of Defense Communities

The article explores the changes that are prompting military and community leaders to take a closer look at partnerships, and provides a template for assessing the success of a prospective collaboration. Two case studies are presented — the arrangement under which the city of Monterey, Calif., provides all facility maintenance at the Presidio of Monterey; and the enhanced use lease at Nellis Air Force Base that resulted in the city of North Las Vegas building a $25 million fitness center for the Air Force. This article can be accessed from the following address: http://www.defensecommunities.org/wp-content/uploads/2012/07/P4_BAH_Journal_final.pdf.

The Base of the Future: A Call for Action by States and Communities (April 2016), Association of Defense Communities

This article examines the common threads that all bases share with their local hosts, and proposes an overarching approach to advise defense communities and states in the development of their own policies regarding adaptation and resilience when dealing with infrastructure, service and economic changes inside and outside the fenceline. Five key components focus on economic development and community planning, expanded sharing of services and infrastructure, mission capability and natural resource conservation, and

military involvement and engagement for policy and legislation. This article can be accessed form the following address: http://defensecommunities.org /wp-content/uploads/2015/01/The-Base-of-the-Future_v5.pdf.

Strengthening National Defense: Countering Encroachment through Military-Community Collaboration (2009), National Academy of Public Administration
This report discusses the significant and growing challenges to military readiness created by nearby civilian community growth and proposes recommendations for increased collaboration among key stakeholders—local and state governments, non-profit organizations, the Military Services and installations, and other federal agencies—in order to creatively and effectively address these complex and critical issues. This report can be accessed from the following address: https://ciaonet.org/attachments/ 26009/uploads.

Videos

The Base Next Door: Community Planning and the Joint Land Use Study Program, OEA
This informative video discusses the issue of encroachment near military installations as urban development occurs within the vicinity. This video can be accessed on the official OEA YouTube channel at: http://www.youtube.com/watch?v=6UiyWDgLeJM

Managing Growth, Communities Respond, OEA
This video highlights the lessons learned from three communities (Kitsap Naval Base in Bangor, Washington; Fort Drum in Jefferson County, New York; and Fort Leonard Wood in Pulaski County, Missouri) that have successful programs for managing growth near their respective military installations. This video can be accessed on the official OEA YouTube channel at: http://www.youtube.com/watch?v=rea6d3bDp3c

Compatibility Assessment

5

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Compatibility Assessment 5

Inside Chapter 5

Compatibility, in relation to military readiness, can be defined as the balance or compromise between community needs and interests and military needs and interests. The goal of compatibility planning is to promote an environment where both community and military can coexist successfully.

A number of factors influence whether community and military plans, programs, and activities are compatible or in conflict. To provide a comprehensive assessment of potential compatibility issues, this JLUS process looked at 25 compatibility factors (topics). This set of factors, listed on Figure 5.0-1 was used to help characterize compatibility issues.

This chapter provides an assessment of the relevant compatibility factors and identified issues. This assessment provides the framework for the recommended strategies presented in the JLUS Report.

Figure 5.0-1. Compatibility Factors

COMPATIBILITY FACTORS

AQ	Air Quality	LAS	Land / Air / Sea Spaces
AT	Anti-Terrorism / Force Protection	LU	Land Use
BIO	Biological Resources	LEG	Legislative Initiatives
CA	Climate Adaptation	LG	Light and Glare
COM	Coordination / Communication	MAR	Marine Environments
CR	Cultural Resources	NOI	Noise
DSS	Dust / Smoke / Steam	PT	Public Trespassing
ED	Energy Development	RC	Roadway Capacity
FSC	Frequency Spectrum Capacity	SA	Safety Zones
FSI	Frequency Spectrum Impedance / Interference	SNR	Scarce Natural Resources
		VO	Vertical Obstructions
LHA	Local Housing Availability	V	Vibration
IE	Infrastructure Extensions	WQQ	Water Quality / Quantity

Methodology and Evaluation

During the preparation of the Montgomery-Maxwell AFB JLUS, the public, the Policy Committee (PC), and the Technical Committee (TC) provided assistance in the identification of compatibility issues to be addressed in the JLUS using the list of 25 compatibility factors. Input on issues was derived from the following meetings and workshops (more detail on the committees and the meetings / workshops held can be found in Chapter 1).

- Committee Meeting #1, (August 20, 2015). This was a joint committee meeting of the PC and TC in which the committees received a formal presentation about the purpose and goals of a JLUS. In addition, this meeting initiated the development of the preliminary set of issues.
- TC Meeting #2 / PC Meeting #2, (June 2 & 3, 2016). Committee members helped to refine a comprehensive set of compatibility issues.
- Public Workshop #1, (June 2, 2016). The public provided their input on the issues they wanted addressed in the JLUS.
- TC Meeting #3 / PC Meeting #3, (November 14, 2016). Review of public input on issues and revision of issue statements (first half of issues).
- TC Meeting #4 / PC Meeting #4, (February 2, 2017). Review of public input on issues and revision of issue statements (first half of issues).
- Public Workshop #2, (April 26, 2017). The public was invited to review and comment on the issue statements developed and to provide input on the priority level for addressing each issue.
- PC Meeting #5, (June 14, 2017). The Final Report, including public comment, was presented to the Policy Committee for acceptance.

The issue statements identified by the above process formed the structure of the compatibility assessment in this chapter. The following chapter is divided into sections covering each compatibility factor, and under each factor are one or more compatibility issues.

For each factor, the section starts with a set of key terms that are useful for understanding the discussion presented. For some factors that are more technical in nature, like Noise (Section 5.18), there is a section titled Technical Background that provides a brief overview of the general concept (for instance, what is noise and how is it measured).

Following Key Terms and Technical Background is the discussion of the issues identified. For each issue, there is a general background on the issue presented, an assessment of current planning tools and their effectiveness that apply to the issue, and the key findings from the assessment. The intent is to provide an adequate context for the discussion of issues and to

ultimately develop strategies to address each issue. As such, it is not designed or intended to be used as an exhaustive technical evaluation of existing or future conditions within the study area.

Of the 25 standard compatibility factors, there were 13 factors determined not to be applicable in the Montgomery-Maxwell AFB JLUS Study Area. They are:

- Air Quality
- Biological Resources
- Cultural Resources
- Dust, Smoke, and Steam
- Frequency Spectrum Capacity
- Local Housing Availability
- Infrastructure Extensions
- Legislative Initiatives
- Marine Environments
- Roadway Capacity
- Scarce Natural Resources
- Vibration
- Water Quality / Quantity

Please see the next page.

Compatibility Assessment 5

5.1. Air Quality

Air quality is defined by numerous components that are regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility (such as particulates, ozone, etc.) and potential non-attainment of air quality standards that may limit future changes in operations at the installation or in the area.

There were no issues identified for Air Quality in this JLUS.

Please see next page.

Compatibility Assessment 5

5.2. Anti-Terrorism / Force Protection

Anti-Terrorism / Force Protection (AT/FP) relates to the safety of personnel, facilities, and information on an installation from outside threats. Security concerns and trespassing can present immediate compatibility concerns to installations. Due to current world conditions and recent events, military installations are required to meet more restrictive standards to address AT/FP issues. These standards include increased security checks at installation gates and physical changes (such as new gate / entry designs). Additional emphasis on credential and vehicle checks can create capacity and queuing issues with entrance gates that are inadequate to support the high volume of vehicles requiring access to the installation on a daily basis. The reduced processing throughput time at the gates can create circulation issues and general safety concerns external to the installation and within local communities.

Key Terms

Anchor Development. An anchor development refers to a development opportunity that creates potential future opportunities for economic development near the anchor development.

Building Setback. A building setback refers to the required separation between a lot line (and / or a right-of-way line) and a building or structure. Setbacks can vary by zoning district and type of structure for each zoning district. A setback is created and enforced by local jurisdictions through ordinances to help maintain public safety, privacy, and environmental protection.

Issues Evaluation

ISSUE AT-1	**No Controlled Perimeter Between Maxwell AFB and the Alabama River** There is no controlled perimeter between Maxwell AFB and the Alabama River, which can increase security breaches of the installation perimeter.

The northern border of Maxwell AFB follows the natural edge of the Alabama River, which serves as a natural barrier, but does not have a secured perimeter for the installation. This uncontrolled perimeter can increase potential for security breaches of the installation including allowing an uncontrolled viewshed onto the base. In addition, there is an existing boat dock, a proposed new boat dock, and plans for future economic development along the Alabama River, northeast of Maxwell AFB. All these opportunities if uncoordinated with the military can create increased potential for security breaches. Concerns over the security and general welfare of personnel at Maxwell AFB could create postponements and / or delays to training and operations on the base. These disruptions ultimately increase the risk of military readiness degradation.

While there are ongoing efforts to revitalize the areas along the Alabama River, including the attraction of an anchor development, this anchor development could promote the future development of the area that could result in the development of hotels, retail, entertainment, and recreational facilities. These types of development have the potential to stimulate economic activity in the area and promote economic development

for the community by increasing the number of visitors close to the river front. However, this increase in visitors along the uncontrolled perimeter has the potential to increase opportunities for security and force protection concerns.

Compatibility Assessment

The United Facilities Criteria (UFC) 4-022-03: Security Engineering: Fences, Gates and Guard Facilities document identifies and defines natural boundaries, which includes water bodies, densely wooded areas, and rough terrain as a barrier for providing protection to a restricted area. However, it further states that security fences around the perimeter of military installations can assist in preventing unauthorized persons from entering installation boundaries by serving as both a physical and psychological barrier.

While it may be adequate to rely on natural barriers in certain areas, it may not be adequate for other areas that are more developed or susceptible to perimeter breaches due to the environment's opportunity.

Findings

- UFC 4-022-03 defines natural barriers; however, it may not be adequate to rely on natural barriers in certain areas.
- Potential increases in visitors to this area due to increased opportunities for economic activity can increase AT/FP concerns for the base.

ISSUE AT-2	**Abandoned Department of Corrections Facility Outside Gunter Annex** The abandoned Department of Corrections facility adjacent to Gunter Annex poses risk to installation security. The property contains abandoned structures and debris in an unsecured environment which increases concern for potential security breaches.

There is an old Alabama State Department of Corrections property located just south of EPA Road and west of the intersection of Morris Avenue and Spaatz Street near the northwest corner of Gunter Annex. While separated from Gunter Annex by a chain-link fence, the property is currently owned by the State and contains several abandoned structures, scattered debris, and has some overgrowth. The structures on the property have fallen into disrepair, and no longer provide value for the community.

State-owned property with abandoned structures

The concern with this property is that there are several factors that characterize the property as unsafe and creates opportunities for unauthorized activities to occur in the old, unmonitored buildings. This could create security concerns for the Air Force and Gunter Annex. The abandoned property and its structures could serve as an area for unauthorized monitoring of Gunter Annex activities and unauthorized assembly of people. Such unauthorized activities could potentially create delays for daily operations, such as concerns over threats, at Gunter Annex or create an unsafe perception for federal and state employees that work at Gunter Annex or at other government buildings in this area. If threats were to occur at the abandoned buildings, then a cease of operations could occur at Gunter and other nearby organization and businesses until the appropriate authorities investigate the threat and determine there is no immediate concern. This could result in lost hours of productivity and classroom time for people at Gunter Annex.

Compatibility Assessment

The State of Alabama adopted the 2006 International Building Code (IBC), which establishes provisions for unsafe buildings and equipment. The Code requires structures to be demolished or made safe, where they:

- *are unsafe, or provide inadequate light or ventilation;*
- *constitute a fire hazard*
- *are deficient because of inadequate means of egress;*
- *exceed structural standards making the structure dangerous;*
- *involve illegal or improper occupancy or inadequate maintenance; or*
- *are not secured against entry shall also be deemed unsafe.*

By the Code's provisions, the abandoned State property meets the above conditions by being unsafe, constituting a fire hazard, inadequate maintenance, and is not secured against entry. Therefore, these abandoned structures should be deemed as facilities that should be demolished by the State per the Code. The IBC further states that an unsafe condition report shall be made by the code official and served to the property owner for demolition of the unsafe building within a defined timeframe, or restored to a safe condition.

Findings

- The existing buildings on the abandoned property create an unsafe environment due to inadequate maintenance, fire hazard, and an unsecured entry.
- The State of Alabama adopted the 2006 IBC establishing provisions for designating property unsafe and preparing for the demolition of such properties.

ISSUE AT-3	**Compliance with Residential Setbacks Adjacent to Gunter Annex's Southern Fence Line** The Gunter Annex southern boundary borders the Dalraida neighborhood where residential properties abut the installation property. Backyard accessory structures such as storage sheds that do not comply with the city's residential setbacks regulations represent an increased security concern for the base.

The southern fence line of Gunter Annex is bordered by the Dalraida neighborhood. There are 29 properties along the southern perimeter fence of Gunter Annex. A visual assessment of the bordering properties confirm that there are several structures along the back fences of the residential

properties, which may create vulnerabilities along the perimeter if they are not situated according to required residential setbacks. The accessory structures that violate the required residential setbacks provide opportunities for unintentional trespass, which can potentially increase the security profile risk of the installation. The structures, and their relative proximities to Gunter Annex's installation perimeter are illustrated on Figures 5.2-2a through 5.2-2c.

When installations are evaluated in Base Realignment and Closure (BRAC), they are required to have a number of feet internal and external from the fence line that is free and clear of obstacles to ensure optimal security. The lack of enforcement of required setbacks for accessory structures from the property line increases the risk profile for the installation. The installation can potentially receive a citation for non-compliance of the DOD AT/FP Standards. This alone will most likely not cause a realignment scenario in a BRAC, but this combined with other factors could potentially result in a realignment scenario. If a realignment occurs, then it could mean lost revenues for the local and regional economy.

Compatibility Assessment

The City of Montgomery's Zoning Ordinance states that accessory structures located on residential properties must be placed at least five feet away from the property lot lines, as well as ten feet from any other structure present on the same lot.

In Maxwell AFB's internal 2015 Installation Complex Encroachment Management Plan (ICEMAP), concerns over the enforcement of residential setbacks were identified as a potential encroachment issue. It was noted in the ICEMAP that Maxwell AFB has a good relationship with private property owners; however, communication attempts to engage private property owners regarding the importance of compliance with the city's minimum setback requirements were not discussed. The need for communication and coordination with the City of Montgomery's planning and zoning department was identified as a necessary action.

Findings

- The City of Montgomery defines residential setbacks for accessory structures on residential properties, but there are several structures along the southern perimeter of Gunter Annex cause concern for Maxwell AFB.

ISSUE AT-4	**Utility Vaults for Water Lines are Not Secured Outside Maxwell AFB** Utility vaults that support Maxwell AFB's water lines are situated on both installation and City of Montgomery property. Only the vaults located on Maxwell AFB are protected.

Maxwell AFB personnel identified that the location of some of the infrastructure necessary for providing the installation with a safe supply of potable water is located partially outside the installation's controlled perimeter on land controlled by the City of Montgomery. Drinking water to Maxwell AFB and to the City of Montgomery is provided by the Montgomery Water Works and Sanitary Sewer Board.

The water distribution infrastructure is housed inside of utility vaults which are shared by Maxwell AFB and the City of Montgomery. Maxwell AFB has strict protocols for maintaining force protection requirements, and keeps the portion of the vault that is location on the installation continuously secured. This strict protocol is designed to protect against potential threats or harmful acts intended to attack the integrity of the military's drinking water supply and disrupt installation operations, impact military readiness, and the ability to execute the mission.

Sources: Maxwell Air Force Base, 2015. City of Montgomery, 1985.

Figure 5.2-2a
Compliance with Accessory Structures Setbacks Concern
Pine Ridge Road

Legend

- Five Foot Setback
- Parcel
- Installation Boundary

0 25 50 Feet

Sources: Maxwell Air Force Base, 2015. City of Montgomery, 1985.

Figure 5.2-2b
Compliance with Accessory Structures Setbacks Concern
Pine Ridge Road / Hillman Street

Legend

- Five Foot Setback
- Parcel
- Installation Boundary

0 25 50 Feet

Sources: Maxwell Air Force Base, 2015. City of Montgomery, 1985.

Figure 5.2-2c
Compliance with Accessory Structures Setbacks Concern
Hillman Street / Cricklewood Drive

Efforts are made by Maxwell AFB and the City of Montgomery to maintain and monitor control over vault access on the City's property; however, occasionally the uncontrolled portion of the vault is found unsecured by Maxwell AFB personnel. The inability for the military to control access to the utility vault beyond the installation's controlled perimeter creates a potential concern regarding keeping the drinking water supply safe for Maxwell AFB.

Compatibility Assessment

Following the terrorist acts of September 11, 2001, the US Congress passed the Public Health Security and Bioterrorism Preparedness and Response Act of 2002. Title IV of this Act is the Drinking Water Security and Safety portion, which added a new section (1433) to the Safe Drinking Water Act, stating that if community water systems serve over 3,300 people, vulnerability assessments must be conducted on the system in order to determine the vulnerability risk of potential acts of terrorism meant to disrupt the system's ability to provide the public with a safe and secure source of drinking water. The assessment is required to include a review of all pipes and conveyance mechanisms, as well as any physical barriers and facilities used for all levels of treatment, storage, and distribution. The Act identified basic potential security enhancements that could be employed, including:

- *The purchase and installation of equipment for detection of intruders,*
- *The purchase and installation of fencing, gating, lighting, or security cameras, and*
- *The tamper proofing of manhole covers, fire hydrants, and valve boxes.*

The Montgomery Water Works and Sanitary Sewer Board has approximately 80,000 water and sewer connections, and serves residents of Montgomery and several surrounding rural utilities. Federal regulations apply to the Montgomery Water Works and Sanitary Sewer Board, and should be sufficient to ensure the safety of the drinking water collection system.

Findings

- The inconsistent control and monitoring efforts by the city of the utility vaults located outside of Maxwell AFB's perimeter poses a risk to the security of the base's safe drinking water.
- Despite the federal regulations that apply to Montgomery Water Works and Sanitary Sewer Board, there is still concern by Maxwell AFB that the utility vaults off-installation are not monitored regularly.

5.3. Biological Resources

Biological resources include federal and state listed species (threatened and endangered species) and the habitats they exist in or utilize. These resources may also include areas such as wetlands and migratory corridors that are critical to the overall ecosystem. The presence of biological resources may require special development considerations and should be included early in the planning process.

There were no issues identified for Biological Resources in this JLUS.

Please see the next page.

5.4. Climate Adaptation

Climate adaptation is the gradual shift of global weather patterns and temperatures resulting from natural factors and human activities (e.g., burning of fossil fuels) that produce long-term impacts on atmospheric conditions. The effects of climate change vary and may include fluctuations in sea levels, alterations of ecosystems, variations in weather patterns, and natural resource availability issues. The results of climate change, i.e., ozone depletion, can present operational and planning challenges for the military and communities as resources are depleted and environments are altered.

Key Terms

Climate Change. Climate change refers to any significant change in the measures of climate lasting for an extended period of time. In other words, climate change includes major changes in temperature, precipitation, or wind patterns, among other effects, that occur over several decades or longer.

Dam. A dam refers to an artificial barrier that has the ability to store or impound water, wastewater, or any liquid-borne substance, for the purposes of control of water.

Earth Dam. An Earth dam refers to an embankment dam in which more than 50 percent of the total volume is formed of compacted earth layers.

Global Warming. Global warming refers to the recent and ongoing rise in global average temperature near Earth's surface. It is caused mostly by increasing concentrations of greenhouse gases in the atmosphere. Global warming is causing climate patterns to change. However, global warming itself represents only one aspect of climate change.

Impervious Surface. An impervious surface is composed of impenetrable materials that do not allow for the reabsorption of water and stormwater. Such impenetrable materials include asphalt, brick, and concrete. Impervious surfaces include roadways, parking lots, and rooftops.

Source: US Environmental Protection Agency; US FEMA Glossary of Terms, 2004.

Issue Assessment

ISSUE CA-1	**Flooding on Maxwell AFB Impacts Operations** Flooding from various sources including private dams, ditches, and Alabama River impacts Maxwell AFB by causing flooding in military operational areas.

According to the 2015 Draft Hazard Mitigation Plan (HMP) developed by the Montgomery City-County Emergency Management Agency for this area, thunderstorms, tornados, hurricanes, and tropical storms are the natural weather that brings significant amounts of rain to the Montgomery-Maxwell AFB area, though the main source of flooding in Montgomery County has historically been associated with flash floods resulting from storms that bring large quantities of rain in a short period of time.

Based on historical data reported by each jurisdiction between 2003 and 2013, flooding caused from various storm-related events and natural disasters including hurricanes and tropical storms resulted in over $11 million in property damage to infrastructure for the City of Montgomery and Montgomery County. Due to weather patterns and historical weather events and the proximity to the Gulf of Mexico, Montgomery County, the

City of Montgomery, and Maxwell AFB have a high probability (70 percent) of experiencing a hurricane, tropical storm, tropical depression, high / strong wind event annually. It should be noted that Maxwell AFB's airfield elevation is approximately 172 feet above mean sea level (MSL). While the airfield is over 100 feet above MSL, the location combined with other water bodies and private dams (privately-owned water bodies, e.g., personal fishing ponds and lakes) in the area all contribute to flooding events in the JLUS Study Area.

According to the United States Army Corps of Engineers (USACE) National Inventory of Dams, there are approximately 98 private earth dams in Montgomery County ranging from various depths and volume capacities. The USACE's data did not report any dams in the county that were owned by local or federal governments. This is important to mention as there are no regulations established for inspections and maintenance of dams in the State of Alabama.

Regarding the impact of flooding to Maxwell AFB, the northern perimeter of Maxwell AFB abuts the banks of the Alabama River, making portions of it vulnerable to flooding caused by excessive rainfall, increased stormwater runoff from impervious surfaces, and unsuccessful water infrastructure management, e.g., maintenance of private earth dams. According to Maxwell AFB's Installation Development Plan, approximately 21 percent of land within the installation is located in the 100-year floodplain, and 30 percent of undeveloped land on the installation is constrained by flooding potential. Areas along the eastern perimeter, along the Alabama River, and portions of the base in the north, south, and west are affected by flooding. Floods have occasionally inundated portions of the base golf courses and the Combat Arms Training and Maintenance (CATM) range. Additional costs realized during these events are due to the inundation incurred by buildings and structures such as the CATM range, which requires maintenance and cleanup after the flooding events and the restoration of recreational areas including the base golf courses.

As many military personnel live on-base, severe flooding can lead to the evacuation of base housing and inaccessibility to medical services on the installation, which would also impact retirees and active-duty dependents. Though initial impacts would be experienced on-base, large on-base evacuations could potentially overwhelm community services and hotels within the local jurisdictions. Other evacuations could include inmates from the federal prison, which is located at Maxwell AFB.

During periods of extreme flooding, impacts from inundation on Interstate 65 causes closures and limits access to Maxwell AFB. It also should be noted that Maxwell AFB is a major employer for the region and as such evacuations and extended closures would have impacts on the local economy including decreased productivity and on Maxwell AFB's ability to perform its mission by delaying or postponing operations for a period of time. This could result in the loss of training hours and skills proficiency, and make it challenging for the installation when performing its Federal Emergency Management Agency (FEMA) duty as the Southwest U.S. FEMA staging and support relief area such as providing a safe haven for aircraft from Florida, Louisiana, and Mississippi in the event of extreme weather conditions including hurricanes. Ultimately degrading Maxwell AFB's abilities to execute its numerous mission components.

Base flooding during major rain events. Photo credit: Carl Bergquist

Compatibility Assessment

Montgomery County does not have historical data related to dam failures; however, the county identifies dam safety as an ongoing issue within the State of Alabama. During the 2014 Regular Alabama Legislative Session, House Bill (HB) 610 was introduced to establish a statewide Dam Safety Program. HB 610 would have established consistent standards for dam construction, maintenance, operation, and removal within the State of Alabama, but the Bill did not make it out of committee. This law would have given oversight authority to the state for construction approvals, inspections, contingency planning in case of emergency and annual certifications, as well as provided additional federal funding opportunities for the restoration and / or removal of compromised dams. The law would have been applicable to all dams that were greater than six feet in height, regardless of capacity, and dams with a capacity greater than 15-acre feet, regardless of height, unless the dam was classified as a potential high-hazard dam.

Source: 2014 House Bill 610, Dam Safety Program, 2016. Retrieved from https://legiscan.com/AL/text/HB610/2014.

Among the many reports the FEMA has developed over the past decade, Alabama remains a state that has no characteristics that model the National Dam Safety Program and the State has not responded to some of the inquiries from FEMA. This is of concern for this area as there is seemingly no protection afforded by the State or local governments to the people. In the event of flooding events and major natural disasters, there is no protection in place that will assist the State in reconstruction and maintenance of such infrastructure. This can result in loss to life and property in the future, if left unregulated or uncontrolled.

According to FEMA and USACE, majority of the nation's dams are privately-owned and as such this causes unique situations regarding maintenance and regulation.

Without state controls, there are no opportunities for the State to receive federal assistance and thus educate the private owners of the dams in Montgomery County. This education and training opportunity of private property owners with dams located on their property could better prepare for natural disasters and flooding events, and minimize the cost of repairs, debris removal, and mitigate property damage.

According to the 2015 Draft HMP, there are several actions identified for Montgomery County, including investigating the feasibility of using conservation easements or land trusts to acquire environmentally sensitive areas that are vulnerable to flooding so as not to permit development in these areas in the future. The Draft HMP also recommends actions to evaluate the effectiveness of increased regulatory standards on building elevations, and limits on fill within flood plains that are currently included in local flood plain management regulations. A feasibility study for a demonstration project related to regional greenways is also recommended as an action in the Draft HMP. Another positive action identified in the Draft HMP involves the establishment of a statewide technical assistance program through the Alabama Cooperative Extension System which would develop Best Management Practices (BMP) for maintaining channels and drainage systems, conduct educational seminars for local officials, and would demonstrate a real world application by completing a project in Montgomery County.

The HMP identifies good actions to potentially reduce and minimize the impacts of hazardous events such as flooding to the county and city; however, it does not identify impacts or mitigation actions to Maxwell AFB and Gunter Annex. Additionally, the Draft HMP does not identify coordination procedures with the military to ensure compatibility regarding hazard mitigation planning in the county.

Source: Draft Montgomery County Hazard Mitigation Plan, 2015 Update.

Additionally and according to the Alabama Department of Transportation (ALDOT) there is somewhat of a precedent for establishing controls for bridge maintenance and inspection as well as debris removal from roadways in the event of flooding. The ALDOT's Maintenance Manual is the department's tool and reports the department is responsible for the removal of debris caused by natural disasters such as flooding events. While ALDOT has a fairly thorough Maintenance Manual for handling and managing various types of maintenance responsibilities, the manual does not address dam maintenance and inspection. This existing condition is a lost opportunity for the ALDOT to gain important data and assist private property owners in being more responsible with their private dams so as not to cause property damage or flooding issues downstream. Due to the state not having authority over dam safety and inspection, this tool would not provide information for that area. However, it is possible that this tool could be easily modified in the event that the State passes a law requiring dam safety.

Findings

- The State of Alabama does not regulate the construction, inspection, or maintenance of privately-owned dams. While this has not been identified as a cause for flooding on Maxwell AFB, a failure in the dam system could potentially have large impacts on Maxwell AFB.
- Maxwell AFB is not represented on the Hazard Mitigation Planning Committee.
- The Draft HMP does not consider military compatibility planning guidelines including coordination with the military.
- The State of Alabama does not have a Dam Safety Program, which is a lost opportunity for potential additional funding and education and training monies.

5.5. Coordination / Communication

Interagency communication serves the general welfare by promoting a more comprehensive planning process inclusive of all affected stakeholders. Interagency coordination also seeks to develop and include mutually beneficial policies for both communities and the military in local planning documents such as comprehensive plans.

Key Terms

No unique terms are used in this section.

Issues Evaluation

ISSUE COM-1	**No Formalized Planning Coordination Between the Local Jurisdictions and Maxwell AFB** There is no formalized planning coordination between the local jurisdictions and Maxwell AFB for ensuring compatible development within Maxwell AFB and Gunter Annex operational areas.

Coordinated planning between the military and the surrounding community is key to promoting compatible growth and land use development. The impacts of incompatible development can lead to actions that can limit military training capability, create risks to public safety, and affect quality of life for the community. It is important that planning in military communities include formal communication and coordination processes for engaging both the military and local planning departments early in the process so that concerns can be identified and addressed before changes in plans result in excess costs.

The primary concern associated with this issue is there are no formal communication or coordination processes in place between the City of Montgomery, County of Montgomery, Maxwell AFB, and jurisdictions to the north of the installation including the cities of Prattville, Millbrook, and Coosada. While the jurisdictions recognize the installation as their neighbor, the jurisdictions' considerations of military operations on land uses they want to develop in their communities are not reflected in any formal agreement. Thus, the impacts of military operations on community activities and vice versa are not formally discussed between the jurisdictions. This can create unreliable communication, coordination, and follow-through to address issues as they occur, and result in missed opportunities for the jurisdictions and military.

Compatibility Assessment

According to Alabama Code Section (§) 11-106-4 (Military Land Use Planning Act), any local jurisdiction within two miles of any portion of a military installation is required to provide written notice to the installation's commander of any local impact issue. The two-mile notification area is illustrated on Figures 5.5-1a and 5.5-1b for Maxwell AFB and Gunter Annex, respectively. This law establishes the state requirement and precedent for formal communication about local issues that may impact the military mission. However, while this law establishes precedent for formal communication and coordination in the future, it does not require jurisdictions to update or amend any planning documents including comprehensive plans and zoning regulations that were in effect prior to the effective date of the law, which is February 18, 2014.

