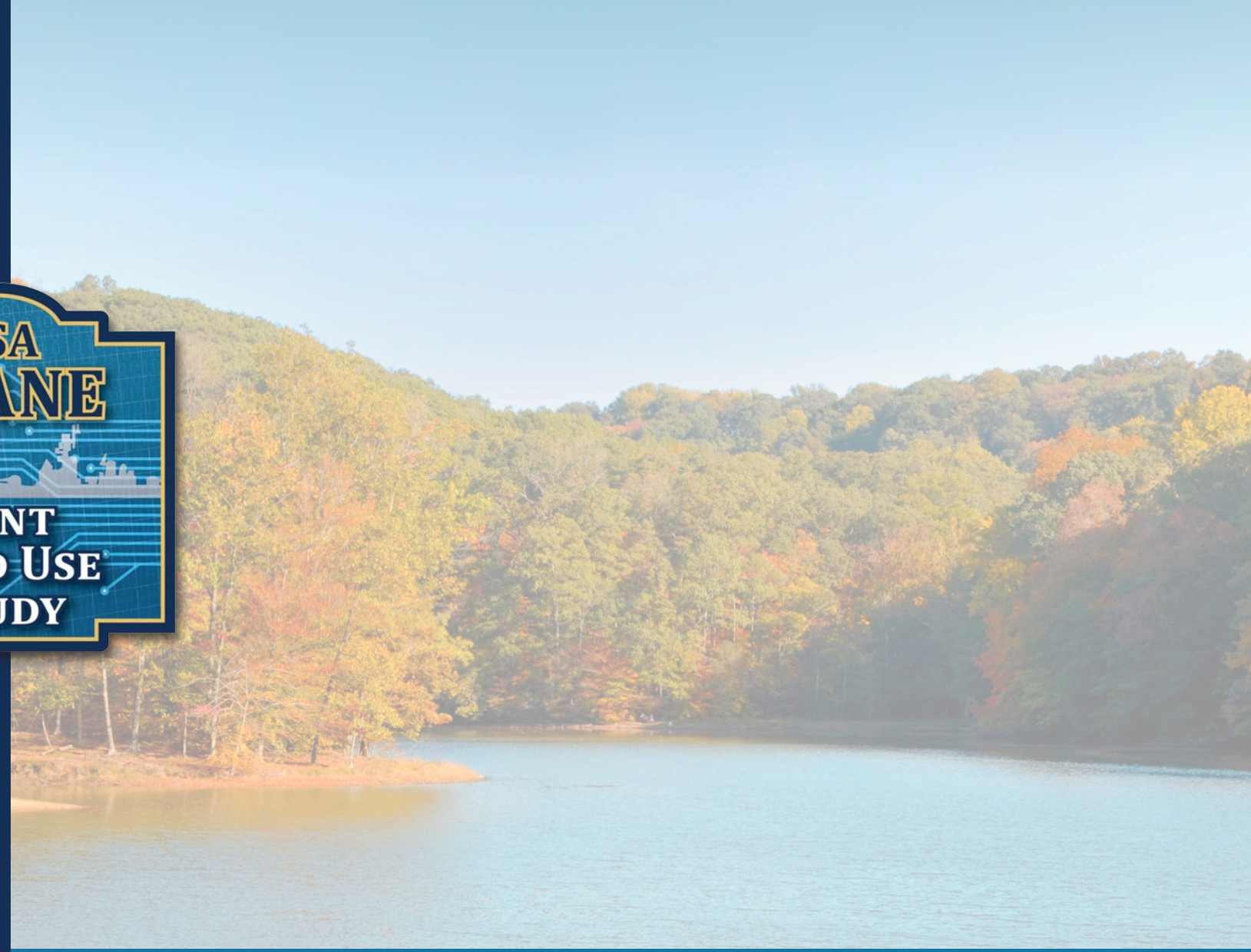
NSA CRANE

JOINT LAND USE STUDY

Joint Land Use Study Report

NSA CRANE JOINT LAND USE STUDY



Matrix DESIGN GROUP

This study was prepared under contract with the Indiana Office of Community and Rural Affairs (OCRA), with financial support from the Office of Economic Adjustment Department of Defense and the following Indiana jurisdictions: Daviess County, Greene County, Lawrence County, Martin County, and Sullivan County. The content reflects the views of the key JLUS partners involved in the development of this study and does not necessarily reflect the views of the Office of Economic Adjustment.

NSA CRANE
JOINT LAND USE STUDY

Prepared Under Contract with:

INDIANA OFFICE OF
Community & Rural Affairs

Indiana Office of Community and Rural Affairs
One N. Capitol Avenue, Suite 600
Indianapolis, IN 46204-2027

Prepared by:

Matrix DESIGN GROUP

February 2017

Please see the next page.

Acknowledgements

Policy Committee

The Policy Committee (PC) served an active and important role in providing policy direction during the development of Naval Support Activity (NSA) Crane Joint Land Use Study (JLUS). The Policy Committee comprised the following individuals:

Brian Blackwell, *Director of Engagement*
NSWC Crane

Commander Timothy Craddock, *Commanding Officer*
NSA Crane

Duane Embree, (Policy Committee Chair) *Executive Director*
Indiana Office of Defense Development

Nathan Gabhart, *Vice-President*
Daviess County Commissioners

Paul George, *President*
Martin County Commissioners

Bill Konyha, *Executive Director*
Indiana Office of Community and Rural Affairs

Ray McCammon, *President*
Sullivan County Commissioners

Ed Michael, *Vice President*
Greene County Commissioners

Jeff Quyle, *President and COO*
Radius Indiana

Don Schulte, (Ex-Officio) *Former Executive Director*
WestGate Authority

Becky Skillman, (Former Policy Committee Chair) *President and CEO*
Radius Indiana

Bill Spreen, *President*
Lawrence County Commissioners

Norman Thomas, *Civilian Executive Assistant*
Crane Army Ammunition Activity

Tony Wichman, *President*
Daviess County Commissioners

Todd Woods, *Community Plans and Liaison Officer*
NSA Crane

Technical Working Group

The Technical Working Group (TWG) served a key role in the development of the Naval Support Activity (NSA) Crane JLUS, providing the overall technical support, review, and guidance of the study. The TWG comprised the following individuals:

Kent Anderson, *Former Vice President of Business Development*
Indiana Economic Development Corporation

Ron Arnold, *Executive Director*
Daviess County Economic Development Corporation

David Bausman, *Director of Policy and Regulatory Affairs*
Indiana State Department of Agriculture

Joseph Carley, *Associate Director for Economic Development*
Office of the Vice President for Engagement, Indiana University

Amy Cornell, *Former Policy Advisory and Counsel*
Indiana Farm Bureau

Lynn Coyne, *President and CEO*
Bloomington Economic Development Corporation

Matt Craig, *Director of Crane Community Support*
Radius Indiana

Janie Craig-Chenault, *Community Activist*

Commander Sean Dalton
NAVFAC Crane

Brad Ellsworth, *President of Vectren Energy Delivery of Indiana – South* Vectren Energy

Brianne Jerrels, *Executive Director*
Greene County Economic Development Corporation

Chuck Martindale, *Economic Development Coordinator*
Hoosier Energy

Misty McCammack, *Regional Economic Development Manager*
Duke Energy

Cullen McCarty, *President*
Smithville Digital

Gene McCracken, *President and CEO*
Lawrence County Growth Council

John Mensch, *Chairman*
Board Westgate@Crane Authority

Pepper Mulherin, *Director of External Affairs*
AT&T – Indiana

Brian Mullen
NSWC Crane

Sam Sarvis, *Deputy Commissioner of Capital Program Management*
Indiana Department of Transportation

Lauren Shipman, *Engineer*
Crane Army Ammunition Activity

Shance Sizemore, *President and CEO*
Lawrence County Growth Council

Acknowledgements

Greg Jones, *Executive Director*
South Indiana Development Commission

Tim Kinder, *Executive Director*
Martin County Alliance for Economic Growth

Dan Kirk, *Planning / Zoning Director / Street Commissioner*
City of Bedford

Neil Krevda, *Indiana Director of Governmental Affairs*
Verizon Communications

Jeremy Sowders, *Economic Development Coordinator*
Hoosier Energy
Former Director of Business Development
Radius Indiana

Deann Talley, *Director*
Sullivan County Redevelopment Commission

Todd Woods, *Community Planning Liaison*
NSA Crane

Indiana Office of Community and Rural Affairs (OCRA)

Matt Crouch
Project Manager

JLUS Consultant

Mike Hrapla
Project Manager

Celeste Werner, AICP
Deputy Project Manager

Rick Rust, AICP, GISP
Technical Manager

Patrick Small, AICP
Lead Planner

Please see the next page.

Table of Contents

Figures and Tables

Please see the next page.

Acronyms

A

APZ	Accident Potential Zone
AQ	Air Quality
AT, AT / FP	Anti-Terrorism / Force Protection

B

BCC	Bedford Chamber of Commerce
BIC	Battery Innovation Center
BIO	Biological Resources

C

CA	Comprehensive Agreements
CAA	Clean Air Act
CAAA	Crane Army Ammunition Activity
CDNL	C-Weighted Day-Night Average Levels
CDU	Crane Division University
CFR	Code of Federal Regulations
CIP	Capital Improvement Program
CNRMA	Commander, Navy Regional Mid-Atlantic
CO	Carbon Monoxide
COM	Communication / Coordination
CSRIC	Communication Security, Reliability, and Interoperability Council
CTC	Concurrent Technologies Corporation
CWA	Clean Water Act
CZ	Clear Zone

D

DAR	Defense Access Road Designations
dB	Decibel
dBA	A-weighted Decibel
DLA	Defense Logistics Agency
DNL	Day-Night Sound Level
DOD	Department of Defense
DSS	Dust / Smoke / Steam

E

EA	Environmental Assessment
EAP	Encroachment Action Plan
EGBTC	East Gate Business and Technology Center
EIS	Environmental Impact Study
EM	Electromagnetic
EMS	Environmental Management Systems
EOD	Explosive Ordnance Disposal
EPA	Educational Partnership Agreement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESQD	Explosive Safety Quantity Distance Arcs

F, G

FAA	Federal Aviation Administration
FCC	Federal Communications Commission
FESA	Federal Endangered Species Act
FONSI	Finding of No Significant Impact
FSC	Frequency Spectrum Capacity

H

HA	Housing Availability
HUD	US Department of Housing and Urban Development

I

I&I	Inflow and Infiltration
I-69	Interstate 69
IBC	Indiana Building Code
IC	Indiana Code
ICRMP	Integrated Cultural resources Management Plan
IDP	Installation Development Plan
IE	Infrastructure Extensions
IEPA	Indiana Environmental Policy Act
IGA	Intergovernmental Agreement
IKC	Indiana Karst Conservancy
ILPA	Indiana Land Protection Alliance
INDOT	Indiana Department of Transportation
INRMP	Integrated Natural Resources Management Plan
IODD	Indiana Office of Defense Development
ISDA	Indiana State Department of Agriculture
IU	Indiana University
IUPUI	Indiana University Purdue University Indianapolis

J, K

JLUS	Joint Land Use Study

L

LAS	Land, Air, and Sea Space Competition
LCEGC	Lawrence County Economic Growth Council
LEG	Legislative Initiatives
LG	Light and Glare
LU	Land Use
LUPZ	Land Use Planning Zone

M

MIDLANT	NAVFAC Mid-Atlantic
MOU	Memorandum of Understanding

N

NAAQS	National Ambient Air Quality Standards
NACo	National Association of Counties
NAVFAC	Naval Facilities Engineering Command
NAVSEA	Naval Sea Systems Command
NAVSUP	Naval Supply Systems Command
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NGO	Nongovernmental Organization
NHP	Naval Hospital Pensacola
NO2	Nitrogen Dioxide
NOAA	National Oceanic and Atmospheric Administration
NOI	Noise
NPDES	National Pollutant Discharge Elimination System
NSA	Naval Support Activity
NSWC	Naval Surface Warfare Center
NTIA	National Telecommunications and Information Administration

O

O3	Ozone
OCRA	Indiana Office of Community and Rural Affairs
OEM	Original Equipment Manufacturers
ONMP	Operational Noise Management Plan
OPNAVINST	Chief of Naval Operations Instruction
OSM	Office of Spectrum Management
OTA	Ordnance Test Area

P, Q

P3	Public-Private Partnerships
PAO	Public Affairs Officer
PC	Policy Committee
PM	Particulate Matter
PM10	Course Particles
PM2.5	Fine Particles
PT	Public Trespassing
PWD	Public Works Department

R

RAICUZ	Range Air Installation Compatible Use Zone
RAMICS	Rapid Airborne Mine Clearance System
RC	Roadway Capacity
RCZ	Range Compatibility Zones
RDT&E	Research, Development, Testing, and Evaluation
REMC	Rural Electric Membership Cooperative
RF	Radio Frequency
ROD	Record of Decision

S

SA	Safety
SAIC	Science Applications International Corporation
SDDCTEA	Surface Deployment and Distribution Command, Transportation Engineering Agency
SDZ	Surface Danger Zone
SIP	State Implementation Plan
SO2	Sulfur Dioxide
SOP	Standard Operation Procedure
SPEA	Indiana University's School of Public and Environmental Affairs
SR	State Route
STEM	Science, Technology, Engineering, and Mathematics
STIP	Statewide Transportation Improvement Program
SWC	Southwest Central

T

TBD	To Be Determined
TSC	Technical Services Corporation
TWG	Technical Working Group

U

UDWI REMC	Utilities District of Western Indiana REMC
UFC	Unified Facilities Criteria
URS	URS Corporation
US	United States
US	US Highway
USFWS	US Fish and Wildlife Services

V

V	Vibration

W, X, Y, Z

WQQ	Water Quality / Quantity

The Naval Support Activity (NSA) Crane Joint Land Use Study (JLUS) is a collaborative planning effort between southwest Indiana jurisdictions and NSA Crane and its Lake Glendora Test Facility (LGTF). These jurisdictions include Daviess County, Greene County, Lawrence County, Martin County, and Sullivan County, and the incorporated and unincorporated communities within them. An organized communication effort between these jurisdictions, NSA Crane, the LGTF, and other stakeholder entities that own or manage land or resources in the region is needed to ensure that future growth around in the installation is coordinated and compatible with current and future military operations.

The NSA Crane JLUS advocates a proactive approach to encourage increased communication about decisions relating to land use regulation, conservation, and natural resource management issues affecting both the community and the military. This study seeks to avoid conflicts previously experienced between the United States (US) military and local communities in other areas of the US and throughout the world by engaging the military and local decision-makers in a collaborative planning process. The intent of the process is to establish and encourage a working relationship among military installations and their proximate communities to act as a team to prevent and / or reduce encroachment issues associated with current and future missions and local growth.

The term encroachment refers to conflicting uses of land, air, water, and other resources that may individually or cumulatively impact the military's ability to carry out its missions. The compatibility factors considered in this JLUS are described in the Compatibility Assessment (Chapter 5 of the JLUS Report or Background Report). A set of strategies to address compatibility concerns was developed upon review of these factors and identification of issues with the communities, NSA Crane, JLUS committees, and the public.

The recommended strategies are based on a toolbox of methods used to address compatibility issues and address the use of 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 to identify compatible land uses and growth management, within and adjacent to, an active military installation. These stakeholders include local community, state, and federal officials, residents, business owners, nongovernmental organizations, and the military. Through the JLUS process, these parties convene to identify existing and potential future issues, and the potential actions that might be carried out to eliminate, mitigate or avoid compatibility conflicts. In addition, the process is intended to establish and encourage a formal, permanent working relationship between local jurisdictions, agencies, NSA Crane and its LGTF.

JLUS Goal and Objectives

The goal of the NSA Crane and LGTF 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 organized in a cohesive outreach program.
- Collaboration. Encourage cooperative land use and resource planning among NSA Crane and LGTF 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 JLUS Study Area.
- Actions. Provide a set of mutually supported tools, activities, and procedures from which local jurisdictions, agencies, NSA Crane, and LGTF 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 government and 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?

A JLUS is helpful to achieve future compatibility between land uses necessary to support the continuation of the military missions at NSA Crane and its LGTF and the increasing civilian development occurring near the installation.

Recognizing the close relationship that should exist between installations and adjacent communities, the Office of Economic Adjustment (OEA) implemented the JLUS program to mitigate existing and future conflicts and enhance communication and coordination among all affected stakeholders. This program aims to preserve the sustainability of local communities while protecting current and future military missions.

Economic Benefit

NSA Crane is the second largest employer in southwest Indiana after the Deaconess Hospital in Evansville, resulting in a significant footprint in the local and regional economy.

In addition to its strategic military value, NSA Crane and its LGTF contribute to both the local and regional economy, serving as the largest employer in Martin County and the surrounding area. Commands at NSA Crane generate more than $2 Million a day in local economic benefit.

According to the Economic Impact Assessment, Commander, Navy Region Midwest Final Report, FY 2009, the economic impact of NSA Crane was $1.7 Billion consisting of:

- Navy payroll of $257.4 Million
- Navy expenditures of $505.2 Million
- Direct, indirect, and induced impacts estimated at $985 Million.

Figure 1 depicts the FY 2009 NSA Crane Economic Impact Assessment.

