







The Vance AFB JLUS was prepared under contract with the City of Enid, with financial support from the Office of Economic Adjustment, Department of Defense. The content was developed through a collaborative stakeholder process, and does not necessarily reflect the views of the Office of Economic Adjustment.



# Vance Air Force Base Joint Land Use Study

JLUS Report

Prepared Under Contract With:



City of Enid, Community Development Department 401 W Owen K. Garriott Road Enid, OK 73703

Prepared By:



December 2018

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# **Acknowledgements**

# **Advisory Committee**

The Advisory Committee (AC) served an active and important role in providing policy direction during the development of the Vance Air Force Base Joint Land Use Study. The AC was composed of the following individuals:

- Chris Bauer, Planning Administrator, City of Enid
- Marc Bolz, District 1 Commissioner, Garfield County
- Mike Cooper, Vance Development Authority
- Jerald Gilbert, City Manager, City of Enid
- Colonel Darrell Judy, Ex-Officio, Vance Air Force Base
- Colonel Corey Simmons, 71st Flying Training Wing Commander, Vance Air Force Base
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- Toby Walker, Commissioner, Alfalfa County
- Larry Whitaker, Mayor, City of Waukomis

#### **Technical Committee**

The *Technical Committee (TC)* served a key role in the development of the Vance Air Force Base Joint Land Use Study. They provided the overall technical support, review, and guidance of the study. The TC was composed of the following individuals:

- Chris Bauer, Planning Administrator, City of Enid
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  Alfalfa County
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- Mike Hrapla Deputy Project Manager
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# **Acronyms**

#### A

AAF Auxiliary Air Field AC Advisory Committee

AETC Air Education and Training Command

AFB Air Force Base
AFI Air Force Instruction
AGL Above Ground Level

AICUZ Air Installation Compatible Use Zone

APZ Accident Potential Zone

AQ Air Quality

AT Anti-Terrorism / Force Protection

ATC Air Traffic Control

#### В

BAH Basic Allowance for Housing

BASH Bird / Wildlife Aircraft Strike Hazard

BIO Biological Resources

BRAC Base Realignment and Closure

### C

COM Communication / Coordination

CR Cultural Resources

CZ Clear Zone

#### D

DAR Defense Access Road

dB Decibel

DCIPP Defense Capital Infrastructure Pilot

Program

DNL Day-Night Average Sound Level

DOD Department of Defense
DSS Dust / Smoke / Steam

#### Ε

ED Energy Development

ESQD Explosive Safety Quantity Distance

#### F

FAA Federal Aviation Administration
FSC Frequency Spectrum Capacity
FSI Frequency Spectrum Impedance /

Interference

# G/H

HA Housing Availability
HAZMAT Hazardous material

ICEMAP Installation Complex Encroachment

Management Action Plan

IDP Installation Development PlanIE Infrastructure ExtensionsIFR Instrument Flight Rules

IRT Innovative Readiness Program

# J/K

JLUS Joint Land Use Study

#### L

LAS Land / Air / Sea Space Competition

LEG Legislative Initiatives
LG Light and Glare

LU Land Use

M

MAR Marine Environments
MCA Military Compatiblity Areas
MIA Military Influence Area
MTR Military Training Route

N

NDAA National Defense Authorization Act NEPA National Environmental Policy Act

NEXRAD Next-Generation Radar

NGO Non-Governmental Organizations NOAA National Oceanic and Atmospheric

Administration

NODA Northern Oklahoma Development

Authority

NORTPO Northern Oklahoma Regional

Transportation Planning Organization

NOI Noise

0

OEA Office of Economic Adjustment

P

PM Particulate matter
PS Public Services
PT Public Trespassing

Q/R

RC Roadway Capacity

S

SA Safety Zones

SNR Scarce Natural Resources

T

TC Technical Committee
T-X Advanced Pilot Trainer

U

UAV Unmanned Aerial Vehicle
UFC Unified Facilities Criteria
UPRR Union Pacific Railway

US United States

USFWS US Fish and Wildlife Service

V

V Vibration

VFR Visual Flight Rules VO Vertical Obstructions

W/X/Y/Z

WQQ Water Quality / Quantity



# Introduction

The Vance Air Force Base (AFB) Joint Land Use Study (JLUS) is a collaborative planning effort led by the City of Enid in partnership with the City of Waukomis, Town of North Enid, Garfield County, Grant County, and Alfalfa County. The JLUS was undertaken in an effort to guide planning and development in the areas surrounding Vance AFB to help mitigate any future issues and enhance coordination among all entities involved in the process.

The Vance AFB JLUS encourages a proactive approach to promote increased communication about the important decisions surrounding land use regulation, conservation, and natural resource management issues that affect both the local communities and the military. The aim of the JLUS process is to establish and encourage a working relationship between military installations and the neighboring communities that surround them so that encroachment issues related to current and future missions and local growth can be reduced or prevented. Encroachment issues refer to the conflicting uses of land, air, water, and other resources that can individually, or cumulatively, impact the military's ability to carry out all missions.

The compatibility factors considered in this document are described in the Compatibility
Assessment (Chapter 5 of the JLUS or Chapter 5 of the Background Report). A review of these factors led to the development of a set of strategies to address compatibility concerns. The recommended strategies become the toolbox of measures for implementation that include policy, planning and

zoning, coordination and communication, and outreach methods.

One of the key recommendations is the formation of a JLUS Coordination Committee responsible for overseeing the implementation progress in the months and years after the JLUS is completed. The recommended strategies are outlined in more detail in Chapter 6, Implementation Plan.

### What is a Joint Land Use Study?

A JLUS is a planning process accomplished through the collaborative efforts of stakeholders in a defined study area in order to identify compatibility issues within and adjacent to an active military installation. These stakeholders may include local jurisdictions, state and federal officials, agencies and organizations, business organizations, local Native American tribal governments, non-governmental organizations, property owners, and the military. The public also plays a vital role in the development and review of a JLUS.

The intent of the JLUS process is to establish working relationships between military installations and nearby stakeholders and encourage them to work as a team to prevent and / or reduce encroachment issues associated with current and future missions and local growth. To do this, a JLUS process culminates in an agreed upon set of recommended strategies that can be implemented by identified stakeholders to promote compatibility and positive relationships between the military and neighboring communities for the present and future.

This JLUS effort was funded through a grant from the Department of Defense (DoD), Office of Economic Adjustment (OEA), and contributions by the City of Enid. While OEA provided the grant funding, the

content of the JLUS was produced by and for the local stakeholders. The project management entity for the Vance AFB JLUS was the City of Enid.

# **JLUS Goal and Objectives**

The goal of the Vance AFB JLUS is to protect the viability of current and future military mission and operations, while simultaneously guiding community growth, sustaining the environmental and economic health of the region, and protecting public health, safety, and welfare. 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 through a cohesive outreach program.
- Collaboration. Encourage cooperative land use and resource planning among Vance AFB and surrounding communities so that future community growth and development are compatible with the military missions and operations, while seeking ways to reduce operational impacts on land within the Study Area.
- Actions. Provide a set of mutually supported tools, activities, and procedures from which local jurisdictions, agencies, and Vance AFB can select, prepare, and approve/adopt in order to implement recommendations developed during the JLUS process. The actions include both operational measures to mitigate installation impacts on surrounding communities and local governments, as well as agency approaches to reduce community impacts on military operations. These tools help decision makers resolve compatibility

issues and prioritize projects within their annual budgeting cycles.

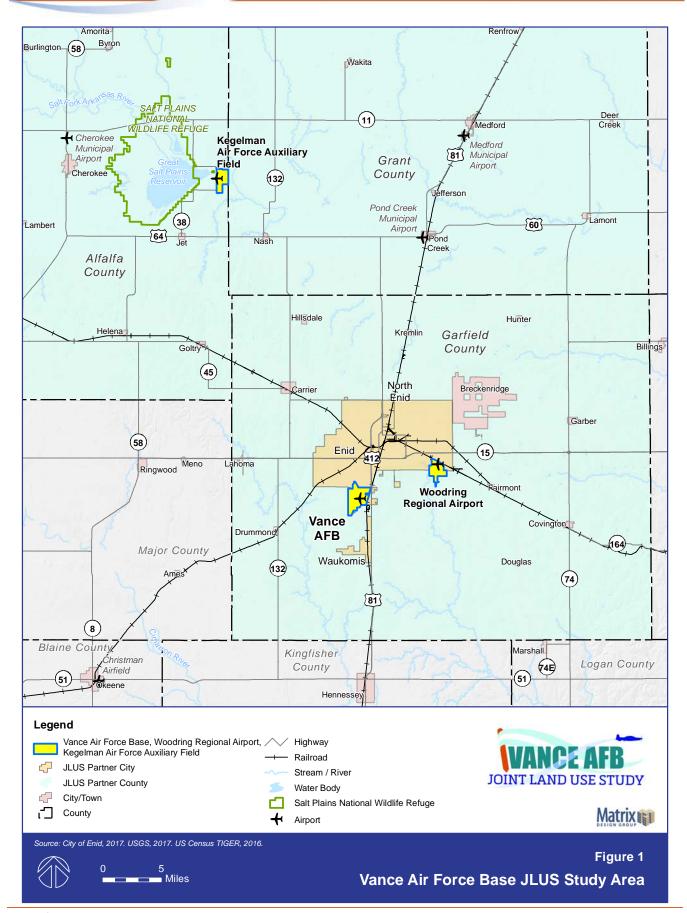
# Why Prepare a Joint Land Use Study?

Although military installations and nearby communities are separated by a defined property boundary, they often share natural and manmade resources such as land use, airspace, water, and infrastructure. Sharing resources has resulted in many positive opportunities and interactions among local jurisdictions, agencies, and the military, but the activities or actions of one entity can have unintended negative consequences for another and result in unnecessary conflicts. As communities develop and expand in response to growth and market demands, they may locate potentially incompatible development closer to military installations and operational areas. The result can generate new, or exacerbate existing, land use problems and other compatibility issues, often referred to as encroachment. Encroachment can, in turn, negatively affect community safety, economic development, and sustainment of military activities and readiness. This threat to military readiness is currently one of the military's greatest concerns.

# **JLUS Study Area**

The Vance AFB JLUS Study Area was designed to address land near the installation that may impact or may be impacted by current or future military operations. Figure 1 shows the extent of this area, which encompassed Vance AFB, Kegelman Air Force Auxiliary Field, Woodring Regional Airport, the City of Enid, the Town of Waukomis, the Town of north Enid, Garfield County, Grant County, and Alfalfa County.

The delineation of the study area boundaries was determined based on the evaluation of the proximity of areas adjacent to Vance AFB and the anticipated magnitude of impacts associated with various military mission operations.



# Public Outreach and Engagement Strategy

The JLUS process was designed to create a locally relevant document that builds consensus and garners stakeholder support. To achieve the JLUS goals and objectives, the Vance AFB JLUS process included a Public Engagement Plan providing a variety of participation opportunities for interested parties.

#### **Stakeholders**

An early step in any planning process is stakeholder identification. Informing and involving stakeholders early is instrumental to identifying, understanding, and resolving their most important issues through the development of integrated strategies and measures. Stakeholders include individuals, groups, organizations, and governmental entities interested in, affected by, or affecting the outcome of the JLUS document. Stakeholders identified for the Vance AFB JLUS include:

- Jurisdictions (cities, towns, and counties),
- DoD officials (including OEA representatives) and Vance AFB personnel,
- Local, county, regional, and state planning, regulatory, and land management agencies,
- State and federal regulatory agencies,
- The public (including residents and landowners),
- Environmental advocacy organizations,
- Nongovernmental organizations (NGOs), and
- Other special interest groups.

JLUS Advisory Committee (AC): The AC consisted of elected officials and decision makers from participating jurisdictions and military installation leadership, as well as representatives from other interested and affected agencies. The AC was responsible for guiding the direction of the JLUS, accepting the study design, offering policy recommendations, and accepting the document final draft.

**JLUS Technical Committee (TC):** The TC was responsible for identifying and studying technical issues.

Membership included representatives from local jurisdictions, agencies, and Vance AFB with technical expertise in one or more of the compatibility factors listed in Chapter 5, Compatibility Assessment. The TC identified and addressed technical issues, assisted in the development and evaluation of implementation strategies and tools for mitigating those issues, and provided feedback on document development.

The AC and TC served as liaisons to their respective stakeholder groups. AC and TC members were charged with conveying committee activities and information to their organizations and constituencies and relaying those parties' comments and suggestions to both committees for consideration. The responsibilities and list of participants for the JLUS sponsors, the AC, and the TC are identified in Tables 1, 2, and 3 respectively.

Table 1. JLUS Sponsor Responsibilities and Sponsors

Participants	Responsibilities		
City of Enid	Coordination		
Office of Economic	Accountability		
Adjustment	Grant Management		
	Funding		

Table 2. JLUS Advisory Committee Responsibilities and Participants

Participants		Responsibilities		
	City of Enid		Policy direction	
	Alfalfa County		Study oversight	
	Town of Waukomis		Monitoring	
	Town of North Enid		Report adoption	
	Garfield County			
	Grant County			
	Metropolitan Area Planning Commission			
	Vance Development Authority			
	Enid Public Schools			
	Vance Air Force Base			
	St. Mary's Hospital			
	Office of Economic Adjustment			

Table 3. JLUS Technical Committee Responsibilities and Participants

Participants	Responsibilities		
■ City of Enid	Identify issues		
<ul><li>Vance Development Authority</li></ul>	Provide expertise to address technical		
Vance Air Force Base	issues		
<ul><li>Envirotech Engineering &amp; Consulting</li></ul>	Evaluate and recommend  implementation		
<ul><li>Metropolitan Area</li><li>Planning</li></ul>	implementation options to the AC		
<ul> <li>Office of Economic Adjustment</li> </ul>	<ul> <li>Provide draft and final report recommendations to the AC</li> </ul>		

#### **Public Participation**

In addition to the AC 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 garnered feedback on the identified issues and proposed strategies. Each workshop included an exercise that provided a "hands on," interactive opportunity for the

public to participate in the development of the study. The public workshops are detailed below.

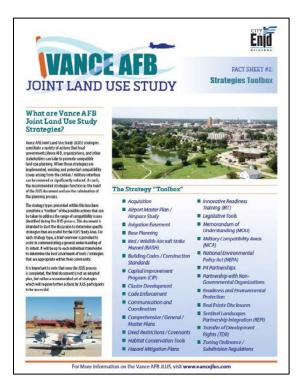
#### **Public Outreach Materials**

#### Fact Sheet #1: Project Overview / Compatibility

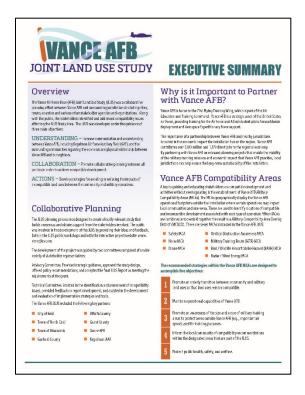
Factors. The first fact sheet was developed at the beginning of the JLUS project to describe the purpose, goals, and objectives of the JLUS program and the methods used to garner input during the JLUS process. This Fact Sheet also provides an overview of the standard compatibility factors that might occur in the JLUS Study Area. This Fact Sheet was made available at the public workshop and committee meetings and was posted on the project website.



**Fact Sheet #2: Strategies Toolbox.** This brochure provided an overview of the strategy types that may be considered when addressing compatibility issues. This fact sheet was used to facilitate discussions regarding possible approaches to compatibility issues with the AC / TC involved stakeholders and the public.



JLUS Project Overview Executive Summary. The final JLUS fact sheet was produced as a four-page brochure. It summarizes the Vance AFB JLUS and includes a graphic display of the study area, the military operations footprint, and the primary JLUS recommendations.



Project Website. A project website was developed to provide stakeholders, the public, and media representatives with access to project information. This webpage was maintained for the entire duration of the project to ensure information was easily accessible. Information on the webpage included program points of contact, documents, maps, and public meeting information. The project website is located at <a href="https://www.vancejlus.com">www.vancejlus.com</a>.





# **Community Profile**

This chapter provides information about the surrounding communities that participated in the Vance Air Force Base (AFB) Joint Land Use Study (JLUS) as well as information about Garfield County, Alfalfa County, and Grant County to provide a county context. Capturing and describing certain demographic characteristics of these communities provides a baseline context from which informed decisions can be made when assessing compatibility strategies. The goal is to provide information that enables stakeholders to understand population and development trends that have the potential to affect Vance AFB's future. This information is intended to be considered with other factors to help decision makers generate coherent, informed planning policies and decisions about future development and economic growth of the communities they represent before compatibility issues arise.

# **Study Area Growth Trends**

The following section provides data on population growth, housing, median home values, and economic growth trends in the JLUS Study Area. This information helps establish the context for the JLUS and the potential for compatibility issues. The data show the rates and types of growth that have occurred and that are anticipated in the region over the next several decades. The information also points to specific locations where compatibility issues between Vance AFB and surrounding communities are most likely to occur.

#### **Population Trends and Projections**

Comparisons of population values through time in a given geographical area are used to identify growth or decline in an area. Population ultimately drives employment and housing growth. The population data used on Table 4 is based on information obtained from the Oklahoma Department of Commerce, the Northern Oklahoma Development Authority (NODA), and the U.S. Census Bureau data.

The population changes between 2000, 2010, and 2016 indicate that population in the JLUS study area has generally experienced little growth. Both Garfield and Alfalfa counties had 3.3% growth from 2010 to 2016. Enid is the largest JLUS city in Garfield County in terms of population size; however, it, too, has had little growth at 3.3%. The fastest growing jurisdiction in the JLUS Study Area in Garfield County is the Town of North Enid, which has the lowest population out of all jurisdictions in the Study Area. Grant County is the only jurisdiction that has experienced a loss in population size, with a growth rate of almost -1%.

Population projections are based on the overall population trends that have been observed in a given

area. Projections are used in future planning and infrastructure investments.

The City of Enid is projected to grow by over 22 percent from 2016 to 2030, indicating that the city will experience significant growth. While Enid is expected to add to its population by over 10,000 people, Alfalfa County is anticipated to grow by 1.3 percent, which is

less than 100 people. Garfield County is the only jurisdiction that is projected to experience a decline in population, with a -0.2% growth rate. This constitutes an approximate net loss of 100 people throughout the county.

Table 4. Population Change

Jurisdiction	Population, 2000	Population, 2010	Percent Change, 2000 – 2010	Estimated Population, 2016	Percent Change, 2010- 2016	Estimated Population, 2020	Estimated Population, 2030	Estimated Percent Change, 2016-2030
City of Enid	47,045	49,379	5.0%	51,004	3.3%	61,000	62,500	22.5%
Town of Waukomis	1,261	1,286	2.0%	1,368	6.4%			
Town of North Enid	796	860	8.0%	1,091	26.9%			
Garfield County	57,813	60,580	4.8%	62,603	3.3%	61,000	62,500	-0.2%
Grant County	5,144	4,527	-12.0%	4,497	-0.7%	5,200	5,300	17.9%
Alfalfa County	6,105	5,642	-7.6%	5,827	3.3%	5,900	5,900	1.3%

Source: Oklahoma Department of Commerce; NODA Comprehensive Economic Development Strategy; US Census, 2000 and 2010. US Census 2016 Estimates.

#### **Economic Growth Trends**

Historically, northern Oklahoma's economy has relied on agricultural production, oil and gas production, and government services. The economies of Garfield and Alfalfa Counties have diversified in the present day, as exemplified by the role of the military in current trends. According to the 2016 Vance AFB Economic Impact Statement, the installation provides over 800 civilian jobs and has a direct payroll of almost \$65 million.

The primary economic drivers in the JLUS Study Area today are the education sector and the health care and social assistance sector, as well as retail and the agricultural industry.

One way to measure economic growth is through changes in median household income. Table 5 shows the median household income from 2000 to 2015 for the jurisdictions in the Study Area. All jurisdictions show growth over 40% within this time period, with Alfalfa County exceeding the other jurisdictions at almost 66% growth in median income.

Table 5. Median Household Income: 2000-2015

Jurisdiction	Median Income, 2000	Estimated Median Income, 2015	Percent Change 2000 – 2015
City of Enid	\$32,227	\$46,365	43.9%
Town of Waukomis	\$32,014	\$47,333	47.9%
Town of North Enid	\$47,212	\$68,438	45.0%
Garfield County	\$33,006	\$48,238	46.2%
Grant County	\$41,994	\$53,889	28.3%
Alfalfa County	\$30,259	\$50,156	65.8%

Source: Selected Economic Characteristics, American Community Survey, 2000; Selected Economic Characteristics, American Community Survey 5-year Estimates, 2011-2015.

Table 6 shows the local force for the JLUS Study Area jurisdictions, using 2015 U.S. Census Bureau estimates. The Bureau of Labor and Statistics derives these

numbers of people participating in the work force and defines employed as a person of 16 years of age or older in the civilian non-institutional population who worked last week. All jurisdictions, except the Town of Waukomis, had unemployment rates less than the national average, which was 4.4 percent as of August 2017. This indicates that the jurisdictions in the Study Area generally have a strong economy relative to workforce employment, except for Waukomis.

Table 6. Labor Force by Jurisdiction, 2015

Jurisdiction	Labor Force	Armed Forces	Employed	Unemployed
City of Enid	63.9%	2.5%	57.7%	3.6%
Town of Waukomis	66.5%	0.0%	60.7%	5.9%
Town of North Enid	63.2%	0.1%	32.6%	0.4%
Garfield County	64.0%	2.1%	58.5%	3.5%
Grant County	61.0%	0.1%	58.7%	2.2%
Alfalfa County	47.9%	0.0%	45.6%	2.3%

Source: Selected Economic Characteristics, American Community Survey 5-year Estimates, 2011-2015.

# Current Development Overview in the JLUS Study Area

Land uses throughout the JLUS Study Area range from urbanized areas in the city of Enid to an abundance of agriculture throughout the counties. This section discusses the setting in the immediate vicinity of Vance AFB, Kegelman Air Force Auxiliary Field, and Woodring Regional Airport.

#### Vance AFB

Vance AFB is surrounded by the city of Enid to the north and east and by Garfield County to the south and west. The primary land use surrounding Vance AFB is generally characterized by agriculture.

The area directly north of Vance AFB is characterized by agricultural land uses. To the northeast, there are single-family residences, some commercial, and open space, all of which is located in the city of Enid. Commercial uses in this area are generally located on US Route 81 and include hotels, health services, and some retail. Meadowlake Park, a 110-acre park, is located northeast of Vance AFB and includes the Meadowlake Golf Course.

The area south of Vance AFB is primarily unincorporated agricultural land in Garfield County. Approximately 2.5 miles south of Vance AFB is the Town of Waukomis, an incorporated town in Garfield County, which mainly comprises single-family residences. Some commercial uses are located in the Town of Waukomis as well as institutional uses, such as an elementary school, church, and postal service.

East of the installation is agricultural land with the inclusion of a single-family residential neighborhood located east of United States Route 81 (US 81).

Agricultural land is also found west of the installation is in both the City of Enid and Garfield County.

#### **Kegelman Air Force Auxiliary Field**

Kegelman Air Force Auxiliary Field is located in Alfalfa County, bordering the Grant County borderline. The primary land uses surrounding Kegelman Air Force Auxiliary Field are generally characterized by open space and agriculture.

The area located north of Kegelman Air Force Auxiliary Field is primarily open space and agriculture. The Salt Fork Arkansas River curves around the northern end of the Auxiliary Field and drains into the Great Salt Plains Lake.

The southern area of Kegelman Air Force Auxiliary Field is characterized by agricultural land in Alfalfa County. There are more agricultural uses on the eastern side of the Kegelman Air Force Auxiliary Field as well as open space in Alfalfa County. The Salt Fork Arkansas River, located in Grant County, flows less than a mile from

the runway, running parallel to the Field before curving southwest at the northern end of the runway.

The western side of the Auxiliary Field is characterized by more agricultural land uses located within Jet, a town in Alfalfa County. Also, west of the Auxiliary Field is the Great Salt Plains Lake and the Great Salt Plains National Wildlife Refuge. The Refuge is characterized by salt flats, mixed-grass prairie, riparian forest and woodlands, wetlands, and a lake. There are single-family residential uses located north of the Great Salt Plains Lake.

#### **Woodring Regional Airport**

Woodring Regional Airport is located in the city of Enid, south of US Highway 412 (US 412). Primary land uses surrounding the airport are agricultural.

There are some agricultural land uses located north of the airport as well as some light industrial land uses, such as processing and packing businesses. These uses are within Enid. There are also agriculture uses to the east both in Enid and in Garfield County. There is an industrial use, a nitrogen company, east of the airport in Garfield County.

Agricultural uses extend to the south and west of Woodring Regional Airport in Garfield County. Also, west of the airport are water treatment plants and residential neighborhoods south of US 412. There are more residences along the north side of US 412 and along US Highway 81 (US 81).



# **Military Profile**

This chapter provides an overview of Vance Air Force Base (AFB), including the installation's location (setting) in the JLUS Study Area and a general description of the military operations conducted at the base and in the region.

Identifying and describing the various activities performed on the installation and in the surrounding airspace provides valuable insight into the importance of Vance AFB as a national strategic asset and as a part of the fabric of the surrounding communities. The purpose of providing this information is to enable stakeholders to make informed decisions about future development and economic growth within communities and institutions near Vance AFB that could potentially impact the viability and future role of the base or be impacted by current or future activities at the base.

# **Installation Setting**

Vance AFB is located approximately 90 miles northwest of Oklahoma City at Enid, Oklahoma. Figure 2 provides a map of the installation setting. The elevation of the installation is 1,307 feet above sea level. The base is approximately 2,122 acres and has 128 buildings and 292 facilities. The base has privatized housing with 242 housing units, 302 unaccompanied units, 23 visitor units, and 10 temporary lodging units, which will soon become five units through a renovation project, making the units larger.