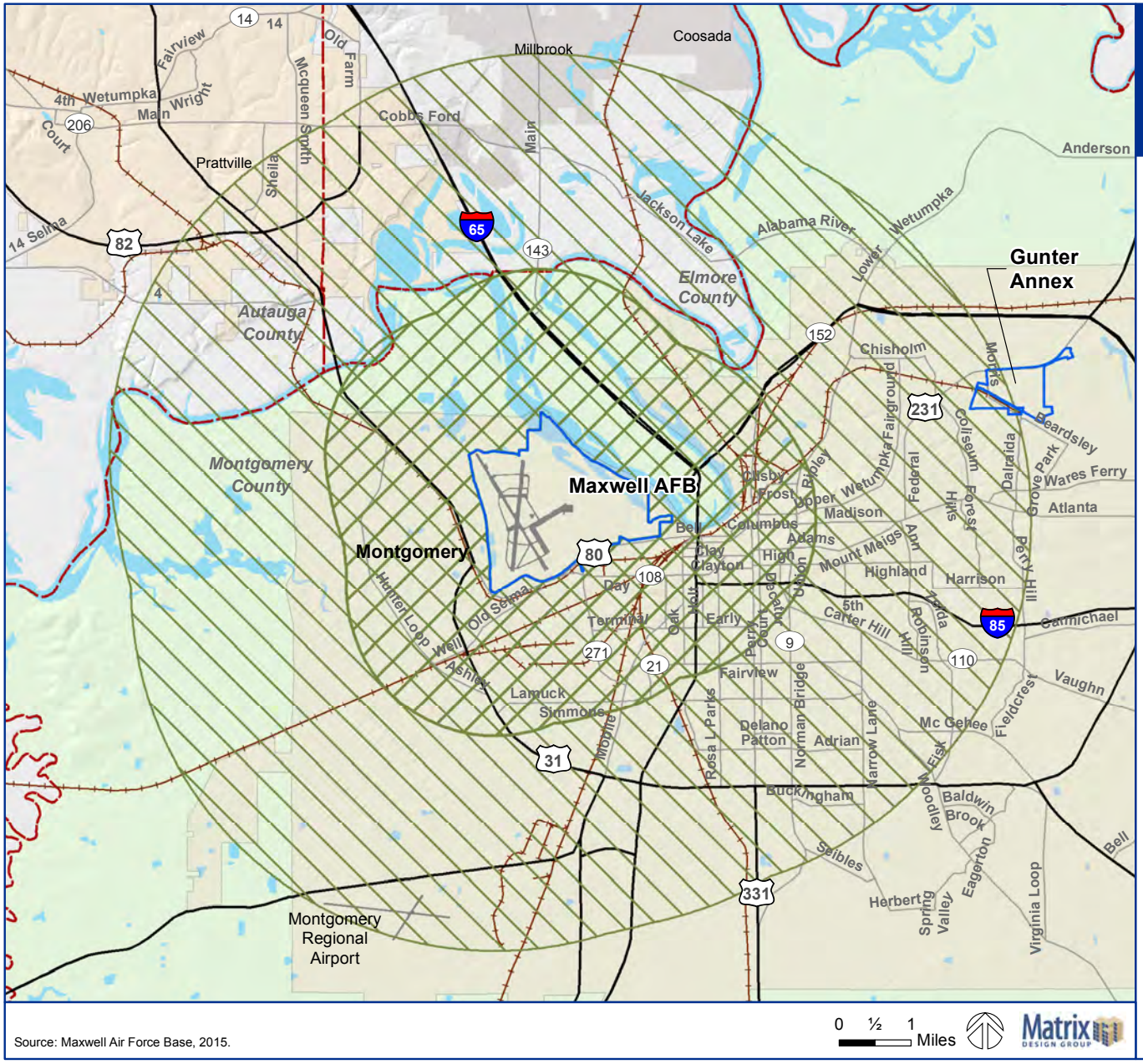
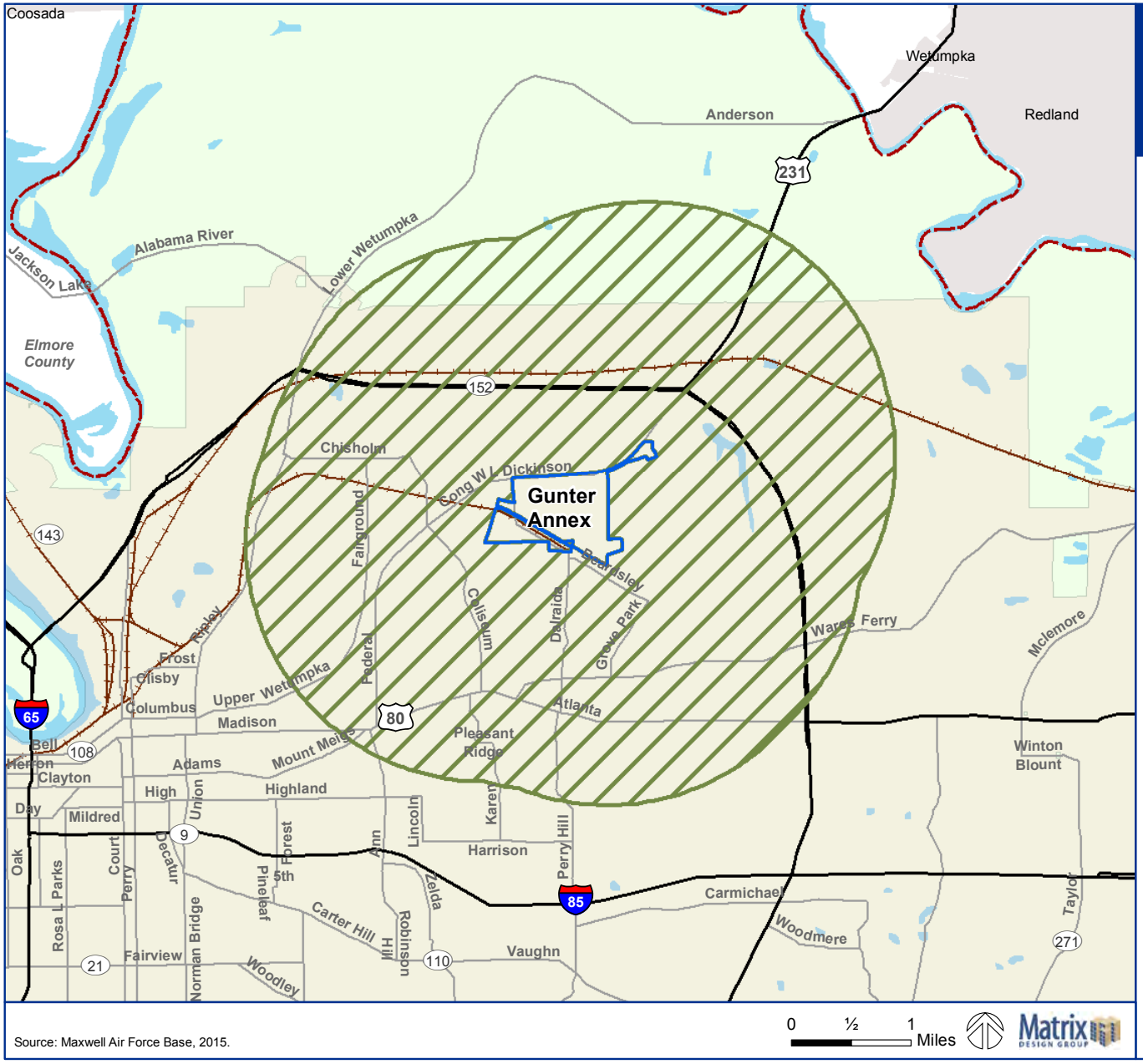


Figure 5.5-1a

Notification Area Maxwell AFB

Legend

- Notification Area (2-Miles)
- Notification Area (5-Miles) Implemented by MOA
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway



Source: Maxwell Air Force Base, 2015.

Figure 5.5-1b

Notification Area Gunter Annex

Legend

- Notification Area (2-Miles)
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway

The jurisdiction may opt to update and amend planning documents to include policies and regulations that promote coordination and communication with the military. The law defines local impact issue as any adoption or amendment by a local government of a proposed zoning plan, comprehensive master plan, or land development regulations that if approved, would significantly impact the military mission. There are other land use planning actions such as variances or special use permits that are not included in this law that could also require the evaluation by a military installation if impacts are associated with it.

In lieu of formal policies in jurisdictional comprehensive plans and regulations in land use rules and zoning, Maxwell AFB is currently in the process of drafting a Memorandum of Understanding (MOU) to formalize communication and coordination between Maxwell AFB and the neighboring jurisdictions pursuant to the Military Land Use Planning Act. The intent of the MOU is to facilitate and ensure communication and mutual cooperation between the Base and surrounding local jurisdictions regarding proposed property zoning changes that could impact the military mission.

The MOU states local jurisdictions will notify Maxwell AFB at least 30 days in advance of any planned actions or public hearings on proposed zoning changes, comprehensive master plans, or land development regulations, which if approved, may or will significantly affect any area or airspace within five nautical miles (NM) of Maxwell AFB's runway centerline and within two miles of Gunter Annex's perimeter. It is important to note that the five NM areas encompass FAA land planning requirements which are associated with approach-departure patterns of aircraft at Maxwell AFB. The MOU also establishes the provision for timely review and return of comments by the military to the jurisdictions. The MOU indicates the local jurisdiction is required to consider the comments provided by Maxwell AFB when considering approval of the local impact issue.

In addition, the MOU establishes points of contact for each of the jurisdictions participating in this agreement, and Maxwell AFB. A primary and an alternate contact are identified in the agreement to include physical addresses of the point of contact rather than email addresses and phone numbers.

This draft MOU provides a good first step for establishing a formal process for communication and coordination between the military and jurisdictions on issues that could potentially impact operations at Maxwell AFB. However, as of the time this JLUS was developed, this MOU is currently a draft and it has not been officially approved. There are enhancements that can be made to the MOU, which will be discussed as it applies to other issues in this section.

Sources: Alabama State Code, Section 11-106-1 through § 11-106-5, 2014. Draft Multi-Jurisdictional Memorandum of Understanding with Maxwell AFB for Zoning and Land Use Change Notifications.

Findings

- Alabama Code § 11-106-1 through § 11-106-5, Military Land Use Planning Act establishes the precedent for formal communication and coordination about changes to comprehensive master plans, zoning rules, and land development regulations for jurisdictions within two miles of any portion of a military installation's boundary.
- Alabama Code § 11-106-1 through § 11-106-5 does not require jurisdictions to update comprehensive plans and amend zoning regulations that were in effect prior to February 2014 when the law was approved.
- A draft MOU delineating communication and coordination protocol between Maxwell AFB and the local jurisdictions has been developed, but as of the time this JLUS was developed, it has not been officially approved.

ISSUE COM-2	**Enhanced Planning Notification for Maxwell AFB** The existing process for planning notification between the City of Montgomery and Maxwell AFB needs to be expanded to allow for earlier involvement by affected stakeholders and notification of land use planning actions, e.g. zoning changes, variances, etc., in the planning and development process.

Early notification is a valuable practice to implement in the public planning process as it allows for modifications of plans earlier in the process where opportunities for cost and operational efficiencies can be realized by the local governments, the development community, and the military. Equally important to land use planning with any military installation and developer is having a defined set of components that would trigger communication and coordination early in the planning process.

Current coordination activities between Maxwell AFB and the City of Montgomery are guided by the Alabama Military Land Use Planning Act, which requires local governments within two miles of a military installation to notify the military on proposed local impact issues. The law establishes a 30-day review period for the military to submit comments to the local jurisdiction on potential impacts of the action on the military mission prior to final action or public hearing on the proposed change or action.

The concern about this part of the law is that this coordination is only required 30 days prior to final action is taken by any jurisdiction, which is late in the process. The plans have been developed without consideration of impacts to the military mission in the area or consideration of impacts on the development by the military. Thus, if the military determined an issue with a proposed local impact issue, then it can become costly for the developer to change plans and / or for the jurisdiction to change plans. Ultimately, the lack of early coordination and communication of planning matters between the development community, jurisdictions, and military could result in cost prohibitive changes to plans and possibly even missed economic opportunities.

Compatibility Assessment

The concern with the law as it is currently is two-fold—the area for which notification is required could be inadequate based on the mission requirements and there is no requirement of early coordination with the military. The law states notification from a jurisdiction to a military installation within two miles of its boundaries is required of a proposed zoning plan change, comprehensive master plan or land development regulations. There are certain military operations that can affect land uses beyond the two mile requirement outside of the installation boundaries, which means the jurisdiction is not required to notify the military installation. This could result in adverse military mission and community activity impacts.

In addition, the law does not consider the impact of late notification in the planning process. The law requires the jurisdiction to allow 30 days for military review and comment prior to final actions, which means the proposed land use change package can be delivered to the military 30 days in advance of a public hearing. The law does not require the jurisdiction to submit the application to the military for review, which could result in cost impacts to the developer and jurisdiction should an impact be determined by the military.

According to the draft MOU between the cities of Millbrook, Montgomery, and Prattville; the counties of Autauga, Elmore and Montgomery; and Maxwell AFB, there are enhancements to coordination in the agreement including expanding the area around Maxwell AFB from two miles to five NM to be consistent with the FAA guidance regarding the approach and departure operations that occur at the airfield. This is a good measure in realizing the law is inadequate relative to the mission-specific requirements.

In addition, the draft MOU does not capture all the local impact issues that could potentially impact Maxwell AFB operations; these issues include variances, zoning changes, comprehensive plan changes, proposed internal city land use actions such as developing parkland in this area, and roadway and utility infrastructure improvements or expansion. All these land use planning matters could potentially impact the military mission at Maxwell AFB depending on location relative to operations. Moreover, the draft MOU does not consider other land use variables that could impact military operations including the production of dust, smoke, or steam, light or glare, or the use of temporary cranes. These impacts could impact the Base mission if not properly mitigated during the construction phase or completion phase.

The MOU also does not specify when the military will be notified of the proposed changes that occur in the five NM areas around Maxwell AFB and the two statute mile area around Gunter Annex. Pursuant to AL Code § 11-106-4, the jurisdictions are only required to allow for a 30-day review period; however it does not specify when in the planning process will the 30-day review occur.

Source: Alabama Code Sections 11-106-4 and 11-106-5, 2014. Draft Multi-Jurisdictional Memorandum of Understanding with Maxwell AFB for Zoning and Land Use Change Notifications.

Findings

- The two-mile notification area in Alabama Code § 11-106-4 may not be adequate to address all potential local military impact issues.
- Alabama Code § 11-106-5 does not require coordination with the military early in the planning process including during the submission of the planning application.
- The draft MOU does not establish early coordination at the time a planning application is submitted to the jurisdiction.
- The draft MOU does not establish triggers for coordination such as the proposed land use generating dust, smoke, steam, light, or glare.

ISSUE COM-3	**Formalized Maxwell AFB Points of Contact** The public and elected officials are not aware of the designated points of contact for Maxwell AFB and Gunter Annex for reporting concerns or obtaining information related to training activities.

An established line of communication between Maxwell AFB and local civic and business leaders is essential for managing issues that arise and impact the military mission or community activity. Issues such as training that occurs out of the routine schedule may impact community activity relative to experiencing noise outside the routine timeframe. Vice versa, a community festival or parade during the week can potentially impact training operations for the military. Established communication lines between the civic and business leaders and the public can help mitigate potential issues associated with these types of activities or reduce the impacts of such activities.

The JLUS participating jurisdictions identified a lack of awareness of the key points of contact and processes for contacting base representatives at Maxwell AFB to obtain information about training or to communicate concerns. When points of contact between the base and the community are not known to either of the organizations, concerns and issues can go unresolved for lengthy periods of time resulting in lost productivity, or delays in operations at the base and / or the community.

Compatibility Assessment

Pursuant to Alabama Code § 11-106-4, Maxwell AFB has developed a draft multi-jurisdictional MOU with the cities of Millbrook, Montgomery, and Prattville, and the counties of Autauga, Elmore, and Montgomery. The MOU formalizes communication and coordination between Maxwell AFB and the surrounding communities on proposed land use changes related to zoning of properties that could impact the Maxwell AFB mission.

The draft MOU provides the points of contact for the base and the participating jurisdictions. The draft MOU provides contact information for both a primary and an alternate contact for the following jurisdictions or organizations:

- City of Millbrook
- City of Montgomery
- City of Prattville
- Autauga County
- Elmore County
- Montgomery County
- Maxwell Air Force Base, 42d Air Base Wing
- Maxwell Air Force Base, 42d Operations Support Squadron
- Maxwell Air Force Base, 908th Airlift Wing

The draft MOU provides the point of contact information for all participating parties of the draft MOU, however, it does not provide information on how the contact information will be maintained or updated. Also, contact information in the draft MOU is limited to postal addresses and does not include email addresses and telephone numbers.

It is important to note that the MOU is a draft; it has not been officially adopted by the participating jurisdictions.

Findings

- The draft MOU does not provide information on how contact information will be maintained or updated.
- The draft MOU only provides mailing addresses for the points of contact and excludes phone numbers and email addresses.
- The draft MOU has not been officially adopted by the participating jurisdictions.

ISSUE COM-4	**Formalized Procedures for Information Sharing and Economic Development Organizations** There are no formal procedures established for information sharing between Maxwell AFB and local and regional economic development organizations to facilitate appropriate discussions about synergistic economic development opportunities. Economic development organizations do not understand the impact some development can have on the operational mission of Maxwell AFB and Gunter Annex.

While the Montgomery Chamber of Commerce assists with communication and coordination between the community and Maxwell AFB for several activities including providing opportunities to learn about the Maxwell AFB mission, the local economic development organizations do not have this same communication between the military. This can result in the economic development organizations marketing for companies and industries that may not be complementary with the military operations that occur in this region. If local economic development organizations do not have open communication with the military and do not have an understanding of the military mission and its operational expanse, then the economic

development organizations cannot target companies and industries that would be compatible and complementary for the community and military.

This means without educating the local economic development organizations about the Maxwell AFB mission requirements, the potential for lost opportunities or development opportunities that target industries and companies that would create incompatible development would potentially increase. While imposing limitations on development may be perceived as an adverse impact on economic development, targeting industries and development that would be compatible or even, synergistic with the military operations facilitates the mutual success of both Maxwell AFB and future community development. If incompatible development occurs due to misinformed economic development efforts, then certain economic development opportunities may not be as profitable as other industries and companies might in this scenario.

Compatibility Assessment

The Montgomery Chamber of Commerce (The Chamber) is the local economic development recruitment agency in the JLUS Study Area. The Montgomery Chamber of Commerce provides the traditional economic development information on its website, https://www.montgomerychamber.com/.

The Chamber provides a community profiles, economic data, population numbers, maps, and various other data. The maps; however, do not provide information on the assets of Maxwell AFB and its operational areas. The airport map does not include Maxwell AFB as an airport. While civilians and commercial airlines do not utilize the Maxwell AFB airport, Maxwell AFB utilizes Montgomery Regional Airport (MGM) and shares Class D airspace with MGM.

There is perception that incorporating military operational areas as maps on the website may have an adverse impact on economic development. Lessons learned and best practices has resulted in knowing that a majority of economic development practitioners and developers prefer having more information early in the process prior to final plans being prepared as this allows for inexpensive changes in plans to accommodate for military operations or any other potential constraints.

In addition, the Chamber indicates on their website that they focus on military and federal affairs; however, none of the maps on the Chamber's website recognizes Maxwell AFB as an economic asset that could be marketed. In addition, the Chamber's website includes an entire webpage to Maxwell AFB missions; however, the website does not explain how to partner with the military in business recruitment. There is also no point-of-contact for the military and federal affairs component of the Chamber's focus.

The Central Alabama Regional Planning and Development Commission (CARPDC) is made up of Autauga, Elmore, and Montgomery counties, and works closely with the South Central Alabama Development Commission's (SCADA) Economic Development District (EDD), to which the City of Montgomery and Montgomery County also belong. SCADA and CARPDC work together on long range planning goals and objectives because of the large impacts of the City of Montgomery and Montgomery County within the region. As these organizations establish goals, objectives, and strategies for local and regional economic development, it would be a missed opportunity if the strategies did not consider the military operations that are ongoing in this region.

The 2015 CARPDC comprehensive economic development strategy (CEDS) recognizes Maxwell AFB as a strength, as it provides billions of dollars in economic development, brings a large educational component, and provides prestige to the area. Items like extending I-85 to Mississippi, waterway tourism, marketing of the region – including land around the airport, and gaining additional military programs from closed bases were identified in the CEDS as economic development strengths and opportunities. Conversely, the CEDS recognizes the impacts if Maxwell AFB loses missions, including job

loss, sales and property tax revenue decreases due to less population, and loss of diversity of skills sets and technological capabilities, in some cases. With this recognition, it is important to not encourage development and economic opportunities that would diminish the value of the military presence in this region.

In addition, the CARPDC CEDS provides a list of partners and resources for economic development, including regional organizations, state agencies, and private corporations. However, Maxwell AFB and Gunter Annex are not listed as partners, which can be a missed opportunity as the military requires services and products from private industry. Maxwell AFB is not represented in the committee listing, not even in the capacity as technical support advisor.

The CEDS also identifies goals and strategies and a list of active projects or programs. A goal of interest regarding this local issue is "creating a cooperative system for economic development with strong regional markets and diverse regional economies." To achieve this goal the CEDS states that one of the strategies is the following:

- *Train public officials on the economic development process to help them attain better marketing skills.*

This goal and strategy are good steps in providing opportunities and the necessary knowledge to market appropriately for this region to economic development practitioners, public officials, and the military. In addition, the CEDS, while it recognizes the economic activity that Maxwell AFB creates for the regional economy, it excludes the military from goals and strategies. There are no specific goals for marketing designated, eligible sites for defense contractors or preserving the Maxwell AFB mission with knowing and understanding the mission requirements and marketing economic development with those mission requirements in consideration.

Source: Central Alabama Regional Planning and Development Commission, Comprehensive Economic Development Strategy, 2015 Draft

The SCADA's CEDS also recognizes the military presence in Maxwell AFB-Gunter Annex as a strength, providing high skilled, high wage jobs. However, SCADA's CEDS does not include Maxwell AFB-Gunter Annex as a technical support advisor on the committees nor does it include goals, objectives, or actions that indicate they consider Maxwell AFB's mission requirements in their recruiting and marketing of the area. An objective under Goal 1 for Economic Development almost considers the military; however, it does not refer to military operations as requiring protection from obstacles or even maximizing the military operational areas for economic opportunities by partnering with Maxwell AFB and the military to promote compatible economic development. The following objective alludes to the reduction of obstacles and capitalization of opportunities:

- *c.Identify innovative ways to collaborate and address emerging economic opportunities in a manner that will minimize obstacles and maximize gains.*

Based on review of the existing tools, there are no other MOUs or agreements between economic development organizations and Maxwell AFB to capitalize on potential opportunities and minimize developments that would encroach upon the mission.

Findings

- The Montgomery Chamber of Commerce is the local economic development corporate recruitment agency in the JLUS Study Area.
- While the Chamber provides an entire page for Maxwell AFB information and missions, it does not provide contact information to do business with the Air Force.
- The Chamber also does not recognize Maxwell AFB as an economic development partner, as it shows due to the installation not being represented on the maps on the Chamber's website.

- While the CARDPC's and the SCADA's CEDS recognize Maxwell AFB-Gunter Annex as a significant employer generating billions of dollars in regional economic impact, neither plan recognizes Maxwell AFB-Gunter Annex as an economic development partner.
- There are no goals, objectives, or actions in either CEDS that demonstrates an effort to market and recruit other defense contractors that may be more compatible in areas planned for economic development in this region.
- Neither the CARDPC's nor the SCADA's CEDS includes goals, objectives, strategies or actions that consider the military in their recruiting or marketing efforts.

ISSUE COM-5	**Lack of Enhanced, Early Coordination with School Districts** There is currently no communication or coordination with the school district regarding planning and siting of new schools in the JLUS Study Area. This could potentially lead to incompatible land uses in military operational areas.

Pursuant to Alabama State Code Sections 8 and 16, the County Board of Education (CBoE) is authorized to administer, supervise, and manage public schools within the county. The CBoE's rights include the power to authorize the use of appropriated revenue to purchase real estate, perform maintenance and repairs on buildings and other property, convey property to a volunteer fire department, and establish and build new schools.

There are 47 school projects planned for 2016 – 2020 for the Montgomery County School District, seven are building replacement projects, one is a land acquisition, and the remaining are renovation projects. The land acquisition project for the Dunbar-Ramer School is south of the City of Montgomery, well outside of the Montgomery-Maxwell AFB JLUS Study Area. When evaluating the remaining planned projects, it is important to evaluate facility features, such as structure height, including flag poles, which are not regulated within the standard zoning districts, but are enforced within the two-mile Airport Hazard Area overlay; the use of solar arrays and their materials; ball field lighting heights and types; and sound attenuation materials if applicable.

An evaluation of the noise and safety zones associated with the runways at Maxwell AFB did not identify any existing elementary or high schools within the base's noise or safety operational areas. However, Trenholm State Community College, which is a 35-acre technical college offering various programs in professional and technical careers, is located within accident potential zone II (APZ II) of Maxwell AFB's southern runway. Due to the increased risk associated with APZ II, schools are identified as an incompatible use because they concentrate large numbers of people within a small physical footprint and are considered a noise sensitive land use. In the event of an aircraft mishap or increased aviation operational activities, this could have a significant impact on the health and safety of the public and property, including federal, state, county, and private property.

Compatibility Assessment

The Military Land Use Planning Act does not apply to school districts that have the power to purchase and acquire land for the purposes of building new facilities.

The Montgomery CBoE's Policy Handbook includes a statement regarding the siting of new schools, stating that the Board will provide an opportunity for comments and recommendations to be made by citizens, Board members, and school personnel when new school sites are to be selected or acquired. However, the policies do not indicate how the CBoE will notify people of the Board's decision to select or acquire, and the policies do not indicate a timeframe that interested people have to make their comments. The Montgomery CBoE's Policy Handbook does not reflect military

compatibility in that it does not recognize the installation as a partner in land use matters to ensure the protection and preservation of the appropriate learning environment.

The draft multi-jurisdictional MOU developed by Maxwell AFB to enhance and formalize communication and coordination on land use changes that could potentially impact Maxwell AFB missions does not include points of contact information or protocol to coordinate with Montgomery County School District or the CBoE.

Findings

- There is no formal process for the Montgomery CBoE, Montgomery County School District, and Maxwell AFB to coordinate on the siting of new schools, which could lead to new schools being constructed in areas associated with high noise and safety risks to both the public and the military mission.
- The Maxwell AFB Draft MOU does not include school districts as agencies to coordinate with on changes in land use matters including acquisitions and development.
- Military Land Use Planning Act does not apply to school districts that have the power to purchase and acquire land for the purposes of constructing new schools within the same area.

Please see the next page.

5.6. Cultural Resources

Cultural resources are an aspect of a cultural system that is valued by or significantly representative of a culture or contain significant information about a culture. A cultural resource may be a tangible entity or a cultural practice. Tangible cultural resources are categorized as artifacts, records, districts, pre-contact archaeological sites, historic archaeological sites, buildings, structures, and objects. Historic properties are cultural resources that are eligible or listed on the National Register of Historic Places. Cultural resources may prevent development, require development constraints, or require special access by Native American tribal governments or other authorities.

The protection of prehistoric and historic resources is provided through the National Historic Preservation Act (NHPA) as a means to protect historical and cultural items within the United States. The NHPA addresses the preservation of cultural resources including cultural landscapes, traditional cultural properties, sacred sites, and historic and archaeological resources. Documentation of cultural resources and NHPA compliance activities must be coordinated through the State Historic Preservation Office (SHPO).

Cultural resources typically take one of four forms: archaeological, historical, architectural, or traditional cultural properties. Archaeological resources are considered material remains of past human life or activities that provide scientific or social insight into past human cultures. Architectural resources are structures including standing buildings, bridges, dams, canals, etc. of historical, architectural, or engineering significance. Traditional cultural properties are places where associations with cultural practices or beliefs of a living community occurred in the past or are presently occurring.

Special considerations must be made for any development or expansion of military mission activities within areas of cultural significance or sensitivity.

There were no issues identified for Cultural Resources in this JLUS.

Please see the next page.

5.7. Dust, Smoke and Steam

Dust results from the suspension of particulate matter in the air. Dust (and smoke) can be created by fire (controlled burns, agricultural burning), ground disturbance (agricultural activities, military operations, grading), industrial activities, or other similar processes. Dust, smoke and steam are compatibility issues if sufficient in quantity to impact flight operations (such as reduced visibility or cause equipment damage).

Particles of dust and other materials that are found in the air are referred to as particulate matter. At certain concentrations, this particulate matter can be harmful to humans and animals if it is inhaled, as it can cause strain on the heart and lungs which provide oxygen to the body. Particulates can be caused by many activities, including driving on unpaved roads and surfaces, wind erosion from unpaved vacant lots, disruption of land from vehicle maneuvers, explosions, aircraft operations, and other earth-moving activities such as construction, demolition, and grading. Its primary source is typically the exhaust emitted by vehicles, wood burning, and industrial processes.

There were no issues identified for Dust, Smoke or Steam in this JLUS.

Please see the next page.

5.8. Energy Development

Development of energy sources, including alternative energy (such as solar, wind, geothermal, or biofuels) could pose compatibility issues related to glare (solar energy), vertical obstruction (wind generation), or water quality / quantity.

The moving blades of a wind turbine create a Doppler effect that can interfere with radio transmissions and radar systems. The impacts to radar are increased with the height, number, and clustering of wind turbines; however, the greatest impact is caused by their location in proximity to the radar system. Although research is still being conducted, it is not fully known how tall, large, or how many wind turbines must be present to interfere since a radar system may be greatly impacted by even a minor interference.

Relative to renewable solar energy, solar facilities could cause substantial amounts of glare depending on their type, location, angle and direction, resulting in a reduction of a pilot's view, even at a very high altitude.

Key Terms

Alternative Energy. The term alternative energy is applied broadly to energy derived from renewable sources (e.g., solar, hydroelectric, wind).

Radio Frequency Clutter. Radio frequency clutter is produced by rotating turbine blades, which creates an undesired Doppler shift on the radar signal. This effect can be increased when the density of wind turbines is high.

Screening. Screening refers to the blocking out portions of the radar "field of view" so that aircraft control instrumentation and / or personnel cannot see aircraft that fly behind the "screen."

Issue Assessment

ISSUE ED-1	**Alternative Energy Development Coordination** There are no formal local procedures for coordinating alternative energy development proposals with the DOD and Maxwell AFB.

Compatibility Assessment

Certain alternative energy projects such as solar and wind development can create incompatibilities with aircraft communications and operations through their design. Solar and wind energy development is not as prevalent in Alabama as in some of the neighboring states; however, as the technology for solar energy evolves, and the cost of attainment decreases, solar is becoming more practical as an alternative source of energy production.

Wind energy can impact aviation activities by creating halo effects on radar making communicating with aircraft between ground control challenging. This can create false radar readings that make it appear that there are aircraft flying in the area that are not actually there. Wind energy projects, typically commercial / utility scale projects, have the potential to affect radar operations and communications at Maxwell AFB due to interference, which is dependent upon the height and density of the turbines, as well as their proximity to Maxwell AFB's operational areas.

According to the National Renewable Energy Laboratory, there is mild to moderate potential for wind energy in the Montgomery region, although not in the immediate vicinity of the City of Montgomery due to its urban

characteristics. Areas to the north and northeast in Autauga and Elmore counties, and areas south and southeast of Montgomery in the Montgomery County have gross capacity factors of 35 percent or higher for large-installation wind energy development for turbines at 140 meters as illustrated on Figure 5.8-1. This means there is good potential for wind energy development in these areas which could cause concern for not only Maxwell AFB but also Montgomery Regional Airport.

This potential, combined with the lack of regulations for alternative energy development within the state is the primary concern related to this JLUS.

There is also a potential for solar energy development in Alabama, with the potential being estimated as moderate, ranging from 5.1 to 5.5 kilowatt-hours per square meter per day (kWh/m^2/Day), with the Montgomery region falling into the higher end of the kilowatt-hour range. This also means the region has good potential for solar energy development as shown on Figure 5.8-2.