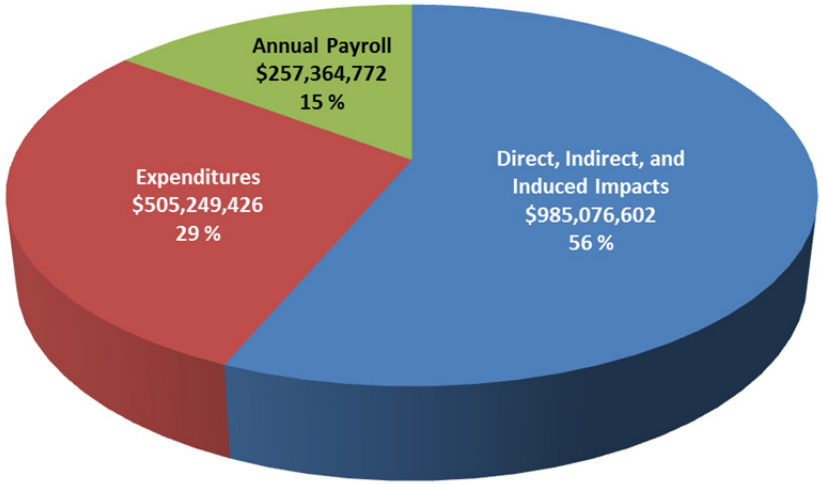
A breakdown of data for the LGTF was unavailable for FY 2009, but available for FY 2014. In FY 2014 the economic impact of the LGTF was approximately $12.5 Million, consisting of:

- $419,000 in fixed personnel salaries
- $11.6 Million in contracts
- Nearly $500,000 in direct customer receipts

Since FY 2012, over $6.5 Million in capital investment has been made in the LGTF.

Source: http://www.radiusindiana.com/news-and-reports/crane-economic-powerhouse; FY14 NSA Crane Economic Impact Report; Team Crane Regional Economic Impact; Sullivan County – Lake Glendora Profile; FY14 Contract Values by County; Economic Impact Assessment, Commander, Navy Region Midwest Final Report, FY 2009

Figure 1. Economic Benefit of NSA Crane



Source: Economic Impact Assessment, Commander, Navy Region Midwest Final Report, FY 2009

Military Strategic Importance

NSA Crane hosts over a dozen tenants, each of which performs different operations to achieve their mission. Primary tenants include the Naval Surface Warfare Center Crane Division (NSWC Crane), and Crane Army Ammunition Activity (CAAA). NSWC Crane comprises 57 percent of the installation population, is the premier naval scientific and engineering institution and largest mission-oriented supported command at NSA Crane. The CAAA is the largest tenant at NSA Crane in terms of land area, occupying over 80 percent of the installation. They maintain ordnance professionals and infrastructure to achieve its mission of receiving, storing, shipping, and manufacturing missiles and ammunition.

Community Activities and Stewardship

NSA Crane and its tenants play an important community role by offering various social and recreational activities. Activities include community outreach programs, professional growth organizations, special events, parades, Boy Scouts of America camping trips, educational science fairs, fire department and police force cross-training and support to local municipalities, blood donations to the Red Cross, significant monetary contributions to area charities, and on-site golfing, fishing, and controlled hunting opportunities. Its continued role in meeting the needs of the military and its good neighbor philosophy has won national recognition and significant environmental and conservation awards.

Source: http://www.navsea.navy.mil/nswc/crane/community/default.aspx

Public Outreach

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 JLUS process included a public outreach program providing a variety of participation opportunities for interested parties.

Stakeholders

An early step in any planning process is stakeholder identification. Informing and involving them 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 NSA Crane and LGTF JLUS included, but were not limited to, the following:

- Local jurisdictions (counties, cities and towns);
- DOD officials (including OEA representatives) and military installation personnel;
- Local, county, regional, and state planning, regulatory and land management agencies;
- Landholding and regulatory federal agencies;
- The public (including residents, businesses and landowners);
- Environmental advocacy organizations;
- Nongovernmental organizations (NGOs).

Policy Committee and Technical Working Group

The development of the JLUS was guided by a Policy Committee and a Technical Working Group comprising community leaders, NSA Crane representatives, Naval Surface Warfare Center (NSWC) Crane Division representatives, Crane Army Ammunition Activity representatives, federal and state agencies, resource agencies, local governments, and other stakeholders.

JLUS Policy Committee (PC). The PC consists of officials from participating jurisdictions, military installation leadership, and representatives from other interested and affected agencies. The PC is responsible for the overall direction of the JLUS, preparation, and approval of the study design, policy recommendations, and draft and final JLUS documents.

JLUS Technical Working Group (TWG). The TWG is responsible for identifying and studying technical issues. Membership includes town and county planners, military planners and staff, business and development community representatives, natural resource protection organizations, and other subject matter experts as needed to help assist in the development and evaluation of implementation strategies and tools. Items discussed by the TWG were brought before the PC for consideration and action.

Public Forums

In addition to the PC and TWG meetings, a series of public forums were held throughout the development of the JLUS. These forums provided an opportunity for the exchange of information with the greater community, assisted in identifying the issues to be addressed in the JLUS, and provided input on the proposed strategies. Each forum included a traditional presentation and a facilitated exercise providing a "hands on," interactive opportunity for the public to participate in the development of the plan. For public convenience, each forum was held in three different locations throughout the JLUS Study Area including one specific to the LGTF Study Area.

Public Outreach Materials

JLUS Overview / Compatibility Factors Fact Sheet / Updates. At the beginning of the JLUS project, a Fact Sheet, or JLUS Update, was developed describing the JLUS program and objectives, methods for public involvement in the process, an overview of the 25 compatibility factors that were analyzed throughout the project, and the proposed NSA Crane and LGTF JLUS Study Area. This Fact Sheet was made available at the workshops for review by interested members of the public and posted on the project website for download.

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

The project website is located at **www.cranejlus.com**. At the completion of the project, all information on the website will be transferred to OCRA to be maintained and ensure future public access to the information.

NSA Crane and LGTF JLUS Website

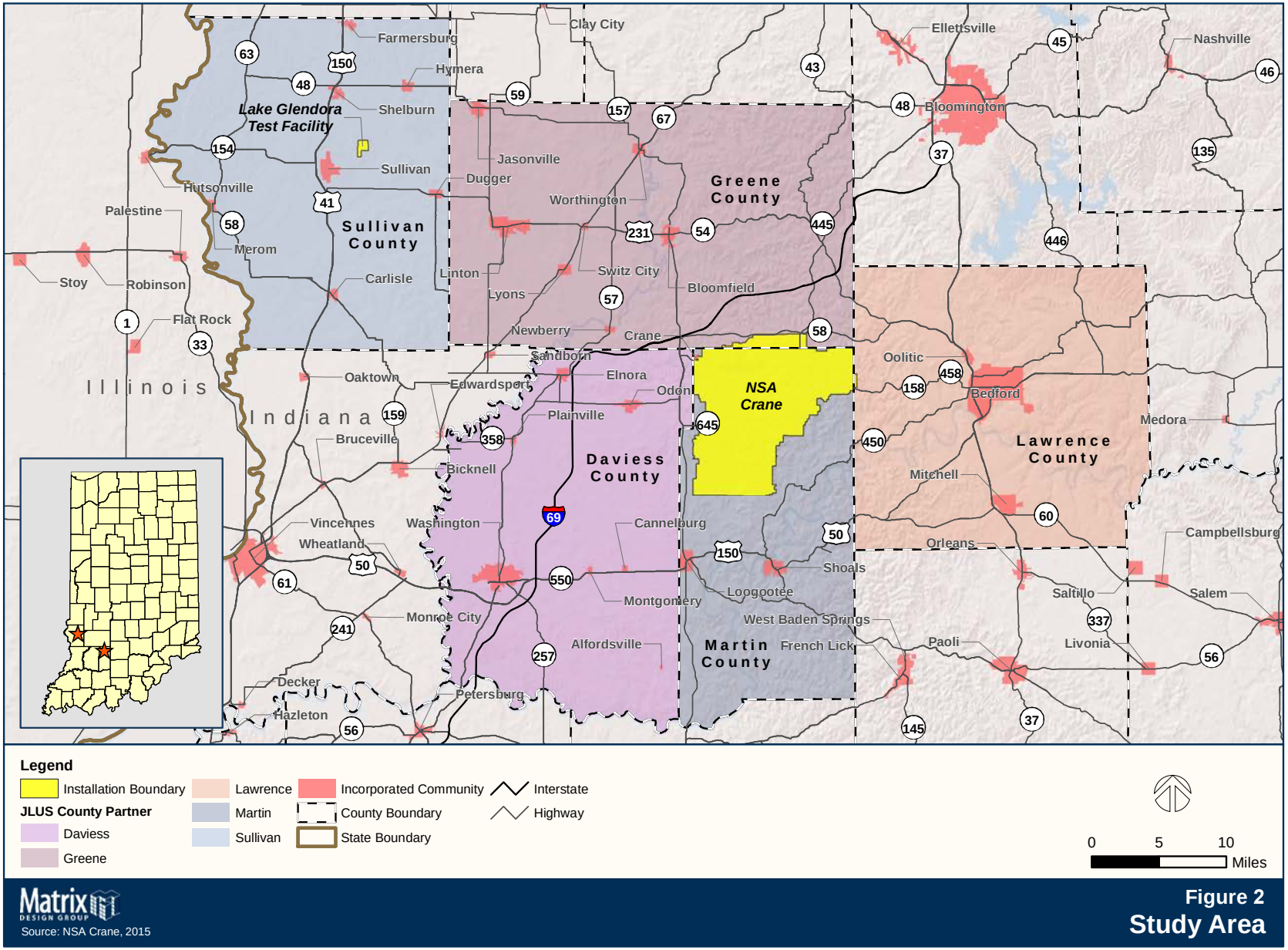
JLUS Study Area

The NSA Crane and LGTF JLUS Study Area is designed to address all land near NSA Crane and its LGTF that may impact current or future military operations or be impacted by operations. Since the JLUS has been developed for two specific geographic locations, there are two distinct sub-study areas within the overall JLUS Study Area:

- The NSA Crane JLUS Study Area including Daviess County, Greene County, Lawrence County, Martin County, and incorporated jurisdictions and unincorporated communities within them, including the cities of Bedford and Loogootee, and the towns of Crane and Shoals.

- The LGTF Study Area including Sullivan County and its unincorporated communities, and the City of Sullivan.

The primary characteristics evaluated in determining the JLUS Study Areas were general compatibility factors associated with land use and development, particularly associated with the Interstate 69 corridor; noise from operations; and the 3-mile military notification area extending beyond the installation boundaries as established by state law. Figure 2 illustrates the NSA Crane and LGTF JLUS Study Area.



Source: NSA Crane, 2015

Figure 2
Study Area

JLUS Implementation

It is important to note that once the JLUS process is completed, the final document is not an adopted plan, but a set of recommended strategies to be used by local jurisdictions, agencies, and organizations in the NSA Crane and LGTF JLUS Study Area to guide future land use decisions to achieve compatibility. Acceptance of the JLUS by stakeholders (i.e., committees, the public, landowners and local agencies) will be sought to confirm their collective support for the identified implementation efforts.

NSA Crane and the LGTF will use the JLUS process as a guide for interacting with jurisdictions on future projects, and managing internal planning processes with a compatibility-based approach. Through this process, stakeholders will make the strategies in the JLUS a reality.

The key to the implementation of the strategies presented in this JLUS is the establishment of a JLUS Implementation Coordinating Committee that will oversee execution of the JLUS. Through this Committee, local jurisdictions, the military, and other interested parties will be able to establish procedures, recommend or refine specific actions for member agencies, and make adjustments to strategies over time.

Please see the next page.

Capturing and describing certain characteristics of the communities in the JLUS Study Area provides a baseline context from which informed decisions can be made when developing compatibility strategies. The goal is to provide information that enables stakeholders to understand population and development trends that have the potential to affect the future of NSA Crane, its LGTF and their missions. This information is intended to be considered with other factors to help decision makers develop consistent, informed planning policies about future development and economic growth of the communities they represent before compatibility issues arise. This section is also intended to advise the military about the types of activities occurring "outside the fence" when considering future missions and operations at NSA Crane and its LGTF.

An analysis of the population and economic trends in the JLUS jurisdictions was conducted to gather baseline information on potential areas of conflict or concern between military operations and civilian uses.

JLUS Community Growth Trends

The following section provides a profile of the counties relative to population growth, housing, median home values, and economic growth trends. These trends illustrate the type of growth which has occurred in the region surrounding NSA Crane and the LGTF, what may be anticipated to occur in the future, and provide valuable insight of where potential incompatibilities between NSA Crane, the LGTF, and the surrounding jurisdictions may develop.

Daviess County

Daviess County had a 2010 population of 31,648 and is home to a large Amish settlement of 725 Old Order Amish families, making up more than ten percent of the population. There are seven incorporated communities in the county, including the county seat –the City of Washington, and the towns of Odon located approximately four miles west of the NSA Crane property and Montgomery.

The primary industries in Daviess County are manufacturing, education, healthcare, and retail with the manufacturing industry comprising 22.2 percent of the county's workforce. Although NSA Crane is not located within Daviess County, the installation supports the county's economy with the WestGate@Crane Technology Park. At buildout, the WestGate@Crane Technology Park could employee up to 3,000 people with nearly 2,100 jobs located in the Daviess County portion of the Park.

Greene County

Greene County, located north of NSA Crane, had a 2010 population of 33,165. The county includes the town of Bloomfield approximately 10 miles north of NSA Crane. A majority of the land – 86 percent is undeveloped, agricultural, or forestland, with 6 percent public land, and the remainder residential.

Coal mining began in the county in the 1840s, which progressed from pick and shovel to mine shafts in the late 1880s to strip mining that occurs today. Along with the coal industry, Greene County has also begun incorporating alternative energy. The primary industries in Greene County are education, healthcare, manufacturing, and retail with the education and healthcare industry comprising 22.2 percent of the county's workforce. Greene County is part of the tri-county area initiative for the WestGate@Crane Technology Park.

Lawrence County

The 2010 population of Lawrence County was 46,134. The county is located east of NSA Crane and has two cities, Bedford and Mitchell, and one town, Oolitic. The City of Bedford is the county seat and approximately 15 mile east of NSA Crane.

The county became known as "Limestone County" due to the large presence of limestone in the area and its quarrying and carving history that began in the early 1800s. Limestone remains an important part of the county's economy along with the primary industries of education and healthcare, manufacturing, tourism, and retail. The education and healthcare industry

comprises of 23.7 percent of the county's workforce. The county is working to develop more industries associated with NSA Crane, focusing on attracting industrial and technology companies to the East Gate Business and Technology Center in Bedford.

Martin County

Martin County has been home to NSA Crane since it was established in 1940 during World War II, covering approximately 28 percent of the county's land area. The majority of the remaining land consists of agriculture and forest, including the Hoosier National Forest and Martin State Forest. As of 2010, the Martin County population was 10,328, which is dispersed through the county in unincorporated communities or concentrated in the City of Loogootee and the towns of Shoals and Crane. The City of Loogootee is located at the intersection of US Route 231 and US Highway 50, approximately 16 miles south of NSA Crane.

The county's economy was historically supported by agriculture; however, the rich natural resources led to multiple economic ventures including stoneware and glass production, tourism associated with the railroad, and mussel harvesting from local rivers used to fabricate buttons. The primary industries in Martin County are education, healthcare, manufacturing, and retail with the education and healthcare industry comprising 17.6 percent of the county's workforce.

Sullivan County

Sullivan County had a 2010 population of 21,475. There are six towns in the county and one city, Sullivan. NSA Crane's 460-acre LGTF is located in Sullivan County, approximately 2 miles northeast of the City of Sullivan and a little more than a ½ mile east of Lake Sullivan. With restricted access to the public and a FAA airspace restriction, the LGTF is a major asset for testing in a controlled environment.

Sullivan County is also the home of the Wabash Valley Correctional Facility, the Merom Power Station and the Bear Run mine, the largest surface mine in the eastern United States. Coal mining has been an important part of the county's economy that continues today along with primary industries of education, healthcare, manufacturing, and retail. The education and healthcare industry comprises of 22.1 percent of the county's workforce. Throughout the summer different communities hold festivals in different parts of the county often featuring markets, crafts, and food which draw tourists to the county.

Population Trends and Projections

Population projections show the overall population trends throughout the JLUS Study Area. Population is relatively stable, with most counties either increasing or decreasing slightly. Daviess County is one exception which grew at about the same rate as the State of Indiana. The WestGate@Crane Technology Park is expected to boost Martin County's population by about 594 persons and Greene County's population by another 3,009 persons by the year 2030. Table 1 shows the population in 2000 and 2010 and the percent increase over the decade.

Table 1. Study Area Population from 2000 to 2010

Jurisdiction	2000	2010	2000-2010 Change
Indiana	6,080,485	6,483,802	6.6%
Daviess County	29,820	31,648	6.1%
Greene County	33,157	33,165	.03%
Lawrence County	45,922	46,134	.46%
Martin County	10,369	10,334	-.34%
Sullivan County	21,751	21,475	-1.3%

Source: US Census Bureau, 2000-2010

County population growth estimates are provided in Table 2.

Table 2. Study Area Population Projections from 2010 - 2030

Jurisdiction	2010 Population	2020 Projection	2030 Projection	Percent Change (2010-30)
Indiana	***6,483,802***	***6,852,121***	***7,143,795***	***10.2%***
Daviess County	31,648	34,096	36,524	15.4%
Greene County	33,165	32,920	32,321	-2.5%
Lawrence County	46,134	45,815	44,878	-2.7%
Martin County	10,334	10,309	10,120	-2.1%
Sullivan County	21,475	21,011	20,429	-4.9%

Source: US Census Bureau, 2010, Indiana Business Research Center

Population projections show a slight decline in population in most of the counties with the exception of Daviess County, which is expected to increase in population. Sullivan County is expected to decrease in population the most over the next 10 to 15 years, losing about 1,000 people. However, it is undetermined what overall impact the WestGate@Crane Technology Park will have on the future population in the area.

Economic Growth Trends

The historic economic engine of southern Indiana has been the export of agricultural commodities throughout the US, which continues to play a significant role in the local economy. In addition to agriculture, the Department of Defense (DOD) through NSA Crane is a major area employer, accounting for approximately four percent of the Study Area population. While the geography and climate of southern Indiana has been ideal for agriculture, the number of agriculture-based jobs has been in steady decline. The resulting diversification of the economy in recent years has provided alternative sources of employment in the sectors of manufacturing, government, education services, healthcare, social service, and retail trade.