In additional to Vance AFB proper, the base operates Kegelman Auxiliary Air Field (AAF) which is used for basic pilot training maneuvers such as touch-and-goes and flyovers. This location has approximately 1,066 acres with one runway, seven buildings and 37 facilities including a Next-Generation Radar (NEXRAD) weather radar system. The Kegelman AAF setting is shown on

Figure 3 and Woodring Regional Airport is shown on Figure 4.

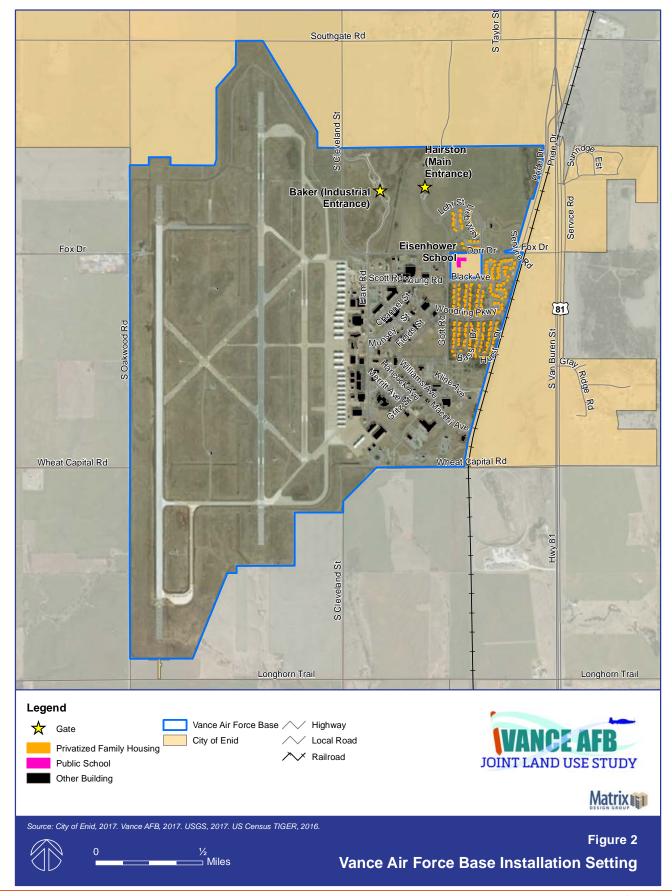
# **Mission Operations**

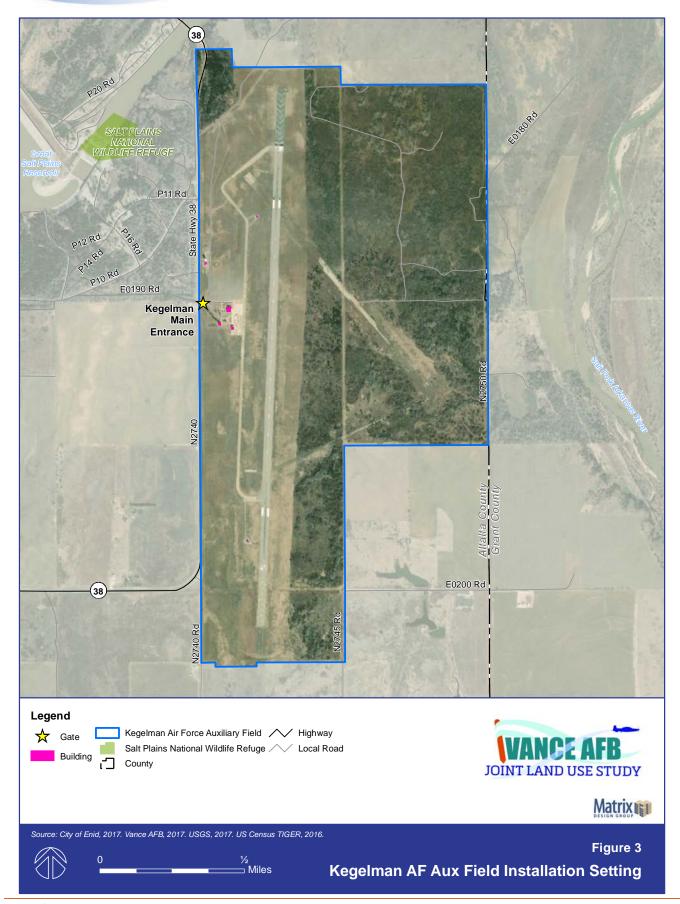
#### **Air Force Mission**

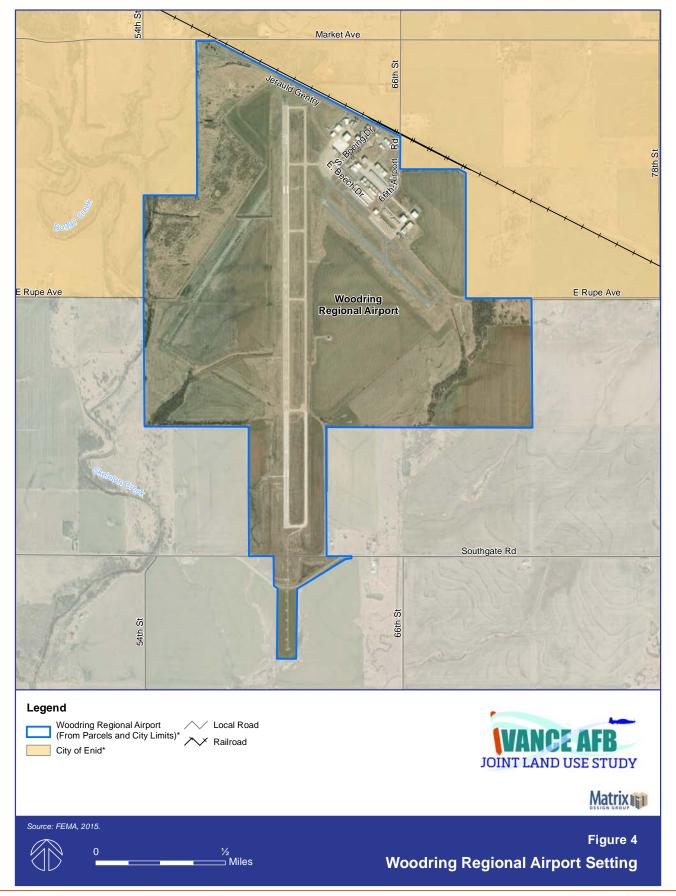
The mission of the 71st Flying Training Wing is to develop professional Airmen, deliver world-class U.S. & Allied pilots and deploy combat-ready warriors. Vance is responsible for training Air Force and allied student pilots for worldwide deployment and Aerospace Expeditionary Force support. The Wing reports to AETC.

In training pilots, the Wing provides Specialized Undergraduate Pilot Training (SUPT) that is divided into three phases with the last phase consisting of two tracks:

- Phase I (preflight) includes ground training and academic training.
- Phase II (T-6 aircraft) provides flying training consisting of academic and ground training, simulator training, and aircraft flying training.
- Phase III fighter / bomber track (T-38C aircraft) covers ground training, academic training, cockpit familiarization, simulator training, and aircraft flying training.
- Phase III tanker / airlift track (T-1A aircraft) covers ground training, academic training, cockpit familiarization, simulator training, and aircraft flying training.







# **Vance AFB Mission Footprints**

The Military Influence Area (MIA) is a planning tool to help maintain operational capability, promote awareness of military activities in surrounding communities, and establish requirements for designated areas. The MIA is generally a combination of effects from different operations or activities that when looked at in total provide a complete view of the impacted area. When combined, the individual "footprints" from specific mission operations make up the MIA. Examples of factors accounted for in developing the MIA may include noise, land development, and use of airspace.

Mission activities conducted on and around Vance AFB may negatively impact surrounding community areas if incompatible land uses are developed. 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 and / or activities. These incompatibilities can include obstructions to air space or the location of noise sensitive uses in high noise zones. Understanding the overlapping spatial patterns of compatibility zones as defined by the mission footprint is essential to promote compatible and informed land use decisions.

#### Airfield Approach and Departure Flight **Tracks**

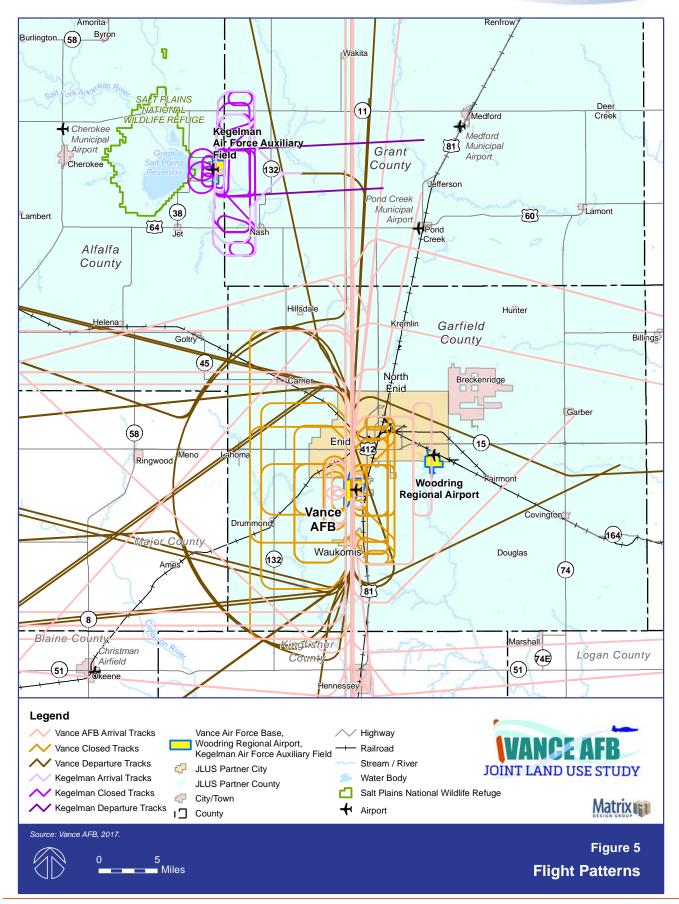
Flight tracks are developed to show the range of standard operations that are associated with the airfield. Flight tracks are created using information gathered from air traffic controllers, pilots, and other sources. Flight tracks are designed to avoid urban development as much as possible in order 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 flight tracks. Vance AFB has three runways, 17L / 35R, 17C / 35C and 17R / 35L. There is one runway at Kegelman AAF, 17 / 35.

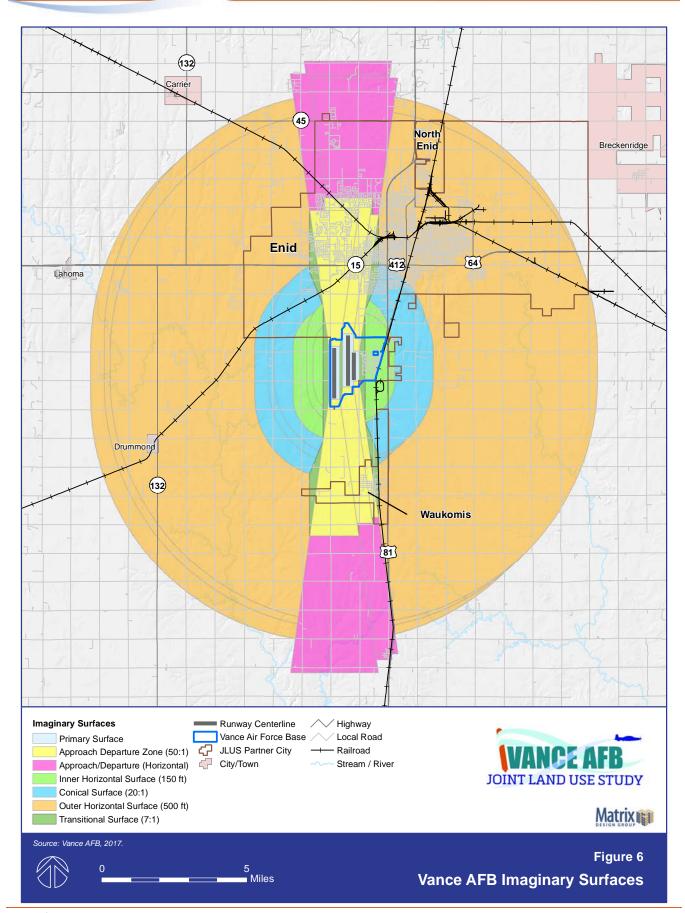
Figure 5 illustrates the primary flight tracks used by Vance AFB and Kegelman AAF aircraft. Other flight tracks may also be used depending on factors such as weather or mission.

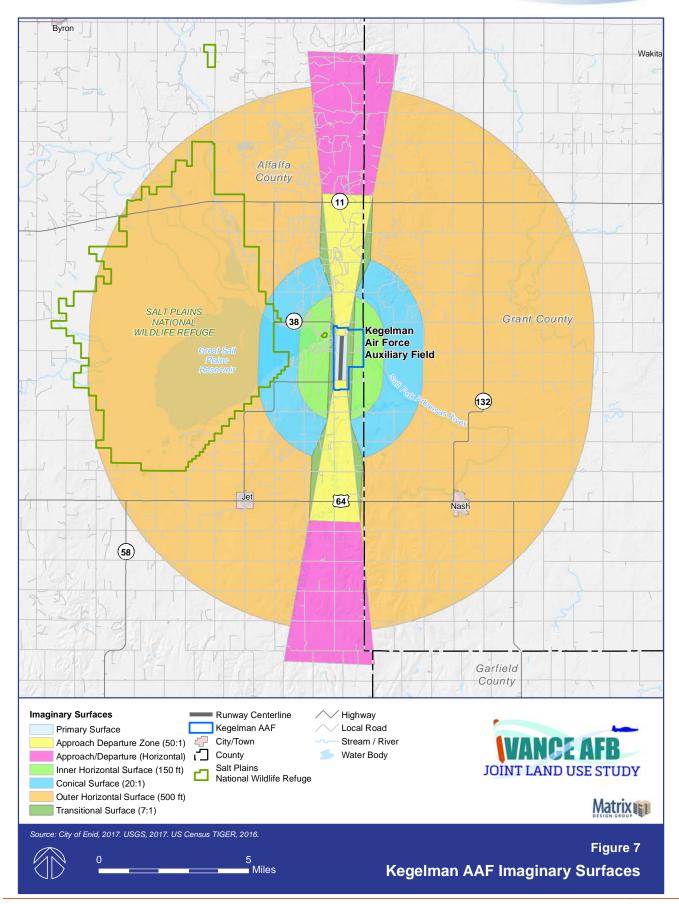
#### **Imaginary Surfaces**

Federal Aviation Regulations, Part 77, specifies a series of imaginary height restriction surfaces surrounding an airfield. The imaginary surfaces of an active runway are used to define the airspace that must remain free of vertical obstructions in the vicinity of aviation operations to optimize safe flight operations. Structures should not exceed these heights in order 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. The three Vance AFB runways are Class B runways, and the relative imaginary surfaces of the runways are shown on Figure 6. The imaginary surfaces for Kegelman AAF are depicted on Figure 7. For a complete technical explanation of the imaginary and transitional surfaces for Vance AFB, see Chapter 5, Compatibility Assessment (Section 5.23 Vertical Obstructions).







#### **Airfield Accident Potential Zones**

In addition to the assessment of imaginary surfaces, there is also the assessment of Accident Potential Zones (APZs). For a complete technical explanation of APZs for Vance AFB, see Chapter 5 Compatibility Assessment (Section 5.14) of the Background Report.

There are typically three safety zones that extend from each end of a runway: Clear Zone (CZ), APZ I, and APZ II. These three zones occur on each end of Vance AFB runways 17L / 35R, 17C / 35C and 17R / 35L and are shown on Figure 8. The safety zones at Kegelman AAF runway 17 / 35 are shown on Figure 9. The CZ begins at each end of the runway. The CZ for a Class A runway measures 3,000 feet wide by 3,000 feet long. This is the area that has the highest potential of an aircraft incident. It is recommended that no development occur in the CZ unless it is needed for safely operating aircraft.

The APZ I is the area beginning at the end of each CZ, with a width of 3,000 feet and a length of 5,000 feet. The APZ II is the area that begins at the end of each APZ I and is 3,000 feet wide by 7,000 feet long. It extends a total of 15,000 feet from the runway threshold. These areas have lower potential for accidents and therefore have less restrictive development restrictions recommended.

#### **Aircraft Noise Contours**

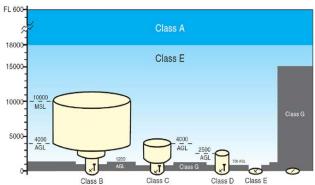
Aircraft noise is produced from flight operations (overflight, take-offs, landings, touch-and-go operations) and from engine maintenance run-ups. An engine run-up is a maintenance procedure performed on the airfield to test for proper engine performance. The Air Force considers how its operations impact the local community by calculating a weighted average noise level that is measured as a day-night average sound level (DNL). DNL is the average noise level over a 24-hour period. The Vance AFB AICUZ uses the DoD NOISEMAP program to produce noise contours that represent noise exposure levels from aircraft operations. These values are an average of all types of aircraft at Vance AFB. Noise contours for Vance AFB

and Kegelman AAF are shown on Figure 10 and Figure 11 respectively.

#### Airspace Control

To help air traffic controllers and pilots work with varying traffic conditions in the sky, U.S. airspace has been separated into six different classes of controlled airspace (A, B, C, D, and E), and one class of uncontrolled airspace (G). These are illustrated on Figure 12. The different classes have different requirements for entry, for pilot qualifications, and for radio and transponder equipment, as well as different minimum weather standards under Visual Flight Rules (VFR) weather minimums.

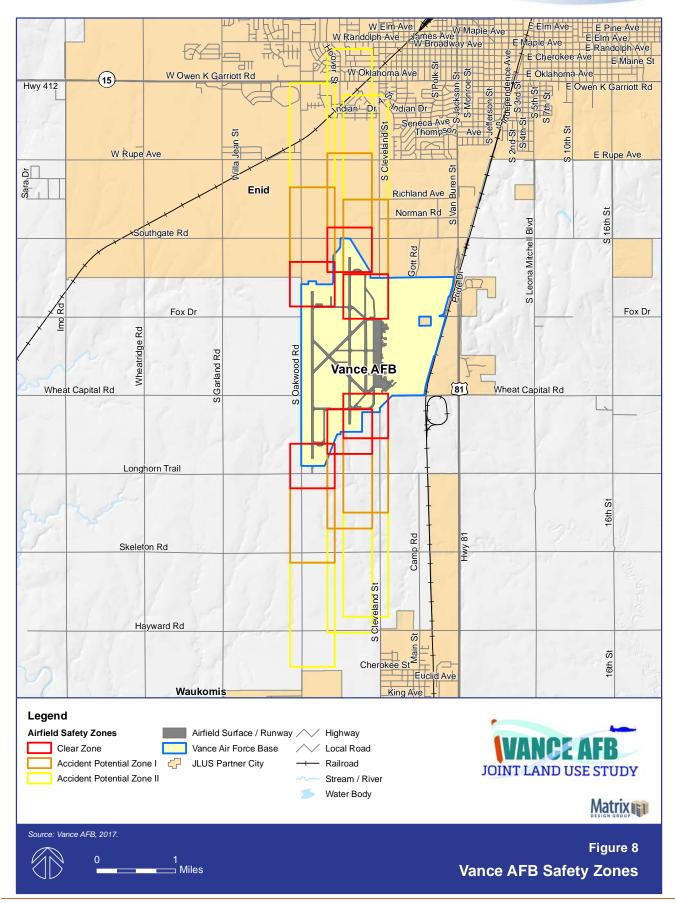
**Airspace Classification** Figure 12.

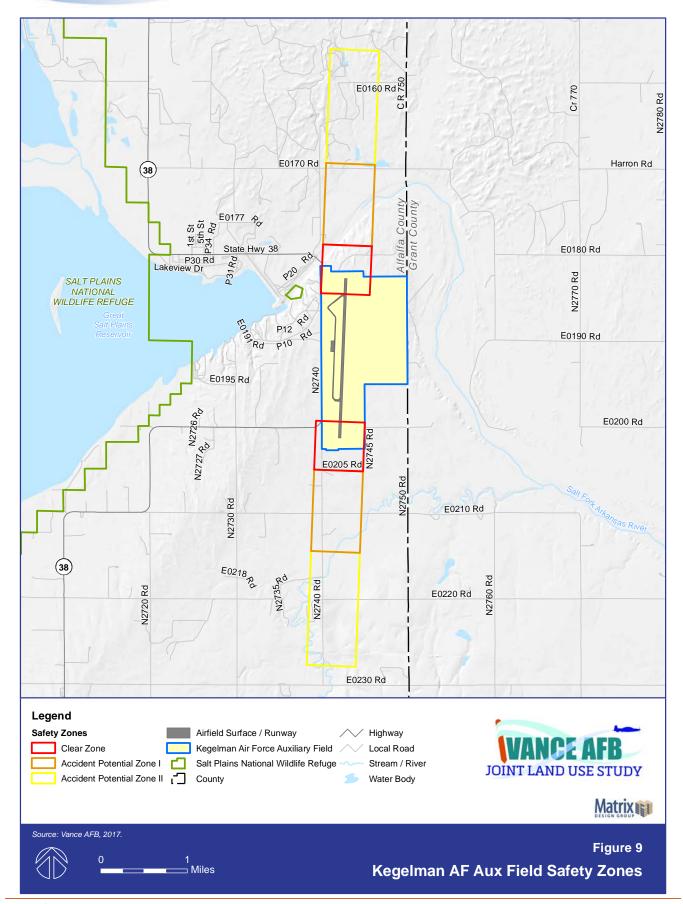


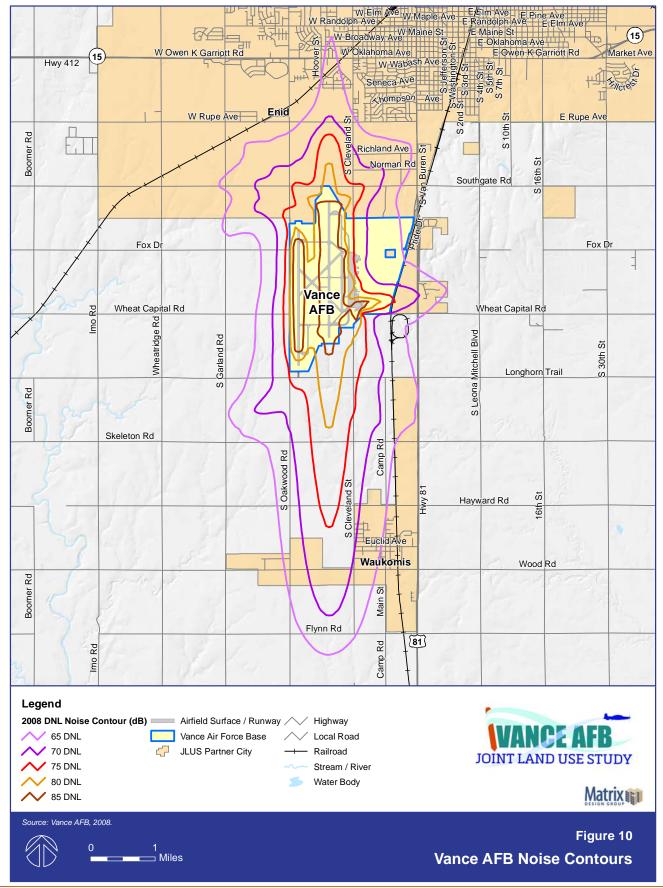
Class D and E Controlled airspace has been established around Vance AFB to manage air traffic. The Vance AFB Class D airspace approximates a five-nautical mile circle around the base, except to the east where it abuts the Class D airspace supporting operations at Woodring Airport. Class D airspace extends to 3,800 feet above MSL.

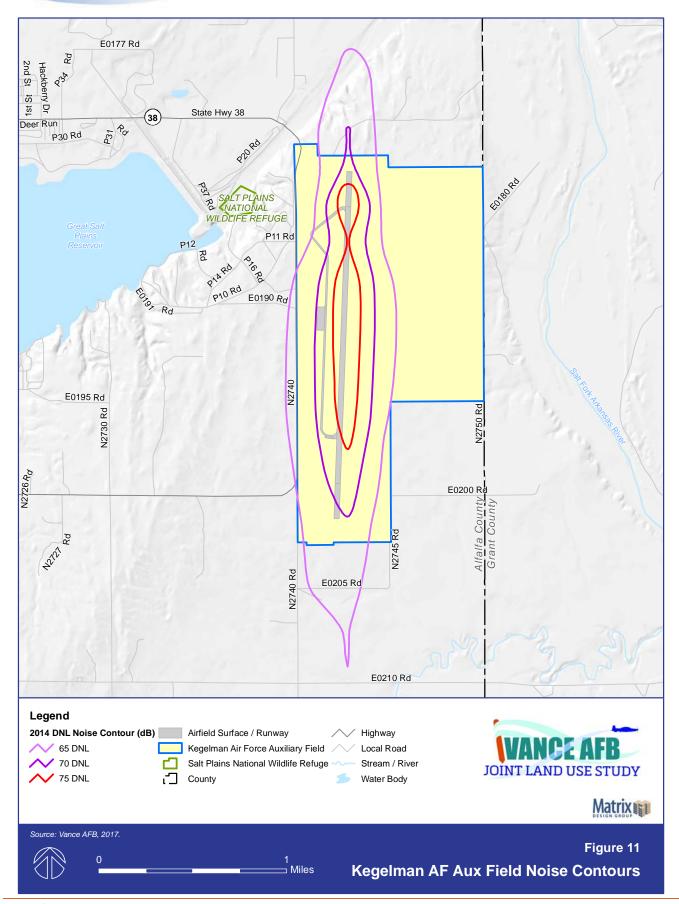
There are also 20 "low level" training routes available for Vance AFB missions. Alert Area A-562B, has been designated over Kegelman AAF and encompasses approximately 150 square nautical miles and extends to 10,000 MSL.