Solar energy development may be more attractive than wind energy in the JLUS Study Area as the technology allows for better integration within communities. Solar panels are often placed on rooftops and covered parking structures, where they are generally out of sight. It is the materials used in the construction of the solar panels that are of particular concern in this JLUS. Solar panels may be constructed with reflective materials which are meant to assist in the generation and distribution of energy, but can also cause unintended glare for military and civilian pilots. The glare from certain materials used in the construction of solar panels can temporarily impact the vision of pilots in the vicinity of airfields or within designated flight routes. The temporary visual impairment of pilots can increase the risk of aircraft mishaps, ultimately increasing the risk to pilot safety and the general public.

Despite the benefits of alternative energy developments, in terms of additional revenue and potential cost savings, as well as public policy benefits to municipal, county, and state government agencies, the potential hazards associated with both wind and solar energy development pose real concerns for the safety of pilots and for the general public.

Maxwell AFB is currently exploring the potential of an Enhanced Use Lease (EUL) for a solar energy installation on the eastern side of base property. The solar installation would provide an additional buffer between the city property and installation activities as well as generate power for the base. While solar energy has many benefits, it does create the potential for some issues, like glare (also referred to as reflectivity). Photovoltaic system panels are the most compatible with aircraft operations for some of the following reasons:

- They have a low profile and modular design, which is compatible with low-demand property such as rooftops and airfields, and
- They are designed to absorb sunlight (rather than reflect it), minimizing potential impacts of glare.

The discussion of utilizing an EUL is still in progress, and no final determination has been made.

In 2014, the Alabama State Legislature attempted to pass statewide legislation to regulate wind turbines. Senate Bill 12 was developed in response to an interest in developing a 60 turbine wind farm that would span over two counties in northeastern Alabama. Senate Bill 12 did not pass; however, a few local bills have been passed in some communities to require certain distances and noise setbacks of such turbine developments. These local bills have served as a deterrent to wind energy developers, which actually means potentially lost revenues for the local communities.

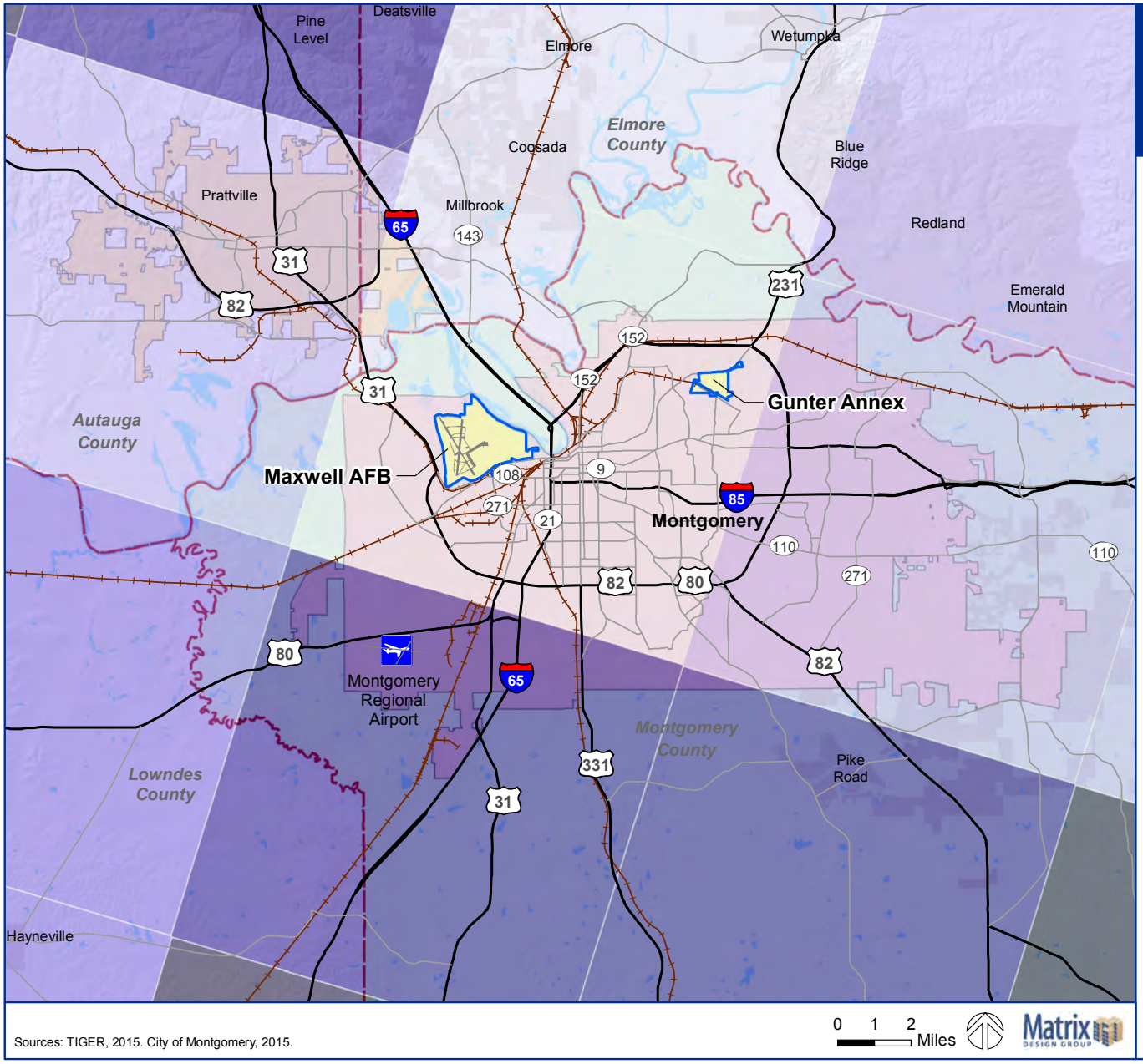


Figure 5.8-1

Wind Energy Potential at 140 Meters

Legend

Potential Wind Capacity At 140 Meters Using Current Technology

35% Or Higher Gross Capacity (Area - sq. KM)

- 0 sq. KM
- 1 - 100 sq. KM
- 101 - 200 sq. KM
- 201 - 300 sq. KM
- 301 - 400 sq. KM
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

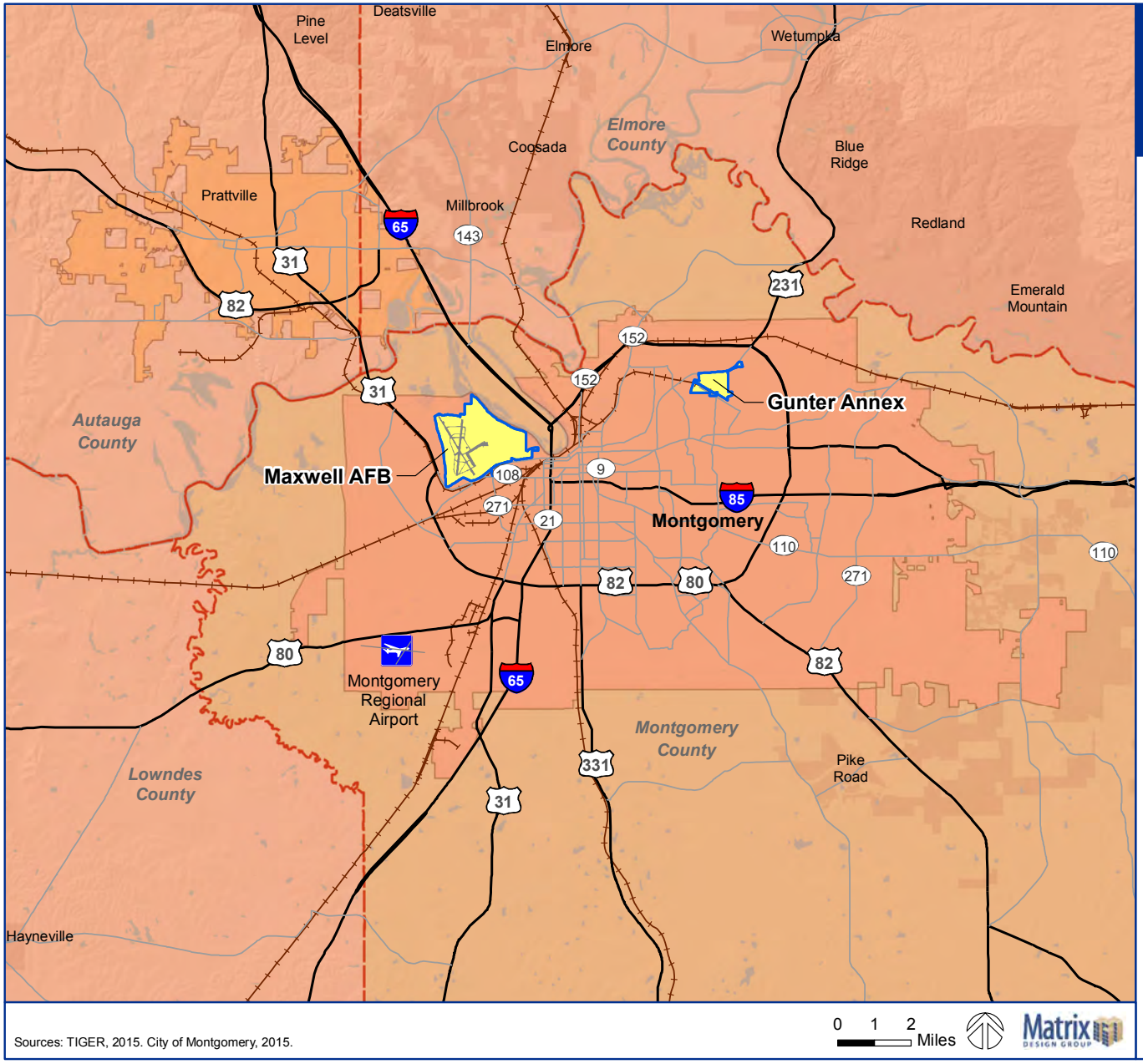


Figure 5.8-2

Photovoltaic Solar Energy Development Potential

Legend

Potovoltaic Potential Output
kWh/m²/Day

- 5.1 - 5.5 Moderate to High
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

The State of Alabama's Energy Policy Committee is responsible for developing and recommending to the Governor and the State Legislature Alabama's Energy Plan. The Plan is required to provide actions for addressing short and long term energy challenges, including alternative energy sources.

There are currently no regulations on alternative energy development for the state, for the counties of Autauga, Elmore, and Montgomery, or for the City of Montgomery, which could result in potentially incompatible siting of solar arrays and wind turbine installations. Moreover, there are no formal coordination procedures between the communities and military regarding these types of development.

Findings

- The State of Alabama has not successfully established permitting or regulations for the development of alternative energy.
- The zoning regulations for the local jurisdictions do not regulate wind turbine or solar developments.

Please see the next page.

5.9. Frequency Spectrum Capacity

Frequency spectrum refers to the range of electromagnetic waves capable of carrying signals for point-to-point wireless communications. In a defined area, the frequency spectrum is limited and increasing demand for frequency bandwidth from commercial applications such as cellular phones, computer networking, GPS units, and mobile radios, is in direct competition with the capacity necessary for maintaining existing and future missions and communications on installations.

There were no issues identified for Frequency Spectrum Capacity in this JLUS.

Please see the next page.

5.10. Frequency Spectrum Interference / Impedance

The frequency spectrum is the entire range of electromagnetic frequencies used for communications and other transmissions, which includes communication channels used for radio, cellular phones, and television. In the performance of typical operations, the military relies on a range of frequencies for communications and support systems. Similarly, public and private users rely on a range of frequencies in the use of cellular telephones and other wireless devices used on a daily basis.

Technical Background

The military's use of frequency spectrum allows for safe operations and the effective delivery of weapons on-target without interference. The military's frequency spectrum needs for testing, evaluation, and training are constantly increasing, while the spectrum available for DOD use is decreasing. The National Telecommunications and Information Administration (NTIA) Office of Spectrum Management explains that:

> *…almost every agency of the Federal Government uses the spectrum in performing mandated missions. The DOD uses the spectrum extensively for tactical uses and non-tactical uses. In the United States tactical uses are generally limited to a number of specific testing sites and training facilities, but DOD's non-tactical applications are extensive and include aircraft command and control, mobile communication in and around military bases, and air fields and long distance communications using satellites.*

Frequency interference is related to other transmission sources. Interference can result from a number of factors, including:

- Using a new transmission frequency that is near an existing frequency;
- Reducing the distance between two antennas transmitting on a similar frequency;
- Increasing the power of a similar transmission signal;
- Using poorly adjusted transmission devices that transmit outside their assigned frequency or produce an electromagnetic signal that interferes with a signal transmission; and
- Existing electronic sources and uses created by portable systems affecting entire communities utilizing Wi-Fi broadband systems and industrial sources that produce electronic noise by-product.

In order to successfully complete its operational activities within the installation and its training areas, the military relies on a range of frequencies for communications and support systems. Since 1993, Congress has been selling federal spectrum bands for reallocation to the private sector, promoting the development of new telecommunications technologies, products, and services. The expanding public and commercial use of the frequency spectrum from wireless transmitters to consumer electronics can encroach on the military's use of the frequency spectrum. Increasing community and DOD demands for this important resource can create conflicts for all users.

Key Terms

Frequency Impedance. Frequency impedance refers to the interruption of electronic signals due to the existence of a structure or object between the source of the signal and its destination (receptor). Certain structures have the potential to block, or impede, the transmission of signals from antennas,

satellite dishes, or other transmission / reception devices affected by line-of-sight requirements.

Frequency Interference. Frequency interference refers to the inability to effectively distribute or receive a particular frequency because of similar frequency competition. As the use of the frequency spectrum increases (such as the rapid increase in cellular phone technology over the last decade) and as development expands near military installations and operational areas, the potential for frequency spectrum interference increases.

Issue Assessment

ISSUE FSI-1	**Frequency Interference Concern** Concern about potential future development near the Gunter Annex area could potentially disrupt transmission signals.

There is a general concern about development particularly businesses that use frequencies to perform their core business operations. Certain potential future development that occurs outside the Gunter Annex facility can potentially impact the missions of Gunter Annex. If certain types of business development is permitted to locate immediately outside the Gunter Annex without coordination with the military, then frequency interference could potentially interrupt operations at Gutner Annex and for the business. This could delay operations for the military and the commercial business.

Compatibility Assessment

According to the Memorandum of Understanding between the Cities of Millbrook, Montgomery, and Prattville, the Counties of Autauga, Elmore and Montgomery and Maxwell AFB for Zoning and Land Use Change Notifications and pursuant to the Alabama Military Land Use Planning Act, development may not be approved by any local jurisdiction prior to vetting it through Maxwell AFB. This is a good measure of land use compatibility planning; however, it does not necessarily provide all the necessary measures to prevent the location of certain frequency-dependent businesses immediately outside the Gunter Annex facility.

In addition, the City's, County's, and State's Business License Application does not currently request the frequency the prospective business requires to perform their core business operations. This lack of information on the application can produce oversight and permit businesses that could potentially generate frequency interference with Maxwell AFB at Gunter Annex. Moreover, the city does not have a frequency zoning ordinance to protect both the Base and prospective businesses that desire to locate in the area around Gunter Annex.

Findings

- The City of Montgomery, Montgomery County, and the State of Alabama Business License Application does not contain an item that requests the frequency for certain frequency-dependent businesses to operate in the area.
- The City of Montgomery does not have a frequency zoning ordinance.
- Maxwell AFB does not have a frequency spectrum management plan.

5.11. Local Housing Availability

Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may result from changes in the number of military personnel, and the supply of military family housing provided by the installation.

There were no issues identified for Housing Availability in this JLUS.

Please see the next page.

5.12. Infrastructure Extensions

Infrastructure refers to public facilities and services such as sewers, water, electric, and roadways that are required to support development (existing and proposed).

Public facilities and services should be appropriate for the type of urban or rural development they serve, but also limited to the existing and planned needs and requirements of the area. For example, the provision of a safe transportation system, including all modes of transportation (automobile, mass transit, railway, highway, bicycle, pedestrian, air, water, etc.), is an important infrastructure component. Adequate transportation infrastructure contributes to local, regional, and state accessibility.

Infrastructure plays an important role in land use compatibility. Infrastructure can enhance the operations of an installation and community by providing needed services, such as sanitary sewer treatment and transportation systems. Conversely, infrastructure can create encroachment issues if expanded without consideration of the consequences of future development. The extension or expansion of community infrastructure to a military installation or areas proximate to an installation has the potential to induce growth, potentially resulting in incompatible uses and conflicts between a military mission and communities. Within comprehensive planning, infrastructure extensions can serve as a mechanism to guide development into appropriate areas, protect sensitive land uses, and improve opportunities for compatibility between community land uses and military missions.

There were no issues identified for Infrastructure Extension in this JLUS.

Please see the next page.

Compatibility Assessment 5

5.13. Competition for Land, Air, and Sea Spaces

The military manages or uses land, air, and sea space to accomplish testing, training, and operational missions. These resources must be available and of a sufficient size, cohesiveness, and quality to accommodate effective training and testing. Military and civilian air and sea operations can compete for limited air and sea space, especially when the usage areas are in close proximity to each other. Use of this shared resource can impact future growth in operations for all users.

The land, air, and sea spaces used by the military can be owned by the DOD, designated for DOD use by a federal or state agency, provided through easements or other agreements with public or private entities, or maintained as a historic usage right. Public and private requests to share or assume some of these resources may have a negative impact on military training and test objectives.

Key Terms

General Aviation. General aviation is defined as aviation activity that is not commercial or military. This term typically covers all civil aviation operations other than scheduled air services and non-scheduled air transport operations for hire.

Controlled and Uncontrolled Airspace Descriptions

To help air traffic controllers and pilots manage varying traffic conditions in the sky, United States airspace is divided into six different classes (A, B, C, D, E, and G). These classes each have different requirements for entry into the airspace, pilot qualifications, radio and transponder equipment, and Visual Flight Rules (VFR) weather minimums.

Class D Airspace. Both Maxwell AFB and Montgomery Regional Airport have Class D airspace surrounding them. Class D airspace encompasses an area within a five-nautical mile (NM) radius of the center of the airfield that extends upward to 2,500 feet mean sea level (MSL). Given the proximity of the airfields, there is not enough space to provide the full five-NM radius, because of the overlap in airspace for Maxwell AFB and Montgomery Regional Airport. However, the FAA designs and individually tailors Cass D airspace to be able to contain instrument procedures. Use of Class D airspace requires the use of two-way communication with Air Traffic Control, which must be established prior to entering Class D airspace. No transponder is required. VFR flights in Class D airspace must have three miles of visibility, and fly an altitude of at least 500 feet below, 1,000 feet above, and 2,000 feet laterally from clouds.

Issue Assessment

ISSUE LAS-1	**Competition for Airspace**
	There is an overlap of operational areas between Montgomery Regional Airport and Maxwell AFB. This creates competition for local airspace between military and civilian aviation operations.

Maxwell AFB is located approximately five NM north of Montgomery Regional Airport-Dannelly Field, which creates an overlap of operational areas within the Class D airspace. Due to the proximity of the airport to the Base, air operations are coordinated through the FAA and all flight paths into

and out of Maxwell AFB are integrated with operations at Montgomery Regional Airport (MGM) in order to minimize airspace conflicts.

Class D airspace around Maxwell AFB and Montgomery Regional Airport

While this arrangement manages the competition for airspace in this area and military and civilian air operations, there are restrictions on Maxwell AFB operations resulting from this arrangement. They are:

- Opposite direction traffic is restricted to certain types of missions;
- Transient aircraft are limited in their use of the airfield to practice approaches;
- When weather does not permit VFR, pilots are often forced to perform full-stops, or utilize alternate airfields to practice multiple approaches;
- Restrictions on radar approaches have resulted in segmented training for pilots, leading to an increase in additional simulation training for controllers, which means reduced realism for training scenarios, and;
- Expansion of civil air operations in the region may lead to an increase in airspace competition within the MTRs utilized by Maxwell AFB.

Due to these restrictions, Maxwell AFB utilizes training routes that, at times, compete with uncontrolled airfields within the area including the airfield in the City of Prattville in Autauga County, Wetumpka Municipal Airport, and other private airfields.

Despite these restrictions and the use of other area airfields, the current arrangement on airspace adequately balances the current Maxwell AFB mission operations with surrounding commercial activities. However, if Maxwell AFB or Montgomery Regional Airport increase their air operations in the future, then the arrangement could potentially create conflicts with air traffic in this area. This could result in delays not only for military operations but also in commercial flights and operations.

Compatibility Assessment

A Letter of Agreement (LOA) between the 42D Operations Support Squadron, the 908th Operations Group, and the Montgomery Regional Airport Approach Control Tower establishes protocol and coordination procedures for aircraft approaches to and departures from Maxwell AFB. The LOA is a supplement to procedures defined in FAA Order 7110.65, Air Traffic Control. The LOA stipulates:

908th AW Operations and Procedures

Departures:

- *Runway 33: If a climb on coarse clearance is received, aircraft will maintain runway heading until 2 DME from the MFX TACAN then turn to the appropriate heading.*
- *Runway 15: The normal procedure will be to execute a right or left hand climbing turn within 2 DME of the MXF TACAN.*

Arrivals:

- *Downwind / Overhead: Unless otherwise approved, utilize rectangular traffic patterns. Traffic pattern altitude is 1,200 feet for the downwind and 1,700 feet for the overhead.*
- *Random Shallow Approaches (RSHA): Random shallow approaches may be flown to Runway 15 or to the Landing Zone only under visual flight rules (VFR). Initial entry from south or east is not authorized. Altitude may be no lower than 300 feet AGL day and 500 feet AGL night.*
- *Random Steep Approaches (RSA): May be flown to the main runway (15/33) or to the Landing Zone. Entry may be from any direction other than south. Initial approach altitude is 4,700 feet mean sea level (MSL) and the aircraft must remain within 3 NM of the runway at all times. MGM Approach may approve / disapprove higher altitudes or recommend another altitude based on existing traffic.*

The LOA indicates restrictions on the use of Runway 33, which effectively limits the capabilities of this runway to operations related to departure only. Approaches to Maxwell AFB from the south are typically not authorized. While the LOA provides procedures to facilitate safe air operations at Maxwell AFB, it does so at the expense of limitations on training capabilities.

Maxwell AFB's Air Installation Compatible Use Zone (AICUZ) Study indicates that closed pattern traffic is largely encouraged on the northern portion of the airfield in order to de-conflict with arrival / departure traffic at Montgomery Regional Airport.

The AICUZ and the LOA both discuss how operations at Maxwell AFB are restricted or modified in order to coordinate aircraft operations at Maxwell AFB and Montgomery Regional Airport; however, the restrictions and limitations may potentially cause undue burden or inconveniences for air traffic controllers and pilots in training.

Source: Letter of Agreement, 42d Operations Support Squadron, 908th Operations Group, and Montgomery Approach Control and Tower, 2015; Maxwell AFB Air Installation Compatible Use Zone, 2009; Maxwell AFB Internal ICEMAP, Draft 2015

It should be noted that the Montgomery Chamber of Commerce is working to enhance the Montgomery Regional Airport, including increasing commercial development, passenger traffic, and expanding the runway. If MGM expands upon services and operations, then the LOA and airspace utilization could be constrained more without appropriate coordination with the military.

Findings

- Airspace restrictions at Maxwell AFB require increased coordination and shared airspace control with Montgomery Regional Airport, which impacts the ability to provide fully effective training for air traffic controllers, resulting in an increase in simulated training and a decrease in real world experience.
- Operational limitations on Runway 33 due to airspace conflicts with Montgomery Regional Airport have created airfield limitations, potentially impacting airfield utilization by military and transient aircraft.
- Currently, the LOAs design a process for sharing the airspace around MGM and Maxwell AFB with the current operations of both airports. If either airport increases in operations or services, then the airspace utilization could become more constrained.

Compatibility Assessment 5

5.14. Land Use

The basis of land use planning and regulation relates to the government's role in protecting the public's health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for avoiding or resolving land use compatibility issues. These tools ensure the separation of land uses that differ significantly in character. Land use separation also applies to properties where the use of one property may adversely impact the use of another. For instance, industrial uses are often separated from residential uses to avoid impacts related to noise, odors, lighting, and so forth.

Key Terms

Land Use Planning. Land use planning stems from the Supreme Court decision of *Euclid vs. Ambler* which enabled jurisdictions to regulate land use through zoning in order to protect the public's health, safety, morals, and welfare. Zoning is a land use regulation tool used by local jurisdictions that generally controls for use, density, intensity, building heights, and setbacks on a parcel or lot. Most states, like Alabama, enacted enabling legislation for local jurisdictions to also create and adopt general or comprehensive plans, which are land use documents that broadly establish a vision, goals, policies, and implementation activities for a jurisdiction over a certain period of time, usually 10 to 20 years, to promote compatible land use, guide growth and logical, orderly development.

Sensitive Land Uses. In terms of compatibility assessment, sensitive land uses are uses that are susceptible to, and affected by, nuisances such as noise, dust and air pollution. Sensitive land uses typically include residential areas, hospitals, convalescent homes and facilities, schools, libraries, churches, and other similar land uses.

Technical Background

Land use planning around military installations is similar to the process for evaluating other types of land uses. For instance, local jurisdictions consider compatibility factors such as noise when locating residential developments near commercial or industrial uses. As the land between local municipalities is developed, or the land between a local municipality and the perimeter of a military installation is developed, both entities are affected. New residents, tenants, or building owners are typically not fully aware of the implications of locating in close proximity to an active military installation and / or training area.

Among the most pressing factors causing incompatibility with installations containing a military airfield and weapons training are the proximate areas of encroaching development, as well as off-installation light pollution from that development which may impact the military operations. The development of land uses incompatible with installation military operations threatens that installation's mission success and its continued existence.

Issues Assessment

ISSUE LU-1	**Proposed Future Development Compatibility** There is a concern about the compatibility of proposed future development in the vicinity of Maxwell AFB. Certain types of development can create compatibility issues if not coordinated with the military, i.e. development that attracts large congregations of people, outdoor lighting for such development, and water features could attract birds and wildlife to the area of air operations potentially creating an incompatible environment.

There are several areas within the imaginary surfaces of Maxwell AFB that are currently being evaluated for potential future development, as illustrated on Figure 5.14-1. The areas identified for proposed development within this area have been discussed to include, but not limited to, recreational areas that could encourage congregations of people in this area. This could result in safety concerns and hazards to air operations. The proximity of these areas to Maxwell AFB and its aviation operational areas can potentially create compatibility concerns. While there are compatibility policies and land use regulations in place, they do not address the compatibility concern associated with large congregations of people, lighting, and bird and wildlife attractants. Without consideration for the military and civilian operations in the vicinity, proposed development could increase the risk for incompatible development.

According to input received during stakeholder interviews, the proposed development for the areas illustrated on Figure 5.14-1 was designed to enhance the land and attractability of the Alabama River, which could promote further future development. Recreational, entertainment and potential land uses that would thrive in a city center-type of environment were discussed by City officials and property developers as potential land uses for the area around the Alabama River. Depending on site plans and design features of the recreational and entertainment-type land uses, they can potentially attract large concentrations of people to a high risk, noisy area and increase light pollution in this area. Without coordination with the Air Force and the Base, the recreational and entertainment land uses could potentially result in a higher risk profile for the Base and render potential future mission capabilities obsolete. Thus, there is a real concern that there could be missed economic opportunities for both Maxwell AFB and the surrounding communities.

Compatibility Assessment

The 2009 Maxwell AFB Air Installation Compatible Use Zone (AICUZ) Update establishes several modeled safety and noise risk areas for Maxwell AFB that impact land outside the base. The AICUZ report also recommends various land uses that are considered compatible, not compatible, and compatible with conditions. The recommended guidance is designed to protect the general welfare and safety of the public while simultaneously protecting the military operational mission. While the AICUZ recommends certain land uses to be compatible, incompatible, and compatible with conditions, the City of Montgomery's Zoning Ordinance does not incorporate this guidance into their ordinance. The AICUZ recommended land uses guidance is also not in the City's Airport Hazard Area Overlay, which is discussed in the following paragraphs.

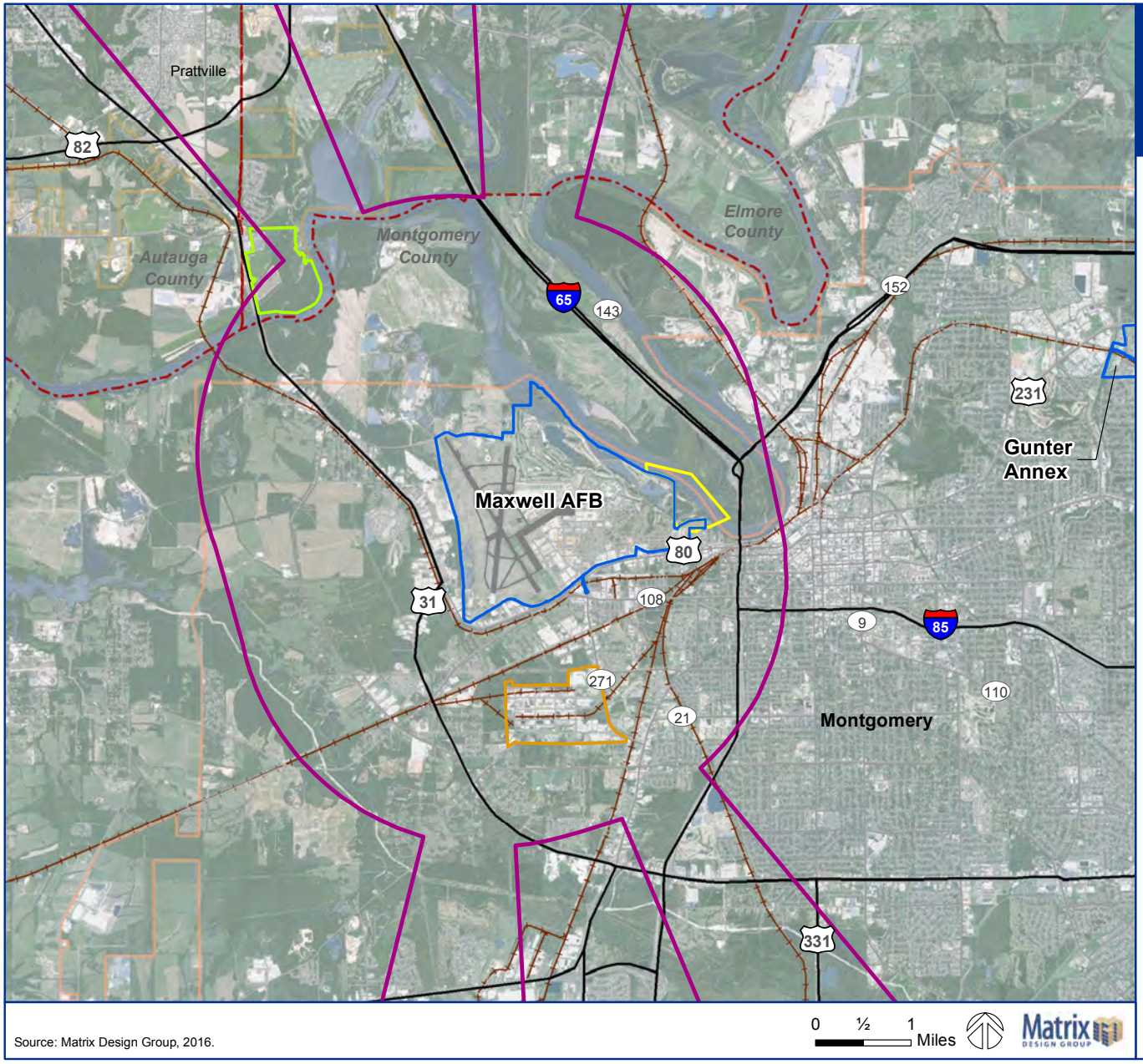


Figure 5.14-1

Proposed Future Development Concern

Legend

- Undeveloped Lands Compatibility Concern

Proposed Development Concerns

- Open Space Proposed for Park Development
- Existing Industrial Park Proposed for Further Development
- Proposed Developments

- Installation
- City of Montgomery
- City of Prattville
- Other County
- Interstate / Highway
- Major Road
- Railroad
- Runway

The City of Montgomery's Zoning Ordinance includes an Airport Hazard Area (AHA) establishing height restrictions of certain land uses within two miles of Montgomery Regional Airport and Maxwell AFB. While this two mile area around these airfields addresses a primary area of concern, it does not capture all the areas of concern regarding potential airspace obstruction around the airfields. The AHA does not address other compatibility factors such as lighting near airfields, land uses that create bird / wildlife aircraft strike hazards (BASH) incidents, and land uses that attract large numbers of people.