Development Overview within the Study Area

NSA Crane Study Area

Land uses throughout the JLUS Study Area range from open space and agriculture to the residential and population centers of Bedford, Odon, Bloomfield, Washington and Loogootee, with varying sizes of employment and population levels throughout.

The area surrounding NSA Crane is a mix of agriculture, rural residential, and recreation / open space uses. Urban development exists in the towns and cities surrounding NSA Crane, including residential, commercial, retail, and industrial uses. Development surrounding NSA Crane is characterized as:

North

North of NSA Crane in Greene County is where future development is focused along US Route 231, around WestGate@Crane Technology Park, and the I-69 corridor. Future land use opportunities include highway commercial development near the I-69 / US Route 231 interchange, buildout of uses in the WestGate@Crane Technology Park, and commercial / industrial and residential uses along US Route 231 from SR 54 to Worthington.

East

Directly east of NSA Crane is the Hoosier National Forest which limits future development. East of the Forest in Lawrence County is the City of Bedford, which plans to develop and expand into the city's one-mile fringe.

Future plans in Martin County include residential development in scattered locations on the flat ridges of eastern Martin County focused where existing residential concentrations exist.

South

The southern border of NSA Crane is bounded by the agriculture, open space, and forests of Martin County. Future growth and development is not currently planned in this area.

West

Future development plans in Martin County west of NSA Crane are targeted largely along US Route 231 near Loogootee and West Boggs Lake and north of the Town of Crane. Future industrial and commercial areas are planned at the WestGate @Crane Technology Park and along US Highway 50, US Route 231, and SR 550 around Loogootee. Future residential areas are planned along US Route 231 north and south of Loogootee and along US Route 231 north of West Boggs Lake.

The WestGate@Crane Technology Park, established in 2006 as a tri-county initiative encompassing parts of Daviess, Greene, and Martin Counties, is located approximately 1 mile west of the NSA Crane Gate, and immediately north of the Town of Crane. The Park has experienced steady, consistent growth with more than 34 tenants, 17 buildings, and 730 employees as of August 2014. With the construction of I-69, future development and population growth is expected in the surrounding area. Several utility improvements including water and wastewater facilities have been made in the area to facilitate buildout of the Park and support area growth.

Lake Glendora Test Facility Study Area

Land uses throughout the LGTF JLUS Study Area range from open space and agriculture to rural residential and urban. The City of Sullivan to the southwest of the LGTF includes an urban mix of residential, commercial, and industrial uses. Between the LGTF and city to the west is Lake Sullivan – a constructed lake with a public park on the southwest side and pockets of single-family, large-lot residential subdivisions, open space and agriculture along the remaining edges. East and southeast of the LGTF was 3,500 acres leased to the Indiana Department of Natural Resources from Peabody Energy designated as the Minnehaha Fish and Wildlife Area. In April 2016 the lease from Peabody Energy was not renewed. Dotted throughout the area surrounding the LGTF are active coalbed methane gas wells.

Located in southwest Indiana, the Naval Support Activity (NSA) Crane Joint Land Use Study (JLUS) Study Area spans the counties of Daviess, Greene, Martin and Lawrence, while the Lake Glendora Test Facility (LGTF) Study Area includes Sullivan County and the City of Sullivan. NSA Crane occupies the northern third of Martin County, extends into Greene County to the north and Lawrence County to the east, and is adjacent to Daviess County to the west.

Identifying and describing the various activities performed on the military installation provide valuable insight into the importance of NSA Crane and the LGTF as strategic national defense assets. This information enables stakeholders to make informed decisions about the future development of NSA Crane, the LGTF, and the economic growth of the communities proximate to the installation, which could potentially impact the existence and future role of the facility.

Naval Support Activity Crane Installation Setting

NSA Crane is located in southwestern Indiana, approximately 70 miles southwest of Indianapolis and approximately 90 miles northeast of Evansville, Indiana. NSA Crane is the third largest US Naval installation by area in the world covering more than 97 square miles (62,000 acres). The installation is heavily forested and consists of undulating terrain, six creeks, and the 800-acre Lake Greenwood. The installation includes an expansive transportation network of 124 miles of roadway and 90 miles of railroad.

Naval Support Activity Crane Installation

NSA Crane mostly has numerous facilities for different research and development work conducted by tenants. The majority of the facilities are concentrated in the "downtown area," in the northwestern part of the installation. Other areas of the installation include a Special Weapons Assessment Facility, Demolition Range, Ordnance Test Area, and Ammunition Burning Area. Ordnance storage occupies over 51,000 acres totaling over 80 percent of the installation land area.

Naval Support Activity Crane Future Development

Development of currently vacant land at NSA Crane has two major constraints – Explosive Safety Quantity Distance (ESQD) arcs and slopes greater than 15 percent. Three areas have been identified by the Installation Development Plan to expand or add missions including the downtown district, the technology corridor district, and the warehouse district. The plan identified approximately 624 acres of land available for future expansion and redevelopment. Infill development may be possible through the demolition of existing obsolete facilities.

Lake Glendora Test Facility Installation Setting

The Lake Glendora Test Facility, part of NSA Crane under the operation of the Naval Surface Warfare Center Crane Division (NSWC Crane), is located in Sullivan County, approximately 30 miles northwest of NSA Crane. Located in rural Sullivan County, the LGTF is surrounded by agricultural land, forest, and a small cemetery at the northwest edge of the property.

Approximately one half-mile west of the LGTF is Lake Sullivan, a local recreational area surrounded by single family residential development and the multi-use Sullivan County Park and Lake.

Lake Glendora Test Facility Installation

The LGTF comprises 460 acres containing three different ranges on a 100-acre lake for a variety of testing purposes. The facility is used for hydroacoustic testing, underwater explosives testing, and surface burns. It is a unique area in that it has been pre-approved through the environmental assessment process with no constraints, placing it in high demand for testing. The facility is the only government testing facility with environmental, Federal Aviation Administration (FAA), Electronic Warfare, and Laser Testing approvals or capabilities all at one site. Testing at the LGTF occurs Monday to Friday between 8:00 am and 5:00 pm.

Lake Glendora Test Facility Future Development

No additional facilities are proposed at the LGTF. An Environmental Assessment (EA) is currently in process to consider expanding testing capability to include an underwater launch program.

Military Operations

NSA Crane hosts over a dozen tenants, each of which performs different operations to achieve their mission. The two largest and most active tenants at NSA Crane are NSWC Crane and the Crane Army Ammunition Activity (CAAA). Mission activities include disposal of excess or obsolete ammunition and explosives, use of ordnance, high-powered electromagnetic (EM) energy systems, high-power lasers, and chemical / biological simulants. The disposal is critical for the safety of the ammunition stockpile and maintaining storage space for current items. The use and testing of these systems helps to ensure their safe operation for the users, while developing and improving better delivery systems and accuracy of weapons.

Naval Surface Warfare Center Crane Division Operations

NSWC Crane's operations include working with power systems and electronic interconnect technology utilizing the High Energy Test Facility and the Electrochemistry Engineering Facility. The strategic mission includes working with technology and infrastructure protection, flight systems, radar systems, platform and launch systems, and power and circuit board technologies. The electronic warfare mission involves support for all airborne, surface, sub-surface, and ground operations. Special missions at NSWC Crane involve working with special munitions and weapons, sensors and communication, mobility and maneuverability, and small arms operations and maintenance training. NSWC Crane has extensive ordnance test capabilities, including ordnance/energetic materials assessment services, engineering analysis and assessment, and maintenance and repair services.

NSWC Crane operates the Ordnance Test Facilities and conducts numerous types of testing and engineering services. This includes climatic testing, dynamic testing, and material evaluation.

Lake Glendora Test Facility

The LGTF is made up of three independent water ranges. Hydroacoustic testing is conducted throughout the lake to collect acoustic data. Underwater explosive testing is conducted, which includes functional tests of underwater explosives, lot acceptance testing, and static/dynamic testing to stop small watercraft. Surface burns conducted at the facility consist of the testing of various signal flares and marine markers.

A 2007 Environmental Assessment (EA) expanded facility capabilities to include hydroballistic testing, surface burst testing, underwater surface launch testing, less than lethal firing capability, and laser testing. Unmanned aerial vehicles (UAVs) are also tested at LGTF.

Crane Army Ammunition Activity Operations

CAAA operations involve the storage, distribution, demilitarization, and production of munitions, which require specialized equipment and related facilities. CAAA covers over 51,000 acres of land including 94 miles of active rail and 124 miles of paved roads.

CAAA stores 25 percent of the DOD's national ammunition in 1,800 magazines – ammunition storage areas, throughout the installation. It is one of four primary distribution installations within the DOD.

Ammunition distribution is shipped and received by both rail and truck. However, recently CAAA has been shifting its distribution to trucks. CAAA sends out 12,000 trucks a year, which utilize the local roads and highways. The defect rate in the area of manufacturing is closely monitored to ensure that only quality goods are shipped. The CAAA's record for the delivery of munitions to the field is exceptional with a 99 percent on-time delivery rate. They ship a variety of products throughout the world to other military installations, government agencies, and private industry.

Most demilitarization activity involves open detonations, which take place from spring through fall at the Demolition and EOD Range. Demilitarization experts work hard to recycle and reuse as much of the ammunition as possible. The CAAA also maintains the only operational white phosphorous demilitarization conversion plant in North America. The demolition range is typically active from April to November and restricted daily from a half hour after sunrise to a half house before sunset. Because weather impacts the distance noise travels, range activity is limited to premium weather days when it is sunny and the wind is below a certain limit. There is a limit to two events per day, allowing approximately 120 clear days per year for events. On average, the range is operational 85 days of the year with 85 percent of use between Monday and Thursday.

Production at CAAA involves the manufacturing of pyrotechnic candles, flares, naval smoke and signal devices, along with a variety of other important products. Finished items range from detonators weighing 20 grams to 40,000-pound cast shock test charges.

Naval Support Activity Crane Mission Footprint

Research and development activities conducted by NSWC Crane and CAAA at NSA Crane generate a number of impacts that can affect the health, safety, and overall quality of life in the surrounding community. Conversely, the military mission is susceptible to hazards created by certain nearby civilian activities and land use development that may locate noise sensitive uses in high noise zones, locate development in sensitive viewsheds, or allow for the gathering large numbers of people in areas deemed vulnerable to potential safety incidents.

A military mission footprint is described as the area outside the installation boundaries on which military activities can have an impact or be impacted by civilian uses. Several elements or mission profiles comprise the mission footprint that extends outside NSA Crane's boundaries.

The following outlines the different elements or mission profiles that contribute to the NSA Crane mission footprint:

- Special Use Airspace
- Noise Contours for Weapons and Explosive Detonations
- Explosive Safety Quantity Distance (ESQD) Arcs
- Surface Danger Zones

Special Use Airspace

While NSA Crane does not have an airfield and only minimal flight activity (using the onsite helipad), restricted airspace has been established by the FAA above both the Lake Glendora Test Facility and the CAAA Demolition Range.

Area R-3404 restricts airspace above the CAAA Demolition Range at NSA Crane. The restricted area covers a 2-mile diameter from the center of the blast area and extends from the surface up to and including 4,100 Mean Sea Level (MSL) as illustrated on Figure 3. This restricted airspace protects aircraft from blast fragments generated during the demilitarization of ordnance.

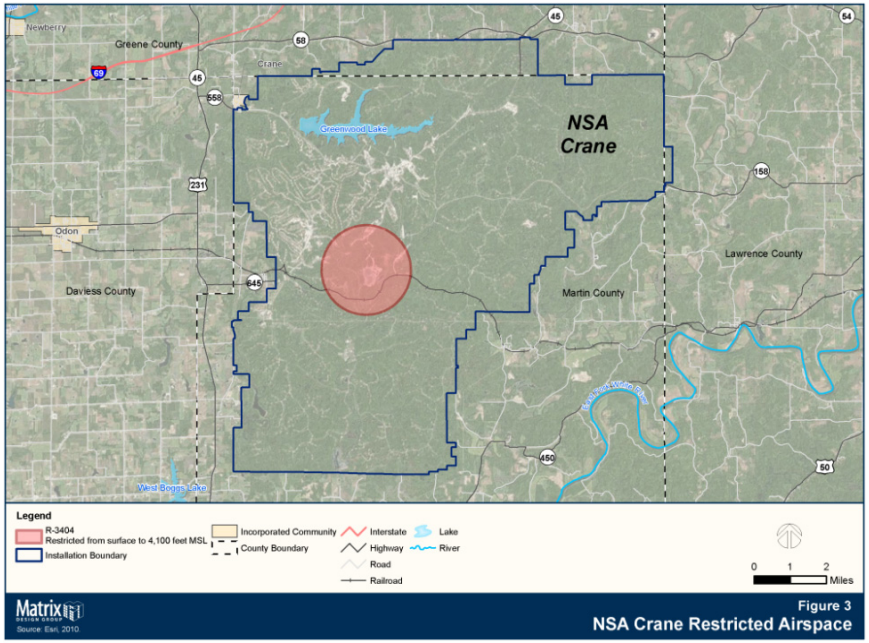


Figure 3
NSA Crane Restricted Airspace

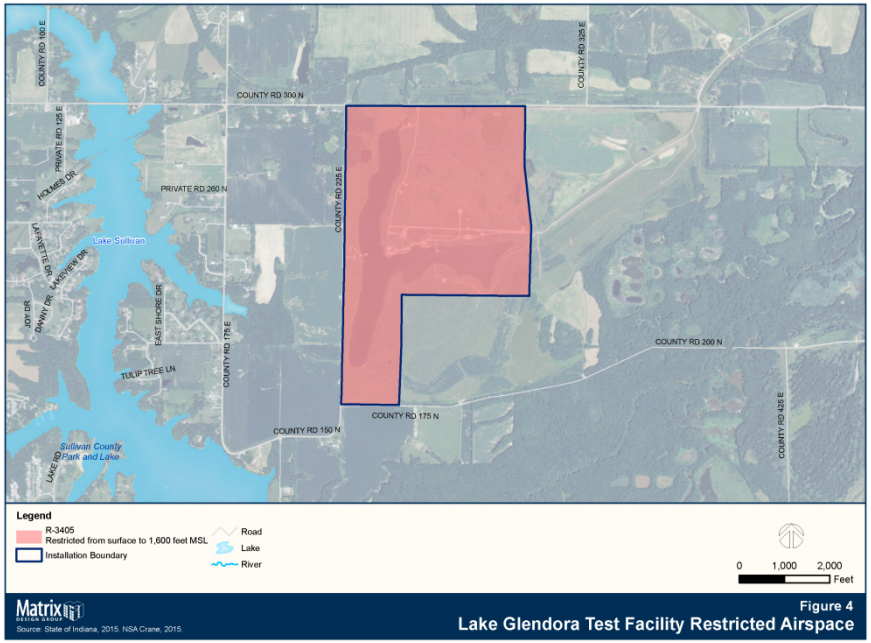


Figure 4
Lake Glendora Test Facility Restricted Airspace

Area R-3405 restricts flight activity over the LGTF. The restricted area covers only the LGTF property and extends from the surface up to and including 1,600 feet MSL as illustrated on Figure 4. Though R-3405 has been activated on only a handful of occasions in the past decade, it has been used to deploy a tethered aerostat balloon to deploy radar, cameras, and other sensor packages for testing and operations. This ability to restrict airspace provides capability for testing new technologies.

Noise Contours

Naval Support Activity Crane

The main source of noise at NSA Crane is from small and large caliber weapon activity conducted at the Special Weapons Assessment Facility, Demolition and Explosive Ordnance Disposal (EOD) Range, and Ordnance Test Area (OTA), and from underwater explosive activity at the LGTF.

The 2014 NSA Crane Operational Noise Consultation illustrates the C-Weighted Day-Night Average Level (CDNL) noise contours and peak blast noise contours expressed in decibels. An explanation of noise is provided in the Noise Compatibility Assessment in Chapter 5.

The CDNL noise contours are classified as:

- Zone III (greater than 70 dB CDNL)
- Zone II (between 62-70 dB CDNL)
- Zone I (less than 62 dB CDNL)
- Land Use Planning Zone (LUPZ) (between 57-62 dB CDNL)

The CDNL noise metric is used for demolition and large caliber weapons to assess the low-frequency energy produced from such activities. The CDNL is an annual average noise from range operations and is intended for long-term land use planning. The CDNL noise is generated from demolition and large caliber weapons activity at the Special Weapons Assessment Facility and demolition range. The CDNL noise contours for NSA Crane are illustrated on Figure 5. Though Noise Zone II and III contours do not extend outside the NSA Crane boundary, the LUPZ extends beyond the installation boundary 0.10 miles to the north, 1 mile to the southeast, and 1.5 miles to the west. Current land uses in the LUPZ are predominately forest lands and agricultural lands with scattered residential properties. The small community of Burns City is within the LUPZ west of NSA Crane and the small communities of Indian Springs and Cale are immediately outside the LUPZ east of NSA Crane. Because these noise contours are averaged, there is potential for individual events more extreme than the average level to cause annoyance and possibly generate noise complaints.

The PK15 (met) noise metric is used for impulse noise from an individual event. The PK15 (met) noise contours for NSA Crane are illustrated on Figure 6.