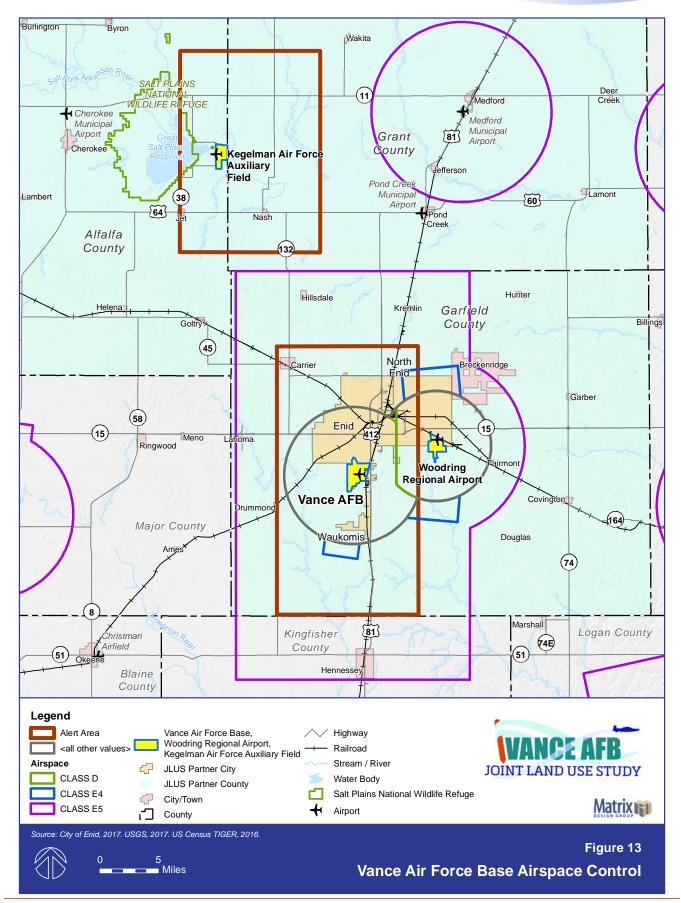
Figure 13 shows the controlled airspace around Vance AFB, Kegelman AAF, and Woodring Regional Airport.











#### **Part 77 Vertical Obstruction Compliance**

The 500-foot rule, promulgated by the FAA, states that every citizen of the U.S. 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 Above Ground Level (AGL) do not represent a compensable taking because they enjoy a free right-ofpassage without liability to the owners below.

Another important outcome of the Act is Federal Aviation Regulation Title 14, Part 77, which provides the basis for the evaluation of vertical obstruction compatibility. This regulation provides information to assess the potential for a vertical obstruction based on the elevation of the airfield, the height and resulting elevation of the proposed structure or facility, and the location of the structure or facility relative to the airfield in question.

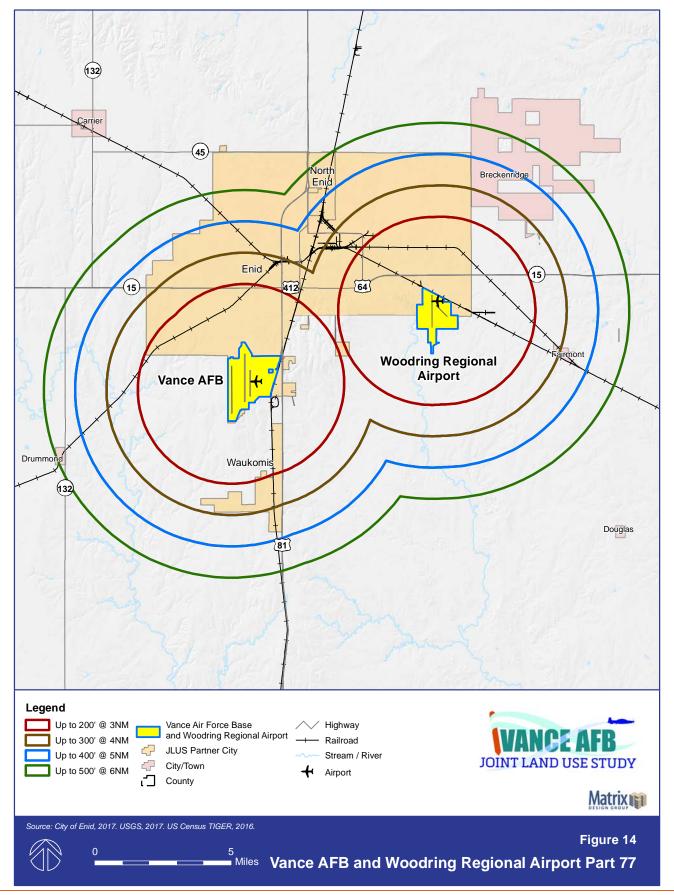
Figure 14 provides an illustration of this measure of vertical obstruction around Vance AFB and Figure 15 provides the same perspective for Kegelman AAF. Note that this is in addition to, not a replacement of, imaginary surface discussed previously.

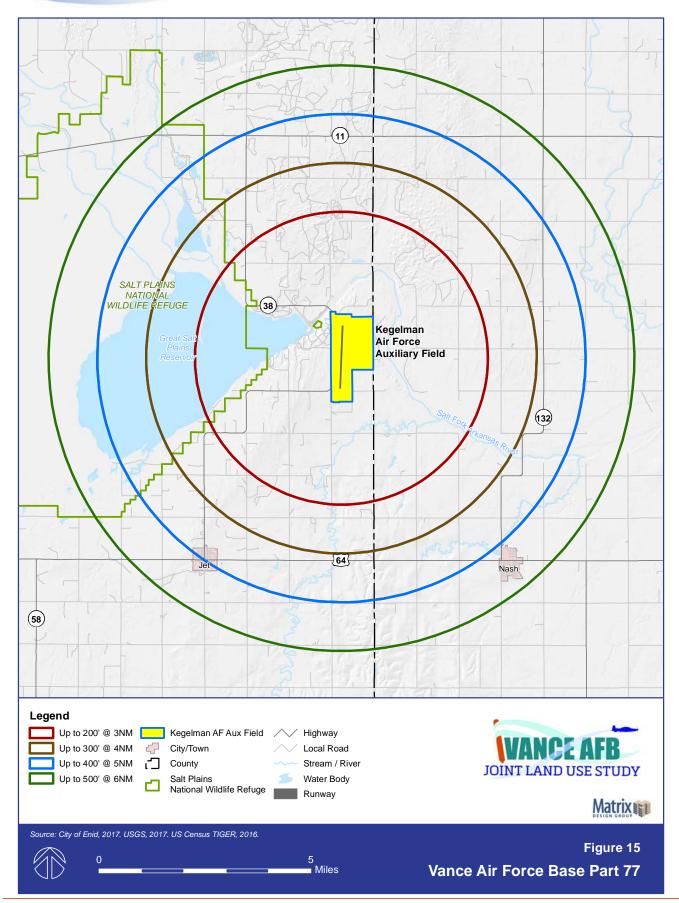
#### **Bird / Wildlife Aircraft Strike Hazard Relevancy Area**

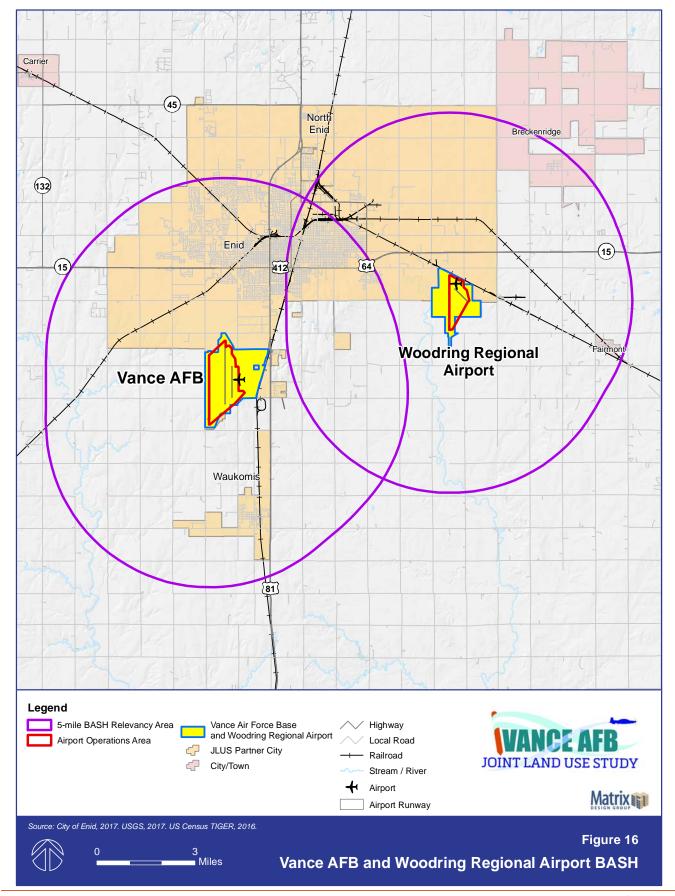
Birds and animals can present a significant hazard to military flight operations. While fatal accidents resulting from bird or wildlife strikes have been limited, impacts can be a safety concern and cause significant damage to aircraft.

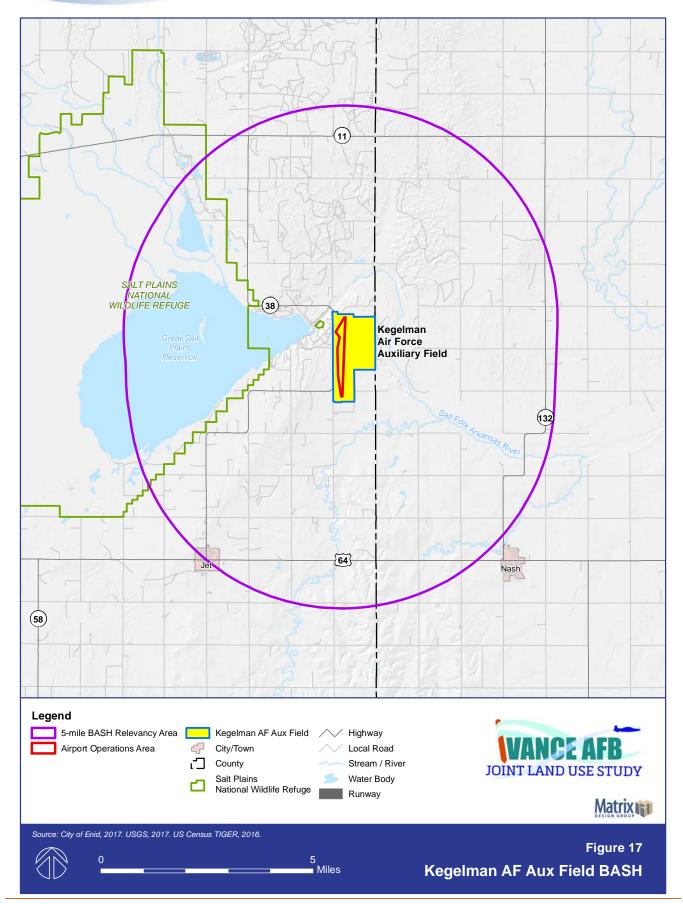
Certain types of environmental characteristics attract birds and wildlife, such as open water areas, standing water, and other natural areas. The location of Vance AFB, surrounded by agricultural activities and open space, attracts a large number of birds. In addition to being surrounded by agricultural and open space, Kegelman AAF is adjacent to the Salt Plains National Wildlife Management Area, where the risk of hazard from wildlife activity is increased.

Vance AFB / Kegelman AAF partner with the U.S. Department of Agriculture to aggressively manage the Bird Aircraft Strike Hazard (BASH) Program. Vance AFB last updated its BASH Plan in 2013. Figures 16 and 17 show a five-mile radius around the Vance AFB and Kegelman AAF airport operations area. Based on FAA statistical analyses, this is the primary area of concern for BASH incidents to occur and the primary focus of compatibility planning for this issue.









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## **Compatibility Tools**

This section provides an overview of governmental plans and programs (tools) that are currently used or may be applied to either directly or indirectly to address compatibility planning and issues identified within the Vance Air Force Base (AFB) Joint Land Use Study (JLUS) Study Area.

There are three types of planning tools that are evaluated; permanent, semi-permanent, and conditional.

- Permanent planning tools include acquisition programs, 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 comprehensive plans, memorandums of understanding, intergovernmental agreements, and other policy documents that can be modified.

An overview of relevant federal, state, and local plans and programs and regional planning entities is included.

### **Federal Programs and Policies**

# Air Force Instruction 32-7063 Air Installations Compatible Use Zones Program

Air Force Instruction 32-7063 was updated in 2015 to implement the Air Installations Compatible Use Zones (AICUZ) and the Air Force Directive (AFPD) 90-20, Encroachment Management. The Instruction applies to all Air Force installations with active runways. The Instruction identifies the requirements for implementing and maintaining the AICUZ program, as

well as implements AFPD by identifying the requirements for compatible land use and development to preserve operational capability. The Instruction provides land use tables, which sets land use compatibility guidelines within the Clear Zones, Accident Potential Zones, and Noise Zones. The procedures were created to develop, implement, and maintain compatible land uses that are in compliance with all federal, state, and local requirements.

## Air Force Instruction 90-2001 Encroachment Management

Air Force Instruction 90-2001 was published in September 2014 to implement the Encroachment Management Program. The Instruction applies to all Air Force installations and addresses encroachment issues and strategies to prevent or reduce encroachment impacts. The Instruction includes the Encroachment Management Framework, which has four elements: organize, assess, act, and monitor. Organization encompasses leadership involvement, cross-functional management structures, issue evaluation structures, designated executive directors at the installation level, and 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 program implementation. Lastly, monitoring involves maintaining awareness of mission needs and encroachment issues.

## Department of Defense Conservation Partnering Initiative

Section 358 of the 2011 National Defense
Authorization Act sanctioned the study of the effects of
new construction and obstructions on military
installations and operations. 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 timeframe 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.

On December 12, 2017, the 2018 National Defense Authorization Act was signed into law, which, among other things, includes changes to the DOD Siting Clearinghouse, which will be transitioned to the Military Aviation and Installation Assurance Siting Clearinghouse. This new Clearinghouse must provide procedures for energy project developers to consult with affected military installations in order to facilitate better coordination and communication from when projects are first initiated through completion. Part of enhanced coordination and communication requires the Clearinghouse to develop procedures for energy project developers to submit the project area and preliminary layout at least one year before the developer plans to begin construction, if the proposed energy project is within any DoD-operated surveillance radar areas or military training routes. These procedures will help set a more clearly defined trigger for coordination and outreach between affected military installations and energy project developers. Also, the review period upon receiving an energy project application from the Secretary of Transportation is extended from 30 to 60 days, allowing more time for the Clearinghouse and affected military installations to assess the proposed development of any potential adverse impacts.

## **Department of Defense Energy Siting Clearinghouse**

Section 358 of the 2011 National Defense Authorization Act sanctioned the study of the effects of new construction and obstructions on military installations and operations. 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 timeframe 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.

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#### **Federal Aviation Act**

The Federal Aviation Act was enacted in 1958 to provide methods for overseeing and regulating civilian and military use of airspace over the U.S. 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 the Act does not specifically address the needs of military agencies. Military planning strives to work alongside local, state, and federal aviation laws and policies, but sometimes must supersede these and other levels of government due to national security interests. The FAA was created as a result of the Act for a variety of purposes, including the management of airspace over the U.S.

The 500-foot rule, promulgated by the FAA, states that every citizen of the U.S. 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. It states that flights 500 feet or more above ground level (AGL) do not represent a compensable taking because flights 500 feet AGL enjoy a right of free passage without liability to the owners below.

Another important outcome of the Act is FAA Regulation Title 14 Part 77, commonly known as Part 77, which provides the basis for evaluating vertical obstruction compatibility. 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 that is provided in the regulation, local jurisdictions can easily assess the height restrictions near airfields. Additional information on Part 77 is located on the FAA Internet site at www.faa.gov. The height standards to determine obstructions within navigable airspace established by Part 77 can be found in Section 3.7.

The FAA has identified certain imaginary surfaces around runways to determine how structures and facilities are evaluated and identify if they pose a vertical obstruction relative to the airspace around a runway. 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 dimensions or size of an imaginary surface depends on the runway classification.

#### **Noise Control Act of 1972**

The Noise Control Act of 1972 determined that noise that is 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 being impacted by encroaching urban development located adjacent to their boundaries and the resulting complaints from military flight operation noise. The DoD responded by establishing the AICUZ program, which was subsequently adopted by the Air Force as AFI 32-7063.

The Noise Control Act, as well as the AICUZ program, are important because encroaching development and larger populations near military installations often create compatibility concerns. As communities grow, it is important that the military installation, developers, and the affected communities work together to mitigate the issue of noise and develop strategies to coexist.

#### **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 habitatbased management strategies. The program assists natural resource managers in the 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 in order to prevent the further endangerment of birds.

## **United States Avian Hazard Advisory System**

The U.S. Avian Hazard Advisory System (USAHAS) is a geographic information system-based bird avoidance model developed by the U.S. Air Force used for the "analysis and correlation of bird habitat, migration, and breeding characteristics, combined with key environmental and man-made geospatial data." The model provides up-to-date information – "near realtime" – 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 U.S. Air Force Bird-Aircraft Strike database, as well as public domain information regarding landfill locations, is used to predict bird activity and movement. The model is available for use by agencies and the general public on the USAHAS website at www.usahas.com.

### **Vance AFB Plans and Programs**

The Vance AFB tools provide guidance for land uses and development activities on and adjacent to the installation. These tools govern land use decisions that occur inside the fence line or within the boundary of the military mission footprint in relation to the military mission or proposed military mission.

These tools also provide guidance and establish measures for standard operating procedures during certain events, such as bird air strike hazard conditions, and/or the parameters for conducting missions within the range of the military complex. There are various installation tools that are instrumental in assisting and guiding land use decisions in regard to base operations.

## **Air Installation Compatible Use Zones Study**

The 2015 Vance AFB AICUZ Resource Book provides details on the operations and noise zone maps for the installation.

The U.S. 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, 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 that is 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 AICUZ program has two objectives. The first is to assist local, regional, state and federal officials in protecting and promoting the public health, safety, and welfare by promoting compatible development within the AICUZ area of influence. The second is to protect Air Force operational capability from the effects of land use that are incompatible with aircraft operations.

#### Noise Zone Profile

Noise is the cornerstone of the AICUZ Study. 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 study (e.g., written text, graphically, etc.). To fully appreciate the findings and recommendations presented in the AICUZ Study, it is beneficial to provide an understanding of how military aircraft noise is measured, evaluated, and graphically illustrated. Day night average sound level (DNL) is a measure of noise commonly used

surrounding a military installation. 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 DNL. 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-dB increments.

This study identifies aircraft flight tracks and maintenance operations, noise associated with operations, and aircraft flight profiles.

#### BASH Plan 91-2

Vance AFB last updated its Bird Aircraft Strike Hazard (BASH) Plan in January of 2013. The purpose of the plan is to provide guidance for reducing wildlife strike hazards where flying operations are conducted. The plan acknowledges that there is no one single solution to mitigate BASH problems, but the following are steps that the plan was designed to do:

- Establish a Bird Hazard Working Group and designate responsibilities among its members.
- Establish procedures to identify high hazard situations and to aid supervisors and aircrews in altering/discontinuing flying operations when required.
- Establish aircraft and airfield operating procedures to avoid high-hazard situations.
- Provide for disseminating information to all aircrews on wildlife hazards and procedures for wildlife avoidance.
- Establish guidelines to decrease airfield attractiveness to wildlife.
- Provide guidelines for dispersing wildlife on the airfield.

#### **Installation Complex Encroachment Management Action Plan**

The Installation Complex Encroachment Management Action Plan (ICEMAP) is an internal Air Force plan that evaluates 13 encroachment challenges are identified in Air Force Instruction (AFI) 90-2001. The plan then develops actions to mitigate any concerns that are identified during the evaluation. The 2014 Vance AFB ICEMAP provides the installation commander, decision makers, and stakeholder with strategies to address current encroachment challenges and minimize the likelihood of future encroachment

The ICEMAP consists of two volumes. Volume Lis the action plan for mitigating or preventing encroachment challenges. Volume II is a reference book, which provides background data and analysis.

#### Installation Development Plan

The 2016 Vance AFB Installation Development Plan (IDP) serves as a guiding document for facility programming decisions over the next 20 to 30 years.

As part of the IDP, planning constraints were identified. Major planning constraints are installation compatibility use zones and airfield and airspace clearance. Minor constraints are environmental restoration quality and munitions response programs, force protection siting criteria, and Explosive Safety Quantity Distance (ESQD) arcs. The IDP established six goals, each with its own objectives for accomplishing those goals. The goals are:

- Fund and update ADPs for each of the Districts identified in the IDP,
- Develop projects using all available funding sources to support the ongoing training mission,
- Develop a consolidated community center for community services,
- Modernize flight line facilities to support enhanced mission capabilities and growth,

- Protect the natural and human environments through pursuit of sustainable development, and
- Continue to foster the Vance/Enid relationship through the AF Community Partnership.

## **State of Oklahoma Plans and Programs**

#### House Bill 2298

House Bill 2298 was passed in 2017 and eliminates tax credits for wind energy development in the state for wind energy facilities that were not operational by July 1, 2017.

#### **House Bill 2472**

House Bill 2472 was passed in 2004 and permits any municipality that contains an active-duty US Air Force military installation to create an ordinance restricting or prohibiting certain future land uses within five miles of the installation.

## Oklahoma Statute, Title 25, Chapter 30, Section (§) 1-3 (25:30-1-3)

The Aircraft Pilot and Passenger Protection Act was codified as Oklahoma Statute 25:30-1-3; it grants authority to the Oklahoma Aeronautics Commission to require a permit for developers proposing to develop structures over 150 feet and within three miles of a public airport—including wind energy generating turbines. Military airports are included as public use airports in this law.

## Regional Organizations, Plans, and Programs

## Northern Oklahoma Development Authority

#### Comprehensive Economic Development Strategy for North Central Oklahoma 2017-2012 Plan

The Comprehensive Economic Development Strategy (CEDS) serves as the guiding document for

coordinating economic development activities in the region, including Alfalfa, Blaine, Garfield, Grant, Kay, Kingfisher, Major, and Noble counties. The CEDS is required by the U.S. Department of Commerce Economic Development Administration. The purpose of the CEDS is to bring the public and private sector together for regional collaboration to evaluate the demographic and socioeconomic trends and weaknesses in the region in order to develop goals and actions that encourage economic growth within the region. The three goals for the CEDS are:

- Improve the quality of life in the region.
- Increase local readiness for new and expanding businesses.
- Create new, long-term, high quality jobs.

## **Local Jurisdiction Plans and Programs**

#### **City of Enid**

#### Comprehensive Plan

The Envision Enid Comprehensive Plan was adopted in 2015 to outline a course of action for future growth.

Through the Comprehensive Plan, the City recognizes that long term policy will allow better coordination with agencies and Vance AFB. It also acknowledges Vance AFB as being a major economic strength in the community and the need for adequate water supplies, housing, and higher education to sustain the civilian and military personnel and their families.

As part of the future land use map, the City identified APZ I and APZ II for Vance AFB. Land uses within these zones are designated as open space in order to remain free of incompatible structures.

#### **Zoning Ordinance**

The City of Enid Zoning Ordinance establishes 24 zoning districts. The Zoning Ordinance for the City of Enid includes an Airfield Environs Overlay, which was

adopted in 2003 and revised in 2008. The Airfield Environs Overlay District has land use and density restrictions within the CZ, APZ I, APZ II, and noise zones. Through the zoning ordinance, the City has adopted the Air Force Land Use Compatibility Standards, which identifies uses that would be incompatible in each CZ, APZ, and noise zone.

In addition to these standards, the Zoning Ordinance lists the following land uses as prohibited within the boundaries of the Airfield Environs Overlay District – the following is an excerpt from the Zoning Ordinance:

"A. Uses which release into the air any substance such as, but not limited to, steam, dust, smoke, fumes or gases, unless such substance is generated from agricultural use, which would impair visibility or otherwise interfere with military operations including ground operations.

Noise level reduction guidelines are regulated through the "Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations", which was adopted by reference in the Zoning Ordinance.

- B. Uses which produce light emissions, either direct or indirect (reflective), which would interfere with pilot vision and aerial or ground based night vision training.
- C. Uses which produce electrical emissions which would interfere with military ground and aircraft communication and navigational equipment.
- D. Uses which attract birds or waterfowl, such as, but not limited to, operation of sanitary landfills, and maintenance of feeding stations.
- E. Uses which endanger the approach, departure, or maneuvering of aircraft by providing structures within ten feet (10') of a defined aircraft approach, departure or

transitional surfaces or one hundred feet (100') beneath a low-level military training route.

F. Uses which detract from the aesthetic appearance or otherwise create or promote an unsightly, unsanitary, or unhealthy appearance of any entrance into a military installation, including, but not limited to, automobile or truck salvage yards, equipment storage sites or solid waste or disposal sites. (Ord. 2006-27, 12-5-2006)."

Additional lighting regulation is provided through sight plan design standards and through parking spaces standards.

#### Subdivision Regulations

The City of Enid Subdivisions Ordinance was adopted in 1998. Subdivision regulations define the standards, procedures, and other requirements for land divisions for the purpose of providing a "permanently whole community environment, adequate municipal services and safe streets".

These regulations can regulate density for subdivisions, which is of concern for subdivisions that are located within the Vance AFB safety zones. The City of Enid includes regulations for development within the Vance Safety zones in the Airfield Environs Overlay District in the Zoning Ordinance.