The AHA establishes additional regulations for certain zoning districts. While the AHA requires 35 feet as the maximum height for all land uses located in the two mile area, the M-3 or General Industrial Zoning District is permitted in this area to exceed 35 feet with a maximum allowable height of 45 feet. The AHA also requires that trees be maintained to a maximum height of 35 feet.

While the AHA is a useful tool to establish some regulations for development, there is no requirement for the City to coordinate with or allow review by Maxwell AFB for proposed development in the two-mile area.

Findings

- The imaginary surfaces of Maxwell AFB are not included in the City's Zoning Ordinance.
- The City of Montgomery's Zoning Ordinance and Smart Code do not reflect military compatibility guidelines by including the recommended land use guidance.
- The AHA does not comprehensively reflect military compatibility around airports.
- There are no requirements for coordination between the military and City in development review applications.

ISSUE LU-2	**Undeveloped Land Concern** There is a general concern about the undeveloped land in the vicinity of Maxwell AFB. If developed without military review, the land could potentially create incompatible land uses with the military mission.

The undeveloped land in the vicinity of Maxwell AFB combined with the relatively minimal military compatibility policies and land use regulations that provide limited control of the land in the area near the airfield create an overall general concern for the Air Force. Figure 5.14-2 illustrates all the undeveloped land within the imaginary surfaces of Maxwell AFB. However, some of these parcels contain natural bodies of water and are near flood-prone areas, which makes them unlikely candidates for future development. The figure also layers the 100-year floodplain over the undeveloped land, which for all purposes of this JLUS, the parcels located within this 100-year floodplain are excluded from this assessment as it is unlikely potential future development would occur in these areas.

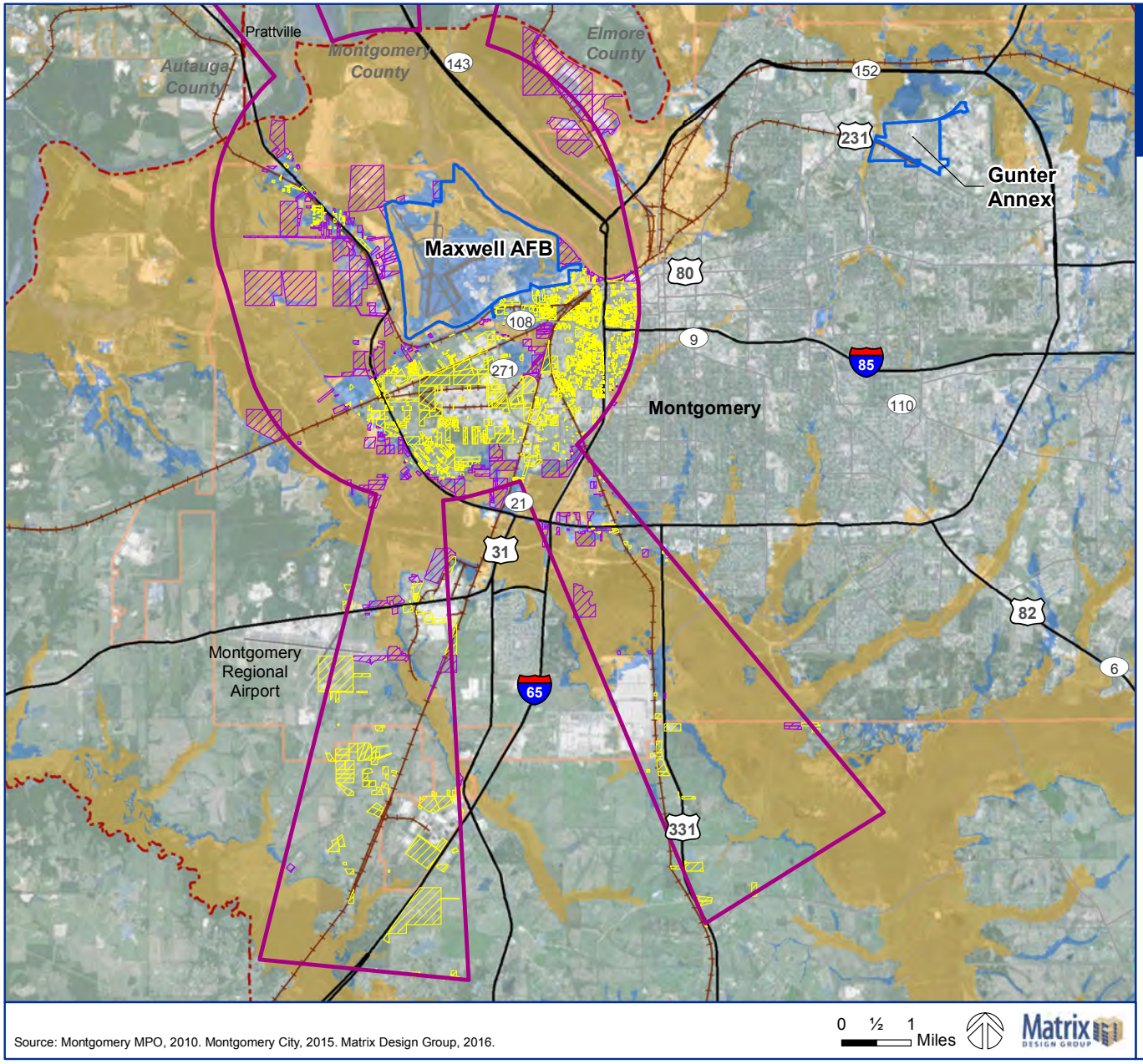


Figure 5.14-2

Undeveloped Lands Concern

Legend

- Undeveloped Lands Compatibility Concern Area

Undeveloped Land and Water Areas

- Not in the 100 Year Flood Zone
- At Least Partially in the 100 Year Flood Zone

Flood Hazard Areas

- 100 Year Flood Zone
- 500 Year Flood Zone

- Installation
- City of Montgomery
- City of Prattville
- Other County
- Interstate / Highway
- Major Road
- Railroad
- Runway

There are 2,695 parcels within the undeveloped land concern area totaling approximately 5,400 acres, of which 270 parcels or approximately 3,000 acres are identified as exclusionary land as they are located within the 100-year floodplain. Of the undeveloped parcels remaining (not in the floodplain), the largest parcel is located in the southern approach-departure clearance surface of Maxwell AFB's landing zone and is approximately 187.67 acres.

There are discussions for large-scale proposed developments to focus on taking advantage of the region's manufacturing capabilities including complexes that support the automotive manufacturing and support plants, aerospace industries, and other high technological industries. These opportunities have been identified as ideal in the rural portions of the city to the south and southeast of Maxwell AFB. However as illustrated on the map, these areas are also impacted by aviation operations—low altitude aircraft, noise, and potentially vibrations. This could result in incompatible development and potentially loss of economic opportunity.

Compatibility Assessment

There are no tools that address this issue. Neither the City of Montgomery's Zoning Ordinance nor SmartCode reflect military compatibility guidelines and do not identify specific areas where military compatible land uses would be ideal and would be an incompatible land use for both the military and community.

Findings

- Local tools do not reflect military compatible land use guidelines.

5.15. Legislative Initiatives

Legislative initiatives include those existing and proposed federal, state, and local laws and regulations that may have a direct or indirect effect on a military installation to achieve its current or future mission.

Federal, state, and local legislative initiatives are important regulatory tools to guide the actions of both local jurisdictions and the military installation. This legislation is not mutually exclusive, and as such, it fosters both parties to work together in partnership to improve operational and community sustainability objectives.

There were no issues identified for Legislative Initiatives in this JLUS.

Please see next page.

5.16. Light and Glare

This factor refers to man-made lighting (street lights, airfield lighting, building lights) and glare (direct or reflected light) that disrupts vision. Light sources from commercial, industrial, recreational, and residential uses at night can cause excessive glare and illumination, impacting the use of military night vision devices and flight operations. Conversely, high intensity light sources generated from a military area (such as ramp lighting) may have a negative impact on the adjacent community.

Enhancements in technology have made it possible for the Air Force to be on the cutting edge of nighttime warfare. Night vision devices and other special operations tactics are deployed to enable strategic nighttime warfare. Thus, nighttime warfare enables the military to execute a multi-faceted offensive strategy under the cover of darkness. In order to be successful in combat, the military must train under conditions and environments similar to what is found in combat theaters. Night vision devices allow military personnel to train in near-daylight conditions during nighttime hours.

Under dark sky conditions, the use of night vision goggles (NVG) allows military personnel to view objects up to a distance of 300 meters away (984 feet); however, lighting located nearby can decrease the NVG effectiveness to a distance of 50 meters (164 feet) or less. Off-installation lighting, such as street lights or other elevated structures that are lit at night, also produces a halo effect around objects, which further reduces visibility and resolution for air and ground personnel. The amount of ambient light experienced on the ground is a function of:

- intensity of nearby light sources (up to 20 miles away);
- distance from the sources;
- spectra of the light sources (blue light decays faster in the atmosphere);
- density of the cloud deck;
- height of the cloud; and
- relative humidity.

Key Terms

Glare. Glare refers to the brightness of direct or reflected light when looking directly toward it.

Horizon Brightening. Horizon brightening refers to sky glow at the horizon.

Night Vision Device. An optical instrument that allows images to be produced in varying levels of light approaching darkness. These devices are often used by military and law enforcement agencies.

Light Pollution. Light pollution refers to the impact of natural or artificial light on the natural nighttime environment. Light pollution has three components: Sky glow, light trespass, and glare.

Light Trespass. Light trespass refers to spill light or excess light falls where it is undesirable.

Sky Glow. Sky glow refers to the brightening of the night sky, which leads to decreased star visibility.

Technical Background

In measuring light pollution, the proximity to a community has a significant effect on the amount of light pollution that saturates the sky. Proximity twice as close to a community makes its sky glow appear approximately six times brighter.

Sky glow from communities typically diminishes in the later hours of the night, when businesses close and some lights are turned off. It follows that, as development continues to progress outward from a community, the area and amount of light pollution can increase. Increased light pollution can cause an increase in the amount of sky glow, and ultimately create compatibility issues with military missions.

The impacts of the use of outdoor lighting on the dark skies are primarily determined by two principal factors – the amount of developed land (density) and the distance of the developed land from the installation or training area. The relationship between density and distance is best demonstrated using an estimate of urban sky glow called Walker's Law. The relationship captured through the use of this formula was developed based on measurements of sky glow for a number of cities in California. The following formula is used to estimate sky glow at an observing site looking at a zenith angle of 45 degrees toward an urban source:

$I=C \times P \times R^{-2.5}$ or $I=C \times P \times R^{\wedge(n)}$

Where:

I = Percent increase of the night sky brightness above the natural background, at 45°down from directly overhead (facing the community, directly overhead is roughly ¼ of this value),

P = Population of the community,

R = Distance, in kilometers, from the observing site to the center of the community,

"C" = 0.01 for "R" values between 10 and 50 km, and

"n" = 2.5 for "R" values between 10 and 50 km

According to the National Oceanic and Atmospheric Administration (NOAA), the assumed radius of a community is a function of its population, ranging from 2.5 km to 24 km. Walker's law applies if the installation is outside the community radius. If located inside the community radius, the sky glow increases in a linear manner toward the center by another factor of 2.5.

Consider the following examples:

Scenario 1: A 100-acre development located two kilometers from the installation with a density of six units per acre (assuming 2.5 persons per household) would impact the sky background by over 260 percent (nearly 663 percent with NOAA factor).

Scenario 2: A 100-acre development located 20 kilometers from the installation with a density of six units per acre (assuming 2.5 persons per household) would impact the sky background by approximately less than 1 percent (just over 2 percent with NOAA factor).

If the density was decreased to one unit per acre the resulting scenarios would result in the following increased sky glow:

Scenario 1: Approximately 44 percent (almost 111 percent with NOAA factor).

Scenario 2: Approximately less than 1 percent (still less than 1 percent with NOAA factor).

In general, the following trends are demonstrated:

- The more dense the urban development, the greater the potential for light intrusion.
- The closer development is to the installation, the greater the potential for light intrusion.

Issues Assessment

ISSUE LG-1	**Preserve Capability for Night Mission Training**
	While the is no current impact to night mission training, there is concern with potential future development that could create light pollution and horizon brightening. This would impact the effectiveness of night vision devices, ultimately affecting the overall capability of Maxwell AFB executing nighttime training.

Land near the northeastern perimeter of Maxwell AFB is a premier location for the development of commercial, recreational, and entertainment land uses because of its attractive location along the Alabama River. These types of development typically require outdoor lighting for businesses, parking areas, and structures designed for outdoor events, such as sports arenas and amphitheaters. According to the 2009 Maxwell AFB AICUZ Study, there are numerous flight tracks over the areas that have been identified for potential development. There is a concern regarding these types of development and their locations because these areas experience flyovers from lower altitude and slower aircraft, which can create potential hazards for the aircraft and pilots flying the aircraft. The aircraft in these areas are usually preparing to depart or approach and as such need an optimum environment, especially at night, where ambient light does not impair the pilots' vision during these aviation operations. Unshielded and not fully cutoff light fixtures in these areas near the runway can increase horizon brightening and glare which could directly increase light pollution in this area rendering this environment not ideal for nighttime training. Ultimately, if the night environment is degraded, then it becomes an ineffective training location for nighttime training of C-130 pilots, which could impact mission capabilities at Maxwell AFB by limiting their ability to conduct night training.

It should be noted that light pollution has had an effect on military training from as far as 10 to 20 miles away from the military installation in other locations across the United States. It is important to Maxwell AFB that the dark skies night environment be protected to ensure the capability to train at night in the future.

Compatibility Assessment

The City of Montgomery Zoning Ordinance does not establish military compatible lighting regulations or provide general lighting requirements that would minimize light pollution. Article VI, General Provisions of the City's Zoning Ordinance provides some requirements for parking lot lighting, but the language is specific to minimizing impacts on adjacent residential properties and roadway traffic.

Article VIII, Airport Hazard Areas, is a City of Montgomery overlay area which was adopted to protect the areas within two miles of the Montgomery Regional Airport and Maxwell AFB. While Article VIII is useful in controlling the height of structures and trees within the two-mile area, the overlay does not establish lighting regulations. This is of concern during night training as two miles from the ends of both runways should be isolated to only runway lighting to facilitate a safe landing. When light is emitted from the community, it can obscure the view for pilots, potentially causing unsafe landing conditions.

Article IX, Outdoor Advertising Signs and Structures, requires lighting for advertising signage to not be illuminated by flashing or moving flickers of light components unless the signs are providing public information such as

weather, time, date, and news. These lighting restrictions for signage also require shielded lights to prevent light trespass from occurring on roadways where glare can impact drivers. Additionally, the signs should not be illuminated in any way that obscures the views of official traffic signs, devices, and signals.

The City of Montgomery's Subdivision Regulations do not include regulations for outdoor street lighting.

The City of Prattville's Zoning Ordinance only requires the location information of all exterior lighting fixtures and design features of lighting in the preliminary site plan and the final site plan. The ordinance does not establish restrictions for lighting.

Findings

- The City of Montgomery adopted very minimal lighting restrictions that generally address light trespass on public rights-of-way, advertisement signs, and parking lot lighting. However, the ordinance does not reflect military compatibility guidelines for lighting.
- The City of Prattville has not established lighting regulations.

5.17. Marine Environments

Regulatory or permit requirements protecting marine and ocean resources can cumulatively affect the military's ability to conduct operations, training exercises, or testing in a water-based environment.

There were no issues identified for Marine Environments in this JLUS.

Please see the next page.

5.18. Noise

Sound that reaches unwanted levels is referred to as noise. The central issue with noise is the impact, or perceived impact, on people, animals (wild and domestic), and general land use compatibility. Exposure to high noise levels can have a significant impact on human activity, health, and safety. The decibel (dB) scale is used to quantify sound intensity. To understand the relevance of decibels, a normal conversation often occurs at 60 dB, while an ambulance siren from 100 feet away is about 100 dB. Noise associated with military operations (arrival/departure of military aircraft, firing of weapons, etc.) may create noises in higher dB ranges.

Key Terms

Ambient Noise. The total noise associated with an existing environment (built or natural) and usually comprising sounds from many sources, both near and far, is referred to as ambient noise.

Attenuation. Attenuation is a reduction in the level of sound resulting from an object's distance from the noise source or absorption by the surrounding topography, the atmosphere, barriers, construction techniques and materials, and other factors. Sound attenuation in buildings can be achieved through the use of special construction practices that reduce the amount of noise that penetrates the windows, doors, and walls of a building. Sound attenuation measures may be incorporated during initial construction for new buildings or as additional construction for existing buildings.

A-weighted Decibel (dBA). An A-weighted decibel is a unit of measurement for noise using a logarithmic scale and measured using the A-weighted sensory network on a noise-measuring device. An increase or decrease of 10 decibels corresponds to a tenfold increase or decrease in sound energy. A doubling or halving of sound energy corresponds to a 3 dBA increase or decrease.

Day-Night Average Sound Level (DNL). DNL represents an average sound exposure over a 24-hour period. During the nighttime period (10:00 p.m. to 7:00 a.m.), averages are artificially increased by 10 dB. This weighting reflects the added intrusiveness and the greater disturbance potential of nighttime noise events attributable to the fact that community background noise typically decreases by 10 dB at night.

Decibel (dB). A decibel is the physical unit commonly used to describe noise levels. It is a unit for describing the amplitude of sound, as heard by the human ear.

Noise. Defining noise from a technical perspective, sound is mechanical energy transmitted by pressure waves in a compressible medium such as air. More simply stated, sound is what we hear. As sounds reach unwanted levels, this is referred to as noise.

Noise Contour. Noise contours consist of noise impact lines constructed by connecting points of equal noise level measured in dB and identify areas on a map that fall within that particular dB noise contour.

Noise Sensitive Receptors/Sensitive Land Uses. Sensitive receptors are locations and uses typically more sensitive to noise, including residential areas, hospitals, convalescent homes and facilities, schools, libraries, churches, recreational areas, and other similar land uses.

Slow Route. Slow route refers to an airspace for aircraft operating below 250 knots and between the surface and 1,500 feet AGL.

Technical Background

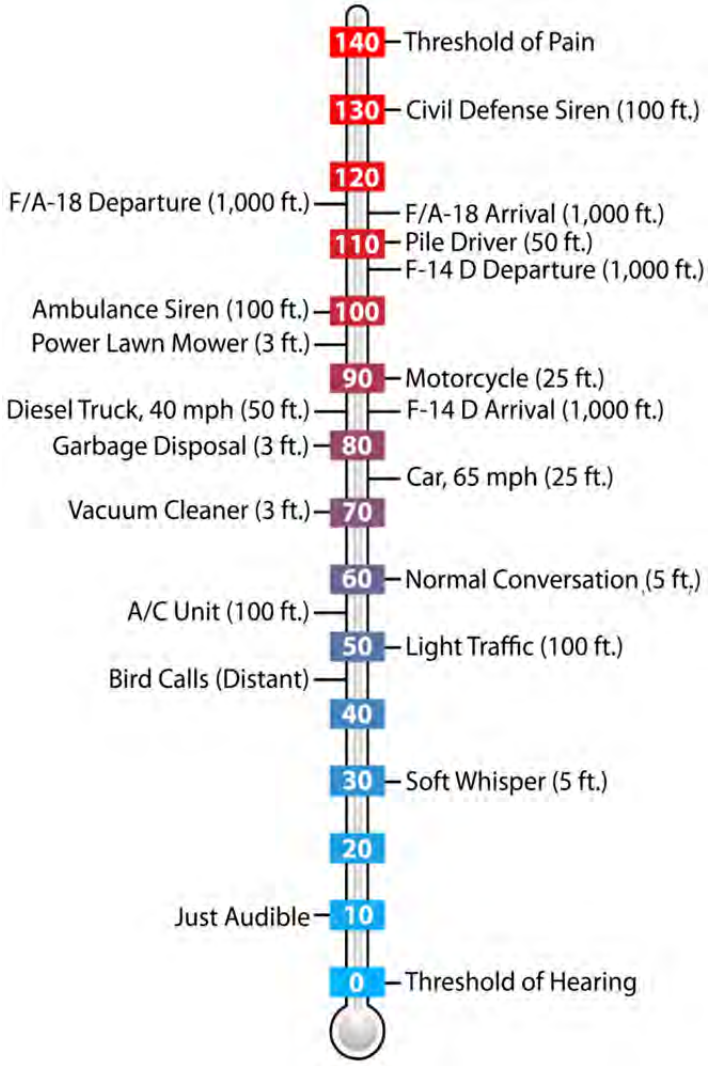
Due to the technical nature of this resource topic and its importance to the JLUS process, this section provides a discussion of the characteristics of sound and the modeling process used to evaluate noise impacts.

Characteristics of Sound

It is important to understand that there is no single perfect way of measuring sound, due to variations used by different entities when conducting sound studies or sound modeling. Sound is characterized by various parameters that include the rate of oscillation of sound waves (frequency), the speed of propagation, and the pressure level or energy content (amplitude). The sound pressure level has become the most common descriptor used to characterize the loudness of an ambient sound level. The dB scale is used to quantify sound intensity. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale (i.e., dB scale) is used to present sound intensity levels in a convenient format.

Since the human ear is not equally sensitive to all frequencies within the entire spectrum, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called "A-weighting" written as dBA. The human ear can detect changes in sound levels of approximately 3 dBA under normal conditions. Changes of 1 to 3 dBA are typically noticeable under controlled conditions, while changes of less than 1 dBA are only discernible under controlled, extremely quiet conditions. A change of 5 dBA is typically noticeable to the general public in an outdoor environment. Figure 5.18-1 summarizes typical A-weighted sound levels for a range of indoor and outdoor activities.

Figure 5.18-1. Comparison in dB



Issues Assessment

ISSUE NOI-1	**Lack of Noise Regulations North of Maxwell AFB** Lack of noise regulations north of Maxwell AFB, including in the cities of Prattville and Millbrook, and the Town of Coosada, could potentially increase noise sensitive land uses in high noise areas, e.g. areas under low level military training.

Aircraft at Maxwell AFB utilize multiple Slow Routes (SRs), which traverse portions of the counties surrounding Maxwell AFB. SRs are defined airspace for military aircraft that operate at slower speeds and lower altitudes. SRs are not part of the military training route (MTR) system and do not have directive guidance in the utilization of them, like the MTRs. Maxwell AFB utilizes four SRs that allow flight training to be performed from as low as 300 feet AGL during the daytime hours. These routes are:

- SR069;
- SR070;
- SR071; and
- SR072.

Though the SRs are located in various areas, both within and outside of the JLUS Study Area, they all enable aircraft arrivals and departures from Maxwell AFB. Figure 5.18-2 provides an illustration of the SRs associated with Maxwell AFB that are located within the JLUS Study Area. Additionally, the map shows an assessment of the zoning districts that are under the SRs that may be impacted by noise generated from aircraft using these airspaces. The zoning districts on the figure were aggregated into broad land use categories for readability. The city's zoning districts that compose the residential category are:

- PGH-35 – Residence Zone (Patio-Garden Home)
- PGH-40 – Residence Zone (Patio-Garden Home)
- PUD – Residence Zone (Planned Unit Development)
- R-24-t – Residence Zone (Townhouse)
- R-50 – Residence Zone (Single Family)
- R-60-a; R-60-d; R-60-m; and R-60-s – Residence Zones
- R-65-d; R-65-m; R-65-s – Residence Zones
- R-75-m and R-75-s – Residence Zones (Single Family)
- R-85 – Residence Zone
- R-99-p and R-99-s – Residence Zones
- R-100 and R-125 – Residence Zones
- T2 – Residence Zone

The city's zoning districts that compose the commercial category are:

- B-1-a and B-1-b – Central Business District
- B-2 and B-2-q – Business District (Single stores)
- B-3 and B-3-q – Highway Commercial District
- B-5-q – Planned Commercial (Community)
- O-1 and O-1-q – Office District
- O-2 – Office Park (Planned Area)

The city's zoning districts that compose the industrial category on the map are:

- M-1 and M-1-q – Light Industry
- M-2 – Industrial Park (Planned Area)
- M-3 – General Industry

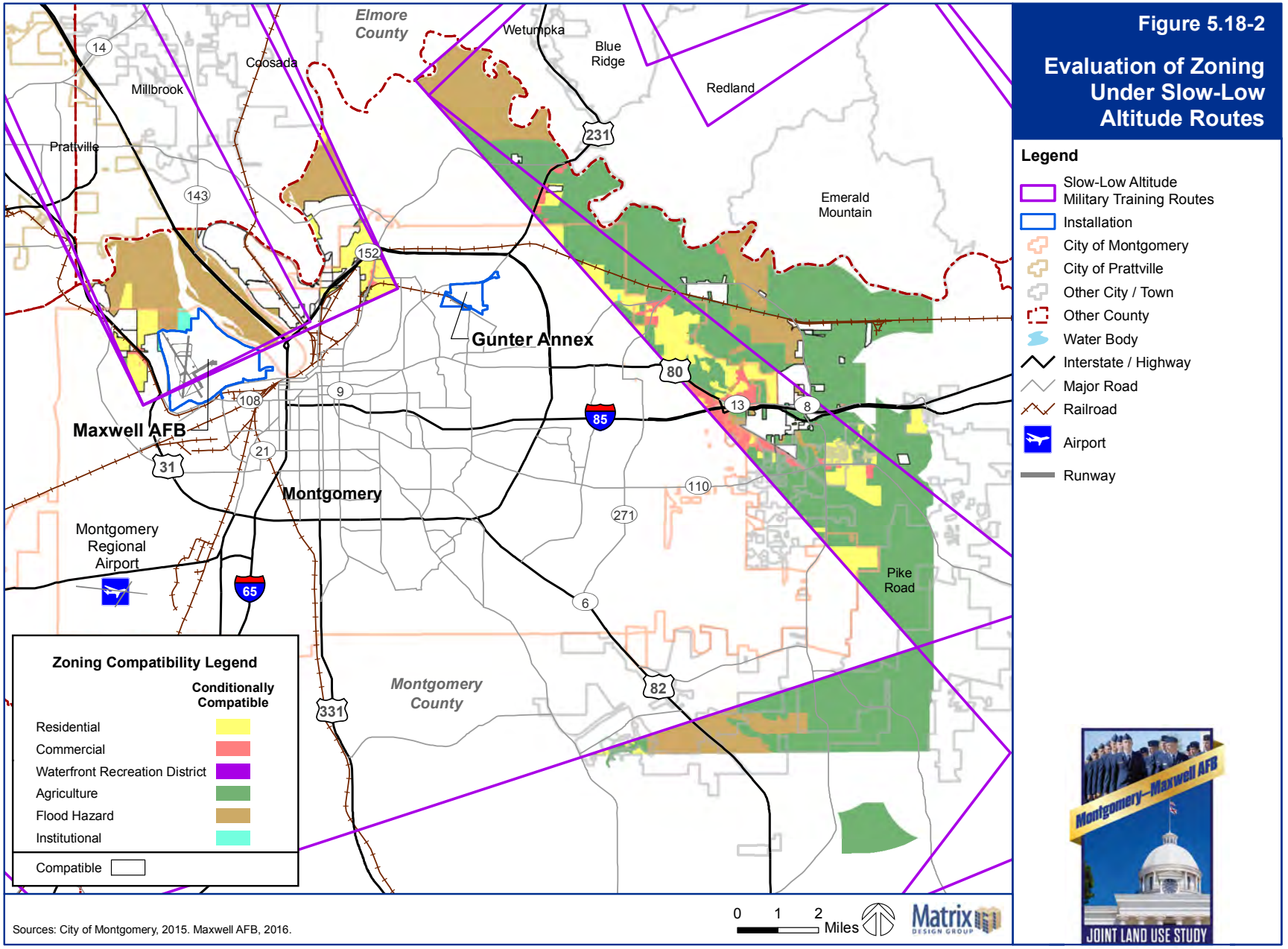


Figure 5.18-2

Evaluation of Zoning Under Slow-Low Altitude Routes

Legend

- Slow-Low Altitude Military Training Routes
- Installation
- City of Montgomery
- City of Prattville
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

The city's zoning district that comprises the waterfront recreation district is WR waterfront recreation on the figure. The city's zoning districts that comprise the agriculture category are AGR-1 Agricultural Area (Residential Agriculture) and AGR-2 Agricultural Area (General Agriculture). Additionally, the FH flood hazard district, INST institutional district, and U utility district all compose their respective zoning districts.

The assessment was based on and limited to available data; therefore, only the City of Montgomery was assessed as it was the only jurisdiction that provided zoning data. Due to the location of portions of the SRs over the communities of Millbrook, Coosada, as well as portions of the City of Prattville and Montgomery County, there is a potential for noise sensitive uses to be developed under these military routes. This could potentially create incompatible development in these areas. Ultimately, if noise sensitive land uses are located in this noise area, then an increase in noise complaints could occur. While unlikely, this could result in changes to military training operations to accommodate for the noise sensitive land uses. Constant changes to military training operational areas could have a detrimental effect on the military and its ability to sustain effective military preparedness. This could result in lost hours and training opportunities for the military in this geography and ultimately, it could mean lost economic impact and opportunity for the local communities.

Compatibility Assessment

There are no recommended DOD guidelines for land uses under SRs; however, due to the authorized low-level aircraft activities that can occur in these areas, considerations of the potential impacts on land uses under the SRs should be evaluated during the land use planning process prior to decision-making actions including approvals of certain land uses in these areas.

Though all military services recognize the importance of compatible land use with noise, the Air Force has published specific land use compatibility guidelines for aircraft noise based on dBs noise measurement in Air Force Instruction (AFI) 32-7063. The Air Force has not modeled noise contours for operations that occur in the SR airspace as this airspace is not where the significant impact is experienced, rather the most impact is experienced at arriving and departing locations, which is typically closest to the ground level and nearest to other types of land uses that may be sensitive to loud noise. Because the intent of the JLUS is to promote land use compatibility and because the recommendations are provided for local governments, the land use compatibility assessment for aircraft noise in SR airspace is based on best practice using the recommended land uses for aircraft noise. Land use compatibility along with notes defining recommended noise level reductions (NLRs) for specific land uses are provided in Table 5.18-1.