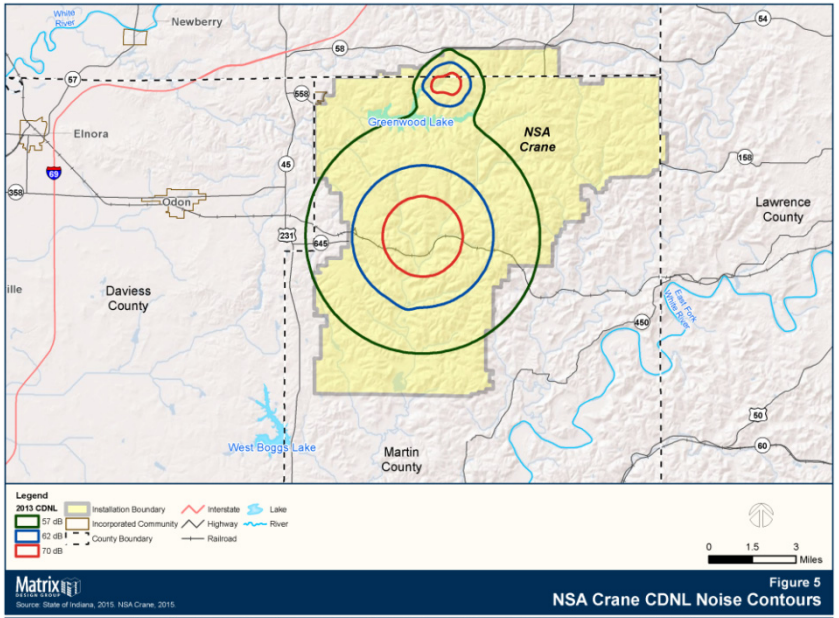


Figure 5
NSA Crane CDNL Noise Contours

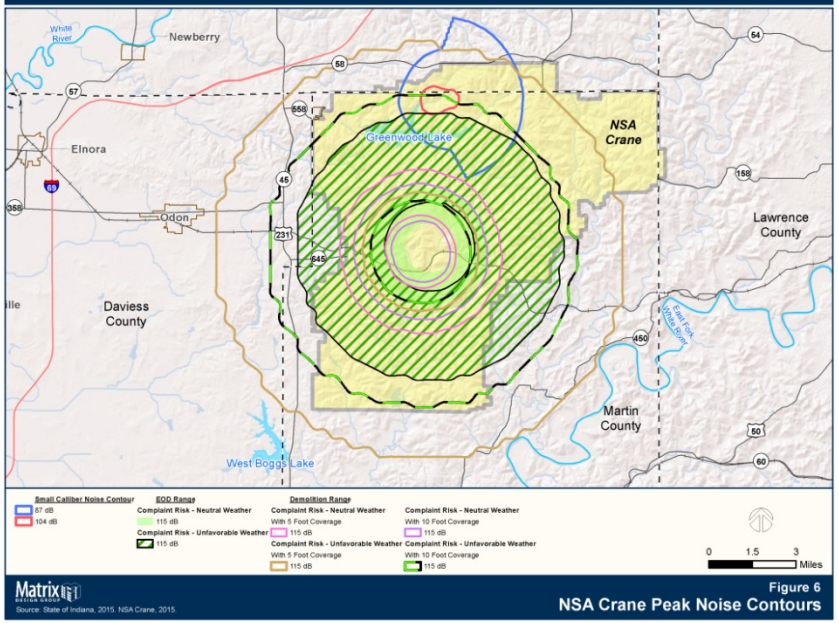


Figure 6
NSA Crane Peak Noise Contours

For small caliber arms activity conducted at the Special Weapons Assessment Facility, peak blast noise contours are classified as

- Zone III [greater than 104 dB PK15(met)]
- Zone II [between 87-104 dB (PK15 (met)]
- Zone I [less than 87 dB PK15 (met)]

Zone III contours do not extend outside the NSA Crane boundary. The Zone II noise contours extend up to 1.5 miles beyond the northern boundary of NSA Crane. This area includes approximately four dozen scattered residential properties.

For large explosions at the Demolition and EOD Range and OTA, peak blast noise contours are used to measure risk complaint potential, which is classified as

- Low Risk [less than 115 dB PK15 (met)]
- Moderate Risk [between 115-130 dB PK15 (met)]
- High Risk [greater than 130 dB PK15 (met)]

Noise was modeled at NSA Crane for both neutral and unfavorable weather conditions and for both 50 lb. and 500 lb. explosions. Noise contours for both neutral and unfavorable weather conditions are illustrated on Figure 6. Because unfavorable conditions represent the worst-case noise scenario with the greatest off-site exposure, this information is presented here and used for the compatibility analysis in Background Report Chapter 5. Noise was modeled for explosive charges buried 10 feet below the ground (as is customary at NSA Crane) and also "half-stem" at 5 feet below the ground to reflect scenarios where the ground coverage is not evenly dispersed over the charge.

In all scenarios, the high complaint risk area is contained within the NSA Crane boundary and all complaint risk areas for activity at the OTA are contained within the NSA Crane boundary.

For 50 lb. charges at the Demolition and EOD Range under unfavorable weather conditions the moderate complaint risk area extends up to 1.7 miles beyond the western boundary and approximately 1.5 miles beyond southeastern boundary of NSA Crane. Current land uses in the moderate complaint risk area are predominately forestland and agricultural land with scattered residential properties. The small communities of Burns City, Bramble, Indian Springs, and Cale are within the moderate complaint risk area.

For 500 lb. charges buried at 10 feet under unfavorable weather conditions at the Demolition and EOD Range, the moderate complaint risk extends beyond the western and southeastern NSA Crane boundary up to 2.5 miles. Current land uses in the moderate complaint risk area are predominately forestland and agricultural land with scattered residential properties. The Town of Crane and small communities of Farlen, Burns City, Bramble, Indian Springs, and Cale are within the moderate complaint risk area.

For 500 lb. charges buried at 5 feet under unfavorable weather conditions at the Demolition and EOD Range, the moderate complaint risk extends up to 4.8 miles beyond the western NSA Crane boundary, 4 miles beyond the eastern NSA Crane boundary, and up to 1.5 miles beyond the northern and southern NSA Crane boundaries. Current land uses in the moderate complaint risk area are predominately forestland and agricultural land with scattered residential properties. The Town of Crane and small communities of Doans, Scotland, Farlen, Raglesville, Burns City, Bramble, Dover Hill, Indian Springs, and Cale are within the moderate complaint risk area.

Lake Glendora Test Facility

Due to the infrequent activity and low net explosive weights (NEWs) of charges at the LGTF, CDNL Noise Zones have not been modeled. Because of the frequency of detonations at the LGTF (averaging 8-10 times per year) and the depth of the lake which greatly diminishes audible noise or disturbance, noise levels from activity at the LGTF indicate a low complaint risk.

A 1991 EA conducted for a similar facility at Aberdeen Proving Ground, Maryland included noise measurements for significantly higher NEWs than routinely used at the LGTF. According to the 2014 NSA Crane Operational Noise Consultation, extrapolated noise level data indicates that the

residences located 0.5 miles from the LGTF could be exposed to noise levels near 109 dB PK15(met) from charge weights of 7.5 lbs. This low level correlates with the lack of noise complaints from the underwater detonations. Predicted noise levels indicate that detonation charges of 30 lbs. would be required for the minimum range for moderate risk of complaints 0.5 miles from the LGTF and 60 lb. charges would be required for the minimum range for moderate risk of complaints 1 mile from the LGTF. Current land uses within 0.5 miles of the LGTF are predominately forestland and agricultural land with scattered residential properties. Current land uses within 1 mile of the LGTF are predominately forestland and agricultural land with scattered residential properties including those on the eastern shore of Lake Sullivan.

Source: Operational Noise Assessment for Naval Support Activity Crane, September 2013

Explosive Safety Quantity Distance Arcs

Explosive Safety Quantity Distance (ESQD) arcs are normally concentric arcs that provide a safety buffer to mitigate the harm an unplanned detonation could cause to people or structures. The radius of each ESQD arc is determined by the operation, net explosive weight of the material, and location. At NSA Crane and the LGTF, these arcs are associated with the storage of ammunition.

Naval Support Activity Crane

The CAAA produces and stores a large amount of ammunition at NSA Crane with the capacity for the storage of 650,000 tons of ordnance. Over 1,800 igloos, or storage areas, containing ammunition are located throughout the installation. Due to the large number of igloos, the ESQD arcs occupy large portion of the NSA Crane property. In order to maintain the arcs within the installation boundary, the storage capacity in certain areas and facilities is administratively restricted by NSA Crane.

Lake Glendora Test Facility

Ammunition at the LGTF is stored in facilities for the purpose of conducting underwater detonations. The ESQD arcs at the LGTF are all contained within the installation.

Sources: NSA Crane Installation Development Plan

Surface Danger Zones

A Surface Danger Zone (SDZ) is an area around a weapon firing range from which the access of all military personnel and civilians is restricted due to the inherent dangers associated with the firing of live munitions. A surface danger zone can include the surface (and subsurface) of land and water, as well as the overhead air space which provides the medium for launched projectiles. A surface danger zone includes the weapons firing position, target impact area and a secondary buffer area, which is an additional distance where errant projectile/munitions fragments may land without risking harm to life or property. The area of a SDZ can vary in size and shape and is specifically dependent on the type of weapon(s) fired, their firing location and projectile trajectory.

The current layout of the ranges at the Special Weapons Assessment Facility are positioned in such a way that all of the SDZs for current weapons systems are contained within the boundaries of NSA Crane to protect the public and neighboring landowners from the risk of ricochet or stray bullets landing on their property. The Demolition and EOD Range and OTA are sufficiently centralized at NSA Crane to contain their associated SDZs.

Please see the next page.

There are many existing tools that can be used to encourage, promote, and manage compatibility between military installations and their neighboring communities. This chapter provides an overview of compatibility tools – key plans and programs – currently used or applied in evaluating and addressing compatibility issues in the Naval Support Activity (NSA) Crane and Lake Glendora Test Facity (LGTF) Joint Land Use Study (JLUS) Study Area organized by level of government.

The tools listed in this chapter are not exhaustive, but are meant to provide a general overview of the primary tools currently utilized in the JLUS Study Area. The overview of plans and programs is organized by level of government in the following order:

- *Federal Plans and Programs*
- *NSA Crane*
- *State of Indiana*
- *Daviess County*
- *Greene County*
- *Lawrence County*
- *Martin County*
- *Sullivan County*
- *Regional Plans and Tools*
- *Other References*

Federal

Department of Defense Energy Siting Clearinghouse

Section 358 of the 2011 National Defense Authorization Act pertains to studying the impacts of the development of new energy production facilities on military operations and readiness. The Energy Siting Clearinghouse serves to coordinate the Department of Defense (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 30-day time frame for completion of a hazard assessment associated with an application, 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.

Readiness and Environmental Protection Integration

This initiative enables DOD to work with state and local governments, nongovernmental organizations, and willing landowners to limit encroachment and incompatible land use through land acquisition by the establishment of conservation easements, land trusts, or the purchase of property. The program provides funding to support these land acquisition efforts to preserve the land around military installations, wildlife habitats, and local communities.

Naval Support Activity Crane

Operational Noise Assessment

The Operational Noise Assessment was published in September 2013 to assess the noise impacts of activities at NSA Crane and the LGTF. The assessment provides both land use planning guidelines and complaint risk potential.

Land use guidelines are noise zones which are established by the average annual demolition and weapons uses. The guidelines are used to avoid sensitive land uses in areas highly impacted by noise. The noise zones are contained on the installation, however, because it is an average measurement there is still potential for individual events to cause complaints.

Peak noise contours are areas based on the loudest event at each facility. The peak noise contours are used to determine the complaint risk areas. Contours are determined for unfavorable and favorable weather conditions. The assessment concludes that peak noise levels indicate a moderate to high complaint risk potential, yet NSA Crane rarely receives noise complaints.

Per the recommendation of the assessment, NSA Crane established a Noise Management Complaint Program in May 2016. A successful noise complaint management procedure helps reduce the potential of noise complaints by keeping the public informed about what is happening and satisfy complainants so that noise complaints do not escalate.

State of Indiana

The State of Indiana has several laws that establish the guidelines for its municipalities and counties to regulate land uses and plan for their future. The body responsible for creating, drafting, and enacting legislation to assist in governing Indiana is the General Assembly comprised of the Senate and House of Delegates.

Indiana has adopted legislative home rule, whereby local governments may exercise all powers the state legislature is capable of delegating to them, even though the legislature has not delegated the power. The legislature may take certain powers from localities or limit local powers under legislative home rule. If the Indiana legislature sets forth a certain manner in which a power may be exercised by a locality, the locality must follow the legislature's instructions.

Comprehensive Plans

Indiana law requires that a plan commission adopt a comprehensive plan if the municipality wants to exercise zoning powers. The Comprehensive Plan is the foundation for all decision-making in matters involving land use planning and growth management, is considered advisory, and serves as a guide for the physical development of the territory within specific jurisdictional boundaries.

Source: http://www.in.gov/legislative/ic/2010/title36/ar7/ch4.html(Page758)

Zoning

Standards authorizing the use of zoning in Indiana are found in §36-7-4-601 of the State Code. The procedures for zoning authorize the local legislative body to take action and adopt a zoning ordinance. Zoning divides a locality into specific districts and establishes regulations concerning the use, placement, spacing and size of land and buildings within the respective districts. Zoning is intended to avoid disruptive land use patterns by preventing activities on one property from generating external effects that are detrimental to other properties. If the municipality wants to exercise zoning powers, it must first adopt a comprehensive plan.

Source: http://www.in.gov/legislative/ic/2010/title36/ar7/ch4.html(Page764)

Planning and Zoning Affecting Military Bases

Per IC §36-7-30.1-2, a jurisdiction is required to notify the commander of the military base before it can take action to plan or regulate a property located within three miles of the perimeter of the base. Activities subject to this notification include the:

- Use, improvement, and maintenance of real property
- Location, condition, and maintenance of structures and other improvements
- Platting and subdividing of real property

The commander must respond to the notice with written recommendations and supporting facts no more than 15 days after receiving the notice. If no response is received after the 15 days, the jurisdiction may presume that the action will have no adverse impacts on the base. A jurisdiction may not take action within three miles of the base if it would have an adverse impact on the operation of the base.

Source: http://www.in.gov/legislative/ic/2010/title36/ar7/ch30.1.pdf(Page1432)

Military Base Immunity

Military bases are granted immunity for noise pollution and telecommunications interference under IC §34-30-21. Section IC 34-30-21-2 states that a military base, a person employed by a military base, or a person otherwise authorized by a military base to conduct operations on or use the military base is not liable for civil damages relating to noise or noise pollution that:

(1) results from the normal operation or use of the military base, including the destruction of ordnance; and

(2) may be heard within two (2) miles of the perimeter of the military base.

Section IC 34-30-21-3 states that a military base, a person employed by a military base, or a person otherwise authorized by a military base to conduct operations on or use the military base is not liable for civil damages relating to interference with telecommunications that:

(1) results from the normal operation or use of the military base; and

(2) occurs within five (5) miles of the perimeter of the military base.

However, IC 34-30-21-1 does not grant immunity from civil liability to a person who commits an act that:

(1) amounts to gross negligence or willful and wanton misconduct; or

(2) does not comply with an applicable federal law.

Source: https://iga.in.gov/legislative/laws/2015/ic/titles/034/ (Page 436)

Local Jurisdictions

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

Table 3 provides an overview of existing planning tools by jurisdiction and their applicability to addressing military compatibility.

Local Jurisdiction Tools

The Code of Indiana grants local governments in Indiana the authority to prepare and adopt a comprehensive plan, zoning ordinance, and subdivision regulations. Indiana law does not require localities to adopt zoning ordinances but allows the adoption at the option of the municipality. If adopted, the zoning ordinance must contain the elements set out by the legislature in Indiana Code Section §36-7-4-600.

The primary tools used by county governments in the NSA Crane JLUS Study Area are the comprehensive plan and the zoning ordinance. A comprehensive plan identifies a broad vision for the community, as well as the policies, goals, and strategies deemed necessary to accomplish stated objectives. A zoning ordinance is used to implement comprehensive plan recommendations through development standards, generally organizing community elements in a rational orderly framework

Table 3. County Planning Tools

Jurisdiction	Comprehensive Plan	Zoning Code Height Restrictions	Zoning Code Density	Zoning Code Sound Attenuation	Zoning Code Outdoor Lighting	Subdivision Regulations	Special Area Plans	Building Codes
Martin County, IN	■	■	■	■	■	■	■	■
Lawrence County, IN	■	■	■	■	■	■	■	■
Greene County, IN	■	■	■	■	■	■	■	■
Daviess County, IN	■	■	■	■	■	■	■	■
Sullivan County, IN	■	■	■	■	■	■	■	■

Legend:

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

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

■ = The tool exists and addresses land use issue(s) related to Military Compatibility.

■ = The tool exists, but does not affect land use issue(s) related to military compatibility as adopted.

■ = The jurisdiction does not employ this tool.

Daviess County

Daviess County Comprehensive Plan

The Daviess County Comprehensive Plan is the policy document that guides the long range development plans for the county and established criteria and guidelines for land use regulation and growth policies for the unincorporated areas of the county. The Comprehensive Plan, which was approved in December 2009, contains elements outlining the community setting, an assessment of existing conditions, community issues, a future vision, and recommendations.

Daviess County Zoning

The Daviess County Zoning Ordinance divides the county into zoning districts that include agricultural, residential, commercial, airport and industrial.

Airport zoning includes additional requirements, including but not limited to height requirements. These requirements are necessary due to the proximity of Daviess County Airport.

Although NSA Crane operations are not specifically identified within the County's Zoning Ordinance, it has provisions that are relevant to compatibility with NSA Crane.

Greene County

Greene County Comprehensive Plan

The Greene County Comprehensive Plan is the policy document that guides the long range development plans for the county and established criteria and guidelines for land use regulation and growth policies for the unincorporated areas of the county. The Comprehensive Plan, which was approved in July 2009, contains elements outlining economy, land use, natural resources protection, transportation, and implementation and evaluation of the plan.

Lawrence County

Lawrence County and City of Bedford I-69 Corridor and County Land Use Plan

The Bedford/Lawrence County 2020 Strategic Plan was funded by a grant from the Indiana Department of Transportation's I-69 Community Planning Program and was published in 2009. The strategic plan is based on local efforts to promote and guide future development. The plan's goals and supporting objectives include land use, transportation, public services, natural resource, and culture to help guide future growth and development.