#### **Buildina Code**

Building codes regulate construction practices to ensure structural integrity and safety. The City of Enid has adopted the 2015 International Building Code. Provisions regarding sound transmission from the exterior to the interior of a structure are no longer included in International Building Code, as of 2010. Exterior to interior sound transmission is the primary component in a building code that would be related to military compatibility.

Although the 2015 International Building Codes does not include exterior to interior sound transmission

guidelines, the City of Enid provides noise level reduction guidelines through the "Guidelines for Sound Insulation of Residences Exposed to Aircraft Operations", which was adopted by reference through the Zoning Ordinance. These guidelines must be used for residential uses within the Airfield Environs Overlay District.

#### **Town of Waukomis**

The Town of Waukomis has not developed any planning tools that support compatible development with Vance AFB.

#### **Town of North Enid**

The Town of North Enid has not developed any planning tools that support compatible development with Vance AFB.

#### **Garfield County**

#### Zoning Ordinance

Zoning Regulations for Garfield County were last adopted in 1963. The regulations establish 14 zoning classifications within unincorporated Garfield County. While each zoning district has specific regulation, these standards do not address compatibility with Vance AFB.

Height regulations are provided for each zoning district. The greatest allowable heights can be built within the Central Business District, which allows buildings up to 80 feet in height. Other districts are limited to 35 feet of 45 feet in height.

As part of these regulations, there are no specific standards for noise or outdoor lighting. General density regulations are provided for the General Agricultural District and the Two-Family Dwelling District.

#### **Grant County**

Grant County has not developed any planning tools that support compatible development with Vance AFB.

#### Alfalfa County

Alfalfa County has not developed any planning tools that support compatible development with Vance AFB.



## **Compatibility Assessment**

## Identification of Compatibility Issues

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 entities communicate, coordinate, and implement mutually supportive actions that allow both to achieve their respective objectives. A number of factors can be evaluated to determine whether community and military plans, programs, and activities are compatible or in conflict. For this Joint Land Use Study (JLUS), 25 compatibility factors were used to identify, determine, and establish a set of key JLUS compatibility issues for discussion.

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

### **Methodology and Evaluation**

The methodology for the Vance AFB JLUS consisted of a comprehensive and inclusive discovery process to identify stakeholder issues associated with the compatibility factors. At the initial Advisory Committee (AC) and Technical Committee (TC) meetings and public workshop, stakeholders were asked to identify the location and type of issue in conjunction with compatibility factors they thought existed today or could occur in the future. As a part of the evaluation phase, the AC, TC, and the public examined and prioritized the compatibility issues identified. Other factors and associated issues were analyzed based on available information and similarity with other community JLUS experiences around the country.

Of the 25 standard compatibility factors, there were nine factors determined not to be applicable in the NWSSB JLUS Study Area. They are:

- Air Quality
- Biological Resources
- Changing Climate
- Cultural Resources
- Infrastructure Extensions
- Legislative Initiatives
- Light and Glare
- Public Trespassing
- Vibration

#### **Anti-Terrorism / Force Protection**

Anti-Terrorism / Force Protection (AT) relates to the security of personnel, facilities, and information on an installation from outside threats. Security issues and trespassing can present immediate compatibility concerns for installations. Due to current world conditions, military installations are required to meet more restrictive standards to address AT issues. These standards include increased security checks at installation gates and physical changes, such as new gates and entries that better control access. The following Anti-Terrorism / Force Protection issues were identified:

- US Route 81 Overpass Provides an Elevated View into Vance AFB. This is the only elevated position that provides visual access near the installation. The ability to observe on base operations poses a possible threat / risk to the Vance AFB mission.
- Concern About the Use of Recreational Drones Around Vance AFB. There are safety concerns with public drone operating at altitudes of up to 400 feet around Vance AFB and Kegelman AAF. The use of drones, or unmanned aerial vehicles (UAV), for recreational or agricultural purposes can create opportunities for views into the installation from outside of the fence line or via unauthorized overflight. Additionally, the use of UAVs can create safety hazards for commercial, private and military aircraft operating on and around Woodring Regional Airport.
- Concern About Proximity of the Union Pacific Rail Line and Potential for Hazardous Materials Incidents. The Union Pacific Railroad (UPRR) line is located along the Vance AFB fence line and carries hazardous cargo, which could affect military housing if derailed and the fence line breached.
- Mutual Aid Agreement with the City of Enid Police Department and Fire Department. There is a need for an agreement, or for modifying existing agreements, to take advantage of unique training requirements for joint training between community and military first responders.
- Concern with Vance AFB Security Fencing Along Oakwood Road / Fox Drive and Impacts from Accidents. There have been incidents with drunk drivers damaging the installation fence line along Oakwood Road,

- specifically at the intersection with Fox Drive. When these accidents occur, it creates fence line breaches that increase security risks at Vance AFB.
- Need to Clarify Territorial Jurisdiction of Local Police and Vance AFB Security Forces. There is a need for enhanced coordination between local police and Vance AFB Security Forces in response to safety issues at Eisenhower Elementary School and other locations in order to ensure lines of authority are established and understood.

#### **Communication / Coordination**

This discussion refers to the programs and plans that promote interagency communication and coordination. Interagency communication serves the general welfare by promoting a more comprehensive planning process, inclusive of all affected stakeholders. Interagency coordination also seeks to develop mutually beneficial policies for both communities and the military to include in local planning documents, such as comprehensive plans. The following Coordination / Communication issues were identified:

- Vance AFB has no Formal Planning Collaboration Relationship with Garfield County. There is a need for enhanced and consistent codified communication and coordination between Garfield County and Vance AFB for mutual planning purposes.
- Limited Communication Between Vance
  AFB and Local Communities. There is a need
  for enhanced communications between Vance
  AFB and the local communities, including local
  governments and property owners, relative to
  the economic impact of the installation and its
  mission.
- There is No Existing Formalized Partnership or Agreement Between Vance AFB,
   Kegelman AAF, and the Great Salt Plains

#### Lake Wildlife Refuge with Respect to BASH.

There are existing BASH concerns related to the Great Salt Plains Wildlife refuge; however, there is no formalized agreement between the three locations for mitigating BASH concerns.

#### **Dust / Smoke / Steam**

Dust results from the suspension of particulate matter in the air. Dust and smoke can be created by fire (controlled or prescribed burns, agricultural burning, and artillery exercises), 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 damage equipment). The following Dust / Smoke / Steam issues were identified:

- Unpaved Roads in the JLUS Study Area Create Dust, which has the Potential to Impact Safety. Southgate Road is an unpaved road that is located directly north of the airfield at Vance AFB and Woodring Regional Airport. Vehicular activity on the dirt road generates dust, creating safety concerns related to traffic and air operations at Vance AFB.
- **Smoke from Local Farmers Burning Fields** has the Potential to Impact Vance AFB **Operations.** Farmers in the local area conduct prescribed burns on their fields during the months of June through August. The burning operations improves the health of the fields by removing old vegetation and adding nutrients to the soil. The smoke from these burns has the potential to impact operations at Vance AFB if activities are uncoordinated.
- Smoke from Local Farmers Burning Fields has the Potential to Impact Kegelman AAF **Operations.** Farmers in the local area conduct

prescribed burns on their fields during the months of June through August. The burning operations improves the health of the fields by removing old vegetation and adding nutrients to the soil. The smoke from these burns has the potential to impact operations at Kegelman Auxiliary Airfield (AAF) if activities are uncoordinated.

#### **Energy Development**

Development of energy sources, including alternative energy sources, such as solar, wind, geothermal, or biofuels, could pose compatibility issues related to glare (solar energy), or vertical obstruction (wind generation). The following Energy Development issues were identified:

- Concern With the Abundance of Wind **Resources and Uncoordinated Development.** Uncoordinated wind energy development could pose compatibility issues with Vance AFB operations by obstructing both the Airport Surveillance Radar and KVNX Weather Radar, as well as degrading military training routes.
- There is a Need to Improve Coordination with the DoD Siting Clearinghouse on **Alternative Energy Projects Sites in the** JLUS Study Area. Alternative energy structures, such as wind turbines and solar farms, can impact military training missions, making it important to coordinate with the DoD Siting Clearinghouse on these projects.

#### **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 that is needed to maintain existing and future missions and communications on installations. The following Frequency Spectrum Capacity issues were identified:

- The NOAA Weather Radar at Kegelman AAF has a Blind Area Due to a Power Pole. There is a power pole that is approximately 20 feet from the facility that is creating a powerline masking issue resulting in a NOAA weather radar blind area.
- Concern with Frequency Impacts from Future Wind Farms. Breckenridge and Chisholm View wind farm facility developments may have a cumulative impact on NOAA radar. There is a need to plan and coordinate coverage with 2nd FAA radar managed by Kansas City Center and to assess current and potential impacts of future development.
- Radio Frequency Conflicts with Kegelman Auxiliary Airfield. Vance AFB has good radio connectivity with good coverage extending to Woodring Airport, but Vance AFB communication with Kegelman AAF is challenged due to the inability to locate an effective radio microwave tower at Kegelman AAF.
- Incompatible Radio Systems Between

  Vance AFB and the City of Enid Emergency

  Response. The City of Enid recently changed
  to a digital trunking system for its emergency
  responders. The two-way Kenwood Trunk
  Service radio system that is used by the Enid
  Police, Fire, and EMS departments for
  communications is incompatible with the
  Motorola radios used on Vance AFB. The
  discrepancy requires workarounds during
  training and potential joint response incidents,
  resulting in potential safety hazards.

■ There is Concern that Limited Availability of Communications Frequencies May Impact Vance AFB Operations. Competition for channels and a lack of coordination on frequency spectrum management with local purchases of radio equipment using competing frequencies may limit interoperability and/or available bandwidth capacity.

#### **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. The following Housing Availability issues were identified:

- Lack of Affordable Housing for
  Unaccompanied and Accompanied Vance
  AFB Military Personnel. The outlook for
  availability of unaccompanied housing for
  pilots and enlisted personnel assigned to
  Vance AFB indicates there may not be enough
  to meet requirements. It was noted that a
  shortage may exist for unaccompanied
  housing of approximately 100 units and that
  there is a need for 1,2 and 3-bedroom
  housing.
- Limited Efficiency Type Apartments for Personnel Coming to Vance AFB for Interim Duty. Activated reserve instructor pilots and students who come to Vance AFB for periods of several months up to a year require smaller units, such as furnished one-bedroom units, which are lacking in the surrounding communities. Personnel in this duty status do not require larger or more expensive units.
- Competition for Affordable Housing. Impact of Rental Rates where DoD BAH is driven by local housing Rental Rates. As new apartments are constructed the rental rates

are increased. The BAH adjusts to this increase, but local citizen's salary does not support the increased rates. Also leaves for DOD to allow to break lease, but not for local citizens.

#### Competition for Land / Air / 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 for all users. While this JLUS assesses land and airspace competition, due to Vance AFB's location, there is no sea space competition. The following Competition for Land / Air / Sea Spaces issues were identified:

- Airspace Congestion from Military and **Civilian Flying Operations in the JLUS Study Area.** A new outside runway proposed for Vance AFB would create mission opportunities but may also have consequences for both military and civilian flight operations, as well as community impacts. There is an opportunity to investigate increased future use of Woodring Airport to support specific components of Vance AFB mission.
- Change in Mission at Vance AFB may **Require Re-evaluation of Current Operational Footprint.** The Air Force intends to replace aging T-38 aircraft with a new T-X trainer jet for training pilots. The timeline for the new T-X is not yet confirmed but is planned to be in place within the next decade. With the new aircraft there are unknown impacts to the current training operations,

noise contours and use of flight routes at Vance AFB and Kegelman AAF. These and other potential concerns will need to be evaluated to ensure successful beddown of the T-X trainer at Vance AFB..

#### **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' comprehensive plans and zoning ordinances can be the most effective tools for preventing 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 from noise, odors, and lighting. The following Land Use issues were identified:

- The State of Oklahoma has a Strong **Property Rights Focus that Minimizes Government Regulation and Intrusion into Private Property Rights.** Due to the strong stance on property rights in the State of Oklahoma, there may be legislative limitations for regulating incompatible development surrounding military installations.
- There is Concern that Ongoing Community **Growth to the North of Vance AFB Could** be Incompatible with Operations at Vance AFB. The area north of Vance AFB has experienced growth in recent years and it is anticipated that this growth in the City of Enid will continue into the future. There is the potential for this growth to extend into Garfield County, creating the possibility for development of incompatible land uses. In addition, a proposed additional runway at

Vance AFB may cause additional impacts to current / future development in nearby communities.

- Uncertainty Regarding Territorial
  Jurisdiction and Mineral Rights on Land
  Near the Vance AFB Gate. There is land near
  the Vance AFB main gate that was purchased
  by the City of Enid and deeded to the U.S.
  government. Currently there is uncertainty as
  to which agency has jurisdiction over the land,
  including mineral rights. This uncertainty is
  affecting the ability to develop future plans for
  the land.
- Vance AFB is Constrained by Limited Onbase Land Availability for Expanding Facilities to Support Operations. Currently, Vance AFB is constrained by a lack of available land on the installation for future mission growth.
- There are Concerns with the FEMA
  Floodplain Master Plan and Extended
  Flood Controls. There is a need to assess the
  storm water drainage configuration and the
  potential for flooding in relation to the Gott
  Road outfall.
- There is a Need to Confirm the
  Compatibility of the Proposed Use for 100
  acres Recently Purchased by the City of
  Enid. The intended use of this area as a sports
  complex owned by Enid Public Schools needs
  to be assessed for compatibility with current
  and future mission growth.
- The City of Enid Zoning Ordinance has Limited Regulations for Development Surrounding Woodring Regional Airport. The City of Enid currently does not have development regulations (outside of height limitations) for industrial districts surrounding Woodring Regional Airport. Although

industrial development is positive for the regional economy, the development of industrial parks could spur incompatible uses that affect the military's ability to use the airport for its current operations, as well as potential joint uses and / or future growth opportunities for both Vance AFB and Woodring Regional Airport.

- Potential for Flooding at Kegelman AAF. Kegelman AAF has had flooding issues in the past, most recently between 2007 and 2010 when portions of the site were under water. Future flooding at Kegelman AAF could negatively impact mission operations.
- Need to Ensure Future School Sitings in and around the City of Enid Account for Vance AFB Flight Operations and Impacts from Overhead Flight Patterns. As the City of Enid grows and Garfield County develops, there are current and future needs to expand school capacity. The siting of new schools or increasing capacity at existing schools needs to be planned in coordination with Vance AFB. Noise contours, aircraft safety zones, and other compatibility factors must be considered to ensure the location of schools is compatible with Vance AFB operations.

#### Noise

Sound is defined as the 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. The following Noise issues were identified:

Potential Noise Impacts of the Proposed New Runway at Vance AFB. A new runway proposed for Vance AFB would create mission opportunities, but may also create noise contours and impact land areas, including offbase communities under the flight path. ■ The Union Pacific Rail Line that Runs Adjacent to Vance AFB and Through the **City of Enid Creates Noise Impacts.** 

Currently the Union Pacific Railroad runs freight traffic on the east side of Vance AFB adjacent to family housing. The rail line also runs through the City of Enid on the east side of US-81 and just to the west of a residential area in Enid. The regular freight rail traffic creates noise and impacts the quality of life of nearby residents.

#### **Public Services**

Public services include that adequate services, such as police, fire, emergency services, parks and recreation, as well as potable water, wastewater, and stormwater infrastructure, are of good quality and available for use by the installation and surrounding communicates as the area develops. The following Public Services issues were identified:

- Access to Public School at Vance AFB is **Impacted by Installation Access Requirements.** Access to the public elementary school on base has been impacted by the REAL ID Act related to deliveries and contractors. These impacts have also altered parents' ability to access the installation for school related meetings, after school student pick-up, and events.
- There is a Need for Enhanced Child Care Near Vance AFB. Quality community child care around Vance AFB is limited, and the onbase Child Development Center is at capacity.
- Readiness of Personnel Supporting Vance AFB is Impacted by the Availability of **Transportation for School-aged Children** and the Location of Services. There are limited transportation services for young students to travel between school and home

- for before/after school activities. The lack of available transportation can impact readiness for Vance AFB members requiring these services.
- **Local Public Transportation Options and Alternative Modes of Transportation are** Limited. There are limited public transportation options and alternative modes of transportation, such as safe bicycle routes, available for community members, especially young airmen without cars, to navigate the City of Enid and surrounding area. There is a partnership opportunity for rideshare services.
- There is a Lack of Higher Education **Opportunities for Military Personnel and** Their Families in the JLUS Study Area. Currently, there is only one educational institution in the region that provides associate's or bachelor's degrees in business, nursing, or other technical areas. This forces many residents to commute over an hour for higher education, which could impact the ability to retain educated personnel.

#### **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. The following Roadway Capacity issues were identified:

Concerns About Maintenance Issues with **Garfield County Roads Caused by Military Convoys and Construction Traffic from Vance AFB.** Military operations from tenant units originating from Vance AFB (i.e. convoys, construction activities) may have an impact on local roads. There is a need to further assess adverse impacts.

- The South Gate on Vance AFB that was Built to Support Army Guard / Reserve Activities is not Manned. The South Gate was built as a result of the 2005 Base Realignment and Closure (BRAC 2005). The gate remains underutilized due to manpower and funding constraints. There is a need to study the potential to operate this gate and look for partnership opportunities for limited use.
- Concern that the Paving of West Southgate Road Will Increase Traffic West of South Cleveland Road Causing Impacts at Certain Locations. The growth of communities, including the City of Enid around Vance AFB, and the evolution of operations at the installation have resulted in changes to traffic patterns and necessary upgrades to roadways. As continued growth and changes occur, there is a need to evaluate traffic commuting patterns and circulation routes to ensure safe and efficient transportation in the JLUS Study Area.
- Current Traffic Configuration Adjacent to Vance AFB May Need to be Addressed. There is a need to consider the possible reconfiguration of the Cleveland Street intersection with Southgate Road to avoid traffic mistakenly being directed toward the north entrance of Vance AFB.
- Maintenance of Local Roads can be an Impediment to Vance AFB Personnel Readiness. Snow removal is limited in the City of Enid, due to a lack of equipment, and only highways are plowed during storms. There are specific locations where snow and ice removal can be a hazard to safe vehicle operations, including the Southgate Road/Gott Road and West Rupe Avenue/South Cleveland Street intersections. Primary routes between the

City of Enid and Vance AFB should be prioritized for required vehicle traffic.

#### **Safety Zones**

Safety zones are areas in which development should be more restricted regarding the use and concentrations of people, due to the higher risks to public safety. Issues to consider include aircraft accident potential zones. The following Safety Zones issues were identified:

- Infrastructure Limit Operations at Vance
  AFB for Future Missions. Vance AFB has only one instrument runway (center runway; 17C / 35C) for all-weather operations. This has the potential to affect airfield operations during inclement weather or during other situations where Instrument Flight Rules (IFR) capabilities are required. Additionally, the proximity and configuration of the three existing runways violates airfield criteria, necessitating the air force construct a replacement runway to bring the three runways up to current standards and operational needs.
- There is a Concern with Encroachment from Woodring Airport Operations. There is a need to analyze / overlay AF criteria with Woodring Regional Airport FAA criteria to ensure long range planning efforts with the City of Enid do not inadvertently constrict military use.
- Clear Zones at Vance AFB and Kegelman AAF Extend Outside of the Installation Boundaries. There are approximately 128 acres of the CZ that are outside of the Vance AFB and Kegelman AAF fencelines and which are not under the control of the Air Force.

- Several Vance AFB Low Level Flight Routes have had to Close Due to Conflicts with Altus and Sheppard AFB Operations. Vance AFB operates along 20 low level air routes. There is a need to assess relationship with Altus AFB's and Sheppard AFB's long-range plans for operational use and the potential impacts to Vance AFB operations.
- There is a Concern with Homes Located North of the Vance AFB in Runway APZ 1. There are homes located to the north of Vance AFB that were grandfathered into APZ I zone. This area is the most likely source of encroachment and should be assessed and criteria provided for future city / county planning updates.
- Vance AFB has a BASH Challenge with Water Fowl and other Birds Due to Local Attractants. Vance AFB is within the flight path of various birds. Bird attractants, such as agricultural crops, bodies of water, landfills, and asphalt millings, are located on and around the installation, increasing the potential for bird aircraft strikes. The future siting of a new landfill could pose additional BASH. While Vance AFB uses various techniques to haze birds (e.g. bird cannons), they are not always effective. In addition, the construction of the Kaw Lake water pipeline project, if not designed to minimize BASH, may add additional attractants.
- Concern with Drummond Flats Wildlife **Management Area Re-establishing** Wetlands. The Drummond Flats Wildlife Management Area (WMA) is a 4,800-acre site located approximately seven miles southwest of Vance AFB, and under portions of the T-38 outside downwind pattern. The potential

- restoration of wetlands at the Drummond Flats WMA poses a potential BASH threat to Vance AFB.
- Bird Attractants Nearby Kegelman Auxiliary Airfield (AAF). Kegelman AAF has a BASH challenge with waterfowl and other birds due to local attractants. Of particular concern are bodies of water, which can attract large birds such as the American white pelican. Low water in nearby lakes and streams can also create fish kills, which, in turn, attracts vultures and gulls.
- The City of Enid has Identified an Unpaved Road as a Truck Route which has the Potential to Increase Truck Traffic Near the Vance AFB Entrance in the Clear Zone. Vance AFB entry off of Southgate Road is impacted by City of Enid truck routes connected to US 81.

#### Scarce Natural Resources

Pressure to gain access to valuable natural resources, such as oil, natural gas, minerals, and water resources that are located on military installations, within military training areas, or on public lands historically used for military operations can impact land utilization and military operations. The following Scarce Natural Resources issues were identified:

- **Concern that Current Availability of Water** May Impact Vance AFB Operations. Vance AFB has a need for a redundant water sources to ensure mission continuity.
- Concern that Current Availability of **Dedicated Power May impact Vance AFB Operations.** There is a need for Vance AFB to have a backup power source to ensure mission continuity.

#### **Vertical Obstructions**

Vertical obstructions are created by buildings, trees, structures, and other features that 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. The following Vertical Obstructions issues were identified:

- There are Vertical Obstruction Concerns with Future Cell Tower Siting in the JLUS Study Area. There is a concern that the development of future cell towers will create obstructions that exceed height restrictions per the DoD Imaginary Surfaces criteria. This is a concern for cell towers in both the City of Enid and Garfield County.
- There is a Concern with the Potential Need for Additional Elevated Water Storage

  Tanks in the City of Enid. The City of Enid currently has three elevated water storage tanks. The City has identified the need for at least one more water elevated storage tank. Any future elevated water tank will require siting in a location where water demands dictate. The siting of additional elevated water tanks may create vertical obstructions that impact Vance AFB flight operations.
- There is a Concern with the Koch Fertilizer Plant and Potential Flight Obstructions. Woodring Regional Airport had to negotiate with Koch regarding flight patterns and vertical obstructions. There is a need to define military criteria related to future development to ensure long term operational use for Woodring Regional Airport.
- Concern that the presence of wind turbines near Vance AFB interferes with existing Military Training Routes. There has been degradation of Military Training Routes'

(MTRs) ability to support aircraft operations due to the presence of wind energy development and associated vertical obstructions.

#### **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 agricultural and industrial use is also a consideration. The following Water Quality and Quantity issues were identified:

- Communities in the JLUS Study Area Have **Challenges with Future Potable Water** Supplies, including Concerns with the **Number of Groundwater Wells in the City** of Enid. Much of the water used by communities and farmers is sourced from groundwater wells. The continuous use of the underground aquifers is drawing water levels down, and there are challenges with meeting future needs. There are 156 groundwater wells located in the City of Enid that pump groundwater from the aquifer, potentially resulting in excessive water drawdown. The City is working to address future potable water shortages by implementing the Kaw Lake water pipeline project. The intent is to draw water from the lake, located 70 miles northeast of Enid, and pipe it to the city in order to meet the water needs of municipal and industrial users for the next 50 years.
- Concern with Kaw Lake Water Pipeline Project which Plans for Water Retention Areas and Water Emergency Storage. The Kaw Lake pipeline project will provide the City of Enid with water resources for the foreseeable future. As currently designed, the project includes water retention areas and water emergency storage areas that could be

attractants for birds and thereby create an additional BASH challenge for Vance AFB. There is a need for the design to be less attractive to large waterfowl by using steep embankments and a square shape.

■ There is a Concern Regarding Water **Outflows from Vance AFB into** Meadowlake Reservoir in the City of Enid.

There is a need to ensure there are documented procedures for interoperability with the City of Enid storm water management and Vance AFB operations.

Please see the next page.



## **Implementation Plan**

#### Implementation Plan

This chapter identifies the recommended courses of action (strategies) that have been developed through a collaborative effort between representatives of local jurisdictions, Vance AFB, state and federal agencies, local organizations, the public, and other stakeholders that own or manage land / resources in the region.

The JLUS strategies incorporate a variety of actions that promote compatible land use and resource planning. Upon implementation, existing and potential compatibility issues arising from civilian / military interactions can be removed or significantly mitigated. These strategies act as the heart of the JLUS document and are the culmination of the entire planning process.

It is important to note that the JLUS is not an adopted plan, but rather a recommended set of strategies which should be implemented by the appropriate JLUS participants in order to address current and potential future compatibility issues.

Each strategy included in this chapter is meant to address specific compatibility issues that are detailed in Chapter 5 of the Vance AFB Background Report. The issues are restated before each set of strategies to which they pertain as a point of reference. They correspond to the issue numbers in Chapter 5 of the Background Report for easy reference and can be used to read additional information on the specifics of the issues themselves.

A critical variable for the implementation of strategies is the establishment of the JLUS Implementation Coordination Committee (see Strategy COM-1A) to oversee the execution of the JLUS. Through the committee, local jurisdictions, the installation, and other stakeholders can enhance their collaboration and adjust strategies over time to ensure the JLUS continues to resolve key compatibility issues into the

future through realistic and applicable strategies and implementation.