Additionally, all the categories that include each individual zoning district, illustrated on Figure 5.18-2, are conditionally compatible under the SRs operational area because the city permits noise sensitive land uses such as residential homes, healthcare facilities, childcare and child development land uses in the individual zoning districts. The only categories and zoning districts that are compatible without condition are industrial and utility, as these zoning districts do not permit uses that are considered noise sensitive land uses.

Findings

- There are no local tools that address this issue.

Table 5.18-1. Recommended Land Uses Under Aircraft Noise Contours

Land Use		Suggested Land Use Compatibility				
SLUCM No.	Land Use Name	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
10	**Residential**					
11	Household units	N[1]	N[1]	N	N	N
11.11	Single units: detached	N[1]	N[1]	N	N	N
11.12	Single units: semidetached	N[1]	N[1]	N	N	N
11.13	Single units: attached row	N[1]	N[1]	N	N	N
11.21	Two units: side-by-side	N[1]	N[1]	N	N	N
11.22	Two units: one above the other	N[1]	N[1]	N	N	N
11.31	Apartments: walk-up	N[1]	N[1]	N	N	N
11.32	Apartments: elevator	N[1]	N[1]	N	N	N
12	Group quarters	N[1]	N[1]	N	N	N
13	Residential hotels	N[1]	N[1]	N	N	N
14	Mobile home parks or courts	N	N	N	N	N
15	Transient lodgings	N[1]	N[1]	N[1]	N	N
16	Other residential	N[1]	N[1]	N	N	N
20	**Manufacturing**					
21	Food and kindred products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
22	Textile mill products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
23	Apparel and other finished products; products made from fabrics, leather, and similar materials; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
24	Lumber and wood products (except furniture); manufacturing	Y	Y[2]	Y[3]	Y[4]	N
25	Furniture and fixtures; manufacturing	Y	Y[2]	Y[3]	Y[4]	N

Land Use		Suggested Land Use Compatibility				
SLUCM No.	Land Use Name	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
26	Paper and allied products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
27	Printing, publishing, and allied industries	Y	Y[2]	Y[3]	Y[4]	N
28	Chemicals and allied products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
29	Petroleum refining and related industries	Y	Y[2]	Y[3]	Y[4]	N
30	**Manufacturing (continued)**					
31	Rubber and misc. plastic products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
32	Stone, clay and glass products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
33	Primary metal products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
34	Fabricated metal products; manufacturing	Y	Y[2]	Y[3]	Y[4]	N
35	Professional scientific, and controlling instruments; photographic and optical goods; watches and clocks	Y	25	30	N	N
39	Miscellaneous manufacturing	Y	Y[2]	Y[3]	Y[4]	N
40	**Transportation, communication and utilities**					
41	Railroad, rapid rail transit, and street railway transportation	Y	Y[2]	Y[3]	Y[4]	N
42	Motor vehicle transportation	Y	Y[2]	Y[3]	Y[4]	N
43	Aircraft transportation	Y	Y[2]	Y[3]	Y[4]	N
44	Marine craft transportation	Y	Y[2]	Y[3]	Y[4]	N
45	Highway and street right-of-way	Y	Y	Y	Y	N
46	Automobile parking	Y	Y	Y	Y	N
47	Communication	Y	25[5]	30[5]	N	N
48	Utilities	Y	Y[2]	Y[3]	Y[4]	N
49	Other transportation, communication and utilities	Y	25[5]	30[5]	N	N

Land Use		Suggested Land Use Compatibility				
SLUCM No.	Land Use Name	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
50	**Trade**					
51	Wholesale trade	Y	Y[2]	Y[3]	Y[4]	N
52	Retail trade – building materials, hardware and farm equipment	Y	25	30	Y[4]	N
53	Retail trade – including shopping centers, discount clubs, home improvement stores, electronics superstores, etc.	Y	25	30	N	N
54	Retail trade – food	Y	25	30	N	N
55	Retail trade – automotive, marine craft, aircraft and accessories	Y	25	30	N	N
56	Retail trade – apparel and accessories	Y	25	30	N	N
57	Retail trade – furniture, home, furnishings and equipment	Y	25	30	N	N
58	Retail trade – eating and drinking establishments	Y	25	30	N	N
59	Other retail trade	Y	25	30	N	N
60	**Services**					
61	Finance, insurance and real estate services	Y	25	30	N	N
62	Personal services	Y	25	30	N	N
62.4	Cemeteries	Y	Y[2]	Y[3]	Y[4,11]	Y[6,11]
63	Business services	Y	25	30	N	N
63.7	Warehousing and storage	Y	Y[2]	Y[3]	Y[4]	N
64	Repair services	Y	Y[2]	Y[3]	Y[4]	N
65	Professional services	Y	25	30	N	N
65.1	Hospitals, other medical facilities	25	30	N	N	N
65.16	Nursing homes	N[1]	N[1]	N	N	N

Land Use		Suggested Land Use Compatibility				
SLUCM No.	Land Use Name	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
66	Contract construction services	Y	25	30	N	N
67	Government services	Y[1]	25	30	N	N
68	Educational services	25	30	N	N	N
68.1	Child care services, child development centers, and nurseries	25	30	N	N	N
69	Miscellaneous services	Y	25	30	N	N
69.1	Religious activities (including places of worship)	Y	25	30	N	N
70	**Cultural, entertainment and recreational**					
71	Cultural activities	25	30	N	N	N
71.2	Nature exhibits	Y[1]	N	N	N	N
72	Public assembly	Y	N	N	N	N
72.1	Auditoriums, concert halls	25	30	N	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y[7]	Y[7]	N	N	N
73	Amusements	Y	Y	N	N	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y	25	30	N	N
75	Resorts and group camps	Y	25	N	N	N
76	Parks	Y	25	N	N	N
79	Other cultural, entertainment and recreation	Y	25	N	N	N
80	**Resource production and extraction**					
81	Agriculture (except livestock)	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]

Land Use		Suggested Land Use Compatibility				
SLUCM No.	Land Use Name	DNL 65-69	DNL 70-74	DNL 75-79	DNL 80-84	DNL 85+
81.5-81.7	Agriculture-Livestock farming including grazing and feedlots	Y[8]	Y[9]	N	N	N
82	Agriculture related activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
83	Forestry activities	Y[8]	Y[9]	Y[10]	Y[10,11]	Y[10,11]
84	Fishing activities	Y	Y	Y	Y	Y
85	Mining activities	Y	Y	Y	Y	Y
89	Other resource production or extraction	Y	Y	Y	Y	Y

Key:

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

Y (Yes) – Land use and *related structures compatible without restrictions.*

N (No) – Land use and related structures are not compatible and should be prohibited.

Yx – Yes with restrictions. The land use and related structures generally are compatible. However, see note(s) indicated by the superscript.

Nx – No with exceptions. The land use and related structures are generally incompatible. However, see note(s) indicated by the superscript.

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

DNL – Day-Night Average Sound Level.

Ldn – Mathematical symbol for DNL.

1. General

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

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

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

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

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

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

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

5. If project or proposed development is noise sensitive, use indicated NLR; if not, land use is compatible without NLR.

6. Buildings are not permitted.

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

8. Residential buildings require an NLR of 25 dB.

9. Residential buildings require an NLR of 30 dB.

10. Residential buildings are not permitted.

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

Source: Air Force Instruction AFI32-7063, Rev. December 2015.

ISSUE NOI-2	**Potential Future Missions Could Increase Noise Impacts** Potential future missions at Maxwell AFB could bring additional C-130s or fighter jets to the installation which could intensify noise impacts and expand the noise contours.

Noise contours established for Maxwell AFB were established in 2007, and re-evaluated in 2008. The 908th Airlift Wing (AW) aircraft activity at that time consisted primarily of C-130s conducting approximately 19 average daily operations, averaging 3,840 operations per year. The noise contours produced by this level of activity are contained mostly within the boundaries of the installation, with approximately 133 acres of land off-installation. The areas where the contours extend beyond the boundary of the installation are at the North and South end of the main runway. The shape of the contour is consistent with typical aircraft activity on the southern end of the runway, which requires aircraft to depart while climbing and turning towards the west in order to avoid airspace conflicts with Montgomery Regional Airport. Figure 5.18-3 illustrates the compatibility of the existing land uses under the noise contours, and Figure 5.18-4 illustrates the compatibility of zoning within the noise contours that extend off-installation.

As shown on Figure 5.18-3, there are no existing land uses that are located within the noise contours that are incompatible. There are approximately 27.21 acres designated as services (this was not defined in the data provided), 21.76 acres designated for agriculture , and 10.77 acres designated as residential or accommodations located within the 65 dB noise contour that are assessed as conditionally compatible due to the city permitting residential and other noise sensitive land uses in these land use categories. Should the intensity of aircraft activity increase or additional missions acquired by Maxwell AFB, the amount of land area covered by the noise contours is likely to increase as well.

While the existing land uses under the current noise contours do not represent a current issue, Figure 5.18-4 illustrates that there are approximately 0.25 acres zoned for R-99s Mobile Home Subdivision located within the 65 dB noise contour. This zoning district is an incompatible land use as mobile homes are typically not constructed with sound-proof or sound mitigating materials to reduce the impacts of aircraft noise in this area. While the amount of land zoned for this type of subdivision would not likely represent an extensive issue, if this type of land use is encouraged in the future in this area, then an increased number of mobile homes or mobile home subdivisions in this area could become a more significant incompatible development.

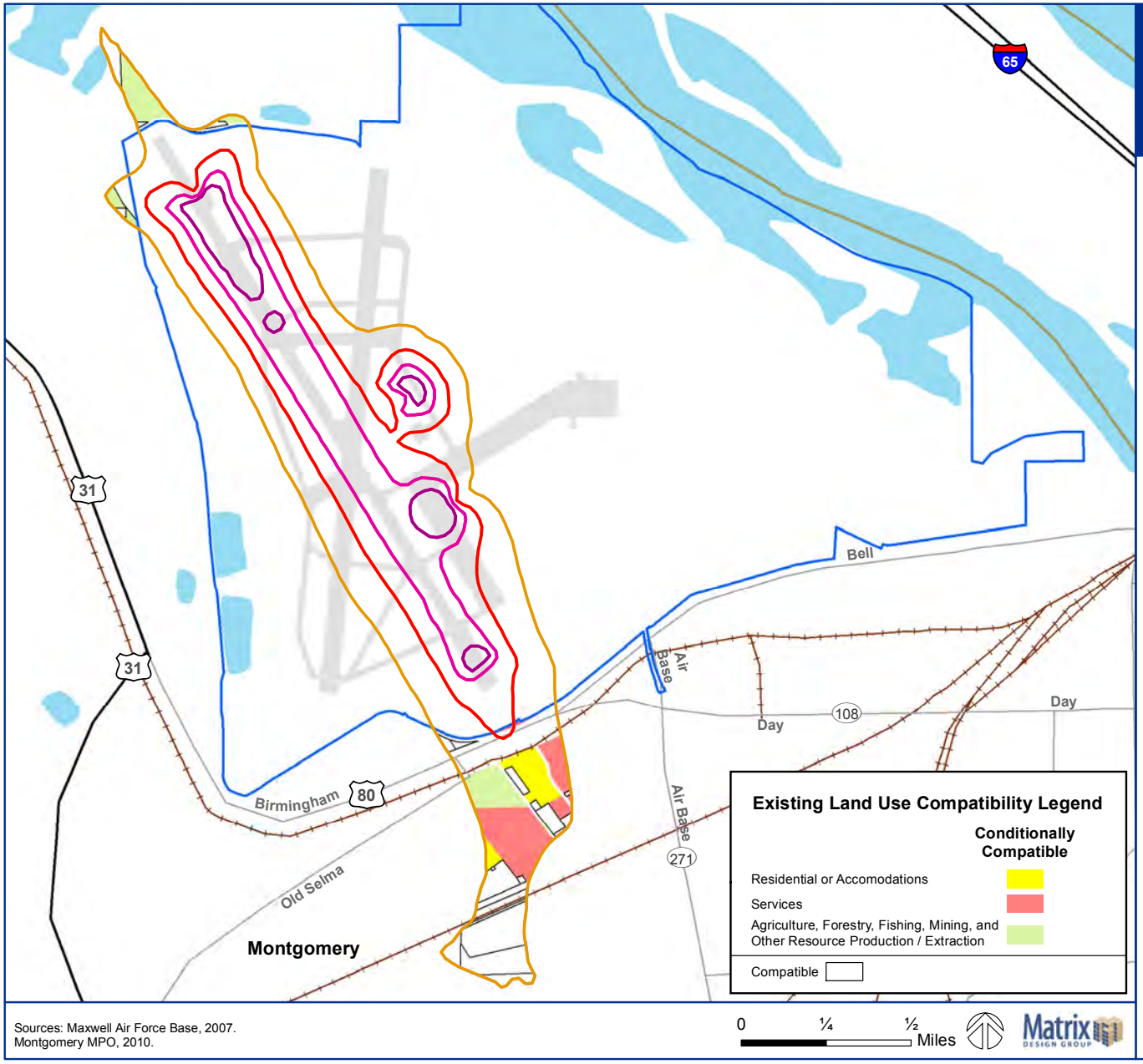
While noise in this area is an insignificant issue currently, future zoning and development if uncoordinated with the military could lead to future, potentially more significant compatibility concerns not only for the Base but also for the City.

Compatibility Assessment

The Air Force (AF) uses the AICUZ program to identify and model areas that could potentially have a high risk associated with them relative to noise and aircraft accidents. While Maxwell AFB updated its AICUZ Report in 2009, the AF has since updated its recommendations for land uses under these high risk areas that are associated with various military training operations. Table 5.18-1 outlines the recommended land uses under the specified noise contours as of December 2015. This can be applied to the jurisdictions within the Montgomery-Maxwell AFB JLUS Study Area. These recommendations are designed to assist communities in planning around active military airfields by managing land uses to reduce the impacts from aircraft noise.

Figure 5.18-3

Evaluation of Existing Land Use Compatibility Under Noise Contours



Legend

DNL Noise Contour (dB)

- 65 DNL
- 70 DNL
- 75 DNL
- 80 DNL

- Maxwell AFB
- City of Montgomery
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway

Sources: Maxwell Air Force Base, 2007.
Montgomery MPO, 2010.

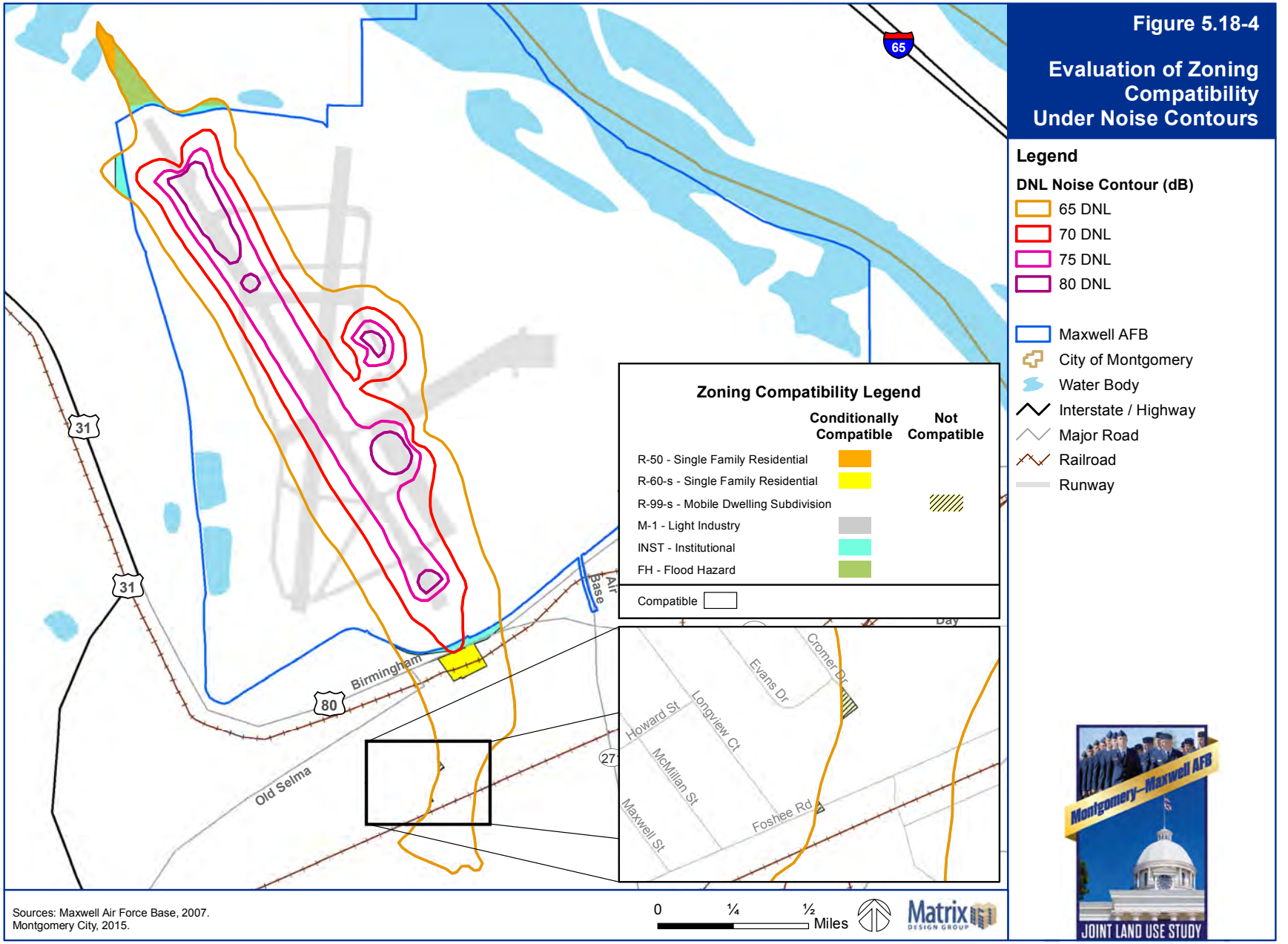


Figure 5.18-4

Evaluation of Zoning Compatibility Under Noise Contours

Legend

DNL Noise Contour (dB)

- 65 DNL
- 70 DNL
- 75 DNL
- 80 DNL

- Maxwell AFB
- City of Montgomery
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway

As identified in Table 5.18-1, there are various agricultural, retail / service land uses that are acceptable and conditionally acceptable in the 65 dB noise contour. For this reason, the zoning districts and land use categories were assessed as conditionally compatible.

Findings

- None of the JLUS participating jurisdictions have incorporated the AICUZ recommended land uses for aircraft noise in their zoning ordinances.

Please see the next page.

5.19. Public Trespassing

This factor addresses public trespassing, either intentional or unintentional, onto a military installation. The potential for trespassing increases when public use areas are in proximity to an installation. Military areas that are located on or adjacent to public lands owned by other entities (i.e., federal, state, or local) that are designated for public access, recreation, or for livestock grazing sometimes experience issues related to public trespassing into training ranges and other areas with safety hazards related to military operations.

Key Terms

Natural Boundaries. Natural formations such as water bodies, rough terrain, or densely wooded areas that may act as a barrier to define and protect the restricted area's perimeter.

Trespass. Trespass is either intentional or unintentional entry or access by persons and / or livestock onto Maxwell AFB or Gunter Annex in a physical or non-physical manner.

Issue Assessment

ISSUE PT-1	**Public Trespass onto Maxwell AFB from Powder Magazine Park** Maxwell AFB records several public trespassing incidents annually of individuals who intentionally and unintentionally trespass onto the installation from Powder Magazine Park.

Powder Magazine Park is a public park comprising of approximately 62 acres between the western bank of the Alabama River and the eastern boundary of Maxwell AFB. Entrance to the park is made via Eugene Street or Gordon Street, south of the park. Access roads leading to the park pass the Salvation Army on Gordon Street and the Salvation Army Church on Eugene Street.

The installation's fencing is along Eugene Street and portions of Riverside Drive but ends near River Road where there are river tributaries and heavy vegetation. Along the installation's fencing are posted warning signs indicating the property is under the jurisdiction of the United States Air Force (USAF) and trespassers will be prosecuted. However, as the installation's boundary becomes obscured by the natural vegetation that is characteristic of this area and near the Alabama River's tributaries, the signs are not marked or even visible in some areas. While the river acts as a natural boundary there should be posted trespassing or warning signs along the perimeter of the installation boundary in this area, even if staked above the waterline.

In addition to the unintentional trespass of fishermen and other recreationalists using Powder Magazine Park and homeless encampments, there are often incidents of intentional trespass associated with the Federal Prison Camp on Maxwell AFB along River Road. According to Maxwell AFB personnel, approximately once a month individuals are caught trespassing onto the installation near the City's boat ramp with the intention of hiding contraband. This type of activity increases the risk of personnel safety and costs of security on the installation due to the property damage from fence cutting, theft, and breaches of security related to the hiding of contraband.

Compatibility Assessment

Department of Defense Instruction 2000.16 authorizes commanders at all levels to enforce security measures at their will and are charged with the responsibility of the protection of persons and property under the commanders' control. As such, there are numerous unified facilities criteria (UFC) guidance publications that outline various fencing and security measures that are appropriate for all types of military installations.

The UFC 4-022-03 Security Fences and Gates defines natural boundaries as natural land or water features, rough terrain, or densely wooded areas that may act as a barrier to define and protect the restricted area of the installation. However, the UFC 4-022-03 does not clearly state that the use of natural boundaries is an acceptable passive barrier for the installation perimeter.

The Military Handbook 1013/10 indicates that installations should use signage at 200-foot intervals on the exterior installation fencing to inform and warn potential trespassers that there is a US military installation at the specified location. While all military services recognize the importance of a secured installation, only the US Navy has published specific guidelines for the installation of warning / no trespassing signs.

Findings

- The Alabama River acting as a natural boundary may not be sufficient for preventing trespass at Maxwell AFB.
- There is no formal plan of coordination between Maxwell AFB and the City of Montgomery for monitoring and addressing the homeless encampments at Powder Magazine Park.
- Trespassing occurs frequently near the City's boat ramp on River Road.

5.20. Roadway Capacity

Roadway capacity relates to the ability of existing freeways, highways, arterials, and other local roads to provide adequate mobility and access between military installations and their surrounding communities.

As urban development expands into rural areas, roads once used primarily to provide access for agricultural uses and limited local traffic begin to function as urban major arterial roadways. These once rural roads often become the main transportation corridors for all types of traffic – from residential to commercial trucking – and can assist or impede access to military installations. As transportation systems grow and provide more capacity, these facilities induce and encourage growth as rural areas become more accessible.

There were no issues identified for Roadway Capacity in this JLUS.

Please see next page.

Compatibility Assessment 5

5.21. Safety

Safety zones are areas in which development should be more restrictive, in terms of use and concentrations of people, due to the higher risks to public safety. Issues to consider include aircraft accident potential zones, weapons firing range safety zones, and explosive safety zones.

Military installations often engage in activities or contain facilities that, due to public safety concerns, require special consideration by local jurisdictions when evaluating compatibility. It is important to regulate land use near military airfields in order to minimize damage from potential aircraft accidents and to reduce air navigation hazards. To help mitigate potential issues, the Department of Defense (DOD) has delineated Clear Zones (CZ) and Accident Potential Zones (APZ) in the vicinity of airfield runways. APZs are usually divided into APZ I and APZ II. Each zone was developed based on the statistical review of aircraft accidents. Studies show that most mishaps occur on or near the runway, predominately along its extended centerline.

Key Terms

Airport Operations Area. The Airport Operations Area (AOA) is an area that encompasses all the airfield's approach or departure airspace including the circling space.

Accident Potential Zone I (APZ I). APZ I is an area beginning at the end of each clear zone and continuing out to a length of 5,000 feet by 3,000 feet wide. This area has a lower potential for accidents and therefore has less restrictive development restrictions recommended.

Accident Potential Zone II (APZ II). APZ II is an area that begins at the end of each APZ I and extends an additional 7,000 feet in length by 3,000 feet wide. Again, the accident potential in this area reduces further, and with this, some additional development types are allowed.

Avigation Easement. An avigation easement refers to a property right acquired from a landowner which protects the use of airspace above a specified height, and can impose limitations on use of the land subject to the easement.

Bird / Wildlife Aircraft Strike Hazard (BASH). BASH refers to the likely occurrence for a collision between an airborne animal (usually a bird) or an animal on the ground on the runway and a man-made vehicle, particularly aircraft.

BASH Relevancy Area. The BASH Relevancy Area is a five-statute mile area from the AOA, including the runway. This area has been determined by the FAA as an area where BASH incidences are likely to occur due to the types of flying operations that occur near the airfield. Such operations are typically at slower speeds and lower altitudes resulting in a greater chance for a BASH incident.

Clear Zone (CZ). The CZ begins at the end of each runway measuring 3,000 feet wide and extending outward to a length of 3,000 feet from the end of each runway. This area has the highest potential of an aircraft mishap. This area should be kept clear of all structures, including fences.

Frangible Pole / Object. A frangible pole / object is a pole or object constructed with materials that are designed to break away at impact instead of remaining erect. The break-away design reduces the impact and potential severity of the incident in the event of a collision with the pole / object.

Issues Assessment

ISSUE SA-1	**Incompatible Uses in Clear Zones**
	Any development that occurs within the Clear Zone (CZ), including railroad, and utility and roadway infrastructure, is incompatible per Air Force AICUZ recommended guidelines.

There are a mix of land uses within the CZs that include single-family residential dwellings and commercial and industrial facilities. The majority of these existing land uses are located in the southern portion of the southern CZ, and according to the DOD AICUZ recommended guidelines are considered incompatible within this operational area. Due to the CZ having a high accident potential risk associated with it because of its location nearest the runway and the operations conducted in this area (the final approach and departure operations), any use other than open space or agricultural uses are considered incompatible within a CZ. Even agricultural uses can be considered incompatible if there is any kind of earth movement or farming activity ongoing in this area. Thus, the commercial uses along Birmingham Highway South those are located within the CZ area also incompatible.

Incompatible uses within the southern CZ are illustrated on Figure 5.21-1. They are:

- Residential uses, 19.90 acres;
- Services uses, 115.82 acres;
- Transportation, communication, and utilities uses, 2.99 acres; and
- Wholesale retail and trade, 0.42 acres.

While these uses are south of the railroad and comprise the southernmost portion of the CZ, they are considered incompatible by the DOD AICUZ recommended guidelines. DOD recommends this area remain free and clear of any kind of development due to the high risk associated with the CZ. Land uses of any kind that encourage high densities for residential uses and high intensities for non-residential uses can potentially create unnecessary safety risks to both the general public and the aircraft pilot should an aircraft mishap occur in this area. This explanation would also be true for the zoning in this area.

Figure 5.21-2 illustrates the zoning within Maxwell AFB airfield safety zones. The majority of the incompatible zoning is located within the southern CZ; however, the northern CZ of main runway contains incompatible zoning for this operational area also. The following list identifies the zoning districts and the amount of acres that are located within the northern CZ.

- FH – Flood Hazard Area, 71.92 acres;
- INST – Institutional Area, 44.10 acres;
- M-3 – General Industry, 20.57 acres; and
- R-50 – Single Family Residential, 58.54 acres.

Figure 5.21-2 shows there are five zoning districts found within the southern CZ that are considered incompatible. The zoning districts and their associated acreages are as follows:

- INST – Institutional Area, 64.23 acres;
- M-1 – Light Industry, 11.44 acres;
- M-3 – General Industry, 72.70 acres;
- R-60-s – Single Family Residential, 7.02 acres; and
- R-75-s – Single Family Residential, 5.63 acres.