The plan recognizes that NSA Crane has remained a powerful economic engine for the county and highlights the need to work together to ensure NSA Crane remains a stable employer to local residents. Objective Land Use-6 involves capitalizing on existing businesses and resources including taking advantage of the county's proximity to NSA Crane. Objective Public Facilities-6 includes providing high tech infrastructure throughout the county which could potentially spur economic development that supports NSA Crane.

While this plan provides guidance for future growth and development, the plan is not a comprehensive plan for Lawrence County.

Land Planning in Lawrence County

Lawrence County does not have any type of land-use planning or zoning in its unincorporated areas. Survey results and conversations with local officials indicate that community-wide education and outreach related to land use planning is needed.

Martin County

Martin County Comprehensive Plan

The Martin County Comprehensive Plan is the policy document that guides the long range development plans of the county. It contains the goals and objectives upon which the county officials base their long-range decisions regarding development within the county. The most recent comprehensive plan, adopted in July 2009, contains elements outlining population and economy, land use, cultural and natural resources, transportation, community facilities, and services and utilities. The guidelines outlined in the comprehensive plan are important because of their potential impacts on operations at NSA Crane, which is located within the county.

Source: Martin County Comprehensive Plan, 2009

Sullivan County

Sullivan County Comprehensive Plan

Sullivan County has not adopted a Comprehensive Plan.

Sullivan County Zoning

Sullivan County has not adopted a zoning ordinance. Indiana Code 36-7-4-501 requires the adoption of a Comprehensive Plan before the creation of a zoning ordinance. The City of Sullivan has adopted a Comprehensive Plan and is therefore able to adopt a zoning ordinance consistent with that Plan.

Please see next page.

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

Methodology and Evaluation

The methodology for the Naval Support Activity (NSA) Crane JLUS consisted of a comprehensive and inclusive discovery process to identify stakeholder issues associated with the compatibility factors. At the initial Policy Committee (PC) and Technical Working Group (TWG) 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 PC, TWG, 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 compatibility factors considered, no issues were identified for the following factors:

- Climate Adaptation
- Cultural Resources
- Energy Development
- Infrastructure Extensions
- Marine Environments
- Scarce Natural Resources
- Vertical Obstructions

Compatibility Issues by Factor

Air Quality (AQ)

Air quality is defined by numerous components regulated at the federal and state level. For compatibility, the primary concerns are pollutants that limit visibility (such as particulates and ozone) and potential non-attainment of air quality standards that may limit construction, maintenance, or operations at the installation or in the area. The following Air Quality issue was identified:

- Regional Air Quality. Though Martin County is in attainment for six air quality criteria pollutants and NSA Crane is in compliance with its Part 70 Title V Air Quality operating Permit, future development has the potential to affect regional air quality.

Anti-Terrorism / Force Protection (AT)

Anti-Terrorism / Force Protection (AT/FP) relates to the safety of personnel, facilities, and information on an installation from outside threats. Security concerns and trespassing can present immediate compatibility concerns for installations. Due to current global conditions and recent events, military installations are required to implement more restrictive standards to address AT/FP concerns. The following Anti-Terrorism / Force Protection issues were identified:

- Line-of-Sight at Lake Glendora Testing Facility. Higher terrain elevations outside the Lake Glendora Test Facility have potential for outside observation of operations creating a security concern.
- Naval Support Activity Crane Visitor's Center. The NSA Crane Visitor's Center is located in the Town of Crane approximately one mile from the NSA Crane Gate. The location of the Visitor's Center affects access to protection level resources.
- Controlled Perimeter at Lake Glendora Test Facility. The controlled perimeter at the Lake Glendora Test Facility is on the property line at points along the southern and eastern boundaries creating a line-of-sight security concern.
- NSA Crane Visitor's Center Utilities. The NSA Crane Visitor's Center utilities are within the Town of Crane and not part of the NSA Crane infrastructure network.

Biological Resources (BIO)

Biological resources include federal and state listed species (threatened and endangered species) and their habitats. These resources may also include areas such as wetlands and migratory corridors that are critical to the overall health and productivity of an ecosystem. The presence of sensitive biological resources may require special development considerations and should be included early in the planning process. The following Biological Resources issue was identified:

- Threatened or Endangered Species. Areas at NSA Crane critical to threatened or endangered species such as the Bald Eagle, the Indiana Bat and the Northern Long-Eared Bat have the potential to impact mission operations and capability.

Communication / Coordination (COM)

This discussion refers to the programs and plans that promote interagency 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 and include mutually beneficial policies for both communities and the military in local planning documents, such as comprehensive plans and regional planning efforts. The following Communication / Coordination issues were identified:

- Public Awareness and Knowledge of NSA Crane / Lake Glendora Test Facility. Need for increased public education of NSA Crane and Lake Glendora Test Facility amongst the local community.
- Contact and Coordination between NSA Crane / Lake Glendora Test Facility and Surrounding Jurisdictions. Need for enhanced and formal communication between surrounding jurisdictions and NSA Crane personnel / leadership.
- Local Jurisdiction Planning Resources. Need for improved awareness of local jurisdiction planning department structure, resources, and knowledge to facilitate coordination and communication from NSA Crane / Lake Glendora Test Facility.
- Coordination of Public Safety Resources. NSA Crane physical security forces are not authorized to assist jurisdictions with public safety and there is perception that NSA Crane does not want local law enforcement participation on the installation.
- NSA Crane / Lake Glendora Test Facility Public Outreach. Need for NSA Crane / Lake Glendora Test Facility public outreach with surrounding jurisdictions.
- Public Notification of Range Activities at NSA Crane and Detonation Activities at the Lake Glendora Test Facility. Need for increased public notification of NSA Crane range activities and detonation activities at the Lake Glendora Test Facility with surrounding jurisdictions.
- Coordinated Noise Complaint Process. Concern that not all noise complaints generated by public and reported to jurisdiction authorities are conveyed to NSA Crane and the LGTF, creating a gap in the communication of complaints.
- Development Notification to NSA Crane / Lake Glendora Test Facility. Lack of coordination to notify NSA Crane of development within 3-mile installation radius despite the state legislative mandate.

Dust / Smoke / Steam (DSS)

Dust results from the suspension of particulate matter in the air. Dust (and smoke) can be created by fire (e.g., controlled or prescribed burns, agricultural burning), ground disturbance (e.g., agricultural activities, military operations, grading), industrial activities, or other similar processes. Dust, smoke and steam can be a compatibility issue if sufficient in quantity to impact flight operations (such as reduced visibility or cause equipment damage) or otherwise interfere with military operations. The following Dust / Smoke / Steam issues were identified:

- Dust from Demolition Area. Detonations at the NSA Crane Demolition Range can generate fugitive dust impacts outside the installation.
- Smoke from Prescribed Burns. Smoke from prescribed burns at NSA Crane can migrate outside the installation.

Frequency Spectrum Capacity (FSC)

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

- Potential for Decreased Frequency Capacity. As additional personnel and / or missions come to NSA Crane, the frequency availability and bandwidth has the potential to decrease.

Frequency Spectrum Impedance / Interference (FSI)

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

- Frequency Interference from Lake Glendora Test Facility Operations. Frequency interference issues have increased as wireless demands and technology use skyrockets. Residents near Lake Glendora Test Facility have experienced wireless and Global Positioning System (GPS) signal loss.
- Impacts to NSA Crane Operations. Uses from outside NSA Crane can impact installation operations and affect mission activities.

Housing Availability (HA)

Local housing availability addresses the supply and demand for housing in the region, the competition for housing that may results from changes in the number of military personnel, and the supply of military family housing provided by the installation. The following Housing Availability issue was identified:

- Lack of Housing Availability Proximate to NSA Crane. Need for high quality housing accommodations proximate to NSA Crane to attract and retain personnel in the local area.

Land / Air / Sea Spaces (LAS)

The military manages or uses land and air 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 land and air operations can compete for limited air and sea space, especially when the usage areas are proximate to each other. Use of this shared resource can impact future growth in operations for all users. The following Land / Air / Sea Spaces issue was identified:

- Potential for Seaplane Base on Kayak Lake Near the Lake Glendora Test Facility. Concern that the approval of private seaplane base on Kayak Lake located near Lake Glendora Test Facility could potentially interfere with the restricted airspace.

Land Use (LU)

The basis of land use planning and regulation relates to the government's role in protecting the public's health, safety, and welfare. Local jurisdictions' general plans and zoning ordinances can be the most effective tools for 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, lighting. The following Land Use issues were identified:

- Future Development Associated with Interstate 69. Potential for incompatible development associated with the development of Interstate 69.
- Development of WestGate@Crane Technology Park. Need for coordinated development at WestGate@Crane Technology Park to ensure future development is compatible with NSA Crane mission.
- Adequate Commercial Rest Facilities and Staging Areas. The lack of adequate commercial truck rest facilities and staging areas outside of NSA Crane has resulted in trucks overnighting in a gravel strip of land opposite of the Town of Crane.
- Development Surrounding Lake Glendora Test Facility. Potential for incompatible land uses surrounding the Lake Glendora Test Facility or interference from incompatible uses with mission capabilities.
- Development Surrounding NSA Crane. Potential for incompatible land uses surrounding the NSA Crane or interference from incompatible uses with mission capabilities.

Legislative Initiatives (LI)

Legislative initiatives are proposed changes in relevant policies, laws, regulations or programs which could potentially have a significant impact on one or more substantive areas of concern to both the facility and to the stakeholder communities. The focus of this compatibility issue is on initiatives with general and broad implications. The following Legislative Initiatives issue was identified:

- Legislative Tools for Indiana's Military Base Protection Act. Need for implementation tools and enforcement procedures in Indiana Code intended to protect military installations in the state.

Light and Glare (LG)

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

- Solar Farm at NSA Crane. Potential for the future solar farm at the NSA Crane Eagle View Golf Club to create glare impacting adjacent residences in Burns City.

Noise (NOI)

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

- Noise from NSA Crane Ranges. Noise from the NSA Crane Ranges extends off installation and has the potential to affect noise sensitive land uses.
- Noise from Lake Glendora Test Facility. Noise from Lake Glendora Test Facility operations extends outside the property and has the potential to affect noise sensitive land uses.

- Regional Ground Noise Sources. There are other regional sources of noise which can be misattributed to activities at NSA Crane.
- Regional Aircraft Noise Sources. The Indiana Air National Guard flyways in the airspace surrounding NSA Crane are sometimes mistakenly attributed to NSA Crane.

Public Trespassing (PT)

This factor addresses public trespassing, either purposeful or unintentional, onto a military installation. The potential for trespassing increases when public use areas are in close proximity to the installation. Military areas that are located on, or adjacent to, public lands owned by other entities (i.e., federal, state, or local) that are designated for public access, recreation, or for livestock grazing often experience issues related to public trespassing into training ranges and other areas with safety hazards related to military operations. The following Public Trespassing issues were identified:

- Potential for Trespassing Related to Future Milwaukee Road Transportation Trailway. Future Phase 4 of the Milwaukee Road Transportation Trailway will terminate at Indian Springs, Indiana adjacent to the eastern border of NSA Crane raising a concern for trespassing into the installation.
- Cattle Migrations onto NSA Crane. Cattle from adjacent farms have the potential to migrate on the installation. Area farmers who enter the property to retrieve their cattle can become a safety risk.
- Public Trespassing at NSA Crane. Safety concern for public trespassing on the eastern side of NSA Crane.
- Public Recreational Fishing Outside the Lake Glendora Test Facility. Security and safety concern for public trespassing from recreational fishing outside the Lake Glendora Test Facility.

Roadway Capacity (RC)

Roadway capacity relates to the ability of existing freeways, highways, arterials, and other local roads to provide adequate mobility and access between military installations and their surrounding communities. As urban development expands into rural areas, roads once used primarily to provide access for agricultural uses and limited local traffic begin to function as urban major arterial roadways. These once rural roads often become the main transportation corridors for all types of traffic – from residential to commercial trucking – and can assist or impede access to military installations. As transportation systems grow and provide more capacity, these facilities induce and encourage growth as rural areas become more accessible. The following Roadway Capacity issues were identified:

- Short Queuing area at Bloomington Gate. The short queuing area at the Bloomington Gate presents a potential safety concern for traffic stacking at intersection of State Roads 45 and 58.
- Commercial Truck Access. Commercial truck traffic accessing NSA Crane shares the Crane Gate entry with all other vehicles. The lack of a dedicated commercial truck gate for screening inspections can potentially create a security risk.
- Traffic from Newly Completed Interstate 69. Potential traffic impacts on local roadways associated with the completion of Interstate 69.

Safety Zones (SA)

Safety zones are areas in which development should be more restrictive, in terms of use and concentrations of people, due to the higher risks to public safety. Issues to consider include aircraft accident potential zones, weapons firing range safety zones, and explosive safety zones.

Military installations often engage in activities or contain facilities that, due to public safety concerns, require special consideration by local jurisdictions when evaluating compatibility. It is important to regulate land use near military airfields in order to minimize damage from potential aircraft accidents and to reduce air navigation hazards. To help mitigate potential issues, the Department of Defense (DOD) has delineated Clear Zones (CZ) and Accident Potential Zones (APZ) in the vicinity of airfield runways. APZs are usually divided into APZ I and APZ II. Each zone was developed based on

the statistical review of aircraft accidents. Studies show that most mishaps occur on or near the runway, predominately along its extended centerline. The following Safety issues were identified:

- Explosive Safety Quantity Distance Arcs. Concern that Explosive Safety Quantity Distance Arcs (ESQD) arcs have potential to extend outside of NSA Crane with mission changes.
- Methane Gas Wells and Mine Shafts located near Lake Glendora Test Facility. There are various methane gas wells and underground mine shafts located near the Lake Glendora Test Facility, including a pipeline that runs along N County Road 225 E connecting gas wells with a pipeline located along E County Road 300 N. Location of several of these wells and mine shafts are unknown.
- Hazardous Materials Transportation Routes. There are no designated Hazardous Materials Transportation Routes in association with daily shipments to NSA Crane. Because the same route is never used in sequence, many local roads are used for transport of hazardous materials.

Vibration (V)

Vibration is an oscillation or motion that alternates in opposite directions and may occur as a result of an impact, explosion, noise, mechanical operation, or other change in the environment. Vibration may be caused by military and / or civilian activities. The following Vibration issues were identified:

- Vibration from NSA Crane Demolition Range. Concern that vibration from the Demolition Range activities at NSA Crane cause physical property damage to buildings and infrastructure outside the installation.
- Vibration from Activities at the Lake Glendora Test Facility. Concern that vibration from testing activities at the Lake Glendora Test Facility causes vibration outside the property.

Water Quality / Quantity (WQQ)

Water quality / quantity concerns include the assurance that adequate water supplies of good quality are available for use by the installation and surrounding communities as the area develops. Water supply for agriculture and industrial use is also considered. The following Water Quality / Quantity issues were identified:

- Shared Use of the NSA Crane Wastewater Treatment Plant. Concern for capacity of NSA Crane wastewater treatment plant to continue serving the Town of Crane.
- Stormwater Runoff at Northern Boundary of NSA Crane. Concern for the quality of stormwater runoff flowing into NSA Crane from adjacent land uses along the northern boundary.

Please see the next page.

Implementation Plan

This section identifies and organizes the recommended actions (strategies) developed through a collaborative effort between representatives of local jurisdictions, Naval Support Activity (NSA) Crane and the Lake Glendora Test Facility (LGTF), state and federal agencies, local organizations, the general public, and other stakeholders that own or manage land or resources in the region. Because the NSA Crane JLUS is the result of a collaborative planning process, the recommendations in this section represent a true consensus plan; a realistic and coordinated approach to compatibility planning developed with the support of stakeholders involved throughout the process.

JLUS strategies incorporate a variety of actions that can be implemented to promote compatible land use and resource planning. Upon implementation, existing and potential compatibility issues arising from the civilian / military interface can be eliminated or significantly reduced. As such, the recommended strategies function as the heart of the JLUS document and are the culmination of the 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 JLUS participants in order to address current and potential future compatibility issues.

The key to the implementation of the strategies is the establishment of the JLUS Implementation Coordination Committee to oversee the JLUS execution. Through this committee, local jurisdictions, NSA Crane and the LGTF, and other interested parties can continue their initial work together to establish procedures, recommend or refine specific actions for member agencies, and make adjustments to strategies over time to ensure the JLUS continues to resolve key compatibility issues through realistic strategies and implementation.

Concurrent with the efforts of the JLUS Implementation Coordination Committee, each Study Area jurisdiction is responsible for establishing their own course of action to execute strategies unique to them through collaboration of planners, leadership, and the public. Since the Implementation Plan is intended to be a living document, each jurisdiction has the flexibility to revise and refine the Plan for their unique circumstances and use for tracking implementation actions and progress.

Implementation Plan Guidelines

The key to a successful plan is balancing the different needs of all involved stakeholders. Several guidelines formed the basis upon which the strategies were developed:

- In concert with the Indiana state laws, the Implementation Plan was developed with the understanding that the recommended strategies must not result in a taking of property value. In some cases, the recommended strategies can only be implemented with new enabling legislation.
- In order to minimize regulation, where appropriate, strategies were recommended only for specific geographic areas to resolve the compatibility issue.
- Similar to 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 full support from all stakeholders, it was determined that the solution / strategy may result in the creation of multiple strategies that address the same issue, but are tailored to individual circumstances.

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 the activities of local communities may affect the military's ability to conduct its mission. An MCA is designated to accomplish the following:

- Promote an organized transition between community and military land uses to maximize compatibility.
- Promote and protect public health, safety, and welfare.
- Maintain the operational capabilities of military installations and areas.
- Promote an awareness of the size and scope of military training areas to protect areas separate from the actual military installation used for training purposes.
- Establish compatibility requirements within the designated area, such as requirements for sound attenuation and avigation easements.