#### **Implementation Plan Guidelines**

The key to successful implementation is balancing the needs of all involved stakeholders. To produce a balanced plan, several guidelines were used as the basis for strategy development. These guidelines are listed below.

- Recommended strategies must not result in a taking of property value, as defined by state law
- In some cases, the recommended strategies can only be implemented with new enabling legislation.
- To minimizing regulation, many of the strategies are only recommended within the identified geographic area for which the issue addresses (e.g. within the noise contours), instead of recommended for the whole JLUS Study Area.
- Like other planning processes that include numerous stakeholders, the challenge is to create a solution or strategy that meets the needs of all parties. In lieu of eliminating strategies that do not have 100% buy-in from all stakeholders, it was determined that the solution / strategy may be expanded and ultimately constitute multiple strategies that address the same issue in different ways that are tailored to individual circumstances.
- Since this JLUS is meant to be a "living document," and state and federal regulations are subject to change, the implementing jurisdiction or party should ensure there is no conflict between the strategy and existing

state or federal laws before executing any of the suggested strategies.

In developing strategies to resolve or mitigate issues that were identified in the JLUS Study Area, consideration was given to the 2018 National Defense Strategy (NDS). The NDS is used to establish objectives for military planning regarding force structure, force modernization, business processes, supporting infrastructure, and required resources. While the NDS is a high-level strategy document and broad in nature, it provides important information for the JLUS process. Three important considerations from the NDS are:

- Values Training the principle of achieving peace through strength requires the Joint Force to deter conflict through preparedness for war;
- Supports Investment the NDS requires a competitive approach to force development and a consistent, multiyear investment to restore warfighting readiness and field a lethal force; and
- Leverage Asset Management The DoD will also work to reduce excess property and infrastructure, providing Congress with options for a future Base Realignment and Closure.

### **Military Compatibility Areas**

In compatibility planning, the term "Military Compatibility Area" (MCA) is used to formally designate a geographic area where military operations may impact local communities and, conversely, where local activities may affect the military's ability to conduct its mission. An MCA is designated to accomplish the following:

- Promote coordination and communication between the military and communities regarding shared land uses.
- 2. Promote an awareness of the size and scope of military training areas to protect areas that are separate from the actual military installation and

- used for training purposes (e.g., critical air space).
- Promote the protection of public health, safety, and welfare by using the awareness areas as a framework to guide discussions regarding proposed developments, proposed land use actions that could impact the military, and for permit applications.
- 4. Encourage the maintenance of operational capabilities of military installations and areas.

An MCA delineates a geographic area for which strategies are recommended to support compatible planning and are applied with a focus on communication and coordination. The MCAs are where most of the recommended strategies apply within the JLUS Study Area. There are six MCAs that comprise a Military Compatibility Area Overlay District (MCAOD) for Vance AFB, Kegelman AAF, and Woodring Regional Airport, which are:

- Drone Operations MCA
- Noise MCA
- Safety MCA
- Radar / Wind Energy MCA
- MTR MCA
- BASH MCA
- Vertical Obstruction Awareness MCA

## **Drone Operations MCA** (Figures 18, 19, and 20)

The Drone Operations MCA includes the drone-restricted airspace surrounding Vance AFB, Kegelman AAF, and Woodring Regional Airport, as indicated by FAA guidelines. It is important to keep these areas clear of drones to ensure a safe operating environment for military pilots. Additionally, the area surrounding a runway will feature low-flying aircraft as part of departure and arrival operations. In this context, drones are a safety hazard to both commercial and military aircraft using the runways.

#### **Noise MCA**

#### (Figures 21 and 22)

Noise is often a concern to the public surrounding military installations with flying missions. The Noise MCA includes all land located off-installation within the Vance AFB and Kegelman noise contours that are associated with military aircraft activities. Additionally, the Noise MCA includes a quarter mile buffer around the noise contours. Residential developments and other noise-sensitive land uses within this MCA may be subject to sound attenuation measures to reduce interior noise impacts.

Noise level reduction requirements in planning documents are key to ensuring noise sensitive uses such as residential, visitor accommodation, healthcare, education, and government facilities are compatible in areas that experience noise levels of 65 dB DNL or greater. Local building codes can also be used to ensure that noise-attenuation measures are incorporated in all new development within the Noise MCA.

### **Safety MCA** (Figures 23, 24, and 25)

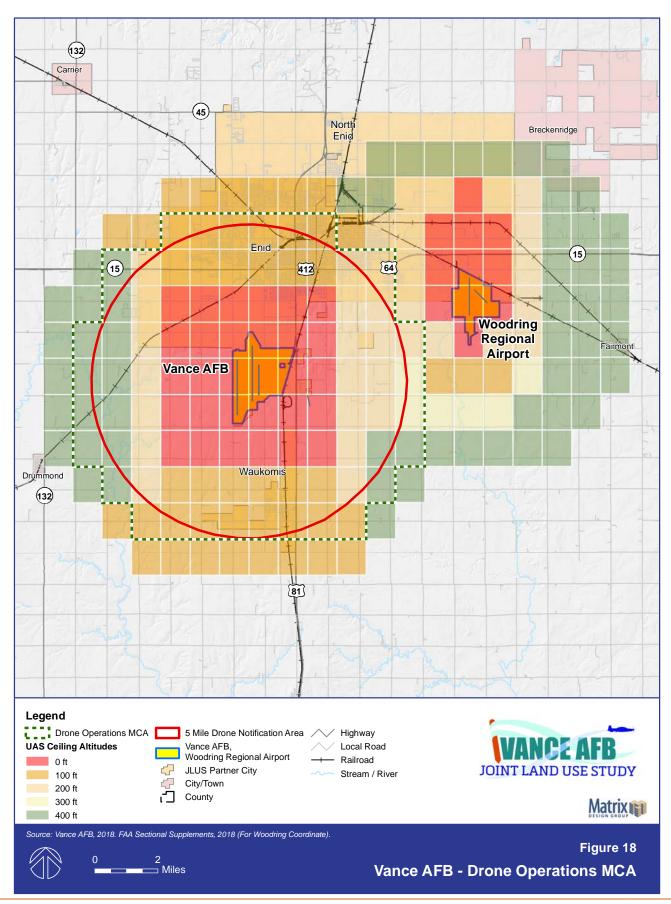
The proposed Safety MCA addresses compatible land use types and densities / intensities within the Clear Zones (CZs) and Accident Potential Zones (APZs) I and II

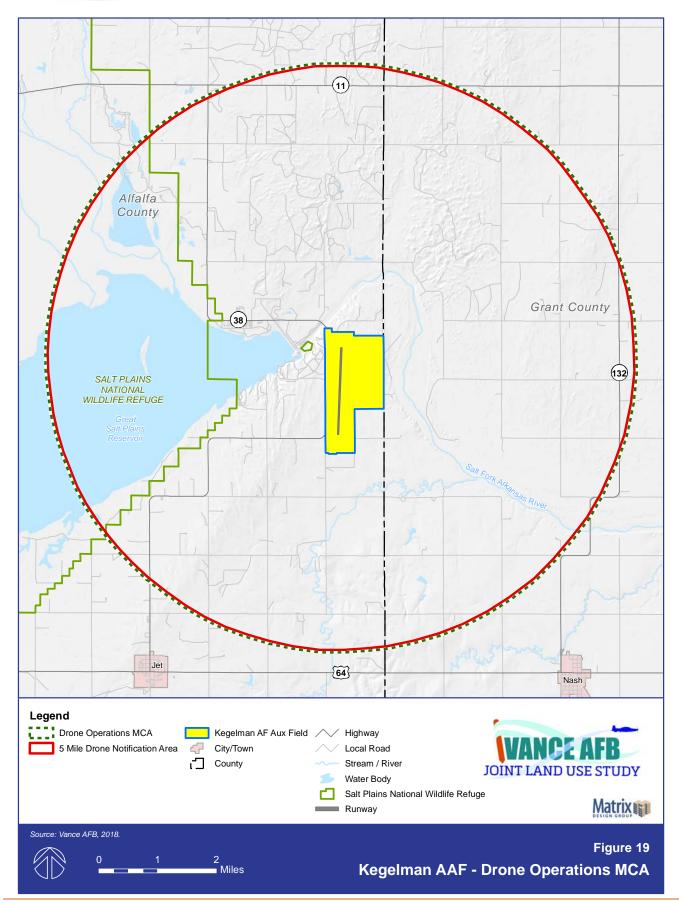
of the runways at Vance AFB, Kegelman AAF, and Woodring Regional Airport. Each of these safety zones is a subzone of the Safety MCA. The current location of each safety subzone is based on the airfield layout and air operations identified in Vance AFB's AICUZ Report. The boundaries of each subzone should be updated based on any operational changes that occur with each AICUZ Study update.

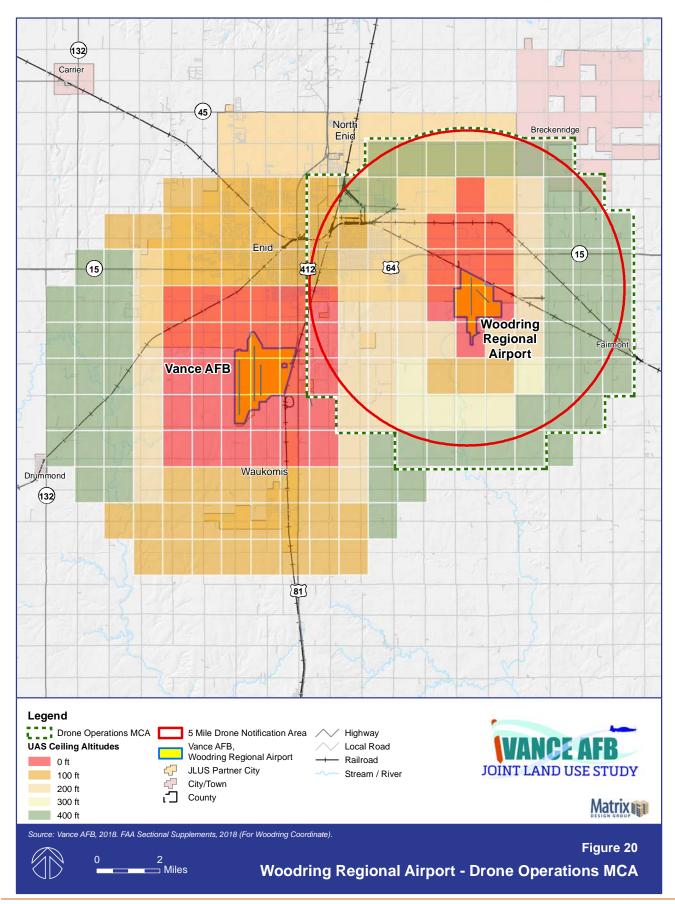
The Safety MCA is designed to prevent the development of incompatible land uses in areas with the greatest potential for an aircraft mishap. These safety zones were identified as a result of Air Force guidance that defines safety zones as areas where an aircraft accident is statistically most likely to occur (in the unlikely event that one was to occur at all). The safety zones follow departure and arrival flight tracks and are based on the analysis of historical data. For criteria on compatible development within the Safety MCA, see Table 5.14-3 in the Background Report.

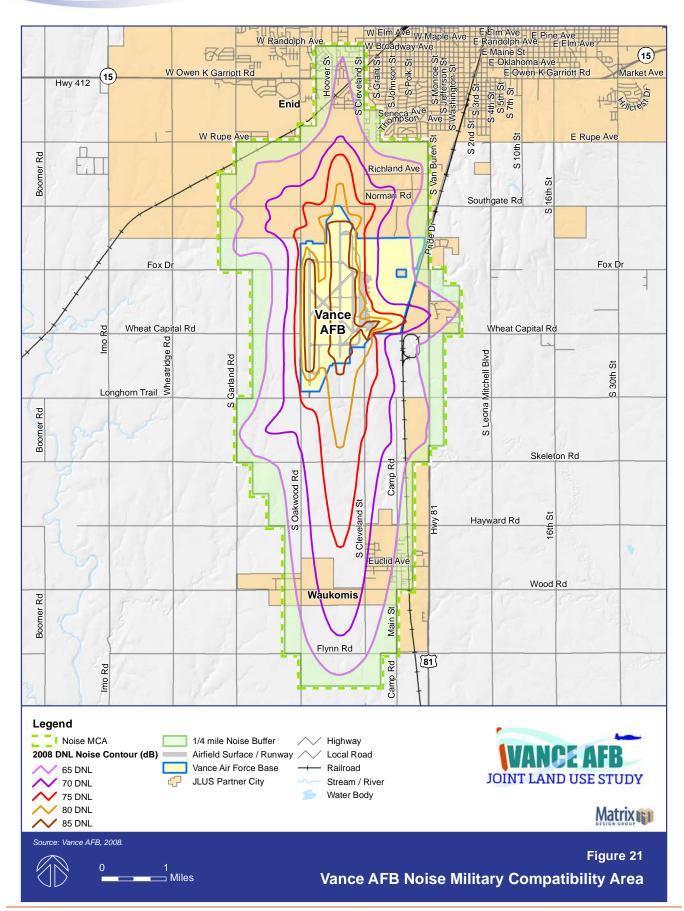
## Radar / Wind Energy MCA (Figure 26)

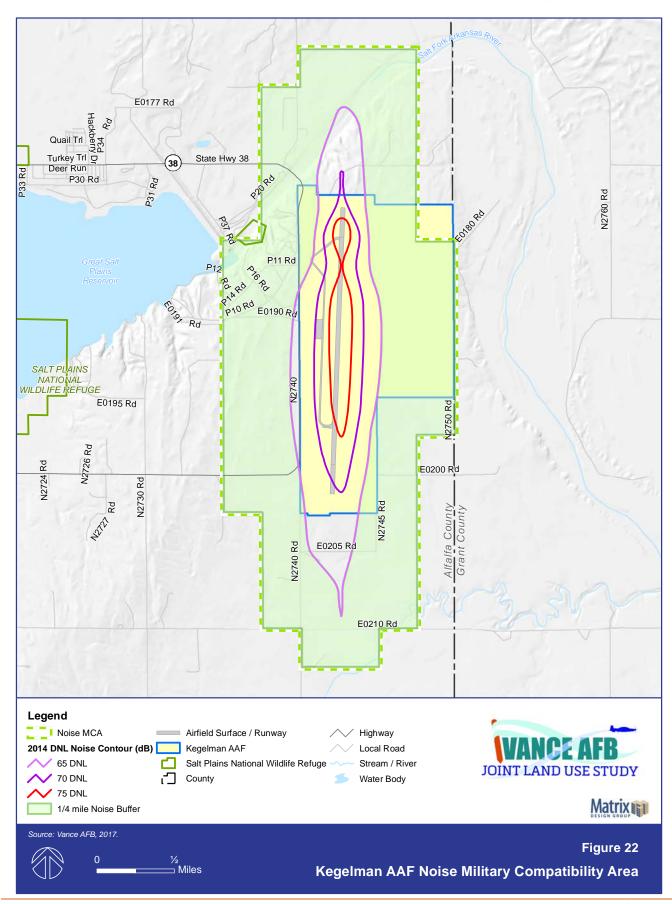
The Radar / Wind Energy MCA includes four subzones surrounding the NEXRAD system at Kegelman AAF. These subzones align with the weather radar impact zones created by the National Oceanic Atmospheric Administration (NOAA) National Weather Service Radar Operations Center (ROC) for wind energy development, as described in Chapter 5 of the Background Report. This radar provides important operational capabilities for the missions at Vance AFB and can be impacted by wind turbines, depending on their height and location relative to the radar site. The MCA also includes the Terminal Area Subzone surrounding the Vance Air Traffic Control tower.

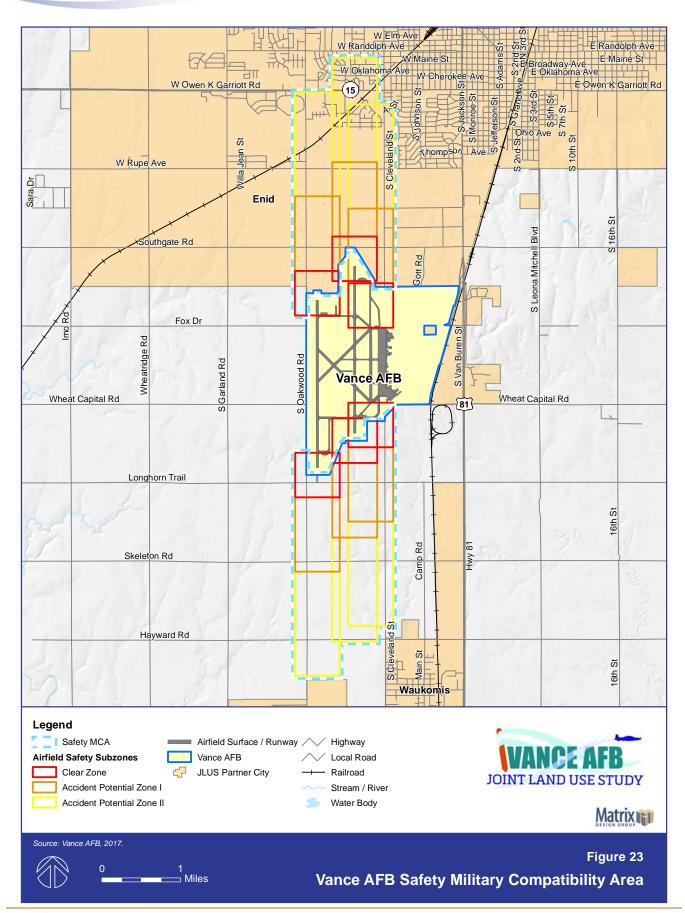


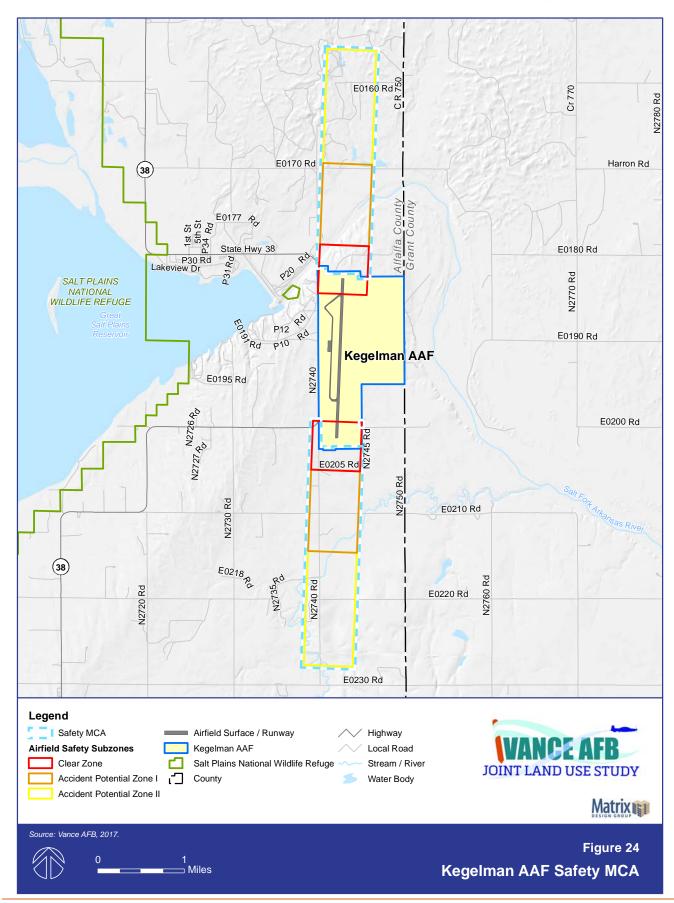


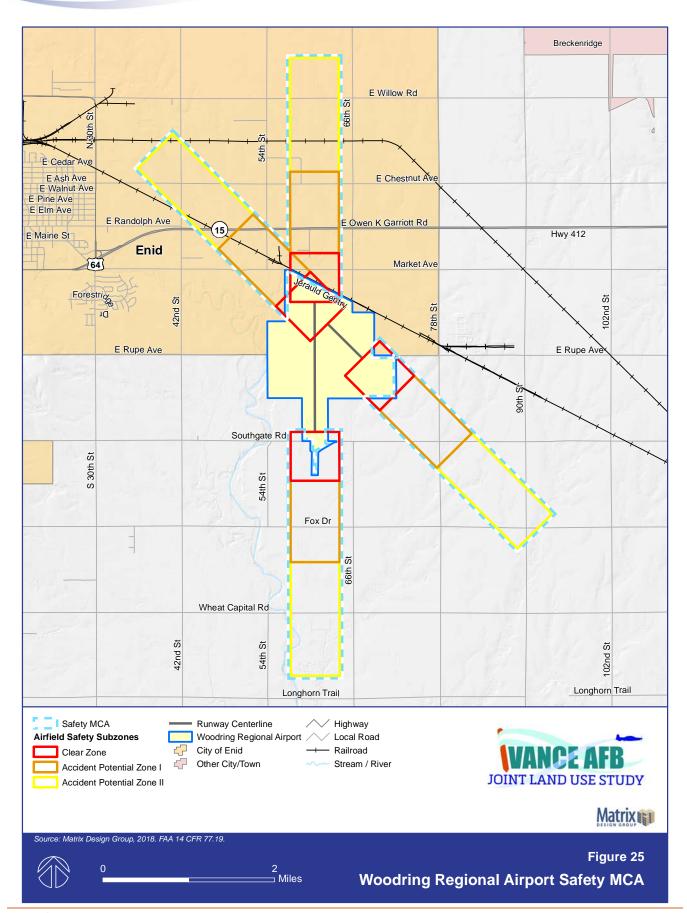


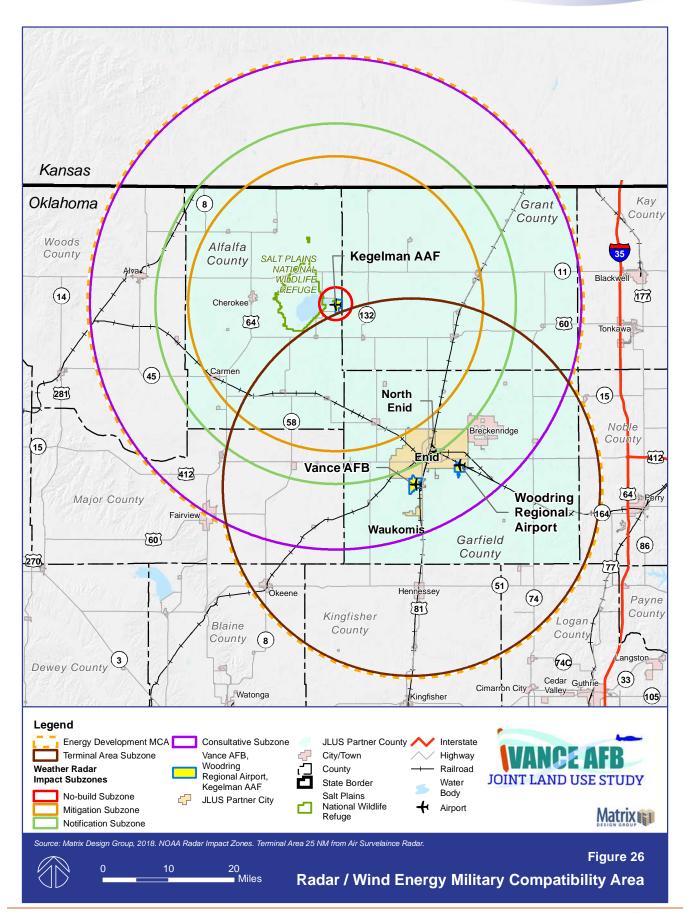












#### **MTR MCA**

#### (Figure 27)

The MTR MAC comprises the flight paths that are used at Vance AFB to perform necessary aviation training operations. The land user this MCA could be impacted by overflight.

#### **BASH MCA**

#### (Figures 28, 29, and 30)

The proposed Bird / Wildlife Aircraft Strike Hazard (BASH) MCA extends 5 miles in all directions from the air operations areas at Vance AFB, Kegelman AAF, and Woodring Regional Airport. This MCA is meant to include areas near the airfield with the highest concentrations of wildlife or wildlife-attractant uses. Bird strikes with aircraft can pose serious safety concerns, including the potential for loss of life or aircraft. Even minor bird strikes can cause costly repairs to aircraft and interfere with training missions. The five-mile distance associated with the BASH MCA is a Federal Aviation Administration (FAA) recommended standard for managing bird attractants around airports.