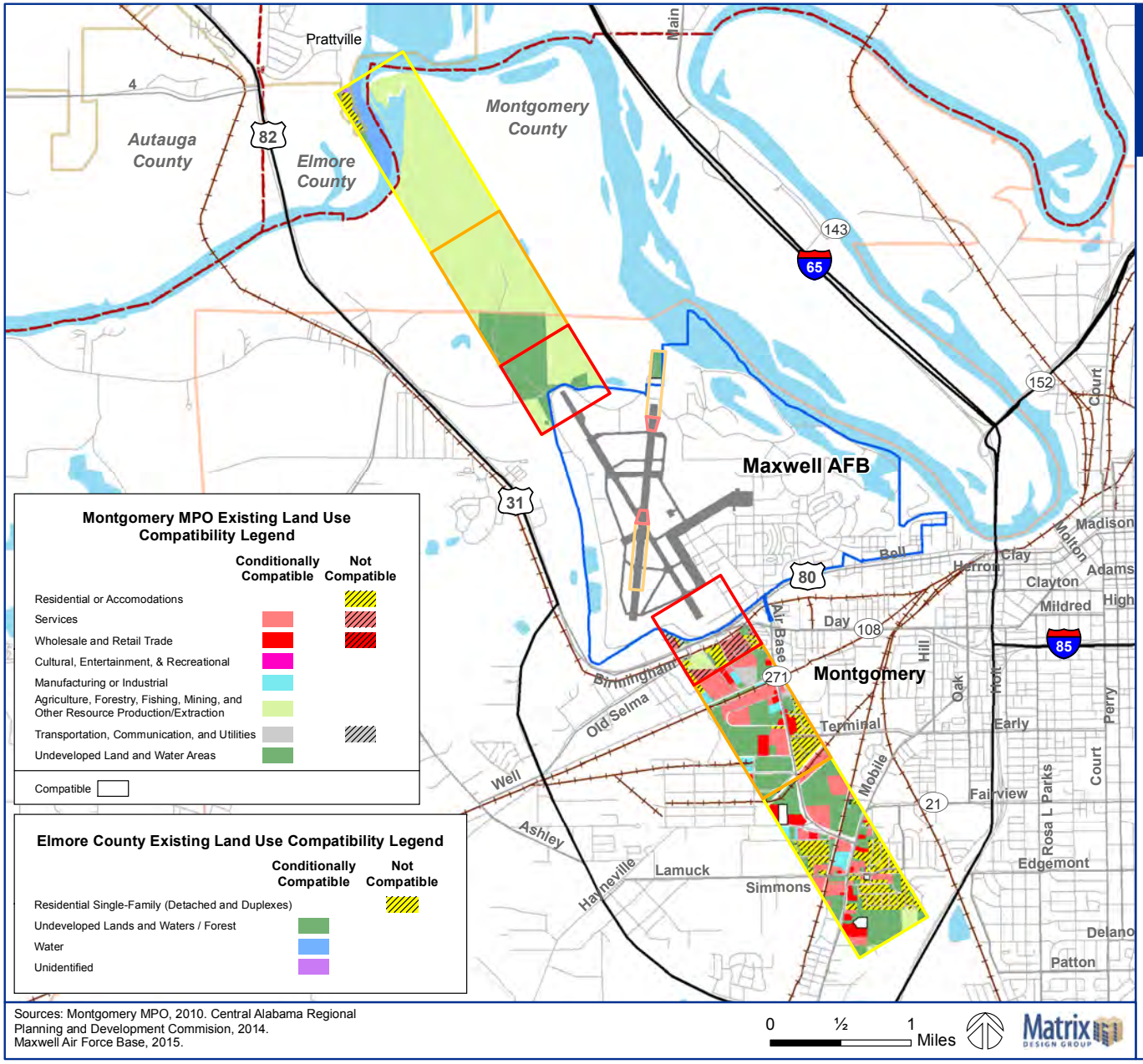


Figure 5.21-1

Evaluation of Existing Land Use Compatibility Under Safety Zones

Legend

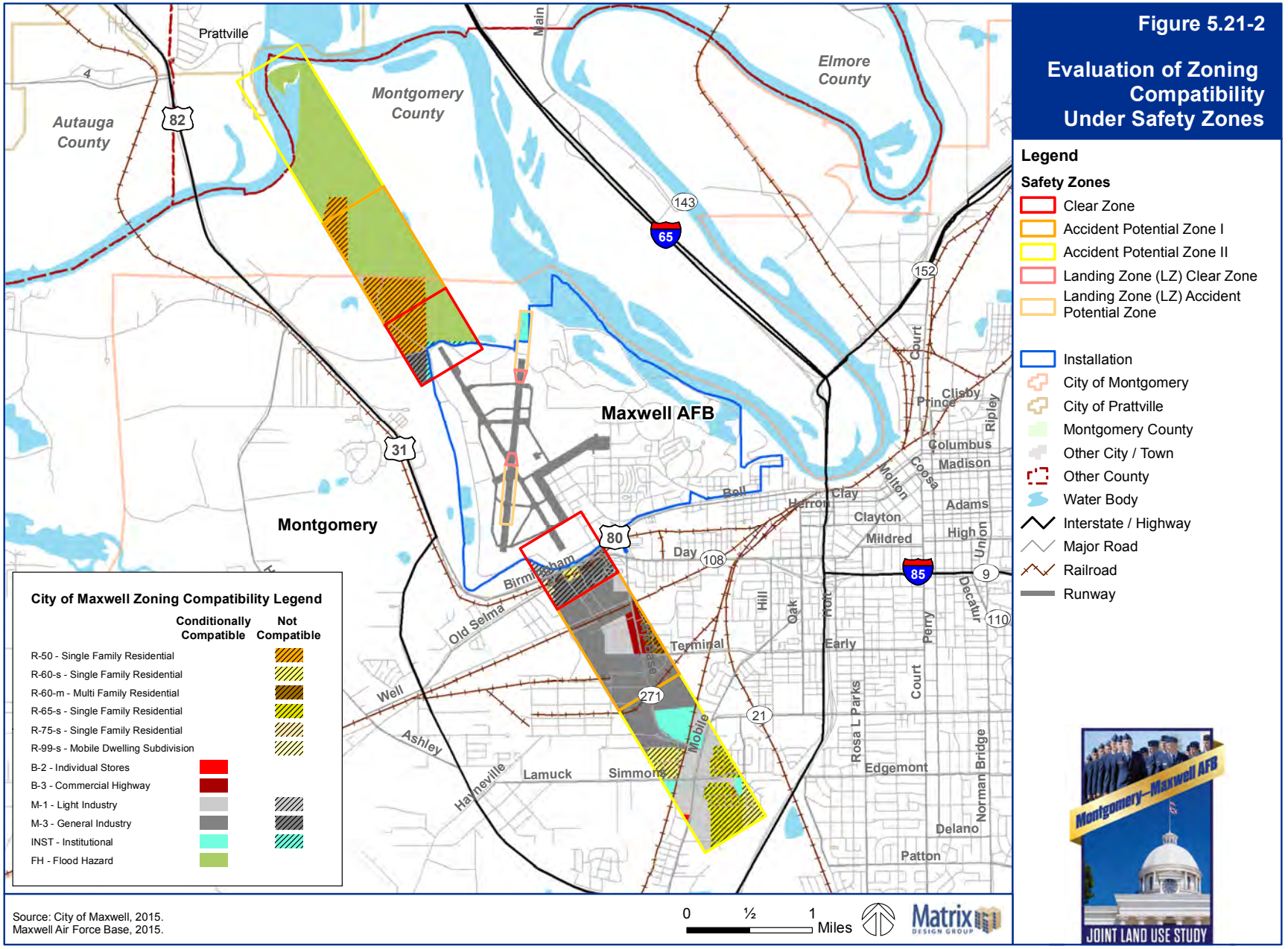
Safety Zones

- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II
- Landing Zone (LZ) Clear Zone
- Landing Zone (LZ) Accident Potential Zone

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway

Figure 5.21-2

Evaluation of Zoning Compatibility Under Safety Zones



City of Maxwell Zoning Compatibility Legend

	Conditionally Compatible	Not Compatible
R-50 - Single Family Residential		
R-60-s - Single Family Residential		
R-60-m - Multi Family Residential		
R-65-s - Single Family Residential		
R-75-s - Single Family Residential		
R-99-s - Mobile Dwelling Subdivision		
B-2 - Individual Stores		
B-3 - Commercial Highway		
M-1 - Light Industry		
M-3 - General Industry		
INST - Institutional		
FH - Flood Hazard		

Legend

Safety Zones

- Clear Zone
- Accident Potential Zone I
- Accident Potential Zone II
- Landing Zone (LZ) Clear Zone
- Landing Zone (LZ) Accident Potential Zone

- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Runway

Source: City of Maxwell, 2015.
Maxwell Air Force Base, 2015.

0 ½ 1 Miles

Matrix Design Group

While there are several zoning districts situated in the southern CZ, the single family zoning districts (R-60-s and R-75-s) comprise of a little over 12.5 acres, which is not too large of a footprint. However, this zoning district is considered incompatible in this area due to the risk associated with the CZ. Likewise for the Institutional and Industry zoning districts, these zoning districts permit structures that would pose a risk for the safety of the general public and pilots if an aircraft mishap occurred.

Compatibility Assessment

The DOD AICUZ program identifies land uses that are compatible and incompatible with active military airfields to encourage sustainable, compatible land use planning around these unique operational facilities. The AICUZ program uses historic data and scientific modeling based on various factors including geography, elevation of runways, aircraft type, aircraft operations, wind, and others to develop the various modeling and zones that are presented in the AICUZ reports, including the Maxwell AFB AICUZ report. This information is designed for military and community planners to make informed decisions about land uses and land use planning around military airports. The Air Force recently updated its recommended land use tables for the AICUZ program to better serve the military and communities. According to the AFI 32-7063 in December 2015, Table 5.21-1 identifies the most current land use recommendations for the airfield safety zones.

Table 5.21-1. Recommended Land Uses for Airfield Safety Zones

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
10	Residential				
11	Household units				
11.11	Single units: detached	N	N	Y[2]	Maximum density of 2 Du/Ac
11.12	Single units: semi-detached	N	N	N	
11.13	Single units: attached row	N	N	N	
11.21	Two units: side-by-side	N	N	N	
11.22	Two units: one above the other	N	N	N	
11.31	Apartments: walk-up	N	N	N	
11.32	Apartment: elevator	N	N	N	
12	Group quarters	N	N	N	
13	Residential hotels	N	N	N	
14	Mobile home parks or courts	N	N	N	
15	Transient lodgings	N	N	N	

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
16	Other residential	N	N	N	
20	Manufacturing[3]				
21	Food and kindred products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
22	Textile mill products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
23	Apparel and other finished products; products made from fabrics, leather and similar materials; manufacturing	N	N	N	
24	Lumber and wood products (except furniture); manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
25	Furniture and fixtures; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
26	Paper and allied products; manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
27	Printing, publishing, and allied industries	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
28	Chemicals and allied products; manufacturing	N	N	N	
29	Petroleum refining and related industries	N	N	N	
30	Manufacturing[3] (continued)				
31	Rubber and miscellaneous plastic products; manufacturing	N	N	N	
32	Stone, clay, and glass products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
33	Primary metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
34	Fabricated metal products; manufacturing	N	N	Y	Maximum FAR 0.56 in APZ II
35	Professional, scientific, and controlling instruments; photographic and optical goods; watches and clocks	N	N	N	
39	Miscellaneous manufacturing	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
40	Transportation, communication, and utilities[3,4]				
41	Railroad, rapid rail transit, and street railway transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
42	Motor vehicle transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
43	Aircraft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
44	Marine craft transportation	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
45	Highway and street right-of-way	Y[5]	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
46	Automobile parking	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
47	Communication	N	Y[6]	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48	Utilities[7]	N	Y[6]	Y[6]	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
48.5	Solid waste disposal (landfills, incinerators, etc.)	N	N	N	
49	Other transportation, communication, and utilities	N	Y[6]	Y	See note 6 below
50	Trade				
51	Wholesale trade	N	Y	Y	Maximum FAR of 0.28 in APZ I & 0.56 in APZ II
52	Retail trade – building materials, hardware and farm equipment	N	Y	Y	See note 8 below
53	Retail trade – including discount clubs, home improvement stores, electronics superstores, etc.	N	N	Y	Maximum FAR 0.16 in APZ II
53.	Shopping centers-Neighborhood, Community, Regional, Super-regional[9]	N	N	N	

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
54	Retail trade - food	N	N	Y	Maximum FAR 0.24 in APZ II
55	Retail trade – automotive, marine craft, aircraft, and accessories	N	Y	Y	Maximum FAR 0.14 in APZ I & 0.28 in APZ II
56	Retail trade – apparel and accessories	N	N	Y	Maximum FAR 0.28 in APZ II
57	Retail trade – furniture, home furnishings and equipment	N	N	Y	Maximum FAR 0.28 in APZ II
58	Retail trade – eating and drinking establishments	N	N	N	
59	Other retail trade	N	N	Y	Maximum FAR 0.16 in APZ II
60	Services[10]				
61	Finance, insurance and real estate services	N	N	Y	Maximum FAR 0.22 in APZ II
62	Personal services	N	N	Y	Office uses only. Maximum FAR 0.22 in APZ II
62.4	Cemeteries	N	Y[11]	Y[11]	
63	Business services (credit reporting; mail, stenographic, reproduction; advertising)	N	N	Y	Maximum FAR 0.22 in APZ II
63.7	Warehousing and storage services[12]	N	Y	Y	Maximum FAR 1.0 in APZ I; 2.0 in APZ II
64	Repair services	N	Y	Y	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
65	Professional services	N	N	Y	Maximum FAR 0.22 in APZ II
65.1	Hospitals, nursing homes	N	N	N	
65.1	Other medical facilities	N	N	N	
66	Contract construction services	N	Y	Y	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
67	Government services	N	N	Y	Maximum FAR 0.24 in APZ II
68	Educational services	N	N	N	
68.1	Child care services, child development centers, and nurseries	N	N	N	
69	Miscellaneous services	N	N	Y	Maximum FAR 0.22 in APZ II

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
69.1	Religious activities (including places of worship)	N	N	N	
70	Cultural, entertainment and recreational				
71	Cultural activities	N	N	N	
71.2	Nature exhibits	N	Y[13]	Y[13]	
72	Public Assembly	N	N	N	
72.1	Auditoriums, concert halls	N	N	N	
72.11	Outdoor music shells, amphitheaters	N	N	N	
72.2	Outdoor sports arenas, spectator sports	N	N	N	
73	Amusements – fairgrounds, miniature golf, driving ranges; amusement parks, etc.	N	N	Y[20]	
74	Recreational activities (including golf courses, riding stables, water recreation)	N	Y[13]	Y[13]	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
75	Resorts and group camps	N	N	N	
76	Parks	N	Y[13]	Y[13]	Maximum FAR 0.11 in APZ I; 0.22 in APZ II
79	Other cultural, entertainment and recreation	N	Y[11]	Y[11]	Maximum FAR 0.11 in APZ I & 0.22 in APZ II
80	Resource production and extraction				
81	Agriculture (except livestock)	Y[4]	Y[14]	Y[14]	
81.5-81.7	Agriculture-Livestock farming, including grazing and feedlots	N	Y[14]	Y[14]	
82	Agriculture related activities	N	Y[15]	Y[15]	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
83	Forestry activities[16]	N	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density
84	Fishing activities[17]	N[17]	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
85	Mining activities[18]	N	Y[18]	Y[18]	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
89	Other resource production or extraction	N	Y	Y	Maximum FAR 0.28 in APZ I; 0.56 in APZ II; no activity which produces smoke, glare, or involves explosives
90	Other				
91	Undeveloped land	Y	Y	Y	
93	Water areas[19]	N[19]	N[19]	N[19]	

Key to Table:

SLUCM - Standard Land Use Coding Manual, US Department of Transportation.

Notes:

1. *A "Yes": (Y) or a "No" (N) designation for compatible land use is to be used only for general comparison. Within each, uses exist where further evaluation may be needed in each category as to whether it is clearly compatible, normally compatible, or not compatible due to the variation of the densities of people and structures. In order to assist air installations and local governments, general suggestions as to FARs are provided as a guide to density in some categories. In general, land use restrictions that limit occupants, including employees, of commercial, service, or industrial buildings or structures to 25 an acre in APZ I and 50 an acre in APZ II are considered to be low density. Outside events should normally be limited to assemblies of not more than 25 people an acre in APZ I and 50 people an acre in APZ II. Recommended FARs are calculated using standard parking generation rates for various land uses, vehicle occupancy rates, and desired density in APZ I and II. For APZ I, the formula is FAR = 25 people an acre / (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)). The formula for APZ II is FAR = 50/ (Average Vehicle Occupancy x Average Parking Rate x (43560/1000)).*
2. *The suggested maximum density for detached single-family housing is two Du / Ac. In a planned unit development (PUD) of single-family detached units, where clustered housing development results in large open areas, this density could possibly be increased slightly provided the amount of surface area covered by structures does not exceed 20 percent of the PUD total area. PUD encourages clustered development that leaves large open areas.*

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density

3. *Other factors to be considered: labor intensity, structural coverage, explosive characteristics, air pollution, electronic interference with aircraft, height of structures, and potential glare to pilots.*
4. *No structures (except airfield lighting and navigational aids necessary for the safe operation of the airfield when there are no other siting options), buildings, or above-ground utility and communications lines should normally be located in Clear Zone areas on or off the air installation. The Clear Zone is subject to the most severe restrictions.*
5. *Roads within the graded portion of the Clear Zone are prohibited. All roads within the Clear Zone are discouraged, but if required, they should not be wider than two lanes and the rights-of-way should be fenced (frangible) and not include sidewalks or bicycle trails. Nothing associated with these roads should violate obstacle clearance criteria.*
6. *No above ground passenger terminals and no above ground power transmission or distribution lines. Prohibited power lines include high-voltage transmission lines and distribution lines that provide power to cities, towns, or regional power for unincorporated areas.*
7. *Development of renewable energy resources, including solar and geothermal facilities and wind turbines, may impact military operations through hazards to flight or electromagnetic interference. Each new development should to be analyzed for compatibility issues on a case-by-case basis that considers both the proposal and potentially affected mission.*
8. *Within SLUCM Code 52, maximum FARs for lumberyards (SLUCM Code 521) are 0.20 in APZ-I and 0.40 in APZ-11; the maximum FARs for hardware, paint, and farm equipment stores, (SLUCM Code 525), are 0.12 in APZ I and 0.24 in APZ II.*
9. *A shopping center is an integrated group of commercial establishments that is planned, developed, owned, or managed as a unit. Shopping center types include strip, neighborhood, community, regional, and super-regional facilities anchored by small businesses, a supermarket or drug store, discount retailer, department store, or several department stores, respectively.*
10. *Ancillary uses such as meeting places, auditoriums, etc. are not recommended.*
11. *No chapels or houses of worship are allowed within APZ I or APZ II.*
12. *Big box home improvement stores are not included as part of this category.*
13. *Facilities must be low intensity, and provide no playgrounds, etc. Facilities such as club houses, meeting places, auditoriums, large classes, etc., are not recommended.*
14. *Activities that attract concentrations of birds creating a hazard to aircraft operations should be excluded.*
15. *Factors to be considered: labor intensity, structural coverage, explosive characteristics, and air pollution.*
16. *Lumber and timber products removed due to establishment, expansion, or maintenance of Clear Zone lands owned in fee will be disposed of in accordance with applicable DoD guidance.*
17. *Controlled hunting and fishing may be permitted for the purpose of wildlife management.*
18. *Surface mining operations that could create retention ponds that may attract waterfowl and present bird/wildlife aircraft strike hazards (BASH), or operations that produce dust or light emissions that could affect pilot vision are not compatible.*
19. *Naturally occurring water features (e.g., rivers, lakes, streams, wetlands) are pre-existing, nonconforming land uses. Naturally occurring water features that attract waterfowl present a potential BASH. Actions to expand naturally occurring water features or construction of new water features should not be encouraged. If construction of new features is necessary for storm water retention, such features should be designed so that they do not attract waterfowl.*

Land Use		Suggested Land Use Compatibility[1]			
SLUCM No.	Land Use Name	Clear Zone	APZ I	APZ II	Density

20. Amusement centers, family entertainment centers or amusement parks designed or operated at a scale that could attract or result in concentrations of people, including employees and visitors, greater than 50 people per acre at any given time are incompatible in APZ II.

Source: Air Force Instruction AFI 32-7063, Rev. December 2015.

The existing City of Montgomery Zoning Ordinance does not incorporate this table or any regulations that require coordination and communication with the military regarding land use planning and proposed developments, especially for this area.

While the City's Zoning Ordinance does not reflect the recommended land use guidelines originally provided in the 2009 Maxwell AFB AICUZ Update, the ordinance in its Airport Hazard Area (AHA) does incorporate the imaginary surfaces and regulates the height of certain structures within a two-mile area around Maxwell AFB and Dannelly Field-Montgomery Regional Airport. However, this addresses height concerns and possible issues associated with vertical obstructions. For further discussion of detail regarding the AHA and addressing vertical obstructions, see Section 5.23, Vertical Obstructions.

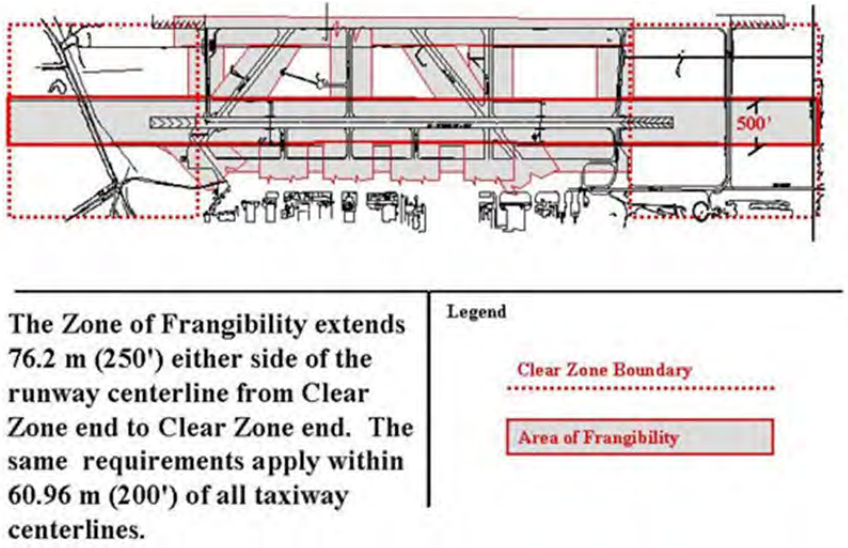
In addition, the FH – Flood Hazard zoning district is designated as incompatible in this area due to the city's ordinance permitting single family dwellings associated with agriculture-type uses and public uses in this zoning district. While unlikely that the city would permit a single family dwelling in the FH district, it is important to note that this land use is permitted in this zoning district which is located in the northern CZ of Maxwell AFB's main runway. In the same vein, there are numerous acres (58.54 acres) zoned for single-family residential that are located in the northern CZ. This is a clear incompatibility as recommended by the latest AF AICUZ guidelines. This can create unnecessary safety risks to the general public and to pilots.

Regarding the utilities, communications, and transportation land uses that are located in the southern CZ, the concern for Maxwell AFB is the utility poles and their respective heights and the impact sustained to surrounding areas and the aircraft and pilot if an aircraft mishap should occur in this area. There are some utility poles that are not to be removed or modified as underground utility. Thus, there is Air Force (AF) guidance that assists the community and the military in these scenarios.

In cases where there are structures that cannot be removed, guidelines for acceptable structural materials are provided in the AF Engineering Technical Letter (ETL) 01-20: Guidelines for Airfield Frangibility Zones. These guidelines define the areas around the airfield that are subject to recommended frangible object design and use. Frangible structures are designed to break away from their bases or foundations upon impact. This design feature helps minimize the impact on aircraft in the event of accidents and emergency landings by allowing the aircraft to continue on its path of descent without creating resistance that could alter the path of the aircraft.

The Air Force frangibility zone consists of an area that extends 250 feet from either side of the runway centerline out for 3,000 feet, covering the entire length of the CZ, as depicted on Figure 5.21-3.

Figure 5.21-3. Airfield Frangibility Zones

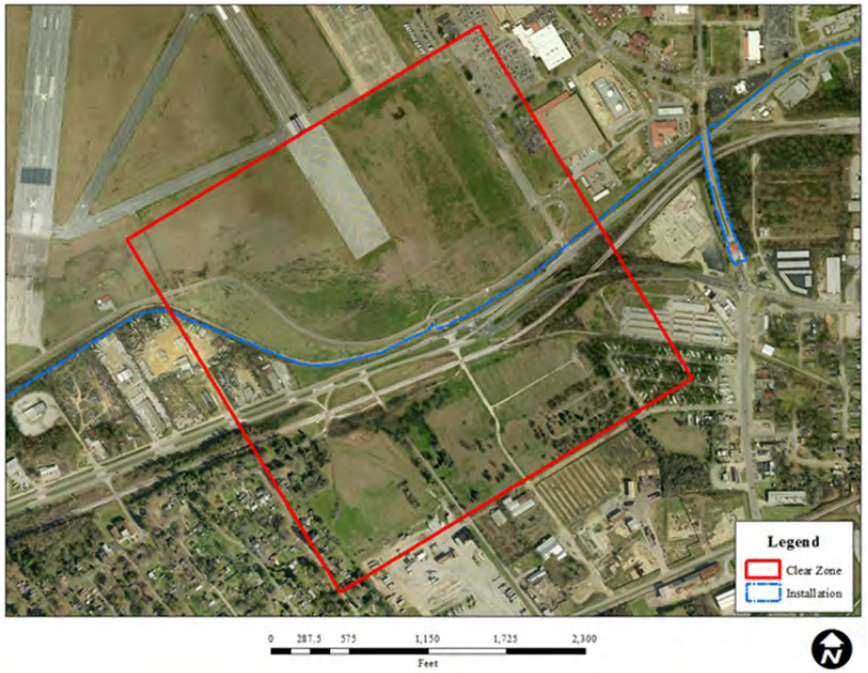


Source: Air Force Engineering Technical Letter 01-20: Guidelines for Airfield Frangibility Zones

The AF guidance requires that several objects and / or structures be made frangible if located within the frangibility zone. The following items are included in the list of required frangible objects:

- Elevated runway, taxiway, and stop-way lights,
- Approach lighting systems,
- Security fencing, and
- Vehicle control signs and traffic lights.

The main roadway traversing the southern CZ is the Birmingham Highway, which includes infrastructure, traffic signal supports and roadway lighting that cannot be removed due to their role in providing a safe environment for vehicular travel. As previously discussed, utility and communications infrastructure are considered incompatible according to the AF AICUZ recommended guidelines. The following graphic shows the area within the southern CZ that is of concern to Maxwell AFB regarding utility infrastructure in this area.



In 2014, Maxwell AFB submitted a request for a temporary airfield obstruction waiver for the light poles and traffic signal supports located along Birmingham Highway in the southern CZ. Temporary airfield obstruction waivers can be obtained from the AF for proposed or existing obstructions which violate airfield and airspace criteria. The waivers are for obstructions which are removable or correctible, and are appropriate for obstructions expected to be present for no more than five years. One component of the temporary waiver submittal is a mitigation plan, which is meant to outline the

planned actions for addressing the obstructions. The area captured in the gold rectangle in the preceding graphic is the area where there are utility poles that are identified in the Maxwell AFB airfield waiver request. These poles require replacement to a frangible pole in order to reduce the risk profile within this area and these structures.

Maxwell AFB has been working with the Montgomery Metropolitan Planning Organization, Alabama Power, and the City to replace the wooden light poles, with frangible poles and buried power lines. The City of Montgomery and Montgomery County have coordinated with Maxwell AFB to remove unnecessary roadway and utility infrastructure.

In addition to the roadway infrastructure, a major railroad, CSX Transportation, traverses the southern CZ. The primary concern regarding the railroad infrastructure in the CZ is safety for the pilots, railroad personnel, and the general public. According to the latest AF AICUZ recommended guidelines, railroads are typically prohibited in the CZ. The AF AICUZ guidance indicates that placing these structures or above ground utility lines and other infrastructure is subject to severe restrictions.

There are no tools that address the railroad compatibility in this area including measures for communication and coordination with the railroad operator.

The city's zoning ordinance includes an AHA that restricts the height of structures and trees within two miles of an airfield, but the AHA does not include regulations to restrict use in accordance with Maxwell AFB's AICUZ report or the latest AF AICUZ recommended guidance. In addition, the AHA does not reflect requirements for coordination among all stakeholders within this area that includes the railroad operators or managers.

The Readiness and Environmental Protection Integration (REPI) Program is designed to remove or avoid land use conflicts by using a partnership program to buffer land around sensitive military training areas. At the time this report was developed, Maxwell AFB had not applied for REPI funding to secure land buffers around priority areas of the base.

Findings

- Not all property within the southern CZ is owned or controlled by Maxwell AFB.
- The City of Montgomery's Zoning Ordinance does not reflect adequate military compatible guidelines including the latest AF AICUZ recommended land uses.
- The City, County, and Montgomery Metropolitan Planning Organization have been working with Maxwell AFB to replace certain utility infrastructure with frangible poles to reduce the degree of impact should an aircraft mishap occur in this area.
- Requirements for coordination among all stakeholders affected by the City's AHA are non-existent. Most importantly, neither the railroad nor its operators or managers are discussed in the City's Zoning Ordinance.
- The City's Comprehensive Plan is not current and does not reflect current policies for coordination among all stakeholders including Maxwell AFB and the Montgomery-Flomaton Railroad operators and managers.

ISSUE SA-2	**Incompatible Uses in Accident Potential Zones** There are land uses, including a Technical College and the Montgomery County Health Center, in the accident potential zones that are incompatible with the latest Air Force AICUZ recommended guidelines for land uses in the airfield safety zones.

The land to the north of Maxwell AFB is relatively undeveloped due to the presence of floodplain and wetlands associated with the Alabama River. This lack of development has resulted in a majority of compatible land uses within the APZs. However there are existing land uses and zoning districts that are identified as incompatible due to the location of the land uses in proximity to the active airfield and the increased risks for accident potential.

The areas south of the installation have the majority of the compatibility concern since the land there is more intensely developed.

There are no existing incompatible land uses within the northern APZ I area; however, there are 36.97 acres designated as residential and accommodations land uses in the southern APZ I. These residential uses are incompatible in this area according to the latest AF AICUZ recommended land use guidance (see Table 5.21-1). These existing land uses are illustrated on Figure 5.21-1.

Regarding the APZ II existing land uses, there are water uses and single-family residential uses that are incompatible within the northern APZ II. While the water is a naturally occurring water body, it is recommended as incompatible. It is recommended that no additional water bodies and features be constructed in this area. The single-family residential is located within the city of Prattville, and they are incompatible because the maximum permitted densities are greater than two dwelling units per acre for all residential zoning districts in the city.

The southern APZ II located in the City of Montgomery contains 88.68 acres of single-family residential designated land uses. These are also incompatible per the latest AF AICUZ recommended guidelines.

The zoning picture looks a little different than that of the existing land uses for the APZs of the main runway. The zoning for the APZs is illustrated on Figure 5.21-2 earlier in this section.

There are 113.31 acres zoned for R-50 single-family residential located within the northern APZ I and 16.59 acres zoned R-50 located within the northern APZ II. This is of major concern to Maxwell AFB as the acreage alone can encourage densities of dwelling units and persons in this high risk area, particularly in APZ I. The zoning in the northern APZ I is at the south-southwestern corner of the APZ I closest to the CZ, which makes the risk associated with this area greater.

Regarding the zoning for the southern APZs, there are 1.50 acres zoned R-50 single-family residential located in the southern APZ I, and 61.87 acres zoned for R-60-s single-family residential and 101.04 acres zoned for R-65-s single-family residential, respectively. The number of acres causes concern for the military as this could potentially put a significant number of the general public at an increased risk as well as the pilots.

Compatibility Assessment

As outlined in the previous Safety issue (SA-1), the AF identifies land uses that are compatible and incompatible in the airfield safety zones. Table 5.21-1 identifies all the land uses and their relative compatibility associated with each area—CZ and APZs.

The City of Montgomery has not updated its Comprehensive Plan, so the evaluation of the existing land use has been limited to information provided by the regional planning organization, as well as visual assessments.

Regarding all the residential uses that either exist in the APZs or are zoned for land located within the APZs, the maximum density permitted by the City's ordinance in terms of square feet is greater than the densities recommended by the AF AICUZ guidance. Zoning district R-50 allows seven dwelling units per acre, which is unacceptable for any of the APZs. The zoning district, R-60-s allows for approximately six dwelling units per acre; this is three times the recommended density within APZ II. This density is not recommended for APZ I. The zoning district R-65-s allows for five dwelling units per acre, which is too high in APZ I or II.

Some of these areas currently support uses including the Trenholme State Community College, the Alabama Department of Health, and the Rufus A. Lewis Branch Library. While these are designated as conditionally compatible, they are not typically recommended land uses for these areas as they encourage congregations of people and most likely do not mitigate for high noise conditions.

There are no local tools that support military compatibility in this scenario.

The State of Alabama's Code, ALA Code §11-52-8 identifies requirements of comprehensive master plans including descriptive matter, maps, and charts that depict the planning commission's recommendations for the development of the territory. The requirements also included provisions for parks, aviation fields, and open spaces; as well as a zoning plan for controlling the height, area, bulk, location, and use of buildings and premises. Though the City has a comprehensive plan, it does not discuss planning near airfields.

Findings

- The City of Montgomery has not incorporated the latest AF AICUZ guidance in its zoning ordinance.
- The City of Montgomery's Comprehensive Plan has not been updated since its creation in 1963, and does not reflect current conditions within the city, or provide policy guidance or recommendations for planning around airfields that includes coordinating and communicating with all affected stakeholders.

ISSUE SA-3	**Land Use Control of Southern CZ** The northern CZ is either owned by the Air Force or controlled by avigation easements that restrict height and use in accordance with the imaginary surfaces. However, a majority of the southern CZ is subject to local land use controls.