The MCAs are geographic areas where specific types of recommended JLUS strategies apply. This technique ensures the strategies are applied to the appropriate areas, and that locations deemed not subject to a specific compatibility issue are not adversely impacted by regulations inappropriate for their location or circumstance.

The NSA Crane MCAOD is comprised of two MCAs:

- Coordination MCA
- Noise MCA

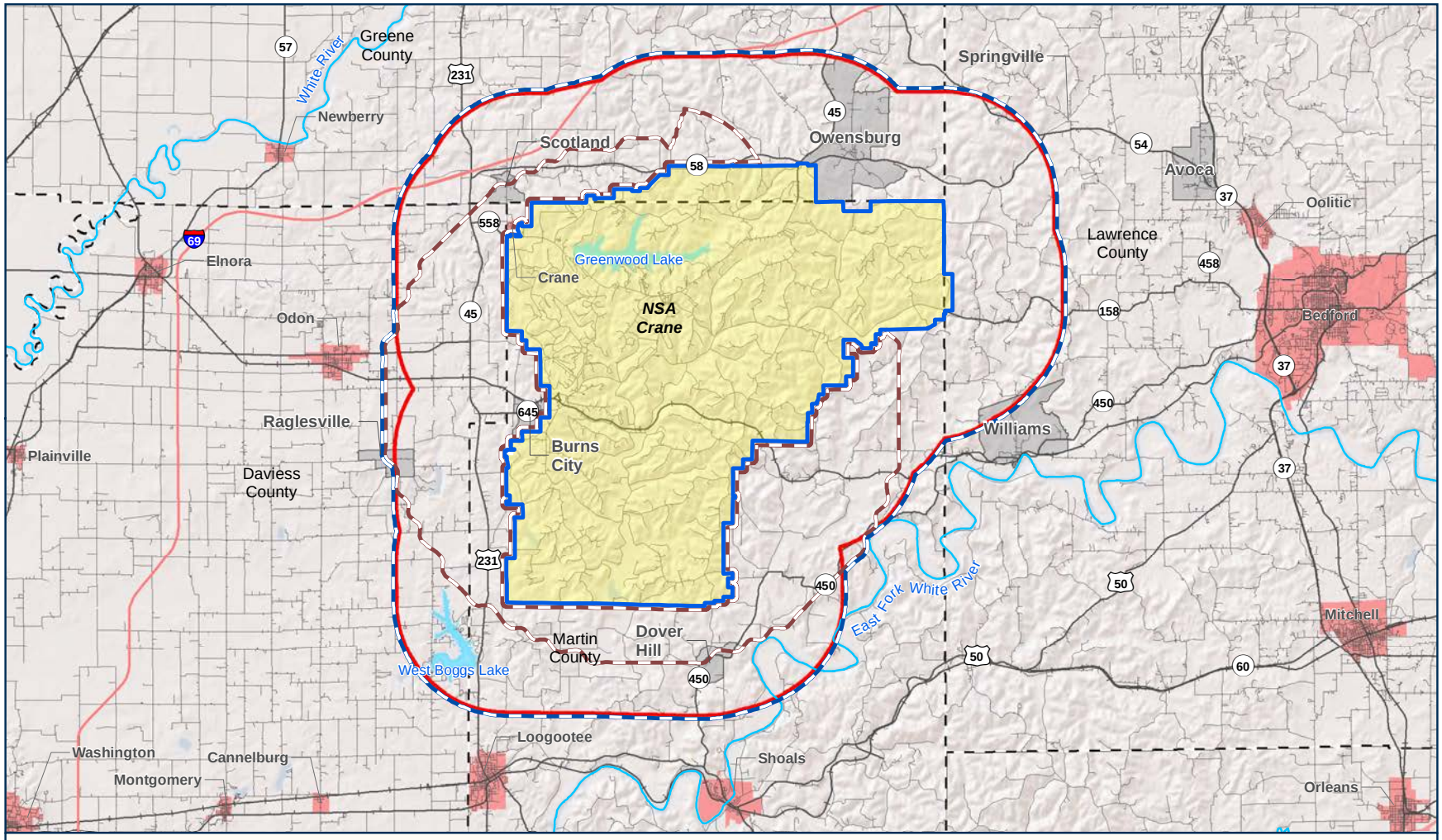
The LGTF MCAOD comprises two MCAs:

- Coordination MCA
- Noise MCA

These MCAs are discussed in the following sections and are organized by facility.

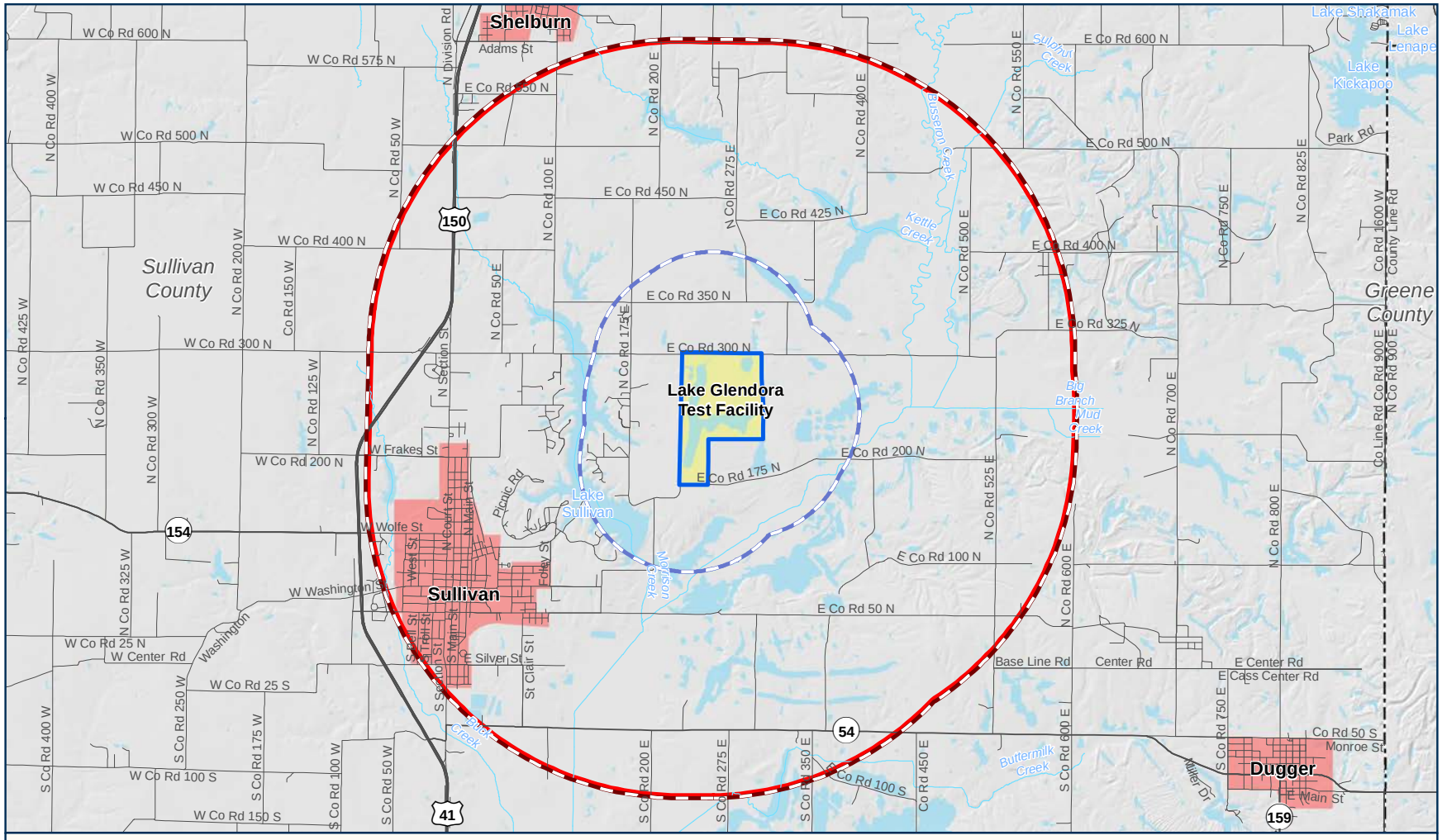
The Military Compatibility Area Overlay District (MCAOD) is a planning technique that ensures the JLUS strategies are applied to the appropriate areas, and that locations deemed not subject to a specific compatibility issue are not adversely impacted by regulations or policies inappropriate for their location or circumstance. The MCAOD encompasses all the MCAs and its geographic boundary is defined by the largest MCA boundary. The MCAOD should be used by local jurisdictions to address ways to prevent or mitigate compatibility issues. Each jurisdiction's MCAOD boundary is determined by the largest geographic boundary of all the MCAs that fall within their jurisdiction.

For the purpose of this JLUS Implementation Plan, there are two MCAODs, one for NSA Crane and one for the LGTF. These are depicted on Figures 7 and 8, respectively, and the individual MCAs are shown on Figures 9 through 12.



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 7
NSA Crane Military Compatibility Area Overlay District



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 8
Lake Glendora Test Facility Military Compatibility Area Overlay District

Naval Support Activity Crane Military Compatibility Areas

Coordination Military Compatibility Area (Figure 9)

The proposed Coordination MCA addresses the areas directly surrounding NSA Crane that could potentially impact military operations. The Coordination MCA is a 3-mile buffer surrounding NSA Crane where there are notification requirements to the military per Indiana Code (IC) §36-7-30.1-2. A jurisdiction is required to notify the commander of the military installation prior to taking action to plan or regulate the use, improvement, and maintenance of real property, or the location, condition, and maintenance of structures and other improvements property, or regulate the platting or subdivision of land within the 3-mile area. The commander can review and determine whether the action will have an adverse impact on the installation and convey this information to the jurisdiction contemplating the action. Any actions pursuant to the state code within the 3-mile perimeter should be coordinated with NSA Crane in an effort to maximize compatibility between the military and the surrounding communities.

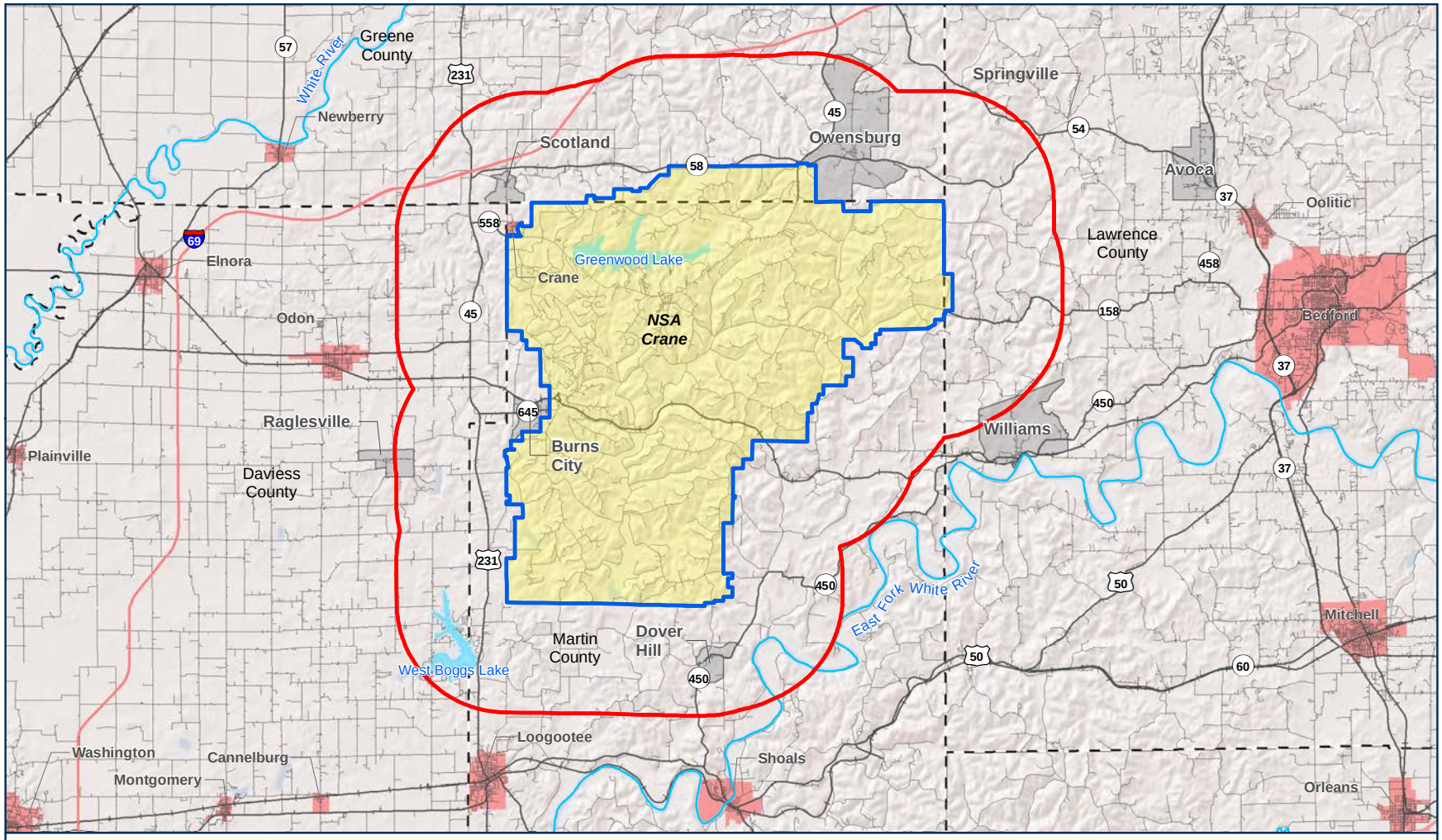
The Coordination MCA is needed to reinforce the military notification requirements and enhance existing communications and coordination with NSA Crane to prevent the development of incompatible land uses in areas with the greatest potential to impact the military mission and conversely can be used by NSA Crane to proactively coordinate with surrounding jurisdictions and notify them of any changes at the installation that could potentially impact development in the community. This area should be considered for land use controls where not adopted, formalized coordination procedures, and a compatible development checklist that jurisdictions can use to identify which land uses could have the greatest impact on the military such as noise sensitive land uses, and other uses that create security or safety issues, frequency interference, have the potential to demonstrably impact water quality at Lake Greenwood, impede traffic flows into or out of the installation, and any other use that could affect the military mission as determined by NSA Crane.

Noise Military Compatibility Area (Figure 10)

The proposed Noise MCA includes all areas off installation that can be adversely affected by military detonations at the Demolition Range or live fire at the Special Weapons Assessment Facility. It is important to understand that NSA Crane conducts different types of noise generating activities using different methods and that NSA Crane typically conducts these activities under neutral weather conditions to minimize noise outside the installation. However, under unfavorable weather conditions the noise can travel and impact surrounding areas. Because this is when people may experience the greatest exposure in the surrounding community, the Noise MCA is based on unfavorable weather conditions with the goal of minimizing military noise on future development.

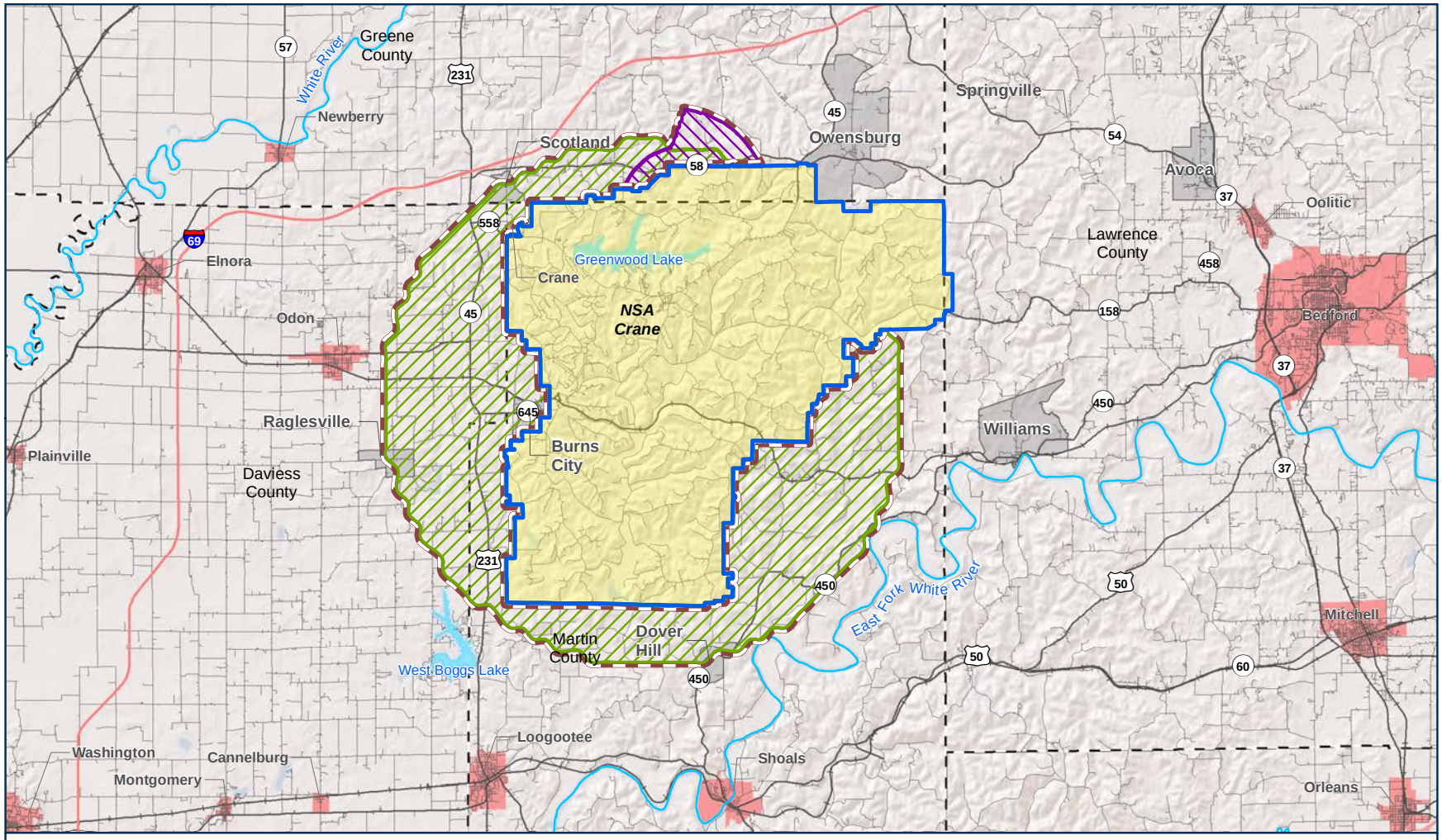
Noise sensitive land uses such as residential uses and those that congregate large groups, including schools, healthcare facilities, and churches, are not compatible within areas that experience small arms fire generating noise within the 87-104 decibel (dB) PK15(met) range. This area comprises the Small Calber Noise Subzone and is located along the northern boundary extending into Greene County.