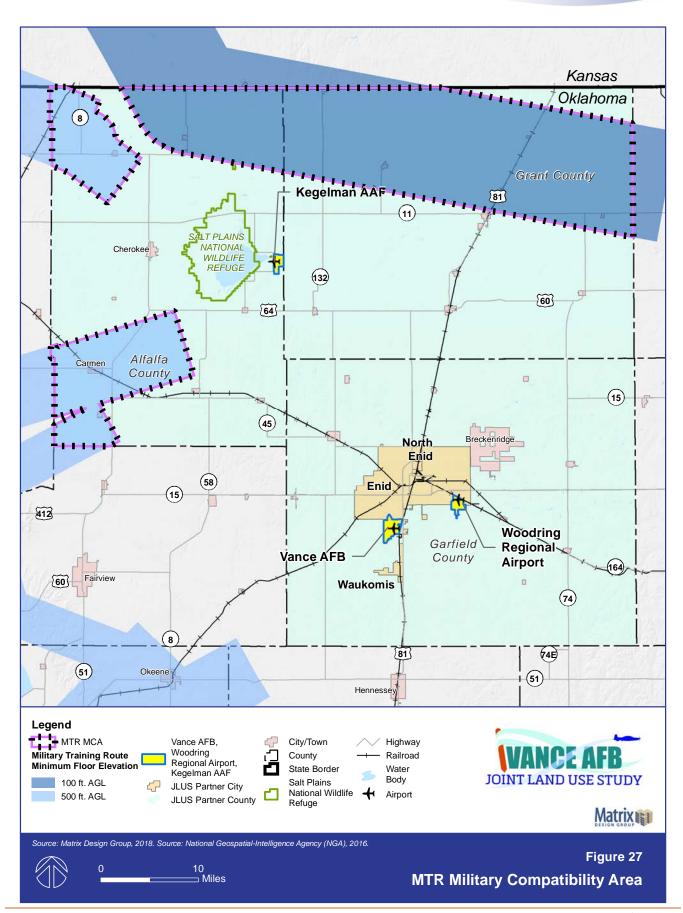
#### **Vertical Obstruction Awareness** MCA (Figures 31, 32, and 33)

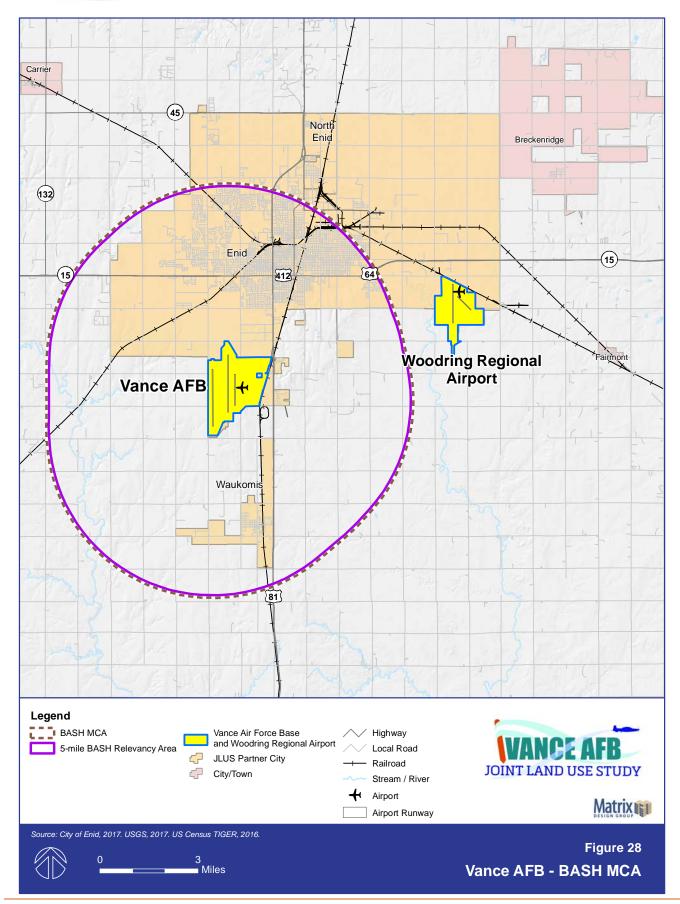
The purpose of the Vertical Obstruction MCA is to regulate the height of all structures within the area that is defined by FAA guidance and Air Force AICUZ instructions using criteria known as "imaginary surfaces."

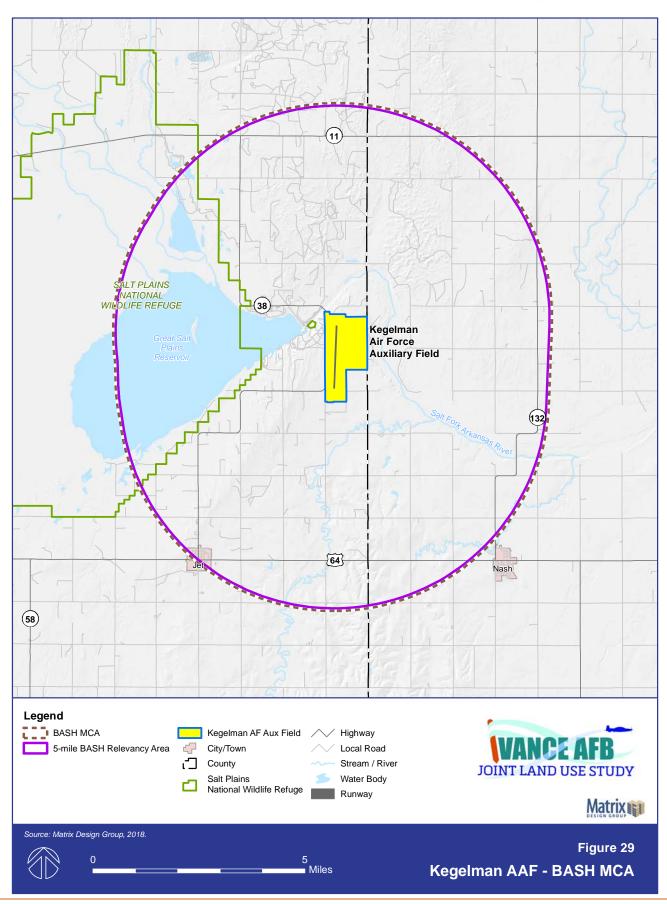
The imaginary surfaces are a 3-D geographic area comprising approach and departure airspace corridors and surrounding navigable airspace. Vertical obstruction heights are a major concern for flight operations and training due to the potential for a structure to extend into navigable airspace, which could impede safe flight operations and put both pilots and citizens on the ground at risk of an aircraft mishap.

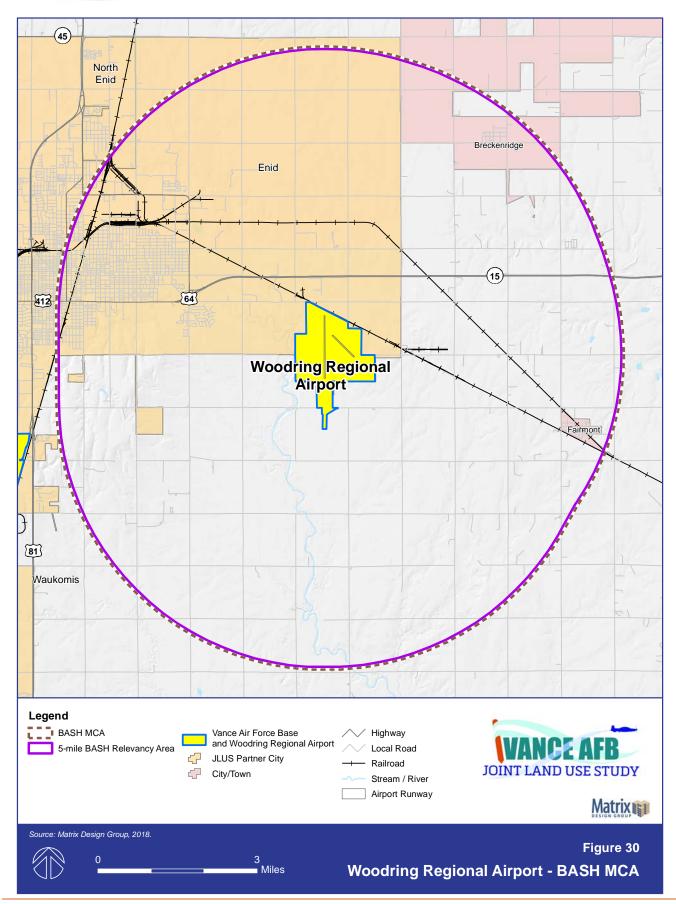
#### **MCAOD** (Figures 34, 35, and 36)

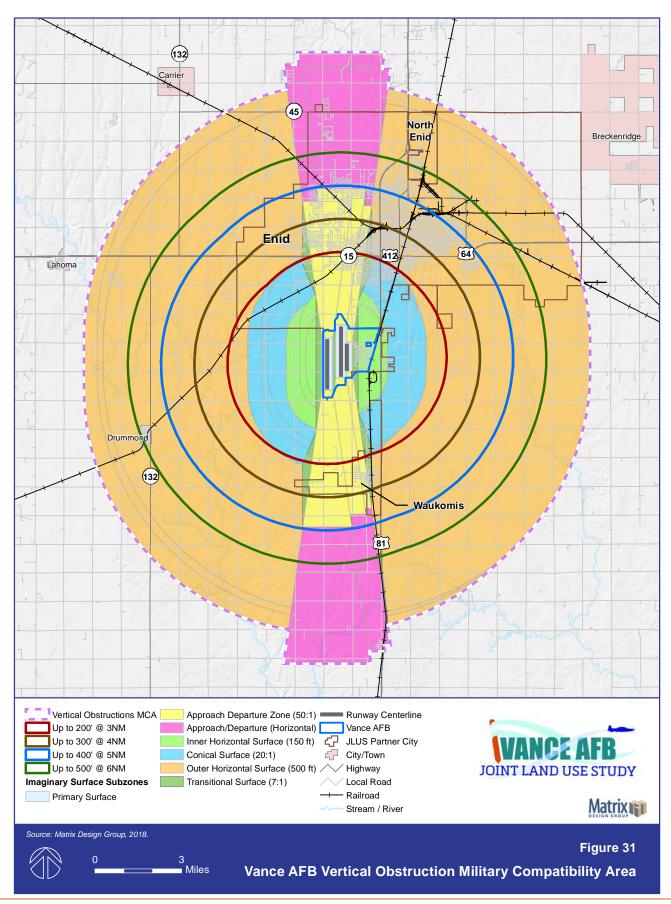
The MCAOD is a comprehensive overlay district combining all seven MCAs for Vance AFB, Kegelman AAF, and Woodring Regional Airport, respectively. The MCAOD is defined by the outermost MCA boundary when all facility MCAs are combined. Figures 34 through 36 provide a geographic view of the influence Vance AFB has on the region, and the various compatibility areas that should be considered when planning future growth and development in the region.

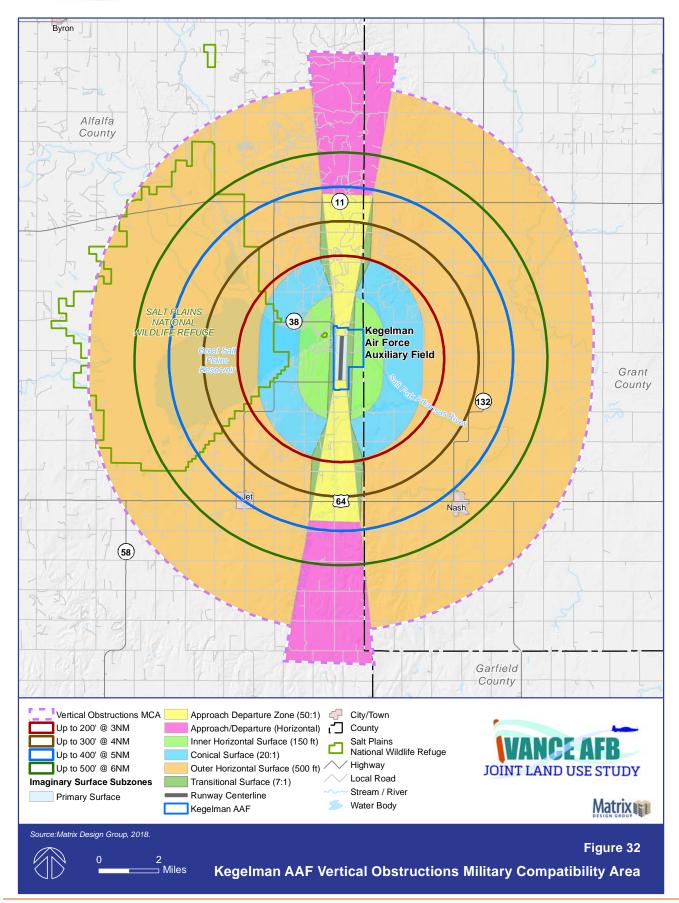


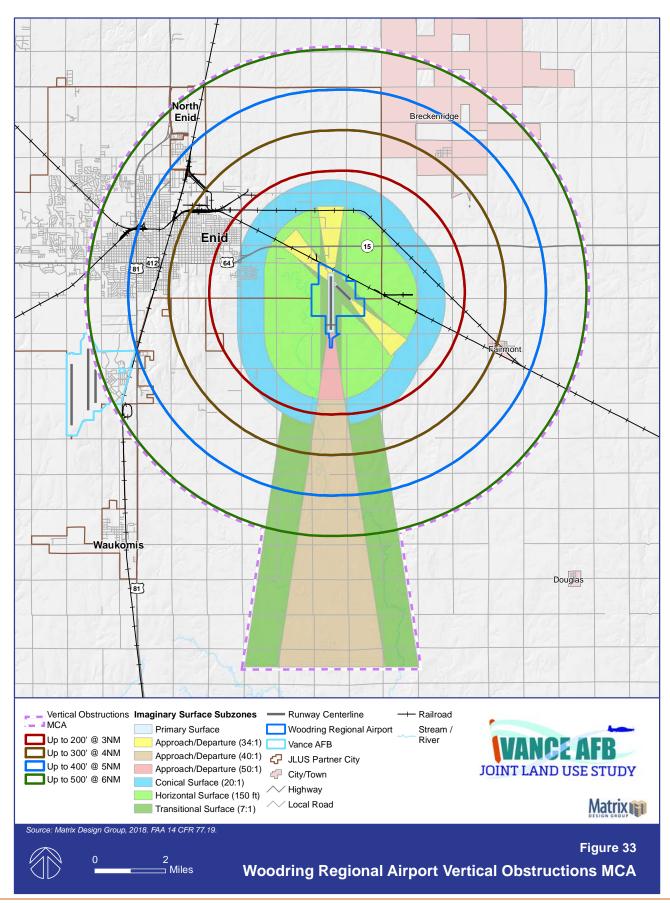


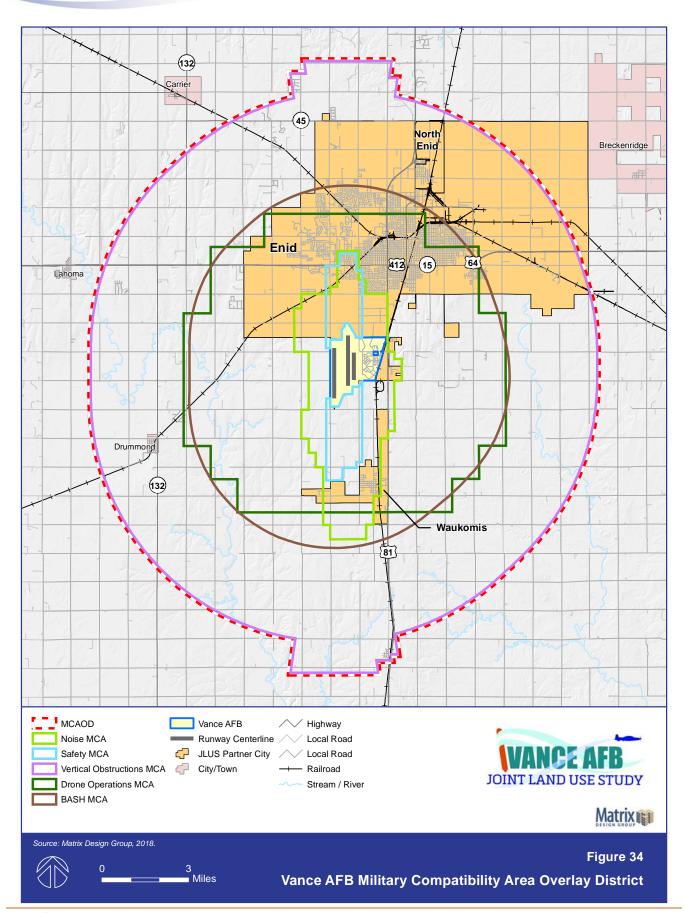


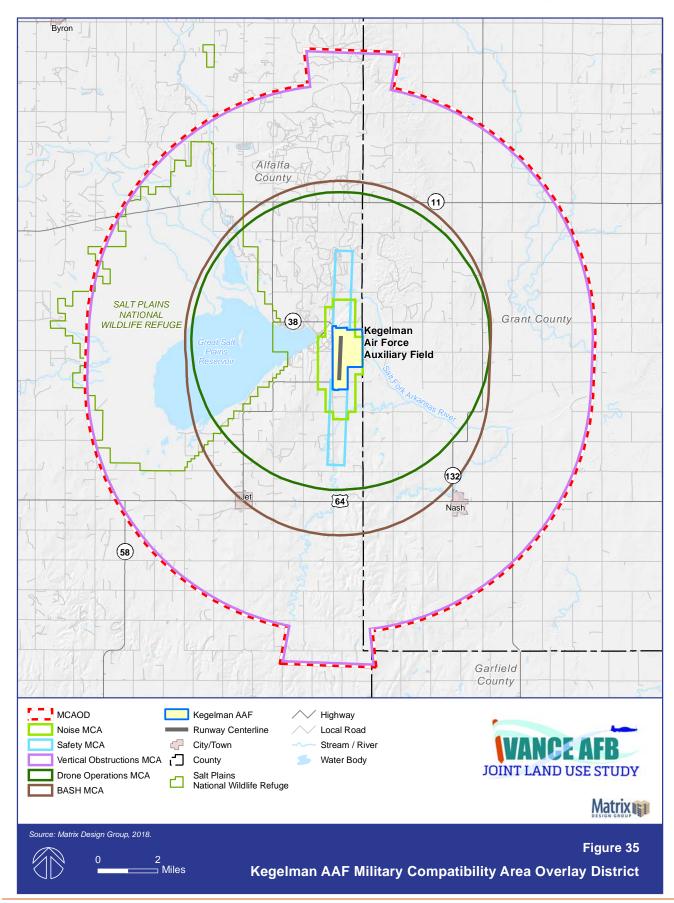


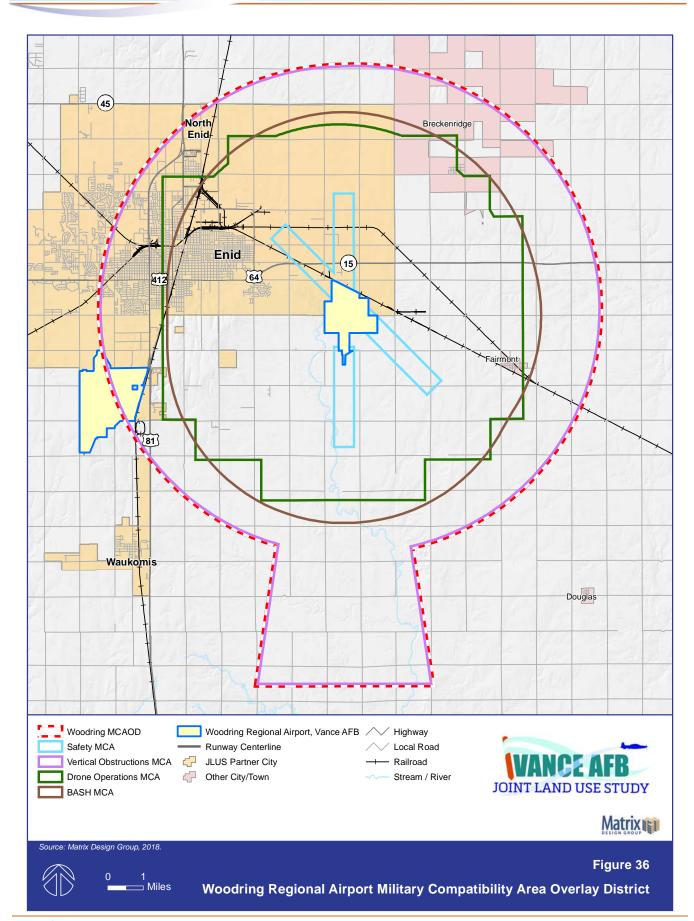












# How to Read the Implementation Plan

The strategies presented in Table 4 are designed to address the issues that were identified while preparing the JLUS. The purpose of each strategy is to:

- Avoid future actions, operations, or approvals that would cause a compatibility issue;
- Eliminate or reduce the adversity of existing compatibility issues where possible; and
- Provide for enhanced and ongoing communications and collaboration.

To make the strategies easier to use, they are presented in a table format that lists the strategy and information on when and how that strategy will be implemented. The strategies in the table are grouped relative to their respective compatibility factors (see Factors starting on page 45). The issues associated with each factor are provided in order to link each strategy with the condition it is intended to resolve or minimize. Figure 37 provides an example of the format and content of the strategy table. The following paragraphs provide an overview of how to read the information presented for each strategy in the table.

Issue or Strategy #. The issue # and strategy # are unique alpha-numeric numbers that provide a reference for each specific issue and strategy. A strategy's reference number is composed of the Compatibility Issue number and this ID (e.g., COM-1, COM-1B, etc.).

**Geographic Area.** This column indicates the MCOAD or MCA area where the strategy should be applied, or whether strategy relates to the JLUS Study Area as a whole.

**Strategy.** In bold type is a title that describes the strategy. This is followed by the complete strategy statement that describes the recommended action.

Timeframe to Initiate. This column indicates the projected timeframe of each strategy. The timeframes describe the year in which a strategy will be initiated or if it is an ongoing action.

Short-Term Strategy to be initiated within 1-2 years

following JLUS completion.

Mid-Term Strategy to be initiated within 3-4 years

following JLUS completion.

**Long-Term** Strategy to be initiated in 5 or more years

following JLUS completion.

Ongoing Strategy will be needed on a continuous,

intermittent or as needed basis.

Responsible Party. At the right end of the strategy table are a series of columns, one for each jurisdiction, military entity, agency, and organization with responsibility for implementing the JLUS strategies. If an entity has responsibility relative to implementing a strategy, a mark is shown under their name. This mark is one of two symbols that represent their role. A solid square (■) designates that the entity identified is responsible for implementing the strategy. A hollow square (□) designates that the entity plays a key supporting role, but is not directly responsible for implementation. The responsible parties are identified by their name or assigned acronym in the heading at the top of each page.

Figure 37 **Strategy Key** 

Issue / Strategy ID #	Geographic Area		Strategy ANTI-TERRO	IRISM / FO	Timeframe	City of Enid	Town of North Enid		Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	c Scho	Vance Air Force Base	Other
AT-1	This is the	e only elevated	rovides an Elevated position that provid ble threat / risk to th	View into Va	ince AFB ess near the				The	abilit	y to	observ	ve on l	oase		
AT-1A	Study Area	Vance AFB sho landscaping fe views of the in Overpass. Land	et for AT / FP Lands ould plan and budget atures to block line-o stallation from the U dscaping should cons meet DoD Anti-Ten ign guidelines.	for of-sight JS Route 81 sider native	Mid-Term										•	
Issue / Strategy Number: Alpha- numeric identified used for reference	: A A ea a	eographic rea: rea in which ach strategy pplies.	Strategy: Description of the strategy.	JLUS com Mid-Tern JLUS com Long-Ter JLUS	rm: 1-2 yea pletion n: 3-4 years	s fol	lowir	ng	a F t	and pagencorima the leader der	ies. ry ag ry ag ad in note: vill as	ole Par er resp The gency n imple s parti ssist th	denote who we ment her ago	le es the vill tale ation encie mary	ne ike n. Th	

**Table 7. JLUS Strategies** 

Table 7. Ji	LUS Strate	gies												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
		Anti-Terrorism / Fo	rce Prote	ctic	on									
AT-1	This is the	<b>81 Overpass Provides an Elevated View into Val</b> e only elevated position that provides visual access poses a possible threat / risk to the Vance AFB	ess near the	inst	tallat	ion.	The	abil	ity to	obser	ve on	base	!	
AT-1A	Study Area	Plan and Budget for AT / FP Landscaping Vance AFB should plan and budget for landscaping features at strategic locations to block line-of-sight views of specific buildings on the installation from the US Route 81 Overpass. Landscaping should consider native vegetation and meet DoD Anti-Terrorism Force Protection design guidelines.	Mid-Term										•	
AT-1B	Study Area	No Stopping / Standing Signage  Work with Oklahoma Department of Transportation (ODOT) to place signage for "no stopping" and/or "no standing" along the overpass and work with the City of Enid Police Department to enforce.  Other Partner: ODOT	Mid-Term / Ongoing										•	
	There are AAF. The opportun the use o	About the Use of Recreational Drones Around National Safety concerns with public drones operating at use of drones, or unmanned aerial vehicles (UAN ities for views into the installation from outside of UANs can create safety hazards for commercial graphs and Regional Airport.	t altitudes o V), for recre of the fence	atio e lin	nal c	r ag via u	ricul <sup>i</sup> naut	tural thori	pur <sub>l</sub> zed o	ooses o	an cre tht. A	ate dditi		
AT-2A	Drone MCA	Enforcement and Fines Vance AFB should work with local law enforcement to assist the FAA and help enforce the established rules and regulations of unauthorized drone usage, and issue fines for those not abiding by the regulations.	Ongoing										•	

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
AT-2B	Drone MCA	Education Regarding the Use of UAVs  Local jurisdictions should develop a public awareness campaign to educate members of the community about the FAA regulations for the use of drones and the potential consequences that could occur if a drone is operated in the restricted areas.	Short- Term / Ongoing											
AT-3	The Unio	About Proximity of the Union Pacific Rail Line and Pacific Railroad (UPRR) line is located along the late a fence line breach and affect military housing illity to respond to HAZMAT incidents.	e Vance AFE	3 fer	nce li	ne, a	nd c	arrie	s ha	zardou	s cargo			
AT-3A	Study Area	Update Emergency Management Procedures and Mutual Aid Agreements  Vance AFB should work with relevant agencies to update emergency management procedures and mutual aid agreements to establish a protocol for managing issues with the railroad should the railroad bisect the base during an emergency event. These updates should be provided to all agencies that have been designated as first responders to the base.  Other Partner: UPRR	Mid-Term										•	
AT-4	There is a	Aid Agreement with City of Enid Police Departm an opportunity to establish an agreement or modequirements for joint training between commur	dify any exis	sting	gagr	eeme	ents		ke a	dvanta	ge of u	niq	ue	
AT-4A	Study Area	Establish an MUA or MOU with Police and Fire Departments  Vance AFB should work with the City of Enid Police and Fire Departments to formulate an agreement that establishes Police and Fire service protocol as well as joint training directives.	Short-Term	•										
AT-5	There ha	with Vance AFB Security Fencing Along Oakwood ve been incidents with drunk drivers impacting to section with Fox Drive. When these accidents on B.	he installati	ion f	fence	line	alor	ng Oa	akwo	od Ro	ad, spe			