Maxwell AFB manages numerous avigation easements, comprising over 1,000 acres around the base, which restrict heights of trees and uses such as crops and buildings within the northern CZ and the approach and departure zones. Land within the northern CZ is either owned by the Air Force or is controlled through avigation easement. However, there are portions of the southern CZ that are neither owned nor controlled by the AF. This lack of control over the southern CZ area subjects the land to local land use controls that may not be reflective of military compatibility. This local land use control over the area located in the southern CZ can create safety hazards in the event of an aircraft mishap.

It should be noted that due to the lack of control of the land within the southern CZ area and other factors such as airspace control, the northern runway is used by the AF to perform the majority of aircraft arrivals and also a large portion of departures.

Compatibility Assessment

The 12 easements contain language that restrict height of trees, crops, and buildings at grade within the northern CZ, and restrict heights of the same land uses for the runway approach-departure zone at a slope of 50 horizontal feet for every one vertical foot, correlative to the associated glide angle plane.

However, there are only three avigation easements in place for the southern CZ. Table 5.21-2 describes the easements and their associated restrictions.

C-130 Hercules takes off from Maxwell AFB

Table 5.21-2. Avigation Easements for Southern CZ of Maxwell AFB and Associated Restrictions

Location	Easement ID	Restrictions
Southern CZ – South Highway 80 and Railroad towards the southeastern corner of the CZ	AE-36	Buildings and structures are restricted at a height and slope of 50:1 to preserve the glide angle plane; Right to clear and level land of crops, buildings, timber, and other obstructions; Exceptions for existing easements for public roadways, highways, utilities, railroads, and pipelines.
Southern CZ – South of Highway 80 and railroad near the center of the CZ on the west side of the runway.	461-E-1	Right to cut to ground level trees, shrubs, and other obstructions; Right to prohibit release of substances that could impair vision (dust, steam, smoke); Right to prohibit objects that produce glare or electrical emissions; Right to prohibit all uses other than agriculture, grazing (no feed lots or dairy herds), permanent open space, existing water areas, right-of-way for 2-lane highways without sidewalks or bike trails, single track railroads, utility right-of-way, storage of concrete structural members or related products, including vehicles and equipment for moving concrete products; Right to restrict concentrations of people to no more than 80 together at one time.
Southern CZ – South of Highway 80 and railroad near the	461-E-2	Right to cut to ground level trees, shrubs, and other obstructions; Right to prohibit release of substances that could impair vision (dust, steam, smoke); Right to prohibit objects that produce glare

Location	Easement ID	Restrictions
center of the CZ on the west side of the runway. This easement is adjacent to 461-E-1 on the south.		or electrical emissions; Right to prohibit all uses other than agriculture, grazing (no feed lots or dairy herds), permanent open space, existing water areas, right-of-way for 2-lane highways without sidewalks or bike trails, single track railroads, utility right-of-way, storage of concrete structural members or related products, including vehicles and equipment for moving concrete products; Right to restrict concentrations of people to no more than 80 together at one time.

The easement identified as AE-36 is split according to the data—one portion is 0.33 acres and the other portion is 30.70 acres; these are located immediately south of the Gulf, Mobile, and Ohio Railroad. The restrictions are different from the other two easements existing in the southern CZ. This easement restricts buildings and structures at the 50 feet horizontal for every one foot vertical slope; however, this area should be free and clear of any development. The easement allows for the right to clear obstructions from the glide angle plane to keep the airspace free of obstructions. These areas should be cleared appropriately of any obstructions including trees and crops as these types of land uses are discouraged for this area. If these land uses are located in this area, then it increases the risk profile for this area, which creates concerns for Maxwell AFB and the DOD when evaluating the installation for new missions.

Avigation easements 461-E-1 and 461-E-2 are 12.73 acres and 2.97 acres respectively, and have the most restrictions on land use in the southern CZ due to size, location, and existing land uses. The easements allow for the continuation of the business activities, associated with an existing concrete company. The activities permitted to continue include the storage of concrete products and equipment needed for the construction and movement of the products, although this activity is not recommended for the CZ area. The continuance of this business activity is more of a concern due to the location of the business, which is near the center of the CZ and near the primary flight path for approach and departure operations. Currently, the majority of the air operations occur from the northern runway; however, this situation of the southern runway and the land uses do not provide the AF opportunities to reinstate this runway at maximum capacity operation due to the risk associated with this business activity and other areas of the CZ that are not controlled.

In addition, the 461-E-1 and 461-E-2 easements limit concentrations of people to 80 people at any given time. The CZ is an area that should not have any people traversing or inhabiting the area for any length of time as this is the area that has the highest risk associated with aircraft mishaps.

The easement restrictions do not encourage an area free and clear of development as recommended by the AF AICUZ guidance. This increases the safety risk associated with using the southern runway more frequently, which is one reason it is not used frequently.

The City of Montgomery's zoning also reflects that about half of the southern CZ that is not owned or controlled by the AF is zoned for uses that are not compatible with this area including single-family residential and general and light industry. According to the AICUZ guidance, this area is at highest risk for an aircraft accident due to its proximity to the airfield and the types of operations that occur in the area. These zoning districts allow for buildings and structures that are not compatible with the CZ area. This would put people and property at greater safety risk if Maxwell AFB required more frequent use of this runway.

Findings

- Less than half the southern CZ is not controlled or managed by the AF, subjecting the majority of this area to local land use controls.
- The City of Montgomery's zoning map does not reflect the easements between the AF and property owners for the southern CZ.
- There are zoning districts in the southern CZ that are not compatible with AICUZ guidance.

ISSUE SA-4	**Bird Air Strike Hazard Awareness Concern** General concern about Bird Air Strike Hazard (BASH) incidents. While Maxwell AFB updates its BASH Plan upon mission changes and monitors the conditions indicative of high risk potential of BASH incidents, it is important to maintain an awareness of the BASH environment in this area to decrease the risk to safety and property damage.

Certain types of land uses and water features have the potential to attract birds and wildlife, such as landfills and waste disposal operations, golf courses, water treatment facilities, wetlands, fishing operations, and natural water bodies, i.e. the Alabama River. Due to the increased risk that accompanies bird activity, the FAA and the military recommend that land uses that attract birds and wildlife be discouraged wherever possible inside the BASH Relevancy Area, which is a five statute area around the entire air operations area (AOA).

Maxwell AFB is not located within any major flyway for migratory birds; however, there is moderate avian activity in the area around the installation. This activity is largely attributed to the numerous water bodies both on- and off-base, including the Alabama River and West End Ditch, as well as the forested areas and farm lands, both north and west of the installation. In addition to the abundance of aquatic and natural areas surrounding Maxwell AFB, there is also a wastewater treatment facility proximate to the northern end of the landing zone, and three landfills located within the BASH Relevancy Area. Figure 5.21-4 illustrates the potential hazard areas, both natural and manmade, within the BASH Relevancy Area.

During 1993 and 1994, three baseline surveys of avian species were conducted, producing observations of 27, 68, and 46 different species respectively. The species most commonly found on or near the base wetlands, west of the airfield, include the great blue heron, great egret, little blue heron, green-backed heron, and prothonotary warbler. Canada geese are prevalent throughout the base, with congregations frequently encountered near the base lakes and golf course ponds, northeast of the airfield.

The bird strike activity for Maxwell AFB between 2000-2015 is provided on Figure 5.21-5. The figure shows that prior to 2013, bird strikes were a greater issue for the base resulting in more than 10 strikes per year. However since 2013, the base has reported less than 10 bird strike incidents per year.

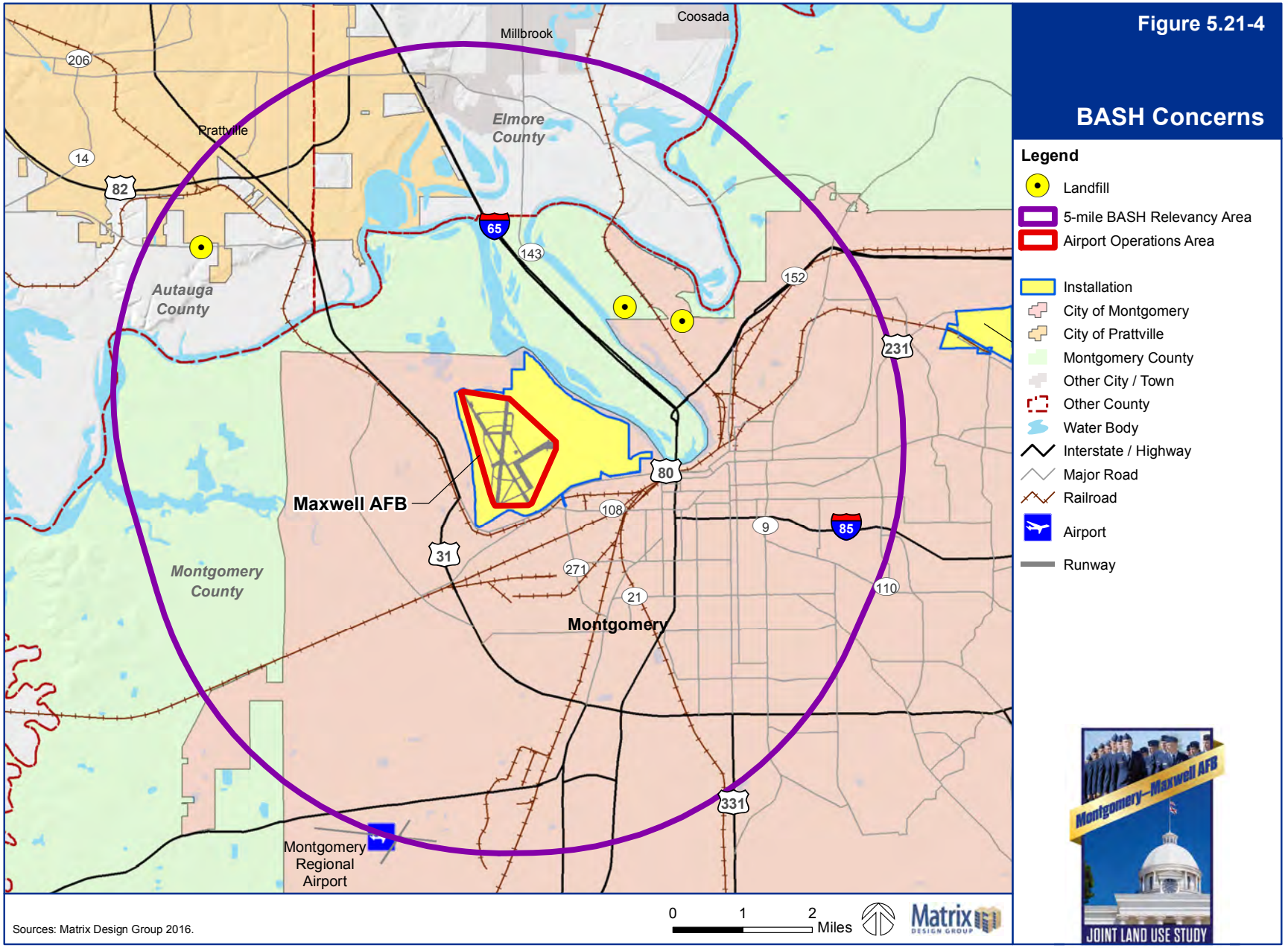


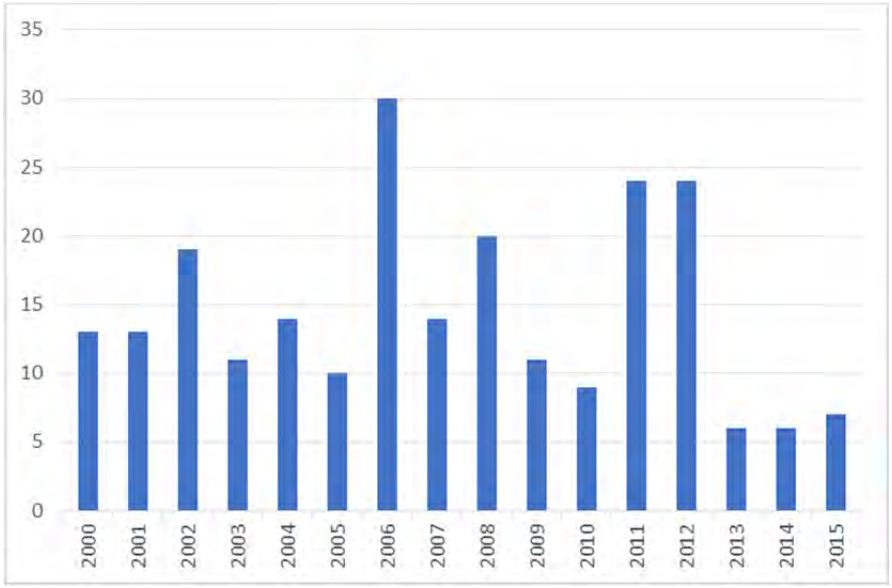
Figure 5.21-4

BASH Concerns

Legend

- Landfill
- 5-mile BASH Relevancy Area
- Airport Operations Area
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Airport
- Runway

Figure 5.21-5 Maxwell AFB Bird Strikes Between 2000-2015



Source: United States Avian Hazard Advisory System, 2015.

It is difficult to know what has attributed to the decrease in bird strikes, as many factors– including, but not limited to, number of air operations performed, timing of operations (months and time of day), increased education and notification among airmen, the removal of wildlife attractants in the area, changes in weather patterns, and changes in bird patterns and behaviors–could all have an impact on the reduction in the number of bird strikes in recent years.

Compatibility Assessment

Maxwell AFB maintains a BASH Plan that is designed to minimize potential BASH incidents on and around the base through the careful management of habitat, and through the education of pilots on the avoidance procedures for areas with high concentrations of birds.

The 2015 Maxwell AFB BASH Plan includes the establishment of a Bird Hazard Working Group (BHWG) that provides recommendations to the Wing Commander on actions that should be taken to reduce or mitigate bird and wildlife hazards on the installation. Some specific actions that Maxwell AFB performs to manage the BASH environment on-installation include educating both base personnel and the local community on the importance of deterring bird / wildlife activities with regards to the overall military mission; controlling food sources of birds and wildlife by minimizing standing water; landscape management; bird-proofing of buildings; and adjusting flight patterns and schedules to avoid times and areas of high risk.

The BASH Plan includes procedures for wildlife management, which favors non-lethal options of habitat modification and dispersion tactics over lethal methods; however, programed shootings will occasionally be organized, which typically target a specific species of concern. One of the on-base challenges for Maxwell AFB are the base golf courses, which serve as a major attractant to birds and require aggressive management of water features and vegetation in order to control avian activity. Like the challenge of the golf courses, the ditch just beyond Maxwell AFB's western border is often blocked with debris and beaver dams, creating an area of standing water and wetlands near the base lakes, potentially increase the insect population, ultimately increasing the food sources for birds and wildlife in the area.

Another function of Maxwell AFB's BHWG is that it acts as the point of contact for off-base BASH issues. This is an important role which should be well established, as Maxwell AFB does not have the authority to control or manage land uses or habitats outside the base within the entire five-mile BASH Relevancy Area. This limitation of authority is also identified in the BASH Plan which mentions crops, cattle pastures, and water bodies a half a mile north of the airfield that provide food sources for birds. The Plan states that the Animal Damage Control Division of the United States Department of Agriculture (USDA) is to be contacted for BASH assistance.

The goals of the BHWG are further supported by Maxwell AFB's Natural Resource personnel through the use of the base's Natural Resource Plan (NRP) in the management of natural resources on the base that correlate to bird / wildlife activities.

Maxwell AFB's NRP incorporates the BASH Plan by reference, and provides details on maintaining the areas around the airfield in accordance with the BASH Plan to limit wildlife attractants. The NRP identifies spring and fall as the seasons associated with the greatest number of bird strikes, but also recognizes that the geographic location and warm weather at Maxwell AFB supports a healthy year-round bird population. The NRP is consistent with the BASH Plan in stating that non-lethal measures are preferred for bird control, but that organized shootings of Canada geese are sometimes coordinated with the USDA and the Alabama Department of Conservation and Natural Resources. Elements of the base's Golf Course Environmental Management (GEM) Plan have also been incorporated into the NRP, which includes an objective for minimizing or eliminating potential BASH hazards through golf course management practices. Additional component plans include Fish and Wildlife Management, which has several objectives for managing wildlife habitats in order to ensure aircraft and aircrew safety such as:

- *Identifying responsible parties for the review of proposed base activities and work requests for BASH concerns;*
- *Identifying the responsible party for maintaining all landscaping in accordance with the criteria defined in the BASH Plan;*
- *Minimize or eliminate birdhouses, fruit trees, certain crops, edge effects, perches, and other features near the airfield that are attractive to wildlife;*
- *Continue the use of non-lethal dispersal methods identified in BASH Plan to discourage and disperse wildlife on the airfield;*
- *Coordinate with the USDA for Canada geese removal when necessary; and,*
- *Continue to comply with the authorizations of the bird depredation permit issued by the US Fish and Wildlife.*

The BASH footprint encompasses land outside the installation boundary where hazard control needs to be coordinated with surrounding jurisdictions. The efforts of the military to maintain and preserve natural lands near airfields can create conditions that are attractive to area wildlife, making it important to minimize attractive food sources and habitat on the land within the BASH Relevancy Area.

Sources: Maxwell AFB Natural Resource Management Plan, 2015; Maxwell AFB 42d ABW Bird / Wildlife Aircraft Strike Hazard (BASH) Plan, 2015

Findings

- The unmaintained ditch near the western border of Maxwell AFB and wetlands near the base lakes creates food sources for birds in the area.
- There are land uses within the five-mile BASH Relevance Area that encourage birds and wildlife in the area.
- While the Maxwell AFB BASH Plan establishes provisions for working with the community and property owners outside the installation, the Plan does not identify points of contact within the surrounding jurisdictions for coordination of BASH-related issues.

5.22. Scarce Natural Resources

Pressure to gain access to valuable natural resources (such as oil, gas, minerals, and water resources) located on military installations, within military training areas, or on public lands historically used for military operations can impact resource utilization and military operations.

Increasing development surrounding military installations will continue to compete with the need for naturally limited resources, such as water, oil, gas, minerals, and scenic / recreational assets. Continual development around the military installation could reduce the available supply of these finite resources.

There were no issues identified for Scarce Natural Resources in this JLUS.

Please see next page.

5.23. Vertical Obstructions

Vertical obstructions are created by buildings, trees, structures, or other features that may encroach into the navigable airspace or line-of-sight of radar signal transmission pathways used by the military. These obstructions can be a safety hazard to both the public and military personnel and potentially impact military readiness.

Vertical obstructions can compromise the value of low-level flight training by limiting the areas where such training can occur. These obstructions can include a range of items from man-made, such as telephone poles, utility transmission towers, and radio antennas, to natural, such as tall trees and land features. Vertical obstructions can also interfere with radar transmissions, compromising the integrity of data transmission between the transmitter and receiver. Though most critical near the transmitter, the geographic area impacting the transmissions, or radar viewshed, can be broad depending on the distance between the transmitter and receivers.

Key Terms

Imaginary Surfaces. The term imaginary surface refers to the areas surrounding a heliport or airfield that must be kept clear of objects that might pose a safety threat to aviation activities. A man-made or natural object that projects above an imaginary surface is an obstruction. See Technical Background for more information.

Technical Background

In relation to flight operations from an airport (military or civilian), vertical obstructions are addressed through compliance with Federal Regulation Title 14 Part 77, which establishes standards and notification requirements for objects affecting navigable airspace. Commonly referred to as Part 77 compliance, this regulation provides details to evaluate the potential for a vertical obstruction based on the elevation of the airfield, the height and resulting elevation of the new structure or facility, and the location of the structure or facility in relation to the airfield in question.

To determine when structures or facilities should be evaluated for vertical obstruction, Part 77 states the following requirements for notifying the FAA:

§77.9 - Any person/organization who intends to sponsor any of the following construction or alterations must notify the Administrator of the FAA:

– Any construction or alteration exceeding 200 feet above ground level.

Any construction or alteration:

– within 20,000 feet of a public use or military airport which exceeds a 100:1 surface from any point on the runway of each airport with at least one runway more than 3,200 feet.

– within 10,000 feet of a public use or military airport which exceeds a 50:1 surface from any point on the runway of each airport with its longest runway no more than 3,200 feet.

– within 5,000 feet of a public use heliport which exceeds a 25:1 surface.

Any highway, railroad, or other traverse way whose prescribed adjusted height would exceed the above noted standards.

When requested by the FAA:

– Any construction or alteration located on a public use airport or heliport regardless of height or location.

Part 77 also identifies the height at which an object may be considered an obstruction at a designated distance:

§77.17- Obstruction standards.

(a) An existing object, including a mobile object, is, and a future object would be an obstruction to air navigation if it is of greater height than any of the following heights or surfaces:

(1) A height of 499 feet above ground level at the site of the object.

(2) A height that is 200 feet above ground level or above the established airport elevation, whichever is higher, within three nautical miles of the established reference point of an airport, excluding heliports, with its longest runway more than 3,200 feet in actual length, and that height increases in the proportion of 100 feet for each additional nautical mile from the airport up to a maximum of 499 feet.

(3) A height within a terminal obstacle clearance area, including an initial approach segment, a departure area, and a circling approach area, which would result in the vertical distance between any point on the object and an established minimum instrument flight altitude within that area or segment to be less than the required obstacle clearance.

(4) A height within an en route obstacle clearance area, including turn and termination areas, of a Federal Airway or approved off-airway route, that would increase the minimum obstacle clearance altitude.

(5) The surface of a takeoff and landing area of an airport or any imaginary surface established under § 77.19, 77.21, or 77.23. However, no part of the takeoff or landing area itself will be considered an obstruction.

(b) Except for traverse ways on or near an airport with an operative ground traffic control service furnished by an airport traffic control tower or by the airport management and coordinated with the air traffic control service, the standards of paragraph (a) of this section apply to traverse ways used or to be used for the passage of mobile objects only after the heights of these traverse ways are increased by:

(1) 17 feet for an Interstate Highway that is part of the National System of Military and Interstate Highways where overcrossings are designed for a minimum of 17 feet vertical distance.

(2) 15 feet for any other public roadway.

(3) 10 feet or the height of the highest mobile object that would normally traverse the road, whichever is greater, for a private road.

(4) 23 feet for a railroad.

(5) For a waterway or any other traverse way not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it.

Apart from the Part 77, the FAA has developed imaginary surfaces around runways to determine how structures and facilities are evaluated as to whether they pose a vertical obstruction relative to the surrounding airspace. The levels of imaginary surfaces build upon one another and are designed to eliminate obstructions to air navigation and operations, either natural or man-made. The dimension or size of an imaginary surface depends on the runway classification. Figure 5.23-1 illustrates all the imaginary surfaces of a runway and the heights and ratios that buildings and structures are evaluated for vertical obstructions.

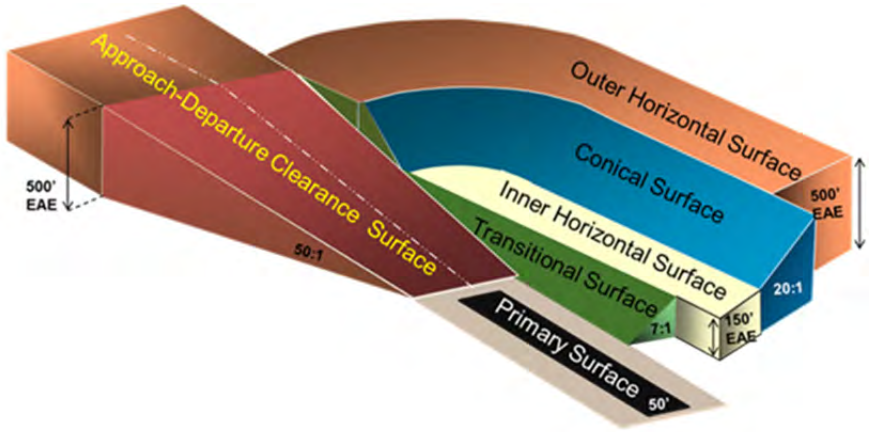


Figure 5.23-1. Imaginary Surfaces Cross-Section

Imaginary Surfaces for Runway 15/33 (Maxwell AFB Main Runway)

As referred to in the 2009 Maxwell AFB AICUZ Update, the following provides a description of each of the imaginary surfaces. For the purposes of explanation, the runway at Maxwell AFB is classified as a Class B runway. Class B runways are intended for use by high-performance and large, heavy aircraft including C-130s.

Primary Surface. This surface defines the limits of the obstruction clearance requirements in the immediate vicinity of the landing area. The primary surface comprises surfaces of the runway, runway shoulders, and lateral safety zones and extends 200 feet beyond the runway end. The width of the primary surface for the type of runway at Maxwell AFB is 2,000 feet, or 1,000 feet on each side of the runway centerline.

Clear Zone. This surface defines the limits of the obstruction clearance requirements in the vicinity contiguous to the end of the primary surface. The length and width of the clear zone surface at Maxwell AFB is 3,000 feet by 3,000 feet.

Approach-Departure Clearance Surface. This surface is symmetrical about the runway centerline extended, begins as an inclined plane (glide angle) 200 at the end of the primary surface of the centerline elevation of the runway end, and extends for 50,000 feet. The slope of the approach-departure clearance surface is 50:1 (50 horizontal feet for one vertical foot) along the extended runway (glide angle) centerline until it reaches an elevation of 500 feet above the established airfield elevation. It then continues horizontally at this elevation to a point 50,000 feet from the start of the glide angle. The width of this surface at the runway end is 2,000 feet; it flares uniformly, and the width at 50,000 feet is 16,000 feet.

Inner Horizontal Surface. This surface is a plane, oval in shape at a height of 150 feet above the established airfield elevation. It is constructed by scribing an arc with a radius of 7,500 feet above the centerline at the end of the runway and interconnecting these arcs with tangents.

Conical Surface. This is an inclined surface extending outward and upward from the outer periphery of the inner horizontal surface for a horizontal distance of 7,000 feet to a height of 500 feet above the established airfield elevation. The slope of the conical surface is 20:1 (20 horizontal feet for one vertical foot).

Outer Horizontal Surface. This surface is a plane located 500 feet above the established airfield elevation. It extends for a horizontal distance of 30,000 feet from the outer periphery of the conical surface.

Transitional Surfaces. These surfaces connect the primary surfaces, clear zones, and approach-departure clearance surfaces to the outer horizontal surface, conical surface, other horizontal surface, or other transitional surfaces. The slope of the transitional surface is 7:1 outward and upward at right angles to the runway centerline. To determine the elevation for the beginning of the transitional surface slope at any point along the lateral boundary of the primary surface, including the CZ, draw a line from this point to the runway centerline. This line will be at right angles to the runway axis. The elevation at the runway centerline is the elevation for the beginning of the 7:1 slope.

Imaginary Surfaces for Runway 007/187 (Maxwell AFB Landing Zone)

As referred to in the 2009 Maxwell AFB AICUZ Update, the following provides a description of each of the imaginary surfaces associated with the Landing Zone (LZ), Runway 007/187. It should be noted this runway is 3,015 feet long by 60 feet wide. This runway is primarily used for C-130 Maxwell AFB crews to perform tactical departure and arrival training. Periodically, transient C-130 aircrews also use the LZ for training sorties.

Primary Surface. This surface defines the area symmetrically centered on the LZ. The elevation of any point on this surface is the same elevation as the nearest point on the runway centerline or extended runway centerline. The primary surface for Runway 007/187 is 150 feet wide by 1,000 feet long.

Clear Zone Surface. This surface is an area on the ground or water beginning at the runway threshold and is symmetrical on the extended runway centerline. It is graded and designed to protect aircraft operations for which only properly located NAVAIDs are allowed.

Maintained Area. This surface is a land area extending outward at right angles from the runway centerline and the extended runway centerline. This area is located outside the graded area and within the exclusion area, and must be free of obstructions. For Runway 007/187, the maintained area is 60 feet wide. The grade may slope up or down to provide drainage but may not exceed a +10 percent or -20 percent slope.

Exclusion Area. This surface is an area that is required for Runway 007/187 and is restricted to development of facilities around the LZ. The only allowable features in this area include taxiways, aprons, NAVAIDs, and aircraft and support equipment. This area extends the length of the runway and the CZ on each end. The Exclusion Area for Runway 007/187 is 1,000 feet as this area is occupied.

Approach-Departure Clearance Surface. This surface is similar in shape to that of the Approach-Departure Clearance Surface for Maxwell's Runway 15/33. However, the slope and length associated with this area for the LZ is reduced. The slope is 35:1 (35 horizontal feet for one vertical foot), and remains constant throughout the length of the surface, which is different from Runway 15/33. The length of this area is 10,500 feet, slightly less than two miles from the runway centroid.

Issues Assessment

ISSUE VO-1	**Pumping Station Tower Extends into Navigable Airspace** The tower at the city's sewer pumping station located north of Maxwell AFB's airfield extends into navigable airspace. This can create an airspace hazard relative to the recommended heights and dimensions of the imaginary surfaces.

The City's Wastewater Treatment Facility located north of Maxwell AFB has an elevation of 164 feet mean sea level (MSL), and the elevation of Maxwell AFB is 172 feet MSL. The concern is the tower on one of the tanks at the treatment plant property is located within the imaginary surfaces of the northern end of the Maxwell AFB Landing Zone (Runway 007/187) and penetrates the imaginary surface, creating a risk to safe navigable airspace. The tower is approximately 2,095 feet from the end of the Landing Zone.

Due to the elevation of the runway at Maxwell AFB, eight feet above the elevation of the wastewater treatment facility, structures would not extend into navigable airspace until they exceeded 59.9 feet in height based on the 35:1 slope defined by the Approach / departure clearance surface for Maxwell Runway 007/187. According to Maxwell AFB personnel, the wastewater plant tower exceeds the imaginary surfaces height guidelines by 15 feet. Using the distance divided by the acceptable slope and adding the result to the difference of the elevation from Maxwell AFB to tower's location elevation, the tower height is approximately 82 feet above ground level (AGL). This height would constitute an obstruction to navigable airspace by imaginary surfaces guidelines for the Maxwell AFB LZ.

This vertical obstruction if not known to pilots can create unsafe navigable airspace and pose safety risks to the pilots and the general public in this area. This could additionally cause delays in military aviation training and / or require training modifications by the AF. Numerous training modifications are detrimental to the capabilities of potential future mission realignments for Maxwell AFB.

Compatibility Assessment

The City of Montgomery through their zoning ordinance established an Airport Hazard Area (AHA), which acts like a traditional zoning overlay district. The AHA is a two-mile radius around both Maxwell AFB and the Montgomery Regional Airport-Dannelly Field. This two-mile area only adds additional regulations to the base zoning district. More specifically the AHA regulations only affect the following zoning districts:

- Agricultural 1 or 2 Zoning District, and
- M-3 Industrial Zoning District.

The additional regulations include limiting heights in M-3 districts to 45 feet, and agricultural districts to 35 feet. While the zoning ordinance does exclude some structures from district height limitations, such as hospitals, farm and manufacturing structures, and communication towers, these structures are not excluded from the height restrictions within the AHA. All exceptions to specified height restrictions are granted by the Board of Adjustment in the appropriate hearing process.