Peak Noise generated at levels of 115 dB PK15(met) and higher create an environment for a moderate risk of complaints. Because noise is experienced as an impulse event, there is only general land use guidance to reduce the potential risk for complaints. Noise sensitive land uses pose the greatest risk for complaints and should be sited with consideration for this type of noise. This area comprises the Demolition Noise Subzone which is located in surrounding areas of Daviess, Greene and Martin counties.



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 9
NSA Crane Coordination Military Compatibility Area



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 10
NSA Crane Noise Military Compatibility Area

Lake Glendora Test Facility Military Compatibility Areas

Coordination Military Compatibility Area (Figure 11)

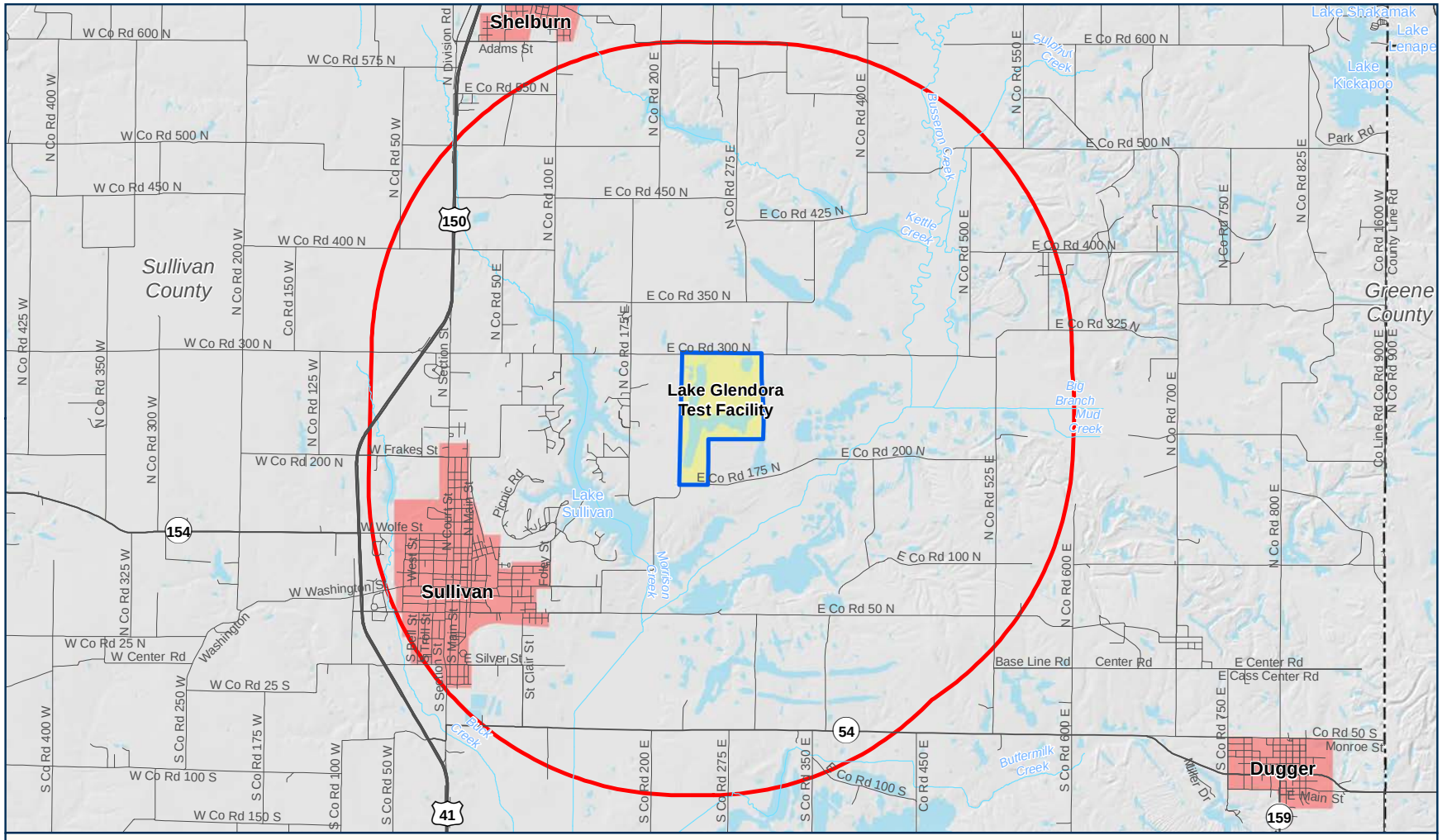
The proposed Coordination MCA for LGTF provides the same 3-mile military notification area surrounding the LGTF per Indiana Code (IC) §36-7-30.1-2 as the Coordination MCA for NSA Crane. Any actions pursuant to the state code within the 3-mile perimeter should be coordinated with the LGTF in an effort to maximize compatibility between the military and the surrounding communities.

The Coordination MCA is needed to reinforce the military notification requirements and enhance existing communications and coordination with the LGTF to prevent the development of incompatible land uses in areas with the greatest potential to impact the military mission and conversely can be used by the LGTF to proactively coordinate with Sullivan County and the City of Sullivan and notify them of any changes at the installation that could potentially impact development in the community. This area should be considered for land use controls where not adopted, incorporating land use compatibility provisions in existing land use controls, formalized coordination procedures, and a compatible development checklist that jurisdictions can use to identify which land uses could have the greatest impact on the military mission at the LGTF.

Noise Military Compatibility Area (Figure 12)

Similar to the Noise MCA for NSA Crane, the Noise MCA for the LGTF shows the areas off installation that can be impacted by noise events conducted at the LGTF. Because noise contours have not been modeled at the LGTF due to the frequency of noise generating events, they have been predicted only for underwater detonations based on accepted metrics at intervals of 0.5 and 1 mile from the LGTF.

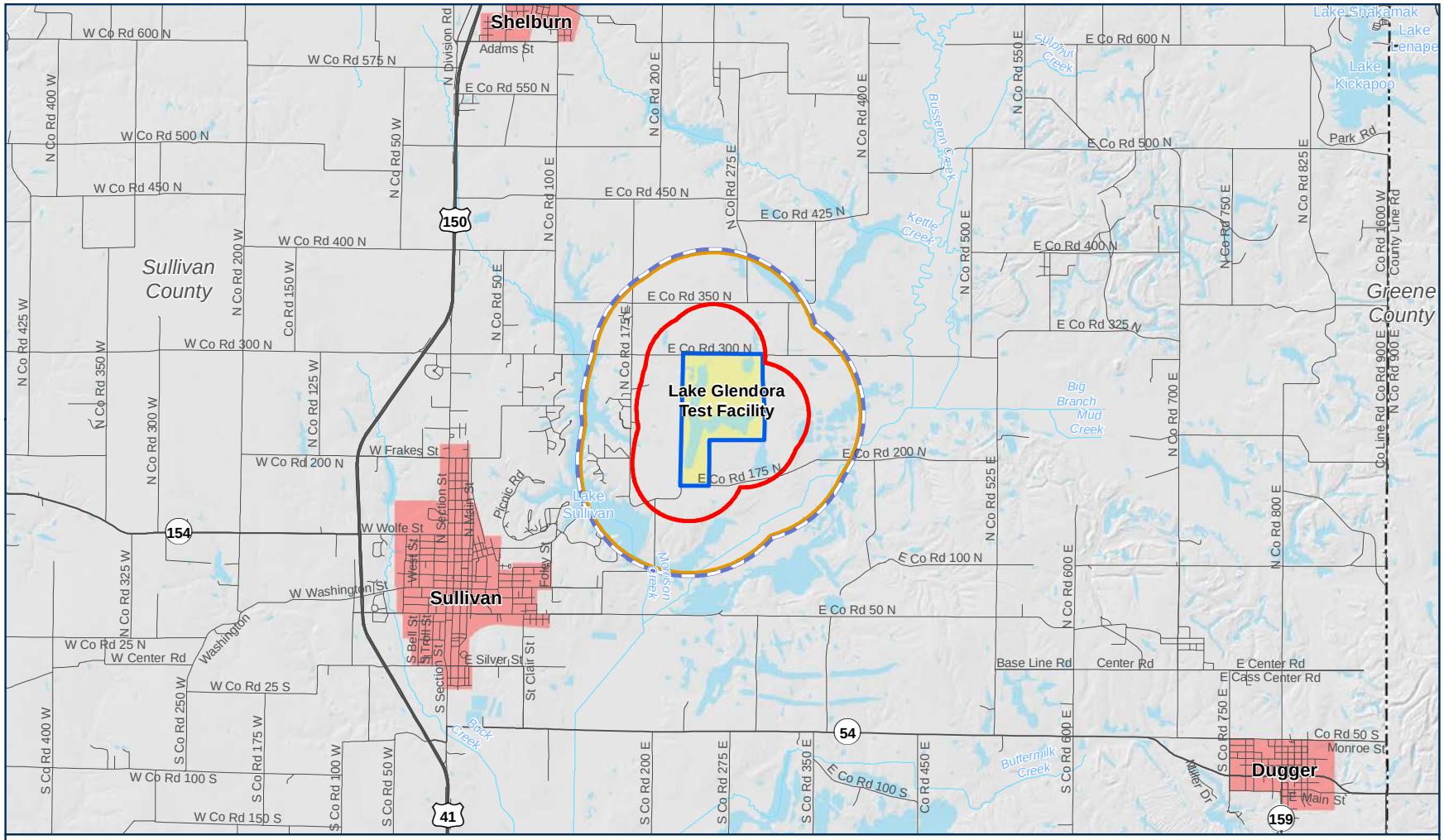
Peak Noise generated at levels between 115 dB PK15(met) and 130 dB PK15(met) create an environment for a moderate risk of complaints. At 0.5 miles from the installation the noise is predicted at 123 dB and at 1 mile the noise is predicted at 117 dB. Because noise is experienced as an impulse event, there is only general land use guidance to reduce the potential risk for complaints. Noise sensitive land uses pose the greatest risk for complaints and should be sited with consideration for this type of noise.



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 11

Lake Glendora Test Facility Coordination Military Compatibility Area



Source: State of Indiana, 2015. NSA Crane, 2015.

Figure 12
Lake Glendora Test Facility Noise Military Compatibility Area

How to Read the Implementation Plan

The strategies developed are designed to address the issues identified during preparation of the JLUS. The purpose of each strategy is to:

- avoid future actions, operations, or approvals that would cause a compatibility issue,
- eliminate an existing compatibility issue,
- reduce the adversity of an existing issue, and / or
- provide for on-going communications and collaboration.

In an effort to list and describe the strategies in an efficient manner, they have been arranged in a table to correspond with their compatibility factor. The issue within each factor topic is presented first to provide a linkage between the strategy and the condition it is to resolve or minimize. The following paragraphs provide an overview of how to read the information presented for each strategy in the JLUS.

Issue / Strategy ID Number. Each strategy is assigned a unique identifier (i.e., COM 1A, COM-1B, COM-1C, etc.) to provide an easy reference. A Strategy ID is composed of the Compatibility Issue to which it applies, i.e. "COM" for Communications / Coordination strategies and a sequential number. The corresponding compatibility issue precedes each set of applicable issues.

Geographic Area. The geographic Area identifies the geographic area applicable to the strategy (i.e. Study Area, MCAOD, Coordination MCA, Noise MCA, etc.). The MCAOD and MCA geographies for the NSA Crane JLUS strategies are described and illustrated on the previous pages of this JLUS. Some of the strategies are designated as "General" if they do not have a specific associated geography; some are designated as "Study Area' if they apply to across the entire Study Area or a specific geography; some are designated as "MCAOD" if they apply to the entire MCAOD for the JLUS Study Area, while others may apply to a specific MCA.

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

Timeline. The timeline is an estimate of when a strategy is anticipated to be initiated:

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.
On-Going	Strategy will be needed on a continuous, intermittent or as needed basis.

Responsible Partner. At the right end of the strategy table are a set of columns, one for each jurisdiction, military entity, agency, and organization with responsibilities relevant to implementation of the JLUS strategies. A column is also assigned as "Other" where parties are only required for select strategies. These parties are identified at the end of the strategy description if they apply.

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 has a primary responsibility 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 the page.

Figure 13 illustrates how to read the JLUS Strategies. The JLUS strategies are presented on the following pages in Table 4, organized alphabetically by compatibility factor.

Figure 13. Strategy Key

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	CAAA	Indiana Legislature	Indiana DOT	Other
COMMUNICATION / COORDINATION (COM)													
COM-1	**Public Awareness and Knowledge of NSA Crane / Lake Glendora Test Facility** Need for increased public education of NSA Crane and the Lake Glendora Test Facility amongst the local community.												
COM-1A	Study Area	**Establish a NSA Crane / LGTF JLUS Coordination Committee** Establish a JLUS Coordination Committee to maintain efficient and effective coordination among the JLUS partners and to oversee the implementation of JLUS recommendations. The JLUS Coordination Committee should meet on a regular basis as agreed upon by the Committee and be responsible for establishing effective and timely means of communication for the purpose of coordinating and addressing compatibility concerns and issues. Consider committee membership from the JLUS Policy Committee as well as other community partners as deemed appropriate to maintain continuity and institutional project knowledge. Consider the formation of a technical subcommittee comprising Technical Working Group members to address technical aspects of the JLUS implementation. Other Primary Partners: Indiana Office of Community and Rural Affairs, Radius Indiana	Short-term	■	■	■	■	■	■				■

Issue / Strategy ID: Alpha-numeric identifier used for reference.

Geographic Area: Geographic area where each strategy applies.

Strategy: Description of the strategy.

Timeframe: The expected initiation date for option

Responsible Party: The primary and partner responsible agencies. For example, the ■ denotes the primary agency who will take the lead in implementation. The □ denotes partner agency who will assist the primary agency in implementation.

Table 4. NSA Crane Strategies

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
AIR QUALITY												
AQ-1	**Regional Air Quality** Though Martin County is in attainment for six air quality criteria pollutants and NSA Crane is in compliance with its Part 70 Title V Air Quality operating Permit, future development has the potential to affect regional air quality.											
AQ-1A	Study Area	**Maintain Local Monitoring and Coordination for Regional Air Quality** The jurisdictions should work with NSA Crane and continue to monitor regional air quality for all six pollutants with the Indiana Department of Environmental Management. *Other Partners: Indiana Department of Environmental Management, university partners*	On-Going	■	■	■	■		■			□
AQ-1B	Study Area	**Ensure Community Activities such as Construction, Prescribed Burns and Industrial Processes 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.	On-Going	■	■	■	■					

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
ANTI-TERRORISM / FORCE PROTECTION (AT)												
AT-1	**Line-of-Sight at the Lake Glendora Test Facility** Higher terrain elevations outside the Lake Glendora Test Facility have potential for outside observation of operations creating a security concern.											
AT-1A	Study Area	**Plan and Budget for Anti-Terrorism / Force Protection Landscaping** NSA Crane should plan and budget for landscaping features at the Lake Glendora Test Facility on the upland portions of the property south and east of the lake that meet Department of Defense Anti-Terrorism Force Protection design guidelines to obscure the viewshed and minimize observation opportunities. Consider native vegetation resistant to extremes of drought, heat, and cold such as Eastern Red Cedar.	Mid-Term						■			
AT-1B IN PROCESS	Study Area	**Pursue Easement Opportunities** NSA Crane should pursue and prepare proposals for Sustainable Landscape projects utilizing such programs as the Readiness and Environmental Protection Integration (REPI) and/or Partnership Easement or Conservation programs to benefit willing landowner participants and to ensure compatible land use in the vicinity of NSA Crane Main Site and Lake Glendora Test Facility.	On-Going						■			
AT-2	**Naval Support Activity Crane Visitor's Center** The NSA Crane Visitor's Center is located in the Town of Crane approximately one mile from the NSA Crane Gate. The location of the Visitor's Center affects access to protection level resources.											
AT-2A	Study Area	**Consider Planning and Budgeting to Relocate the Visitor's Center** NSA Crane should consider planning and budgeting for relocation of the Visitor's Center closer to the NSA Crane gate. The planning and	Long-Term						■			