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
AT-5A	Study Area	Roadway Improvements along Oakwood Road  Coordinate with Northern Oklahoma Regional Transportation Planning Organization (NORTPO) and ODOT to assess, design, fund, and install a transportation improvement to keep vehicles from crashing into the Vance AFB perimeter fence. Coordinate with ODOT to program the improvement project in the state transportation capital improvements program. Consider a short term temporary solution, such as the placement of jersey barriers, while permanent solutions are being determined.  Other Partner: ODOT, NORTPO	Long- Term											
AT-6	There is a	Clarify Territorial Jurisdiction of Local Police and need for enhanced coordination between local Eisenhower Elementary School and other deeded od.	police and	Van	ce A	FB Se	ecuri						ues 1	that
AT-6A	Study Area	Coordinate with Local Police As a part of the agreement developed in AT- 4A, add provisions outlining the protocol for providing service for Eisenhower Elementary School and other DoD land that has been deeded to the City of Enid.	Mid-Term										•	

**Table 7. JLUS Strategies** 

		gies												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
		Communication /	Coordina	tior	١									
COM-1	There is a	B has no Formal Planning Collaboration Relation need for enhanced and consistent codified com B for mutual planning purposes.	_				_	n be	twee	n Garfi	eld Co	unty	, and	ţ
COM-1A	Study Area	Train Local Jurisdiction Elected Officials and Planning Staff  Establish a program for the technical training of local jurisdiction planning departments and elected officials to educate them on the issues, concerns, and compatible or incompatible development that could occur within the MCAOD so that the appropriate staff and elected officials have the technical background and knowledge when reviewing development proposal and/or making legislative decisions. The training process could include brochures, manuals, and/or mentorships and should include a visit to the installation. Different levels of training may be developed dependent upon the needs of the local jurisdictions.	Ongoing											
COM-2	There is a	ommunication Between Vance AFB and Local C n opportunity for enhanced communications be ents and property owners, relative to the econor	tween Van	ce A								ding	loca	al
COM-2A	Study Area	Establish a JLUS Implementation Coordination Committee Establish a JLUS Implementation Coordination Committee to provide oversight and monitoring of the JLUS implementation and facilitate efficient and effective coordination among the JLUS partners. Consider establishing a Sub Committee comprising JLUS Technical Advisory Group members to provide technical assistance during the JLUS implementation.	Short- Term										•	

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
COM-2B	Study Area	Provide Mutual Briefings  To perpetually enhance support and cooperation, and reinforce the partnership between Vance AFB and local jurisdictions, the installation should annually present a "state of the installation" briefing including strategic goals, operational changes, and proposed construction projects that may impact the greater community to the Study Area county commissions, city councils, congressional delegations, regional elected and appointed officials and key partners. The counties and cities should provide annual briefings to Vance AFB of changes within the communities that may impact the installation including comprehensive plans, master plans, transportation plans, zoning, development projects, and capital improvement plans.	Ongoing	•	•	•			•		•	•	•	
COM-2C	Study Area	Vance AFB Staff Representative on Local Planning and Zoning Commissions Invite a representative from Vance AFB to serve as a technical advisor to jurisdiction planning and zoning commissions to allow for Vance AFB to provide input on proposed developments in the MCAOD that may impact the Vance AFB mission. This invitation should be formalize through an MOU.	Ongoing						•					

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
COM-2D	Area	Establish a Communication Process for Notifying Local Jurisdictions of Mission Activities and Changes  Vance AFB should work with local JLUS jurisdictions and other relevant agencies to establish procedures for communication relative to base operations and changes to base operations and activities. This would include:  -definition of operations and changes in operations that warrant public knowledge -identification of points of contact for coordination and communication -defined process for responding to comments of questions from jurisdictions and the public defined timeframe for responding to questions and/or concerns  Procedures should be reviewed annually and updated by the JLUS Implementation Coordination Committee (See Strategy COM-2A).	Short- Term / Ongoing										•	
сом-з	<b>Wildlife R</b> There are	No Existing Formalized Partnership or Agreement Refuge with Respect to BASH existing BASH concerns related to the Salt Flats the three locations for mitigating BASH concerns	Wildlife re											t

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	<b>Enid Public Schools</b>	Vance Air Force Base	Other
COM-3A	Study Area	Coordinate on Wildlife Policies  Vance AFB and Kegelman AAF should coordinate and collaborate with Oklahoma Department of Wildlife Conservation, U.S. Fish and Wildlife, and the Salt Flats Wildlife Refuge on the inclusion of additional or revised wildlife policies that incorporate concerns related to BASH and assist in minimizing the risk of bird / wildlife air strikes in areas proximate to military training sites. This coordination should be formalized through an MOU.  Other Primary Partners: Oklahoma Department of Wildlife Conservation, U.S. Fish and Wildlife, Salt Flats Wildlife Refuge	Short- Term										•	
		Dust / Smoke	/ Steam											
DSS-1	Southgate	Roads in the JLUS Study Area Create Dust, which e Road is an unpaved road that is located directly dehicular activity on the dirt road generates dust AFB.	y north of t	he a	irfiel	d at	Van	ce Al	B ar	nd Woo	_	_		
DSS-1A	Study Area	Speed Limits Limit speed to help mitigate dust.	Short- Term											
DSS-1B	Study Area	Road Paving Determine if military can pave Southgate Road via Defense Access Roads Program (DAR). Additionally, program may be leveraged for any repairs to off-base roads deteriorated as a result of construction activity  Other Primary Partners: DAR	Mid-Term										•	

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
DSS-1C	Study Area	Defense Capital Infrastructure Pilot Program Evaluate if the Defense Capital Infrastructure Pilot Program (DCIPP) – referenced in the FY19 National Defense Authorization Act (NDAA) 2019 – infrastructure work off installation. Other Partner: Office of Economic Adjustment (OEA)	Long- Term	•										
DSS-2	Farmers i	om Local Farmers Burning Fields has the Potent in the local area conduct prescribed burns on the operations improves the health of the fields by re om these burns has the potential to impact opera	eir fields du emoving old	ring d ve	the getat	mon	ths c and a	of Jur addir	ne th	ıtrients	to the	soi		ie
DSS-2A	Study Area	Communication on Prescribed Burns The Oklahoma Forestry Services should establish protocols to notify Vance AFB, the Oklahoma State Highway Patrol, US Fish and Wildlife Service, and JLUS Study Partner jurisdiction Emergency Services Departments of planned controlled burns.  Primary Lead Partner: Oklahoma Forestry Services Other Partners: Oklahoma State Highway Patrol and US Fish and Wildlife Service	Short- Term											•
DSS-2B	Study Area	Ensure Prescribed Burns Employ Best Management Practices Consider adopting regulations requiring best management practices and enforcement mechanisms to control fugitive dust, smoke, and steam impacts to maintain the attainment status for regional air quality and to protect the environment.  Other Partner: Oklahoma Forestry Services	Ongoing	•									•	
DSS-3	Farmers i	om Local Farmers Burning Fields has the Potent in the local area conduct prescribed burns on the operations improves the health of the fields by recommendate burns has the potential to impact operanated.	eir fields du emoving old	ring d ve	the getat	mon	ths c	of Jur addir	ne th	rough <i>i</i>	to the	soi	l. Th	ie

**Table 7. JLUS Strategies** 

Table 7.	JLUS Strate	egies												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Authority Fnid Public Schools	Vance Air Force Base	Other
	Study Area	Also see DSS-2A and 2B for addressing this issue.												
		Energy Deve	lopment											
ED-1	AFB oper Radar ald Need to d	that Abundance of Wind Energy and Uncoording rations and Potentially Obstruct the View Shed ong with the Degradation of Military Training Redevelop / codify proactive process for proposed ning of process to identify / mitigate potential co	of Vance Al outes wind energ	FB A	irpo	rt Su	rvei	llanc	e Ra	dar an	d KVN	IX W	eath'	er
ED-1A	Radar / Wind Energy MCA	Develop Alternative Energy Ordinance Consider development of alternative energy development ordinances to coordinate siting within military influence areas and limit heights within restricted and special use airspace.	Mid-Term				•	•	•					
ED-1B	Radar / Wind Energy MCA	Coordination with the National Oceanic and Atmospheric Administration Coordinate the review of wind energy development projects within the recommended "No-Build Zone" and "Notification Zone" with the National Oceanic and Atmospheric Administration (NOAA). Incorporate NOAA's recommendations concerning wind turbine placement into local zoning regulations.  Other Partner: National Oceanic and Atmospheric Administration	Mid-Term	•	•	•	•	•	•					
ED-2	Study Are The DoD developn transmiss Evaluatio	Improve Coordination with the DoD Siting Clear ea Siting Clearinghouse works to overcome risks to nent. Energy production facilities involving tall st sion lines may degrade military training operatio in process provides analysis of potential impacts atifying mitigation strategies to minimize those in	national se tructures, so ns. The Dol to military	curi uch D's S	ty w as w liting	hile pind to	orom urbii iring	notin nes, s hous	g coi solar se Mi	mpatib panels	le dor , and Compa	nest rela itibi	ic en ted ity	

**Table 7. JLUS Strategies** 

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
ED-2A	Radar / Wind Energy MCA	Coordinate with DoD Siting Clearinghouse. The DoD Siting Clearinghouse requirements and standards published in Title 32, Code of Federal Regulations, Part 211, advise and guide the process to facilitate the early submission of renewable energy project proposals to the Clearinghouse for military mission compatibility review. Amend applicable local planning documents (comprehensive plans, regional plans, and energy system ordinances) to incorporate procedures requiring coordination of alternative energy development applications with the DoD Siting Clearinghouse.  Other Partners: DoD Siting Clearinghouse, Wind Energy Developers	Mid-Term		•	•	•							
		Frequency Spectr	um Capad	city										
FSC-1	There is a	A Weather Radar at Kegelman AAF has a Blind A power pole that is approximately 20 feet from the A weather radar blind area.						oowe	erline	e maski	ing iss	ue r	esult	ing
FSC-1A	KAAF	Reconfigure Power Pole at KAAF Relocate the power pole and / or bury lines as to remove the pole in that location. Potentially explore using different material for pole resolve. Evaluate if the Innovative Readiness Training (IRT) Program can be leveraged to relocate the pole. The IRT program is led by the Director, Civil-Military Training Policy, in the Office of the Deputy Assistant Secretary of Defense for Reserve Integration. The IRT program includes opportunities for Active, Guard, and Reserve Service Members to work to support communities through a grant program. Other Primary Partner: Office of the Deputy Assistant Secretary of Defense for Reserve Integration	Short- Term											

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Authority Enid Bublic Schools	Vance Air Force Base	Other
FSC-2B	KAAF	Reconfigure Power Pole at KAAF Relocate the pole and / or bury lines as to remove the pole in that location. Potential to explore using different material for pole resolve. Evaluate if the Defense Capital Infrastructure Pilot Program (DCIPP) — referenced in the FY19 National Defense Authorization Act (NDAA) 2019 — infrastructure work off installation.  Other Primary Partner: OEA							•				•	
FSC-2	Breckenri	with Frequency Impacts from Future Wind Farm dge and Chisholm View wind farm facility develon to plan and coordinate coverage with 2nd FAA ra impacts of future development.	pments ma	-										
FSC-2A	Energy MCA	Identify and Map Locations Suitable for Wind Energy Development  Work with the Air Force to identify and publish locations for alternative energy development that are ideal for wind developers as well as compatibility with military operations. Develop a "Red, Yellow, Green" map that communicates and illustrates specific locations where structures that exceed a mutually agreed upon height should be prohibits to avoid incompatibility with military operations. Include discussion with the State of Oklahoma for pursuing additional mapping statewide to account for potential future changes in the mission.  Other partner: Wind Industry, FAA, State of Oklahoma								•				
FSC-3	Vance AFI	quency Conflicts with Kegelman Auxiliary Airfie B has good radio connectivity with good coverag cation with Kegelman AAF is challenged due to t AAF.	e extendin	_			_	-				e to	wer a	t

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
FSC-3A	KAAF	Relocate KAAF tower  Explore relocating tower off KAAF property on private property away from airfield safety zones through easement or other process  Other Partner: IRT Program	Mid-Term										•	
FSC-4	The City of Service rawith the	tible Radio Systems Between Vance AFB and the of Enid recently changed to a digital trunk system adio system that is used by the Enid Police, Fire, a Motorola radios used on Vance AFB. The discrepincidents, resulting in potential safety hazards.	n for its emo	erge epar	ncy tmer	respo nts fo	onde or co	ers. T mmı	he to	ations i	s incom	npat	ible	
FSC-4A	Study Area	Establish a Frequency Working Group Explore possible strategy to investigate modification of radios to be interoperable or setting standards of interoperability.	Short- Term											
FSC-5	Competit	Concern that Limited Availability of Communica ion for channels and a lack of coordination on from tusing competing frequencies may limit interogeting frequ	equency sp	ectr	um r	mana	agem	ent	with	local p	urchas		of rac	dio
FSC-5B	Study Area	Establish Procedures to Avoid Frequency Conflicts  Vance AFB should coordinate with the City of Enid, Garfield County, Alfalfa County, and Grant County on review of projects with frequency requirements that could impact communications on- and off-installation. The criteria that should trigger coordination includes: -proximity to Vance AFB or Kegelman AAF-tower height -power emissions from tower sources -high output transmission devices  Other Partner: FAA	Mid-Term										•	

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
FSC-5A	Study Area	Acquire and Improve Radio Frequency Spectrum Analysis Technology Devices Pursue acquisition and development of "RF spectrum analyzer" technologies used to detect interference between frequency bands. This tool can be used to identify interference from on-installation sources including military and public/commercial users.	Ongoing										•	
		Housing Ava	ilability											
HA-1	The outlo	ffordable Housing for Unaccompanied and Accordance ok for availability of unaccompanied housing for y not be enough to meet requirements. It was not ately 100 units and that there is a need for 1,2 a	pilots and oted that a	enli sho	sted rtage	pers e ma	onn	el as	signe	ed to Va				
HA-1A	Study Area	Assess Housing Needs  Continue to assess the housing needs for  Vance AFB personnel and share findings with the local community, (See HA-2A).	Ongoing											
HA-1B	Study Area	Military Housing in Local Communities  If additional or replacement housing is needed to serve Vance AFB, work with local jurisdictions to determine if this housing need can be met locally with existing housing stock or new privatized housing in the community.	Short- Term											
HA-2	Limited Efficiency Type Apartments for Personnel Coming to Vance AFB for Interim Duty  Reserve activated instructor pilots and students who come to Vance AFB for periods of several months up to a year require smaller units, such as furnished one-bedroom units, which are lacking in the surrounding communities.  Personnel in this duty status do not require larger or more expensive units.													

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HA-2A	Study Area	Share Information on Housing Needs and Demand with Local Realtors and Associations Vance AFB should share information about housing needs and demands with local realtors and realtor associations to assist in providing quality, eligible housing to the Vance AFB transient population. This should begin to build the relationship between the Vance AFB Housing Management Office and the Realty community.  Other Partners: Vance AFB Housing Management Office, Realty Community, Realtor associations	Ongoing											
HA-2B	Study Area	Coordination for Excess Housing Demand When housing demands require more than normal demand in the local markets, such as during training events, provide advanced notices to hotels and other transient lodging facilities off-installation.  Other Partner: Greater Enid Chamber of Commerce	Ongoing										•	
НА-З	Impact o	tion for Affordable Housing f Rental Rates where DoD BAH is driven by local h tes are increased. The BAH adjusts to this increas so leaves for DoD to allow to break lease, but not	e, but local	l citi	zen's			-						
	Study Area	See Strategy HA-2A to address this issue.												
		Competition for Land	/ Air/ Sea	a Sp	ace	S								
LAS-1	A new ou	Congestion from Military and Civilian Flying Op utside runway proposed for Vance AFB would cre itary and civilian flight operations, as well as com- d future use of Woodring Airport to support spec	ate missior munity imp	op <sub>l</sub>	portu s. The	unitie ere is	es bu s an o	ıt ma oppo	rtun	ity to i		•		s for

**Table 7. JLUS Strategies** 

Table 7. J	LOS Strate	gies												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
LAS-1A	MTR MCA	Monitor Airspace Utilization Vance AFB and Woodring Regional Airport should track and catalog the air activities that occur within each classified airspace to assess utilization and determine need for adjustments between military and civilian aviation operations.	Ongoing / in progress	•									•	
LAS-1B	MTR MCA	Airspace Utilization Study Vance AFB should work with the FAA to conduct a comprehensive airspace utilization study to identify areas of greatest conflict and areas where minor improvements can be made to alleviate airspace congestion during peak times. Consider funding such study through the FAA or P3 partnerships.  Other Primary Partner: FAA	Long- Term											
		Any issues and strategies, where the issue of a new runway is identified has opportunity of leveraging Woodring Regional Airport should be captured and included in strategy discussion.  See LU-2, NOI-1, SA-1, etc.												
LAS-2	The Air For Training v flight rou	n Mission at Vance AFB may Require Re-evaluate orce intends to replace aging T-38 aircraft with a with new aircrafts can result in unknown impacts tes. These and other potential concerns will need Vance AFB.	new T-X tra to the curi	aine rent	r jet trair	for t	raini oper	ing p	ilots ns, n	within oise co	ntours	, an	d use	e of
LAS-2A	Study Area	Facilitate a Civilian and Military Aviation Coordination Annual Meeting Vance AFB, Study Area jurisdictions, and other resource agencies should consider facilitating a Civilian / Military Aviation Coordination meeting to promote collaboration among all impacted stakeholders and to address the individual issues and opportunities that may arise for civilian and aviation operations.												

**Table 7. JLUS Strategies** 

	JLUS Strati													
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
		Other Partners: FAA, Oklahoma Aeronautics Commission												
LAS-2B	Noise MCA	Work with HHQ  Vance AFB to continue to work closely with HHQ to ensure local concerns are addressed in all associated planning documents for new trainer such as NEPA, AICUZ, etc. While the Air Force always prepares these products, they are sometimes lacking in accounting for local issues/aspects.	Ongoing											
		Also see Strategy to connect LAS-2 with LAS-1 in that use of Woodring may help with future new mission footprint concerns to address this issue.												
		Land U	se											
LU-1	Private F	e of Oklahoma has a Strong Property Rights Food Property Rights he strong stance on property rights in the State o tible development surrounding military installation	f Oklahoma											
LU-1A	Study Area	Enhanced Legislation Study Area jurisdictions should approach lawmakers about legislation that would increase enforceability for airport zoning regulations and limit incompatible development that could impact military missions in areas around Vance AFB.  Other Partners: State of Oklahoma elected officials	Mid-Term / Ongoing		•	•	•	•	•				•	
LU-2	Operation The area continue creating	Concern that Ongoing Community Growth to the ons at Vance AFB I northwest of Vance AFB has experienced growth into the future. There is the potential for this growth the possibility for the development of incompating may cause additional impacts to current/future.	n in recent yowth to ext ble land use	year end es. N	s, an fron ⁄lore	d it in the	s ant City , pro	ticipa of E	ated inid i	that th nto Ga nway c	is gro	wth Coui	will nty,	t

**Table 7. JLUS Strategies** 

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Full Public Schools	Vance Air Force Base	Other
LU-2A	MCAOD	Define and Establish Military Compatibility Areas  Create a Military Compatibility Area Overlay District (MCAOD) containing Military Compatibility Areas that reflect the types and intensity of compatible uses and map them on an online platform. The MCAOD is the collective geographic area of all of the MCAs combined. The MCAs established should be used by local jurisdictions to identify areas where specific compatibility issues are more likely to occur and address ways to avoid compatibility issues. The MCA's should include:  •Safety MCA. Includes the land within the BASH Relevancy Area. The safety zone may need to be adjusted by the Air Force to include Clear Zone and Accident Potential Zones outside the installation dependent on future runway needs.  •Noise MCA. Includes areas within the peak noise contours, as well as an additional half mile beyond the noise contour boundary.  •Vertical Obstructions MCA. Includes the estimated Inner Horizontal Surfaces and Approach-Departure Clearance Surfaces for the runway at Vance AFB and Kegelman AAF.  •Radar / Wind Energy MCA. Encompasses the areas within the radar viewshed.  •Drone MCA. Includes the drone-restricted airspace surrounding Vance AFB, Kegelman AAF, and Woodring Regional Airport as indicated by FAA guidelines.  •BASH MCA. Includes areas within a five-mile radius around the airfield with the highest concentrations of wildlife or wildlife-attractant uses.	Mid-Term											

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LU-2B	MCAOD	Develop Military Compatibility Area Development Guidelines Develop a Military Compatibility Area Development Guidelines for the Counties who do not have zoning. This document would provide guidance on what type of land uses, heights, and building materials which are compatible within each MCA.	Mid-Term				•	•	•					
LU-2C	MCAOD	Investigate Increased Use of Woodring Regional Airport for Vance AFB Operations Explore strategy that could help minimize need/impacts of replacing a runway at Vance by increasing the use of Woodring Regional Airport for operations. Other Partner: Woodring Regional Airport	Long- Term										•	

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
LU-2D	Noise MCA	Update the City of Enid Airport Environs Overlay Zoning District  Amend the City of Enid Airport Environs Overlay Zoning District per the following:  1. City to draft and submit a Map     Amendment Application to replace the     existing Overlay District map with the     Vance Military Compatibility Overlay     District Map and the Woodring Regional     Airport Military Compatibility Overlay     District Map (inclusive of all MCAs).  2. City to Draft and submit a Text     Amendment Application to update the     existing Airport Environs Zoning Overlay     District with:      a. Delete the text that states the         Noise Contours map should be         updated when Vance AFB         updates their AICUZ.      b. Replace the AICUZ land use table         with the new AF AICUZ land use         table  Add regulatory language providing what is permitted and not-permitted in each of the MCAs within the Overlay District.	Mid-Term											
LU-3	There is la Currently	nty Regarding Territorial Jurisdiction and Miner and near the Vance AFB main gate that was purc there is uncertainty as to which agency has juris ag the ability to develop future plans for the land	hased by thadiction ove	ne Ci	ity o	f Eni	d and	d de	eded	to the	_			
LU-3A	MCAOD	Investigate Territorial Jurisdiction and Mineral Rights on and Adjacent to Vance AFB Prepare a report that conforms current land ownership and enacted easements; defines property rights based on completed real property transactions; and identifies legal uses and actions by affected parties.  Other Partner: Office of Economic Adjustment	Mid-Term											

**Table 7. JLUS Strategies** 

등 Issue / Strategy ID #	Currently the lack of	Strategy B is Constrained by Limited On-base Land Avail , Vance AFB is constrained by a lack of available of available land along with limited facilities space ons or when temporary space is required for cert	land on the e has negat	ins	tallat impa	ion f	or fu	ıture	mis	sion g	<b>Dperat</b> irowth.	<b>ons</b> In a	dditi	
LU-4A	VAFB MCAOD	Prepare a Mission Impact Analysis and Needs Assessment Prepare report that identifies, and documents actual mission impacts related to land/facility deficiencies.  Other Partners: Air Force Civil Engineer Center (AFCEC)	Short- Term										•	
LU-4B	VAFB MCAOD	Prepare a Space Utilization Analysis and Needs Assessment  Vane AFB should conduct a thorough space utilization study that reduces user space footprints to minimum that is authorized/required. The goal should be to consolidate space use in an effort to free up space for other critical uses.  Other Partner: AFCEC	Mid-Term										•	
LU-4C	Study Area	Explore Enhanced Partnership Opportunities Assess possible EUL/P3 opportunities to develop land/space opportunities adjacent to current installation footprint. Other Partners: AFCEC, AF Partnership Program, OEA	Ongoing								0		•	
LU-5		e Concerns with the FEMA Floodplain Master Planed to assess the storm water drainage configurable.							ding	; in rel	ation t	o th	e Go	tt

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LU-5A	Study Area	Coordination on Storm Water Improvement Planning Notify and coordinate stormwater infrastructure improvement plans with the City of Enid Public Works Department. Vance AFB should be notified when the City of End implements improvements to storm water facilities that would impact the drainage basins that Vance AFB stormwater flows into.											•	
LU-5B	Study Area	Conduct an Installation Storm Water Improvement Plan  Prepare stormwater report that identifies current capacity / off flow issues at Gott Rd drainage. Identify any deficiencies based on current development, planned future development. Include considerations for future potential development. Assessment needs to look at drainage from Vance outfall to Meadowlake intake. (See WQQ-3)  Other Partners: AFCEC, OEA		or 10	00 a	cres	Rece	ently	Puro	chased	by th	e Cit	y of	Enid
LU-6A		Update AICUZ Information Based on Upcoming Mission Changes  The City of Enid needs to evaluate property in terms of Vance airfield operations including AICUZ criteria and determine incompatibility concerns as the mission changes and forecasting future mission changes (i.e.		l I	Scho	ols n	eeds	s to b	oe as:	sessed	for co	mpa		
		increased training throughput, use of Woodring Airport, change in training aircraft). Development of the property should comply with AICUZ and other applicable land use plans and zoning ordinances.  Other Partners: AFCEC, OEA												