Several of the zoning districts within the Approach / Departure Clearance Surface 35:1 glide area do not have defined height restrictions, such as the Institutional District which the tower is located in. This zoning district and its relative height limits are not addressed in the zoning ordinance or the AHA ordinance.

Source: City of Montgomery Zoning Ordinance, 1985.

Findings

- The height restrictions in the City of Montgomery's Zoning Ordinance do not consider the airport elevation and parcel location within the 35:1 Approach / Departure Clearance Surface for the Maxwell AFB LZ as it has a different slope than the Main Runway.
- There are zoning districts that do not have height restrictions in the zoning ordinance, and they are not addressed in the AHA section of the ordinance.

ISSUE VO-2	**Trees Inside Southern Clear Zone** Trees inside the southern CZ pose an obstruction to navigable airspace for Maxwell AFB's Main Runway (R15/33).

There are several trees located in the southeastern corner of the southern CZ of Runway 15/33 that present vertical obstructions to Maxwell AFB's navigable airspace. These trees are mostly associated with residential properties within the City of Montgomery. This is a concern to Maxwell AFB due to the vertical obstructions that the trees create for low-altitude, reduced speed arrival flight operations and low-altitude, increasing speed departure operations from this runway. These trees are recommended to be a certain height and maintained at that height so as not to interfere with these arrival and departure aviation operations. This type of vertical obstruction can potentially create an unsafe environment for the public in the area as well as the pilots flying the aircraft. This type of encroachment can also have costly property damages both to private and federal property and equipment in the event of an aircraft collision with the trees.

Aerial of Maxwell AFB Runway 33 Clear Zone and Trees

Compatibility Assessment

The City of Montgomery's AHA is the two-mile area around Maxwell AFB in which the city requires maintenance of tree heights at regulated structure heights associated with the individual zoning districts. The properties in the southern CZ are zoned Residential R-60-s, which has a height restriction of 35 feet. Thus, the 35 feet height should be maintained as the tree height, according to the AHA in the City's Zoning Ordinance. However, the AHA regulations state that maintaining the tree heights is only a necessary enforcement if the tree(s) becomes a vertical obstruction to safe aviation navigation in this area. This regulation is excerpted from the AHA regulations as follows:

> *Article VIII Airport Hazard Areas, Section 4. Additional Regulations*
> *§ 4.d. – Height regulations concerning trees shall be enforced only when a failure to do so would allow an obstruction to air navigation to occur or exist.*

While it is understood that the maintenance of tree heights and canopies are only to be enforced when it becomes an issue, the concern with this reactive approach is there is seemingly no proactive approach or management of said trees. This reactive approach can cause delays in planning and budgeting monies for maintenance of the trees in the southern CZ. Moreover, delays in city planning and budgeting for the trimming and / or cutting of trees in this area can create unnecessary hazards for the people on the ground in this residential area and the pilots flying the aircraft.

Source: City of Montgomery Zoning Ordinance, 1985

In addition, the City of Montgomery's Tree Ordinance establishes the regulations for planting, maintenance, and removal of public trees within the city limits. While this tree ordinance assists the city in enforcing regulations for tree maintenance, planting, and removal, the ordinance's primary focus is trees on public property. The concern of trees in this particular issue is that the said trees are located in a residential subdivision within the southern CZ, which the tree ordinance has no jurisdiction.

However, the ordinance allows for property owners to request maintenance services from the city for tree maintenance in the event the property owner does not know if the said tree is located on private or public property. The city will inspect the tree and its surroundings to determine the appropriate course of action. The property owner is notified by the city of the findings of the evaluation and the course of action to be taken.

Findings

- Only enforcing maintenance of tree or tree canopy height in accordance with structure heights allowed in the AHA specific zoning districts is a reactive approach to a known vertical obstruction issue.
- There is no management plan to assist in the proactive management of tree trimming / cutting in the southern CZ.
- There are properties in the CZ that are not controlled through restrictive easement.
- The Tree Ordinance establishes regulations for trees on public property.

ISSUE VO-3	**Temporary Crane Permits** The lack of permits for temporary construction cranes in the City of Montgomery creates the potential for vertical obstructions of the imaginary surfaces.

The southern end of Maxwell AFB borders the more developed areas of Montgomery. There are concerns over development and redevelopment activities within some of the industrial areas located in the APZs. There are industrial properties in the southern APZ II that contain temporary cranes for onsite construction. Though the construction cranes are temporary, their use can be sporadic throughout the day and introduces aviation concerns by creating intermittent obstructions to the navigable airspace with little or no notice to airmen and other aircraft operators in the area.

This lack of notification of the use of temporary cranes in the area nearest the airfield can create delays in operational training or at worst case, can create safety risks for pilots and the general public on the ground in these areas. This can ultimately increase the risk profile for aircraft mishaps in this area, cause Maxwell AFB and the Montgomery area to miss potential future capabilities through realignments to the Base.

Compatibility Assessment

Maxwell AFB has engaged the local businesses in the southern APZs to educate them on the impacts that the cranes can have on aviation, and to encourage them to obtain FAA waivers for the cranes prior to beginning construction activities. The businesses have started putting flags on the cranes, but there is no formal procedure for notifying Maxwell AFB in order to provide them with time to assess potential impacts to aircraft operations prior to bringing in construction cranes.

FAR Part 77.9 is an FAA Rule that provides guidelines for notifying the FAA of construction or alterations for projects which:

Exceed 200 feet above ground level (AGL);

Are within 20,000 feet of a public or military airport which exceeds a 100:1 surface from any point on the runway with at least one runway that is more than 3,200 feet.;

Are within 10,000 feet of a public or military airport which exceeds the 50:1 surface from any point on the runway with the longest runway no more than 3,200 feet in length.

Notifications are required to be filed at least 45 days prior to the proposed construction start date for permanent and temporary obstructions. Temporary obstructions include:

- construction equipment;
- cranes, boom trucks;
- concrete pumps;
- drilling rigs;
- stock piles; and
- temporary lights.

Notification is initiated by completing FAA Form 7460-1, which is the Notice of Proposed Construction or Alteration with the FAA's Obstruction Evaluation / Airport Airspace Analysis (OE/AAA), which can be done electronically at http://oea.faa.gov. This information is not included in the city's zoning ordinance and nor are copies provided at the city's planning office. In addition, this form is not required upon submitting a package to the land use planning office in the city.

According to the City of Montgomery's Zoning Ordinance, temporary cranes are not regulated and do not require permits for submission of plans that involve construction activities. In addition, the AHA overlay does not require coordination with the installation regarding use of temporary cranes in this area.

Findings

- Local businesses are not required to communicate or coordinate with Maxwell AFB about construction activities that occur within the AHA.
- The city does not require a copy of the FAA's Form 7460-1 to be submitted in any proposed plan package for approval.
- Local jurisdictions do not regulate temporary cranes in either the zoning ordinance or the AHA.

ISSUE VO-4	**Lack of Awareness of Imaginary Surfaces in Economic Development Community** The lack of awareness about imaginary surfaces within the economic development community creates potential for incompatible development with aviation operations.

The Montgomery Area Chamber of Commerce (MACoC) Economic Development Department (EDD) is the primary economic development organization for the City of Montgomery, whose goal, among others, is to attract business to locate or expand in the city or county resulting in

increased economic benefit through direct jobs and property tax revenues. As part of their corporate recruitment and expansion efforts, the MACoC EDD has identified several premier industrial sites that are dotted within the city limits and immediately outside the city limits. See the MACoC website located at http://www.choosemontgomery.com/find-properties.aspx. These sites are currently being actively marketed for appropriate industrial / industrial-related businesses. Figure 5.23-2 illustrates the locations of these industrial sites.

As shown on the map, the sites are within the imaginary surfaces of the Maxwell AFB airfield, and more specifically, there is one site proposed for location in a critical aviation area just south of the airfield—the Approach-Departure Clearance Surface. In addition, two of these targeted areas are within the two-mile AHA, which limits industrial zoning districts to 45 feet and agricultural 1 and 2 zoning districts to 35 feet. Moreover, development of industrial sites so close to the end of the runway can represent other impacts to aviation including the generation of dust, smoke, or steam. The structure and the type of development can pose safety risks to aircraft, the pilots, and the general public if located in this area and not considerate of military compatibility measures. This could ultimately degrade the effectiveness of training at Maxwell AFB.

In addition, this type of development, if uncoordinated with the military, can cause encroachment by causing the military to modify their training routes or flight paths to avoid such vertical obstructions. If vertical obstructions continue to develop without appropriate coordination with all pertinent stakeholders including Maxwell AFB and Montgomery Regional Airport / Dannelly Regional Airport, then the potential for lost or realigned military missions or realignments of commercial flights can occur, which ultimately results in lost revenues and possibly a reduction of jobs.

Compatibility Assessment

While the planning and development community may be aware of the City of Montgomery's AHA, a zoning overlay that restricts tree and structure heights within two miles of airports, the economic development community may not be aware of such restrictions in the two-mile vicinity of airports. In addition, the AHA covers only the area within two miles of airports; however, the imaginary surfaces cover an area greater than the AHA. The imaginary surfaces typically cover an area approximately 8.5 to 9.5 miles around the airfield in all directions. Thus, the AHA does not provide adequate guidance or regulations for areas outside the two-mile area. Conversely, the AHA requires development proposed for the zoning district M-3 General Industry to limit height to 45 feet within the AHA. In addition, the Montgomery Zoning Ordinance requires zoning districts for M-1, Light Industry and M-2, Industrial Park to maintain a building height not to exceed 35 feet. The City provides adequate guidance for the protection of the critical airspace immediately surrounding Maxwell AFB.

The Central Alabama Regional Planning and Development Commission (CARPDC) is the covers Autauga, Elmore, and Montgomery counties. According to the CARPDC's Comprehensive Economic Development Strategy (CEDS), the CARPDC expects more growth in the automotive industry as suppliers for Hyundai and KIA expand into the area. Aerospace is another economic cluster which is experiencing growth in the region. As part of the CEDS development, a strengths, weaknesses, opportunities, and threats (SWOT) analysis was performed that confirmed Maxwell AFB as a regional economic engine injecting billions of dollars into the regional economy including opportunities for high-skilled, professional employment positions.

Some of the strategies identified for achieving CARPDC's goal of creating a cooperative system of regional economic development with strong markets and diverse economies include: promoting the I-65 and I-85 transportation corridors for industrial recruitment and development, and supporting planning and development of new industrial and commercial parks. While this economic development strategy may be a good venture for the region,

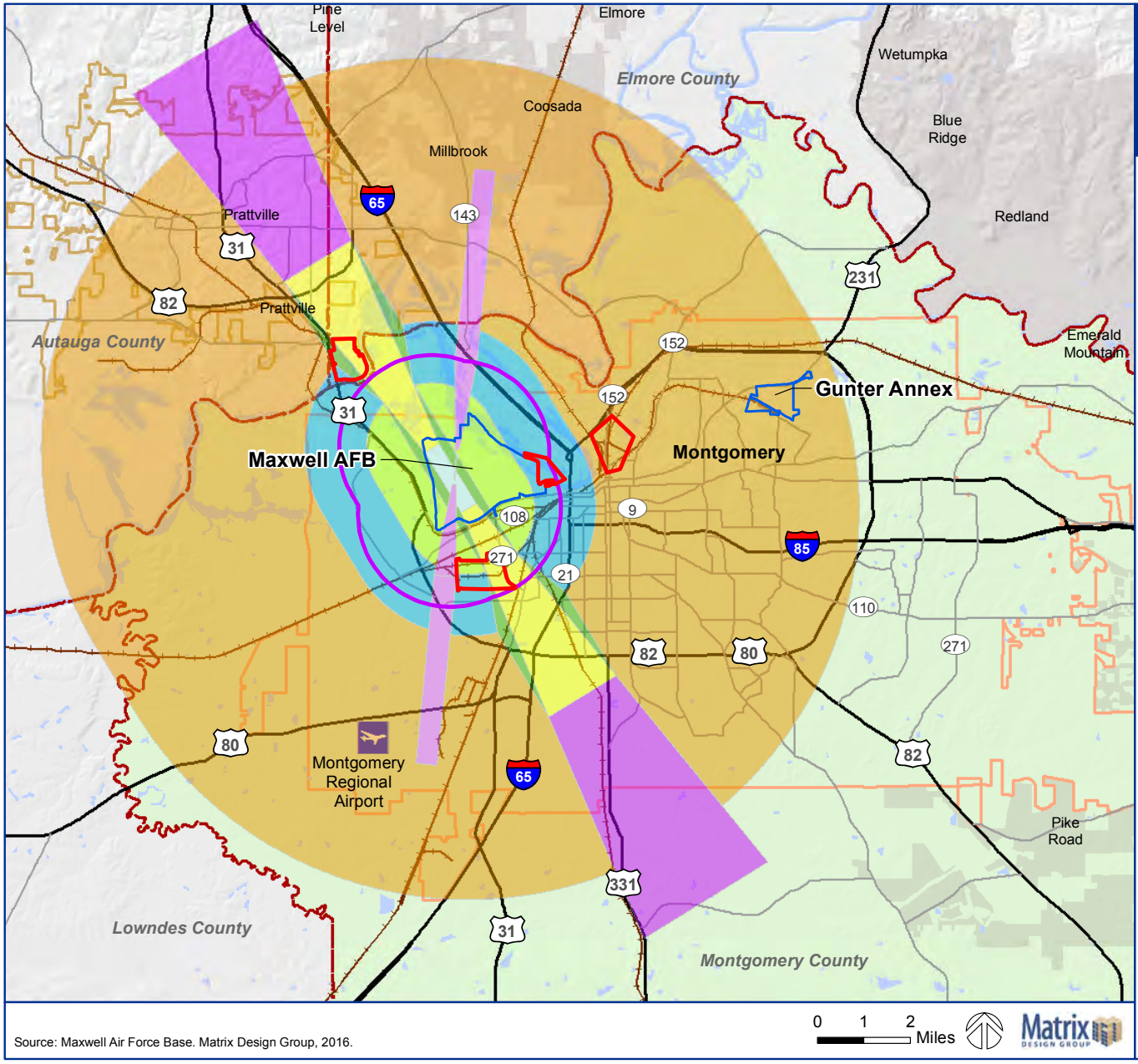


Figure 5.23-2

Potential Vertical Obstruction Concerns with Economic Development Target Areas

Legend

- Economic Development Target Areas of Concern
- Airport Hazard Area

Airfield Imaginary Surface

- Primary Surface
- Approach/Departure Clearance Surface (50:1)
- Approach/Departure Clearance Surface (Horizontal)
- (LZ) Approach/Departure (35:1)
- Inner Horizontal Surface
- Conical surface (20:1)
- Outer Horizontal Surface
- Transitional Surface (7:1)
- Installation
- City of Montgomery
- City of Prattville
- Montgomery County
- Other City / Town
- Other County
- Water Body
- Interstate / Highway
- Major Road
- Railroad
- Montgomery Regional Airport

Source: Maxwell Air Force Base. Matrix Design Group, 2016.

0 1 2 Miles

this strategy does not consider military compatibility and protecting the Base and its economic benefit in the region.

The CEDS also identified important regional partners and resources for CARPDC, including members of the Chamber of Commerce and economic development organizations, state and federal agencies, regional utility companies, and regional industries. However, Maxwell AFB was not included as an economic partner or resource for the region, despite its economic impact in the region.

The South Central Alabama Development Commission (SCADC) is the regional planning and development commission for south central Alabama, covering six counties including Montgomery County. According to SCADC's updated CEDS, the vision is to increase the economic diversity and quality of life in the region. The SCADC's CEDS identified six broad goals that their strategies and actions are based on, including:

- Increased economic development and opportunity, and
- Improved transportation access and infrastructure.

The SCADC's CEDS also indicated that at least 500 major companies have located or expanded within the region over the past 15 years, and there are approximately 60 major industrial parks within the region, several of them at capacity. While this is a good problem to have, the uncoordinated siting of new industrial parks could potentially lead to vertical obstructions and encroachment on aviation activities in the region. The SCADC does not incorporate military compatibility goals into the CEDS.

Findings

- The CEDS for both organizations, CARPDC and SCADC, do not include military compatibility goals.
- The economic development organizations in the region recognize the importance of Maxwell AFB as an economic anchor in the community; however, there are no coordination policies established with the Base on economic development matters.
- The City's AHA provides adequate guidance for imaginary surfaces and related height limitations for proposed structures immediately surrounding the airfield within two miles.

ISSUE VO-5	**Height Regulations Do Not Consider Imaginary Surfaces** Current Montgomery and Prattville height regulations do not consider the Federal Aviation Administration's height guidance relative to imaginary surfaces.

The primary concern with this issue is the cities of Montgomery and Prattville height regulations for certain zoning districts located within the imaginary surfaces of the Maxwell AFB airfield do not necessarily consider the recommended slope of FAA imaginary surface guidance. This concerns the military due to the cities potentially allowing unnecessary vertical obstructions through approving certain development in locations that are critical for safe maneuvering of aircraft.

As defined above there are three imaginary surfaces that have slope guidance relative to height limitations, they are the approach-departure clearance surface, which has a 50 foot horizontal to one vertical foot slope up to 500 feet for built structures; the conical surface, which has a 20 foot horizontal to one vertical foot slope; and the transitional surface, which has a 7 foot horizontal to one vertical foot slope from the runway centerline. The cities of Montgomery and Prattville are within the majority of the imaginary surfaces. The City of Prattville is not impacted by the conical surface which has the 20:1 slope. However, the City of Montgomery is impacted by all the imaginary surfaces, except the primary surface. The other imaginary surfaces have straightforward recommended height

limitations, such as 150 feet or 500 feet, for built structures, which makes it less challenging to determine if a structure will be a vertical obstruction.

Compatibility Assessment

The City of Montgomery has incorporated some of the imaginary surfaces in its zoning ordinance through the adoption of the AHA and a map titled, "*Standards for Determining Obstructions to Air Navigation, Maxwell A.F.B., Montgomery, Alabama;*" however, the AHA regulations only apply to an area that is two miles around the airfield. The imaginary surfaces in their entirety cover an area up to 9.5 miles around the airfield. Although the City of Montgomery has adopted the AHA, the majority of height restrictions of the zoning districts in the zoning ordinance appear to be compatible with the various imaginary surfaces, except for the B-1-a and B-1-b Central Business District and U – Utilities and FH – Flood Hazard Districts, which have no limit established for maximum building height. This could result in a major compatibility issue if a business wanted to construct a very tall building near the airfield. The U and FH Zoning Districts also do not have specified height restrictions, which can pose a vertical obstruction to safe air navigation.

If this imaginary surface guidance is not considered or followed in future development, including renovations, then a risk could be created resulting in unsafe navigable airspace. If an aircraft mishap were to occur, then there could be damage to federal and private property as well as safety risks for the general public. This could also delay and postpone mission training, which could ultimately degrade military capability for training in the future at Maxwell AFB.

Due to this not referenced in the AHA, it is likely that this scenario would not be evaluated until application submission, which is after plans have been formalized and funding has been secured for the plans. At this time in the process usually a significant amount of money has been spent in developing the plans. If the slope of these certain imaginary surfaces is considered after the plans have been developed, then that can result in additional costs to the developer and potentially lost economic development opportunities for the city.

The City of Prattville establishes height restrictions for every zoning district within their code. The majority of the zoning districts do not exceed 50 feet, which is typically a compatible height. Table 5.23-1 provides information about two zoning districts—B-4, Highway Commercial and FAR-Forest, Agricultural, Recreation—that could present a conflict for buildings if erected in an area near the transitional surfaces and the approach-departure clearance surface and not coordinated with Maxwell AFB.

Table 5.23-1. Heights of the Commercial Highway and Forest, Agricultural, Recreation Districts for the City of Prattville

Zoning District	Maximum Height	Compatibility
B-4 (Highway Commercial)	**Maximum Height:** Seventy-five (75) feet or five (5) stories; whichever is less.	Conditionally Compatible
FAR (Forest, Agricultural, Recreation)	**Height of Buildings**: No building shall exceed two and one-half (2½) stories or thirty-five (35) feet in height except in the case of towers, spires, domes or other such structures not designed for human occupancy may exceed this height, provided such structures comply with the provisions of all other pertinent codes and ordinances, and provided further, that such structures are located no closer to the nearest property line than the distance equal to their height plus ten (10) feet. No accessory structure shall exceed two (2) stories or twenty-five (25) feet in height.	Conditionally Compatible

Source: City of Prattville Code of Ordinances, Adopted February 1950.

The B-4 Highway Commercial is conditionally compatible because of the potential location of this zoning district. There are two state highways—State Highways 31 and 82—in the vicinity of the imaginary surfaces with certain slopes including the transitional surface with a 7:1 slope and the approach-departure clearance surface with a 50:1 slope. Depending on site elevations at the proposed development, this could represent a vertical obstruction with the imaginary surfaces. While development is unlikely in these areas, it is important to assess and consider in this JLUS.

In addition, the FAR Forest, Agricultural, Recreation zoning district is conditionally compatible because although buildings may not exceed a height of 35 feet, the zoning code allows for uninhabited structures such as towers, spires, domes, and other such structures to exceed this 35 foot height restriction. The zoning code does not stipulate a height restriction for these types of structures in this zoning district; therefore, this could represent a vertical obstruction depending upon location.

It should be noted the City of Prattville does not incorporate the Maxwell AFB imaginary surfaces in its zoning ordinance.

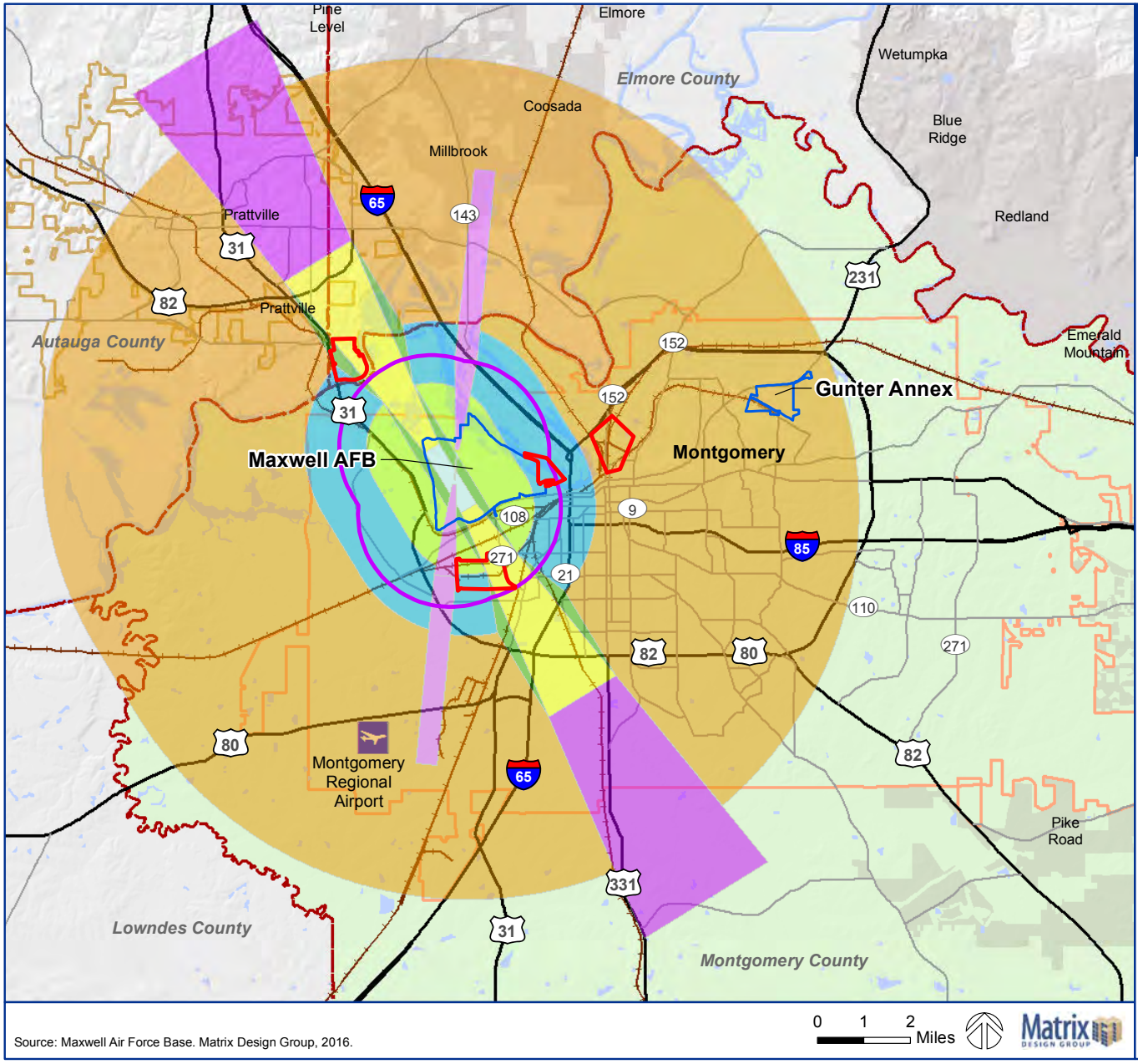
Findings

- The cities of Montgomery and Prattville do not incorporate the Maxwell AFB imaginary surfaces within their zoning regulations.
- The Montgomery AHA overlay does not provide the information on the slopes or heights for the imaginary surfaces located within the AHA.
- The AHA only applies to a two-mile area around Maxwell AFB, while the footprint of all the imaginary surfaces can extend outward from the installation in all directions up to 9.5 miles.
- Site elevation is not referenced in the AHA for the City of Montgomery.
- The City of Prattville's Code of Ordinances does not reflect military compatibility.

ISSUE VO-6	**Formalized Cell Tower Regulations** There are no formalized cell tower regulations for the jurisdictions in the JLUS Study Area. Lack of a formalized process for approval can potentially lead to oversight and compatibility issues.

There are no formalized cell tower regulations for the cities of Montgomery or Prattville. Towers and antennas associated with cellular communications can exceed 500 feet in height which can impact aircraft operations within the imaginary surfaces, as well as within military training routes (MTRs). If there are no formal regulations for controlling the height and location of structures such as a telecommunications towers, then there are no land use controls for these types of land uses, which provides a degree of safety and security to the general public and aircraft pilots if an aircraft mishap should occur. This could result in personal injury, death, damages to federal and private property, delays in mission training activities, and / or potentially lost opportunity for Maxwell AFB to be considered for additional mission capabilities in the future. This could mean potentially lost increased economic benefit from lost mission opportunities.

There are currently six towers located within the imaginary surfaces of the Maxwell AFB airfield that are of concern, as illustrated in Figure 5.23-3. The map only shows three symbols, but the symbol that is located furthest east on the map is actually a cluster of four towers. Based on heights of the structures and the site elevation, these structures currently exceed



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- Other County
- Water Body
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- Railroad
- Montgomery Regional Airport

Source: Maxwell Air Force Base. Matrix Design Group, 2016.

0 1 2 Miles

recommended height limitations for these areas. There is one tower in a critical area, the approach-departure clearance surface inside the FAA Part 77 Ring of 200 feet. This could represent a significant incompatibility. The tower furthest northwest located in Prattville exceeds the imaginary surfaces recommended guidance. Both of these footprints are shown to demonstrate that structures may be non-compliant with both the footprints or with either footprint. The Federal Communications Commission (FCC) requires all communication towers and their related structures, such as antennas, that are 200 feet in height or taller, or that are located near an airport runway to be registered with the FCC. A structure that exceeds 200 feet is also supposed to coordinate with the FAA to receive a FAA obstruction evaluation (OE). If uncoordinated with the FAA, then the military and other stakeholders can encourage FAA to evaluate the structure and designate it an OE.

Compatibility Assessment

According to the City of Montgomery's zoning ordinance, Radio and communication towers are among the structures that are excluded from regulation in their zoning ordinance, with the exception of areas associated with the AHA. All structures within the AHA, including the standard exclusions and trees, are restricted by the height limitations prescribed by the individual zoning district within the two-mile AHA.

The structure in the approach-departure clearance surface south of the runway is right outside two-mile AHA, which could still represent a concern for the military and aviation training.

The City of Prattville's zoning ordinance regulates structure heights, and like Montgomery, includes radio and cellular communication towers in their list of standard exclusions. The extent of the height recommendations associated with the imaginary surfaces in Prattville would limit heights to below 500 feet of the airfield elevation. The fact that the elevation is measured from that of the airfield is important, as Prattville can range from 100 to nearly 300 feet higher than the Maxwell AFB airfield in elevation. If a site has an elevation of 400 feet, then a communication tower or antenna that is cited within a surface with a 500 foot limit would create an obstruction to navigable airspace if it exceeded 271 feet in height.

Findings

- There are six existing towers that exceed imaginary surface and FAA Part 77 guidance relative to obstructions of navigable airspace.
- The City of Montgomery's AHA only limits heights of structures including telecommunications towers and antenna within the two-mile area around the airfield; however, imaginary surfaces extend outward from the airfield in all directions upwards of 9.5 miles. The City of Montgomery Zoning Ordinance does not incorporate imaginary surface or FAA Part 77 guidance, which does not address the remaining seven to 7.5 miles around the airfield.
- The City of Montgomery's AHA does not consider site elevation, distance from the airfield, and slopes when establishing restrictions for height.
- The City of Prattville's zoning ordinance does not restrict heights for cellular communication towers or antennas.

Please see the next page.

5.24. Vibration

Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment. Vibration may be caused by military and/or civilian activities.

There were no issues identified for Vibration in this JLUS.

Please see next page.

5.25. Water Quality and Quantity

Water quality / quantity concerns include the assurance that adequate water supplies of good quality are available for use by the installation and surrounding communities as the area develops. Water supply for agriculture and industrial use is also considered.

There were no issues identified for Water Quality and Quantity in this JLUS.

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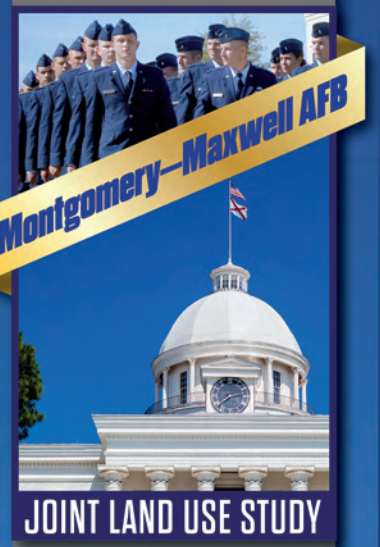
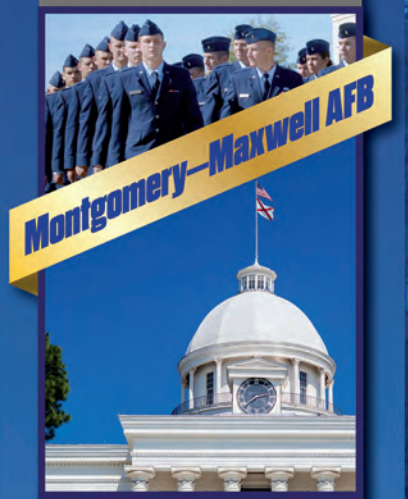


JOINT LAND USE STUDY



JOINT LAND USE STUDY

Matrix DESIGN GROUP