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LU-7	The City of surround developm	of Enid Zoning Ordinance has Limited Regulation of Enid currently does not have development reging Woodring Regional Airport. Although industriant of industrial parks could spur incompatible perations, as well as potential joint uses and/or Airport.	gulations (o rial develop uses that af	utsion mer	de of nt is p the	heig oosit milit	ght li ive f ary's	mita or th	tions e re	s) for ir gional o o use t	dustria econor he airp	al di ny, t ort t	strict :he for it	ts :s
LU-7A	Woodring Regional Airport	Develop an Airport Overlay District  Develop an airport overlay district in the Enid Zoning Ordinance to guide development surrounding Woodring Regional Airport, similar to the existing Airfield Environs Overlay District.	Mid-Term	•										
LU-8	Kegelmar	for Flooding at Kegelman AAF  AAF has had flooding issues in the past, most reter. Future flooding at Kegelman AAF could nega								portio	ons of t	he s	ite v	vere
LU-8A	KAAF MCAOD	Develop an Integrated Flood Management Plan  Alfalfa County should work with Kegelman AAF, Vance AFB, and the Salt Flats Wildlife Refuge and other agencies to develop an integrated flood management plan to identify:  Areas where the majority of flooding occurs,  Causes of flooding  Procedures to prevent and manage flooding on-base  Roles and responsibility in flood management  Other Partners: Salt Flats Wildlife Refuge, City of Jet	Long- Term											
LU-9	Impacts f As the Cit The siting Noise cor	Ensure Future School Sitings in and around the from Overhead Flight Patterns by of Enid grows and Garfield County develops, to of new schools or increasing capacity at existing atours, aircraft safety zones, and other compatible compatible with Vance AFB operations.	here are cu g schools ne	rren eeds	t and	d fut	ure r anne	need:	s to (	expand dinatio	schoo n with	l ca <sub>l</sub> Var	oacit ice A	

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LU-9A	MTR MCA	Consider MTRs when Siting Future Schools Consider MTRs when siting future schools in the community and coordinate with Vance AFB during the development review process to ensure that schools are not located in noise contours.	Ongoing	•			•							
LU-9B	Noise MCA	Amend State Building Code for Sound Attenuation  Consider incorporating sound attenuation in building construction requirements to achieve a maximum interior noise level of 45 dB from external sources for sensitive land uses, such as schools and habitable places.  Other Partner: Oklahoma Uniform Building Code Commission	Short- Term											
NOI-1	A new ru	Noise Impacts of the Proposed New Runway at nway proposed for Vance AFB would create miss and areas, including off-base communities under	t Vance AFI	unit	ies, l	out n	nay a	also d	creat	e noise	e conto	urs	and	
NOI-1A	Noise MCA	Develop Noise Informational Brochure for Vance AFB and Kegelman AAF Operations  Vance AFB should develop an information/educational brochure about the noise generated from the operations that occur at Vance AFB and Kegelman AAF to include any low-level operations and points of contact. Local jurisdictions and other partners, such as the realty community, should help in the distribution of these brochures by making them available on websites.  Other Partner: Realtor Associations	Short- Term										•	

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NOI-1B	Noise	Extend Airport Noise Contours	Mid-Term											
	MCA	Extend the noise contours for Vance AFB, Kegelman AAF, and Woodring Regional Airport to an agreed upon extend to ensure that mission changes at Vance AFB are captured in the zoning ordinances.												
NOI-1C	Noise MCA	Conduct New Noise Study Vance AFB should conduct a new Noise Study and update the AICUZ Study after the new T-X mission is operational. The AICUZ should recommend a strategy that states the City of Enid should incorporate the largest noise contour footprint in their Airport Environs Zoning Overlay District (either the 2009 Noise Contour footprint in the Airport Environs Zoning Overlay District or the most up to date noise contour, whichever is larger)	Long- Term									•		
NOI-1D	Noise MCA	Noise Notification Signage Cities and Counties within all three MCA Overlay Districts should develop and install street signage on major arterials that are zoned for residential development informing them that this area is an Aircraft Overflight and Noise Area and the Proud Home of "Vance AFB."	Mid-Term						•					
NOI-1E	Noise MCA	Facilitate Legislative Initiatives to Amend Property Disclosures Facilitate a legislative initiative to include notification of military impacts on property in real estate disclosures.  Other Partners: Realty Community, Realtor Associations	Mid-Term											
NOI-2	Currently line also	n Pacific Rail Line that Runs Adjacent to Vance A the Union Pacific Railroad runs freight traffic on runs through the City of Enid on the east side of eight rail traffic creates noise and impacts the qu	the east si US-81 and j	de d ust	of Va to th	nce /	AFB a	adjao f a re	ent	to fami	ly hou	sing	. The	

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NOI-2A	Noise MCA	Amend Zoning Ordinance for Noise Standards for Railroad Operations.  Update zoning ordinances to regulate exterior to interior noise near railroads.	Mid-Term												
NOI-2B	Noise MCA	Establish formal Partnership with UPRR Vance AFB and Enid should work with UPRR to adjust train schedules to minimize noise during certain times (at a minimum train horns near housing) while discussing exercise interoperability.  Other Partner: Union Pacific Railroad (UPRR)	Mid-Term	•										•	•
		Public Ser	vices												
PS-1	Access to	Public School at Vance AFB is Impacted by Inst	allation Ac	cess	Req	uirer	nen	ts							
	Access to	the public elementary school on base has been ors. These impacts have also altered parents' abil	impacted b	y th		AL ID								gs, af	ter
PS-1A	Access to	the public elementary school on base has been	impacted b	y th		AL ID								gs, af	ter
PS-1A PS-2	Access to contractor school st Study Area	the public elementary school on base has been ors. These impacts have also altered parents' ability and events.  Consider Redrawing Fenceline Further Study the feasibility of redrawing the Vance AFB fenceline to go around Eisenhower Elementary School so that it is not within the fenceline.  A Need for Enhanced Child Care Near Vance AFB	impacted b lity to acces Mid-Term	y th	e ins	AL ID	tion	for s	choc	ol relat	ed i	mee	ting	•	
	Access to contractor school st Study Area	continuous characteristics the public elementary school on base has been ors. These impacts have also altered parents' ability and events.  Consider Redrawing Fenceline  Further Study the feasibility of redrawing the Vance AFB fenceline to go around Eisenhower Elementary School so that it is not within the fenceline.	impacted b lity to acces Mid-Term	y th	e ins	AL ID	tion	for s	choc	ol relat	ed i	mee	ting	•	

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PS-3A	Study Area	Conduct a Feasibility Study to Assess Viability of Public Transit onto Vance AFB.  Conduct a transportation feasibility study to quantify the possibility of public transit to increase accessibility to Vance AFB. The study should evaluate trip generation including origin and destination pairs; driver peak trip periods; and cost, management, and funding of a transit system that provides access to Vance AFB.	Mid-Term	•									•	
PS-3B	Study Area	Carpool Program  Investigate the possibility of establishing a voluntary Carpool Program for military personnel and their families.	Short- Term											
PS-4	There are available	blic Transportation Options and Alternative Mode e limited public transportation options and altern for community members, especially young airme ere is a partnership opportunity for rideshare serv	native mode en without	es of	trar	spor	rtatio	on, si	uch a		-			
PT-4A	Study Area	Expand Pedestrian and Bicycle Opportunities to Connect the Base with the Surrounding Community  Work to receive funding for the Southgate Lane Trail through a BUILD Grant or DoD Innovative Readiness Training.	Long- Term	•									0	
PT-4B	Study Area	Rideshare Programs  Work with private rideshare programs, such as Uber and Lyft, to coordinate drop off / pick-up locations near the installation.  Other Partner: private rideshare companies	Short- Term										•	
		Also see PS-4A to address this issue.												
PT-5	Currently business	a Lack of Higher Education Opportunities for Mi y, there is only one educational institution in the , nursing, or other technical areas. This forces ma ould impact the ability to retain educated personr	region that iny resident	pro	vide	s ass	ociat	e's c	r ba	chelor	s deg	rees	in	

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PT-5A	Study Area	Promote Online Courses  Promote and encourage the use of online course resources that are provided by universities and colleges in the state.	Short- Term											
		Roadway Ca	apacity											
RC-1	from Van Military	About Maintenance Issues with Garfield Count ice AFB operations from tenant units originating fro impact on local roads. There is a need to fur	m Vance A	ΛFB	i.e.	con	voys	s, co	-					
RC-1A	Study Area	Keep Roads Moistened Water trucks should be used on a regular basis, especially during high-volume training times, to help prevent roads from cracking and becoming damaged from heavy use.	Ongoing				•							
RC-1B	Study Area	Pursue Defense Access Road Designations Vance AFB should work with Garfield County to pursue DAR designations for the roads used by military traffic to receive federal funding to assist with upkeep of the roads.	Long- Term				•						•	
RC-2	The Soutl	h Gate on Vance AFB that was Built to Support in Gate was built as a result of the 2005 Base Realized due to manpower and funding constraints. Partnership opportunities for limited use.	lignment a	nd C	losu	re (B	RAC	2005	5). Tł	ne gate	remai		ate a	and
RC-2A	Vance AFB MCAOD	Coordinate and budget for Gate Improvements Identify, and budget for, necessary improvements to achieve AT / FP and more efficient functionality of egress / ingress points at the South Gate.  Other Partner: JLUS Implementation Coordination Committee	Mid-Term										•	

**Table 7. JLUS Strategies** 

	LOS Strate	U												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
RC-2B	Study Area	Conduct a Traffic Study  Conduct a traffic study to quantify demand cycles and address alternatives such as the reopening of the South Gate.  Other Partners: Oklahoma Department of Transportation, Northern Oklahoma Regional Transportation Planning Organization	Long- Term											•
RC-3	at Certair The grow installation changes of	that the Paving of West Southgate Road Will Inc a Locations th of communities, including the City of Enid arc an, have resulted in changes to traffic patterns a occur, there is a need to evaluate traffic commutation in the JLUS Study Area.	ound Vance nd necessar	AFB y up	, and	d the	evo o roa	lutio adwa	n of ıys. <i>F</i>	operati	ons at nued g	the grov	vth a	and
RC-3A	Study Area	Transportation Improvements / Expansions The City of Enid should monitor capital improvement projects to ensure roadway capacity is sufficient to meet local and regional mobility needs without causing growth inducement to areas near Vance AFB.	Ongoing	•										
RC-3B	Study Area	Conduct Traffic Impact Analysis  Vance AFB should work with the Oklahoma  Department of Transportation and the City of Enid to develop a traffic impact analysis to quantify impacts from increased traffic and future Level of Service along Southgate Road.  Other Partner: Oklahoma Department of Transportation	Mid-Term										•	
RC-4	There is a	raffic Configuration Adjacent to Vance AFB Ma need to consider the possible reconfiguration of fic mistakenly being directed toward the north 6	f the Clevel	and	Stre	et in		ectio	n wi	th Sout	hgate	Roa	d to	
RC-4A	Vance AFB MCAOD	Coordination on Access Point Work with the City of Enid to ensure that there is adequate queuing space and traffic control are provided at actively used entry gates into Vance AFB.	Mid-Term											

**Table 7. JLUS Strategies** 

	JLUS Strate	B103													
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area		Vance Development Authority	Enid Public Schools	Vance Air Force Base	Other
RC-4B	Vance AFB MCAOD	Cleveland Street and Southgate Road Intersection Reconfiguration Determine if military can reconfigure the Cleveland Street intersection with Southgate Road via DAR. Other Primary Partner: DAR	Mid-Term											•	•
RC-5	Snow ren There are Southgat	ance of Local Roads can be an Impediment to Vanoval is limited in the City of Enid, due to a lack of specific locations where snow and ice removal a Road/Gott Road and West Rupe Avenue/South and Vance AFB should be prioritized for requi	of equipmen can be a ha n Cleveland	nt, a zard Stre	nd o I to s et in	nly h afe v	ighv ehic	vays le op	erat	ions,	incl	udin	g th	e	
RC-5A	Vance AFB MCAOD	Coordinate Road Maintenance with the City of Enid  Vance AFB should coordinate snow removal with the City of Enid during snow storms.	Mid-Term												
		Safet	у												
SA-1	Vance AF to affect capabiliti criteria, r	Configuration and Supporting Infrastructure Lim B has only one instrument runway (center runw airfield operations during inclement weather or es are required. Additionally, the proximity and secessitating the air force construct a replacementational needs.	ay; 17C/350 during othe configuration	C) fo er sit	r all- uation	wear	ther vher e ex	oper e Ins istin	atio trum g rur	ns. Th nent F nways	is h ligh vio	ias th it Rul lates	les ( air	IFR) field	
SA-1A	Study Area	Identify Impacts to Runway Assess and document the impact to the Vance AFB mission that are resulting from runway unavailability due to weather related issues and other situations where IFR would be required.	Short-Term												
SA-1B	Study Area	Runway Reconfiguration Identify and budget for the reconfiguration of the Airfield as provided in the Vance AFB Installation Development Plan.	Mid-Term												
SA-1C	Study Area	Identify Other IFR Opportunities Consider opportunities at Woodring Regional Airport for additional IFR capacity.	Mid-Term												

**Table 7. JLUS Strategies** 

Issue / Strategy ID #		Strategy  Concern with Encroachment from Woodring R  need to analyze/overlay AF criteria with Woodr	_	-	-			eria Grant County	Alfalfa County	Metropolitan Area Planning Commission		Enid Public Schools		Other
SA-2A	efforts wi	th the City of Enid do not inadvertently constrict Convey Concerns to the Federal Aviation Administration  Document impacts to airport growth including constraints resulting from military airspace and submit to the Federal Aviation Administration for consideration and possible remedies.  Other Partners: local airports constrained by military airspace	Ongoing											
SA-2B	Woodring Regional Airport MCAOD	Develop an Airport Master Plan  The City of Enid should consider creating an Airport Master Plan for Woodring Regional Airport and incorporate military aviation operations in the area and establish military compatibility policies.	Long-Term	•										
SA-3	<b>Operatio</b> Vance AF	ance AFB Low Level Flight Routes have had to (	a need to	asse	ss re	elatic	nshi	p wi	th Al				eppa	rd
SA-3A	MTR MCA	Quantify the Impact of Loss of Military Airspace Conduct a study on the impact of reduced capacity of military airspace on the training missions at Vance AFB. quantify the impact on training hours, cost, and risk to viability of Vance AFB. reach out to other military users of these low-level flight routes and Vance AFB to include quantified impacts on their mission and include in results.  Other Partners: Altus AFB; Sheppard AFB	Mid-Term											
SA-4	There are	es at Vance AFB and Kegelman AAF Extend Out approximately 128 acres of the CZ that are outs nder the control of the Air Force.								\AF fer	nceline	s an	d wh	nich

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
SA-4A	Safety	Consider Prioritization of Land Acquisition	Mid-Term											
	MCA	Consider reprioritizing resources to purchase property within the CZ or assess feasibility of working with the City of Enid to purchase the property and provide the Air Force an easement for the property.												
SA-4B	Safety MCA	Update Plans and Amend Regulations with Air Force Recommended Land Uses	Mid-Term											
		Alfalfa County and Garfield County should review their zoning ordinance and amend as necessary to incorporate Air Force recommended land use limitations and standards in the CZs.												
SA-4C	Safety	Investigate New Flight Pattern for T-X Aircraft	Safety											
	MCA	Vance AFB should investigate if there will be a new flight pattern for the T-X aircraft. Vance AFB should coordinate with JBSA Randolph to obtain their research and data that they have on their new T-X flight tracks and proposed Airfield Safety Zones (CZ, APZ I, APZ II) pattern that is based on the Navy AICUZ Instructions.	MCA											
SA-5		a Concern with Homes Located North of the Var			-									
		e homes located to the north of Vance AFB that w	_										ost l	ikely
SAFA		f encroachment and should be assessed and crite			Tut	ure (	ity/(	Journ	ιγ ρι	anning	upuat	es.		
SA-5A	Safety MCA	Land Use Controls in Safety Zones  The City of Enid should review current land use controls within Vance AFB safety zones and develop revisions to the land use regulations to address land use compatibility in the safety zones.	Mid-Term											
SA-6		FB has a BASH Challenge with Water Fowl and o												
	and asph future si bird can	B is within the flight path of various birds. Bird a halt millings, are located on and around the instal ting of a new landfill could pose additional BASH. nons), they are not always effective. In addition, t I to minimize BASH, may add additional attractan	lation, incre While Vand the constru	easii ce A	ng th FB u	ie po ses v	tent ario	ial fo us te	r bir chni	d aircra ques to	aft stri haze	kes. bird	The s (e. <sub>{</sub>	g.

**Table 7. JLUS Strategies** 

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Enid Public Schools	Vance Air Force Base	Other
SA-6A	BASH MCA	Control Bird and Wildlife Attractants Near Base  Work directly with local jurisdiction and other appropriate agencies on control of bird and wildlife attractants in the vicinity of the base and within flight paths.  Other Partners: US Department of Agriculture, Oklahoma Department of wildlife Conservation	Ongoing										•	
SA-6B	BASH MCA	BASH Consideration in Jurisdiction or Agency Projects  All projects sponsored by a local jurisdiction or agency should consider bird attractants and require consultation with Vance AFB representatives on the review and mitigation of significant direct and indirect features that may be generated through the approval of development proposals.	Ongoing										•	
SA-6C	BASH MCA	Increase Surrounding Landowner Awareness  Develop a detailed outreach and educational program to inform surrounding land owners on the impacts, size, and effects of BASH and outline compatible solutions and techniques to minimize conflicts.  Other Partner: landowners	Short- Term										•	
SA-7	The Drur southwe	with Drummond Flats Wildlife Management Ard mmond Flats Wildlife Management Area (WMA) i st of Vance AFB, and under portions of the T-38 of at the Drummond Flats WMA poses a potential	s a 4,800-a outside dov	cre s	site l	ocato atte	ed a <sub>l</sub> rn. T	ppro		-			f	
SA-7A	BASH MCA	Consultation with the Air Force The Oklahoma Department of Wildlife Conservation should consult with the Air force about the type of wetland restoration project that is planned for Drummond Flats Wildlife Management Area. Other Partner: Oklahoma Department of Wildlife Conservation	Short- Term											•

## **Table 7. JLUS Strategies**

Table 7	ILUS Strate	gies												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development Authority	<b>Enid Public Schools</b>	Vance Air Force Base	Other
SA-8		actants Nearby Kegelman Auxiliary Airfield (AAI n AAF has a BASH challenge with waterfowl and o		due	to lo	ocal a	attra	ctan <sup>.</sup>	ts. O	f partic	ular co	nce	rn ai	re
	_	water, which can attract large birds such as the								-				C
	streams o	an also create fish kills, which, in turn, attracts v	ultures and	gul	ls.	l	l				I			
		Also see Strategy SA-6A, SA-6B, SA 6-SA-6C to address this issue.												
SA-9	The City of Enid has Identified an Unpaved Road as a Truck Route which has the Potential to Increase Truck Traffic  Near the Vance AFB Entrance in the Clear Zone													
		Vance AFB Entrance in the Clear Zone B entry off of Southgate Road is impacted by Cit	v of Enid tru	uck i	route	es co	nned	cted	to U	S 81.				
SA-9A	Study Area	Seek Support to Improve Traffic Flows Across Southgate Road	Long- Term								•		0	0
		Seek additional and alternative sources of funding from the State for improvements to Southgate Road.  Other Partner: Oklahoma Department of												
		Transportation												
SA-9B	Study Area	Seek Support to Improve Traffic Flows Across Southgate Road	Long- Term	0										
		Determine if DAR may be leveraged for any repairs or traffic study / reconfiguration to off-base roads deteriorated as a result of construction activity												
		Other Primary Partners: DAR												
		Scarce Natural	Resource	S										
SNR-1		that Current Availability of Water May Impact \ B has a need for a redundant water source to er		-										
SNR-1A	Vance AFB	Master Plan Update for Potable Water Provision to Vance AFB	Ongoing											
	MCAOD	Continue to update the Water System Master Plan and include considerations for Vance AFB potable water supply.												
SNR-2		that Current Availability of Dedicated Power M												
		need for Vance AFB to have a backup power so			miss	ion c	onti	nuity	<b>'</b> .					
SNR-2A	Study Area	Renewable Power Generation	Mid-Term											

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Fuld Public Schools	Vance Air Force Base	Other
		Investigate opportunities for on base renewable power generation capabilities for critical mission capabilities.												
Vertical Obstructions														
VO-1	There are Vertical Obstruction Concerns with Future Cell Tower Siting in the JLUS Study Area  There is a concern that the development of future cell towers will create obstructions that exceed height restrictions per the DoD Imaginary Surfaces criteria. This is a concern for cell towers in both the City of Enid and Garfield County.													
VO-1A		Amend Zoning Ordinance for Height Hazards Garfield County should amend the zoning ordinance and the City of Enid should amend the Airfield Environs Overlay District in the Zoning Ordinance to specify the Imaginary Surfaces for the Vance AFB airfield.	Mid-Term	•			•							
VO-1B	Vertical Obstruct. MCA	Develop Telecommunications Ordinance The City of Enid and Garfield County should develop a telecommunications ordinance to facilitate consistent, required coordination between multiple stakeholders. At a minimum, the ordinance should include:  •Contact information for all local government and military officials including name, phone number, and email address,  •Identification of suitable and non-suitable areas for telecommunications towers  •Utilization of permit forms to aid in record keeping and formalization  •Decommissioning procedures and contact information  •Options or incentives for operators that collocate  •Validation of proposed tower frequencies	Mid-Term				•							
VO-2	The City o	that might have changed since FAA review  Concern with the Potential Need for Additional  Family currently has three elevated water storage tank. Any future elevated water to	ge tanks. Th	e Ci	ty ha	s ide	ntifi	ed th	ne ne	eed for	at lea	st o		ore

**Table 7. JLUS Strategies** 

	JLU3 Strate	8.00												
Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission				Other
	dictate. Toperation	The siting of additional elevated water tanks may ns.	y create ver	tica	l obs	truct	tions	that	t imp	act Va	nce AF	B fli	ght	
VO-2A	Vertical Obstruct. MCA	Ensure FAA Part 77 compliance when permitting for Tall Structures  The City of Enid and developers should ensure compliance with the FAA's Part 77 for height limitations of structures within navigable airspace.  Other Partner: Developers	Short- Term											
		Also see Strategy VO-1A to address this issue.												
VO-3	There is a Concern with the Koch Fertilizer Plant and Potential Flight Obstructions  Woodring Regional Airport had to negotiate with Fertilizer Plant related to flight patterns and VO. There is a need to define military criteria related to future development to ensure long term operational use for Woodring Regional Airport.													
VO-3A	Vertical Obstruct. MCA	Community Coordination  Work with the community and local farms to educate / solicit feedback on what are some potential flight obstructions.	Ongoing											
		Also see Strategy VO-1A, VO2A to address this issue.												
VO-4	There has	that the presence of wind turbines near Vance as been degradation of Military Training Routes along and the associated vertical obstruction and f	bility to sup	por	t airc		_		-		_		e of	
VO-4A	Vertical Obstruct. MCA	for wind energy conversion systems (WEC), require developers of proposed tall structures (above 200 feet) to report to the FAA if structures are to be located within a MTR.  Other Partner: Federal Aviation Administration	Ongoing											
VO-4B	MTR MCA, Vert	Develop a Web-Based Vertical Obstruction Model for the MTR MCAs.												

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Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	Vance Development	Authority Esid Bublic Schoole	Vance Air Force Base	Other
	Obstruct. MCA	Develop a web-based model to display vertical obstruction guidance within MTRs at Vance AFB.												
		Develop a Web-Based Vertical Obstruction Model  Develop a web-based model to display vertical obstruction guidance within imaginary surfaces at Vance AFB, Kegelman AAF, and Woodring Regional Airport.											•	
		Also see Strategy ED-1A to address this issue.												
		Water Quality a	nd Quanti	ity										
WQQ-1	Communities in the JLUS Study Area Have Challenges with Future Potable Water Supplies including Concerns with the Number of Groundwater Wells in the City of Enid  Much of the water used by communities and farmers is sourced from groundwater wells. The continuous use of the underground aquifers is drawing water levels down and there are challenges with meeting future needs. There are 156 groundwater wells located in the City of Enid that pump groundwater (approximately 20-30 wells are down for maintenance at any given time) from the aquifer potentially resulting in excessive water drawdown. The City is working to address future potable water shortages by implementing the Kaw Lake water pipeline project. The intent is to draw water from the lake, located 70 miles northeast of Enid and pipe it to the City for use by municipal and industrial users to meet the water need for the next 50 years.													
WQQ-1A	Study Area	Develop a Water Master Plan  Develop a water master plan which includes assessment of existing conditions; quantified supply and future demand based on	Mid-Term										•	•

**Table 7. JLUS Strategies** 

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	City of Enid	Town of North Enid	City of Waukomis	Garfield County	Grant County	Alfalfa County	Metropolitan Area Planning Commission	> 9		Vance Air Force Base	Other
WQQ-2	Concern with Kaw Lake Water Pipeline Project which Plans for Water Retention Areas and Water Emergency Storage  The Kaw Lake pipeline project will provide the City of Enid with water resources for the foreseeable future. As currently designed the project includes water retention areas and water emergency storage areas that could be attractants for birds creating a BASH challenge for Vance AFB. There is a need to see if design can be less attractive to large waterfowl, steep embankments and square shape.													
WQQ-2A	BASH MCA	Wildlife Policies Vance AFB should coordinate and collaborate with the City of Enid on the inclusion of additional or revised wildlife policies that incorporate concerns related to BASH and assist in minimizing the risk of bird / wildlife air strikes in areas proximate to military training ranges	Ongoing	•									•	
		Also see Strategy SA-6A, SA-6B, SA-6C to address this issue.												
WQQ-3	There is a	Concern Regarding Water Outflows from Vanc need to ensure there is documented procedure tent and Vance AFB operations.									_			
WQQ-3A	Vance AFB MCAOD	Monitor Drainage Basins  Vance AFB should continue to monitor drainage basins that flow from the base and any changes that occur within them due to operations. This monitoring and associated data could be used by the City of Enid to develop a stormwater mitigation plan.  Also see Strategy LU-5 to address this issue.	Ongoing										•	