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		budgeting should incorporate Department of Defense Anti-Terrorism Force Protection design standards.										
AT-3	**Controlled Perimeter at Lake Glendora Test Facility** The controlled perimeter at the Lake Glendora Test Facility is on the property line at points along the southern and eastern boundaries creating a line-of-sight security concern.											
AT-3A	Study Area	**Consider Planning and Budgeting for an ATFP-Compliant Controlled Perimeter** NSA Crane should consider planning and budgeting for a new controlled perimeter around the Lake Glendora Test Facility with a standoff that provides the required clear zone. The new fence line should incorporate Department of Defense Anti-Terrorism Force Protection design standards. Consider installing in conjunction with Strategy AT-1A.	Long-Term						■			
BIOLOGICAL RESOURCES (BIO)												
BIO-1	**Threatened or Endangered Species** Areas at NSA Crane critical to threatened or endangered species such as the Bald Eagle, the Indiana Bat and the Northern Long-Eared Bat have the potential to impact mission operations and capability.											
BIO-1A	Study Area	**Develop a Conservation Plan for Indiana Bat and Northern Long-Eared Bat Habitat** The JLUS jurisdictions should consider working with US Fish and Wildlife Service and the Indiana Department of Natural Resources to develop a Conservation Plan for the Indiana bat and Northern long-eared bat – identifying existing suitable habitat areas within a 10-mile radius of NSA Crane for preservation and to promote their	Mid-Term	■	■	■	■					■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		sustainability to reduce potential impacts on future NSA Crane missions. *Other Primary Partners: US Fish and Wildlife Service, Indiana Department of Natural Resources, University Partners*										
BIO-1B	Study Area	**Protect Environmentally-Sensitive Land with the Readiness and Environmental Protection Integration (REPI) Program** The JLUS Jurisdictions should work with NSA Crane and willing landowners to protect the Indiana bat and Northern long-eared bat habitat within 10 miles of NSA Crane using REPI funding to safeguard mission capability at NSA Crane. *Other Primary Partners: Willing landowners, The Nature Conservancy, Four Rivers Resource Conservation and Development Council, Indiana Karst Conservancy, Sycamore Land Trust, Indiana Natural Resources Foundation, Indiana Land Protection Alliance, Indiana Department of Natural Resources, Indiana Heritage Trust Program*	Mid-Term	■	■	■	■		■			■
BIO-1C	Study Area	**Continue Monitoring of Delisted Species** NSA Crane should continue to support the monitoring of delisted species such as the Bald Eagle to ensure the installation continues to maintain populations in balance with their habitat and the military mission. *Other Primary Partner: Institute for Bird Populations*	On-Going						□			■
BIO-1D	Study Area	**Update Integrated Natural Resources Management Plan** NSA Crane should continue to perform annual updates to the Integrated Natural Resources Management Plan to ensure continued compliance with environmental laws and regulations, the	Mid-Term						■			□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		maintenance of quality lands to accomplish NSA Crane's critical military mission, and to ensure that natural resource conservation measures and military activities are integrated and consistent with federal stewardship requirements. *Other Partners: US Fish and Wildlife Service, Indiana Department of Natural Resources*										
COMMUNICATION / COORDINATION (COM)												
COM-1	**Public Awareness and Knowledge of NSA Crane / Lake Glendora Test Facility** Need for increased public education of NSA Crane and Lake Glendora Test Facility amongst the local community.											
COM-1A	Study Area	**Establish a NSA Crane / Lake Glendora Test Facility JLUS Implementation Coordination Committee** Establish a JLUS Implementation Coordination Committee to maintain efficient and effective coordination among the JLUS partners and to oversee the implementation of JLUS recommendations. The JLUS Implementation Coordination Committee should meet on a regular basis as agreed upon by the Committee and be responsible for establishing effective and timely means of communication for the purpose of coordinating and addressing compatibility concerns and issues. Consider committee membership from the JLUS Policy Committee as well as other community partners as deemed appropriate to maintain continuity and institutional project knowledge. Consider the formation of a technical subcommittee comprising Technical Working Group members to address technical aspects of the JLUS implementation.	Short-Term	■	■	■	■	■	■			■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		Other Primary Partners: Indiana Office of Community and Rural Affairs, Radius Indiana, City of Sullivan, Town of Shoals, Town of Crane, Indiana Office of Defense Development, Southern Indiana Development Commission										
COM-1B	Study Area	**Continue to Seek Funding for Public Outreach** NSA Crane should continue to annually seek funding from federal sources to conduct public outreach activities that focus on public education and advocacy for the missions at NSA Crane.	Short-Term						■			■
COM-1C	Study Area	**Consider Hosting Open House Events** Consider open house events and installation tours and visits accessible to all groups, i.e. building and development community, elected officials, and the general public. NSA Crane should evaluate the requirements for such events. NSA Crane can provide enhanced insight on the military mission to educate these groups about the mission at NSA Crane.	Short-Term						■			
COM-1D	NSA Crane MCAOD / LGTF MCAOD	**Foster Enhanced Public Awareness Through Accurate Mapping** Provide all of the surrounding local, county, regional, and state governments with an accurate geographic information system (GIS) data layer or geodatabase of the installation boundaries and military footprints that extend outside the installation for inclusion on all land use, transportation, park and recreation, public facilities, and other related planning documents. *Other Partner: Indiana Office of Community Rural Affairs*	On-Going						■			□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
COM-1E IN PROCESS	Study Area	**Enhance Public Education of the NSA Crane and the Lake Glendora Test Facility Missions** Develop fact sheets or brochures which outline the mission and community benefits that are generated from the activities that occur at NSA Crane and the Lake Glendora Test Facility. Public education materials should be made available on an "official" NSA Crane and Lake Glendora Test Facility website. The education materials can also be distributed to the County and cities for inclusion on their websites or printed material for their government offices. Incorporate any findings from the Indiana University and NSA Crane Economic Impact Study to illustrate the economic benefit of NSA Crane. *Other Partners: Radius Indiana, Indiana Office of Defense Development*	On-Going	☐	☐	☐	☐	☐	■	☐	☐	☐
COM-1F	Study Area	**Create a Crane Community Affairs Committee** Create a citizen-led Crane Community Affairs Committee consisting of business leaders, property owners, and students to educate and advocate for sustaining the missions at NSA Crane. The committee could be established through partnerships between Chambers of Commerce who could provide logistics support. Identify champions in the community, community organizations and educational institutions that can sustain the committee once established. *Other Primary Partners: Chambers of Commerce, local citizens, higher educational institutions, WestGate Authority* *Other Partner: Radius Indiana*	Short-Term	☐	☐	☐	☐	☐	☐	☐	☐	■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		For another strategy that addresses this issue see Strategy COM-6C.										
COM-2	**Contact and Coordination between NSA Crane / Lake Glendora Test Facility and Surrounding Jurisdictions** Need for enhanced and formal communication between surrounding jurisdictions and NSA Crane and the Lake Glendora Test Facility personnel / leadership.											
COM-2A	NSA Crane Coordination MCA / LGTF Coordination MCA	**Develop Memorandum of Agreement for Communications** NSA Crane and Lake Glendora Test Facility should collaborate with local governments and economic development organizations to implement a Memorandum of Agreement that delineates lines of communication between jurisdictions, agencies and NSA Crane / Lake Glendora Test Facility leadership. *Other Primary Partners: Indiana Office of Defense Development; Indiana Office of Community and Rural Affairs; Radius Indiana; City of Sullivan; Town of Crane; local economic development corporations, councils and commissions*	Short-Term	■	■	■	■	■	■			■
COM-2B	NSA Crane Coordination MCA / LGTF Coordination MCA	**Amend State Legislation to Allow a Non-Resident Representative from the Military to Serve as Non-Voting Member on Plan Commissions** The Indiana Legislature should amend Indiana Code (IC) 36-7-4-210 to allow county and municipal governments the option to appoint a non-resident from the military to serve as a non-voting member on plan commissions. *Other Partner: Indiana Office of Defense Development*	Short-Term							■		■
COM-2C	NSA Crane Coordination	**Invite a NSA Crane Representative to Serve as a Non-Voting Member of Plan Commissions**	Short-Term	■	♦	♦	♦	♦	□			■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCA / LGTF Coordination MCA	In an effort to continue a collaborative partnership, include in a Memorandum of Agreement between county and local governments and NSA Crane that allows NSA Crane to participate as a non-voting member on Plan Commissions to attend meetings and provide technical input on military compatibility issues. This strategy applies to any jurisdiction that establishes a Plan Commission in the future as indicated by the ♦symbol. *Other Primary Partner: City of Sullivan*										♦
COM-2D	NSA Crane Coordination MCA / LGTF Coordination MCA	**Provide Mutual Briefings** To perpetually enhance support and cooperation, and reinforce the partnership between NSA Crane / Lake Glendora Test Facility and Study Area jurisdictions, installation leadership should annually present a "state of the installation" briefing including strategic goals, operational changes, and proposed construction projects that may impact the jurisdictions to the Study Area county commissions and city councils. The counties and cities should provide annual briefings to NSA Crane / Lake Glendora Test Facility leadership of changes within the communities that may impact the installation including comprehensive plans, master plans, transportation plans, zoning, development projects, and capital improvement plans. *Other Primary Partners: City of Sullivan, Town of Crane* *Other Partners: Indiana Office of Defense Development, Indiana Office of Community and Rural Affairs, Radius Indiana*	Short-Term	■	■	■	■	■	■			■
COM-2E	Study Area	**Expand Geographic Area of Responsibility to Include Sullivan County** As a strategic partner with NSA Crane, Radius Indiana should	Mid-Term									■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		consider formally expanding their partnership representation to Sullivan County and NSA Crane's Lake Glendora Test Facility. *Other Primary Partner: Radius Indiana, Indiana Office of Community and Rural Affairs, Southern Indiana Development Commission*										
COM-3	**Local Jurisdiction Planning Resources** Need for improved awareness of local jurisdiction planning department structure, resources, and knowledge to facilitate coordination and communication from NSA Crane / Lake Glendora Test Facility.											
COM-3A	NSA Crane Coordination MCA / LGTF Coordination MCA	**Designate and Formalize Points of Contact for Planning** Consider a Memorandum of Agreement between the JLUS Study Area jurisdictions and NSA Crane / Lake Glendora Test Facility that formally designates and identifies the points of contact for jurisdictions and NSA Crane / Lake Glendora Test Facility. The point of contact should be an individual with knowledge of county and local governments and economic development initiatives, capable of relaying information between the jurisdictions and the military. *Other Primary Partners: local economic development corporations, councils and commissions, and area cities and towns*	Short-Term	■	■	■	■	■	■			■
COM-3B	NSA Crane Coordination MCA / LGTF Coordination MCA	**Formalize Coordination with NSA Crane / Lake Glendora Test Facility in Planning Documents** County and local governments should formalize coordination procedures with NSA Crane / Lake Glendora Test Facility in planning documents including comprehensive plans and zoning ordinance to ensure community compliance with military notification procedures outlined in Indiana Code IC 36-7-30.1 and as amended from time to time. *Other Primary Partners: Southern Indiana Development*	Short-Term	■	■	■	■	■	□			■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		Commission, City of Sullivan, Town of Crane, other jurisdictions that may have incorporated area within the notification buffer in the future.										
COM-3C	Study Area	**Evaluate "P4" Partnership Opportunities** Investigate the feasibility of a local government / Navy / private development venture through public-public and public-private partnerships to address opportunities for public resource sharing including but not limited to transportation, road maintenance and consumables where economies of scale may prove beneficial. *Other Primary Partners: Indiana Office of Defense Development; Indiana Office of Community and Rural Affairs; Radius Indiana; local economic development corporations, councils and commissions; WestGate Authority*	Short-Term	■	■	■	■	■	■			■
		For another strategy that addresses this issue see Strategy COM-2A.										
COM-4	**Coordination of Public Safety Resources** NSA Crane physical security forces are not authorized to assist jurisdictions with public safety and there is perception that NSA Crane does not want local law enforcement participation on the installation.											
COM-4A	NSA Crane Coordination MCA	**Identify Need for and Consider Executing a Mutual Aid Agreement for Law Enforcement Resources** The local law enforcement agencies should consider collaborating with NSA Crane security forces to execute a mutual aid agreement that will provide for the coordination of law enforcement resources and identify opportunities for resource sharing and training.	Short-Term	■	■	■	■		■			

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
COM-5	**NSA Crane / Lake Glendora Test Facility Public Outreach** Need for NSA Crane / Lake Glendora Test Facility public outreach with surrounding jurisdictions.											
COM-5A	Study Area	**Develop an Outreach Campaign Plan** Develop an Outreach Campaign Plan to identify public outreach goals and action items, metrics and milestones for activities, and responsible parties for conducting outreach activities. Goals should support a range of activities including public appearances, speaking engagements, educational seminars, open houses, media engagements, exhibits, press and news release and publication development/distribution that reinforces the community understanding of NSA Crane / Lake Glendora Test Facility, enhances its strategic value within the community, and strengthens the community support base. The Public Outreach Campaign Plan should address current issues, concerns, and potential changes at NSA Crane / Lake Glendora Test Facility. Consideration should be given to a broad mix of outreach channels including in person, print, video, and digital tools such as websites, social media, and podcasts and support from area jurisdictions and organizations.	Short-Term						■			■
		For other strategies that address this issue see Strategies COM-1B, COM-1C, COM-1D, and COM-1F.										

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
COM-6	**Public Notification of Range Activities at NSA Crane and Detonation Activities at the Lake Glendora Test Facility** Need for increased public notification of NSA Crane range activities and detonation activities at the Lake Glendora Test Facility with surrounding jurisdictions.											
COM-6A	NSA Crane MCAOD / LGTF MCAOD	**Establish an "Official" Public Notification Protocol to Jurisdictions** NSA Crane / Lake Glendora Test Facility should establish an official public notification protocol to inform the community leaders in advance of detonation activities so the community can inform their residents. The protocol should consider the following: ■ Best method to use, e.g. email, phone, media releases, to maximize outreach, ■ Agreed upon timeframe for advance notification, ■ Information about the activity and its duration, ■ Information about impacts if other than noise, and ■ A contact number for the installation.	Short-Term						■			☐
COM-6B	NSA Crane MCAOD / LGTF MCAOD	**Jurisdiction Notification to the Public** Based on the notification protocol from NSA Crane / Lake Glendora Test Facility in Strategy COM-6A, establish an official and routine public notification protocol to inform residents in advance of detonation activities at NSA Crane / Lake Glendora Test Facility. Consider methods to maximize outreach, e.g. county and city government meetings, government offices, county and city websites, county and city social media sites. *Other Primary Partners: City of Sullivan, Town of Crane*	Short-Term	■	■	■	■	■				■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
COM-6C	NSA Crane MCAOD / LGTF MCAOD	**Promote Social Media Outlets for General Public** NSA Crane / Lake Glendora Test Facility should promote and market the existing NSA Crane, Naval Surface Warfare Center and CAAA social media outlets as methods to provide important activity information to the general public. Promotion could also include providing links to jurisdictions for inclusion on county and city websites. *Other Partners: City of Sullivan, Radius Indiana, Indiana Office of Defense Development, Indiana Office of Community and Rural Affairs*	On-Going	☐	☐	☐	☐	☐	■			☐
COM-6D	NSA Crane MCAOD / LGTF MCAOD	**Communication on Detonations Testing** NSA Crane / Lake Glendora Test Facility should communicate upcoming detonation activities to the public. Communication should take the form of formal media releases, eBlasts, website flash tickers, public service announcements, and radio / TV coverage to ensure the notification is in general circulation. NSA Crane / Lake Glendora Test Facility should also consider an audible early warning system to alert the surrounding residents two to five minutes prior to a detonation event.	On-Going						■			☐
COM-7	**Coordinated Noise Complaint Process** Concern that not all noise complaints generated by public and reported to jurisdiction authorities are conveyed to NSA Crane / Lake Glendora Test Facility, creating a gap in the communication of complaints.											
COM-7A	NSA Crane MCAOD / LGTF MCAOD	**Update the Installation Noise Complaint Management Program** The NSA Crane / Lake Glendora Test Facility and the Crane Army Ammunition Activity should improve upon the existing Installation	Short-Term						■			☐

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		Noise Complaint Management Program to establish the following: ■ A common form to complete about the noise nuisance that describes the noise, time the noise occurred, frequency, etc. ■ Points of contact for all communities and the installation ■ Response time for addressing the noise complaint ■ Follow-up to ensure the complaint was either addressed or explanation as to why it was not addressed										
COM-7B	NSA Crane MCAOD / LGTF MCAOD	**Jurisdiction Procedures for Noise Complaints** Jurisdictions should adopt coordinated and formal procedures for noise complaints lodged by residents to jurisdiction authorities to ensure complaints are officially documented, conveyed to NSA Crane and the Lake Glendora Test Facility, and that there is appropriate feedback to close the loop with the complainant. *Other Primary Partners: City of Sullivan, Town of Crane, and other area cities and towns*	Short-Term	■	■	■	■	■	□			■
COM-8	**Development Notification to NSA Crane / Lake Glendora Test Facility** Need for formalized notification to NSA Crane / Lake Glendora Test Facility of development within 3-mile installation radius per the state legislative mandate.											
COM-8A	NSA Crane Coordination MCA / LGTF Coordination MCA	**Acknowledge Military Notification by Resolution** Each jurisdiction should document their understanding and intent to implement the military notification provisions per IC 36-7-30.1 by way of a resolution to acknowledge awareness of its requirements. *Other Primary Partners: City of Sullivan, Town of Crane*	Short-Term	■	■	■	■	■				■
COM-8B	NSA Crane Coordination	**Require Property Subdivision Plats to Note the Coordination MCA**	Short-Term	■	■	■	■	■				

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCA / LGTF Coordination MCA	Jurisdictions should consider the County Recorder to require a notation on filed subdivision plats that real property is within the Coordination MCA. A map of the Coordination MCA boundary should be on file with each County Recorder and in the County Assessor's GIS system for reference and verification.										
COM-8C	NSA Crane Coordination MCA / LGTF Coordination MCA	**Adopt Development Notification Checklist** Jurisdictions should work with NSA Crane / Lake Glendora Test Facility to develop, adopt and implement a development notification checklist that will assist jurisdictions, developers, residents and the military with identifying development types that could potentially be incompatible with the NSA Crane / Lake Glendora Test Facility missions. The checklist should define applicable development types and scales that warrant NSA Crane / Lake Glendora Test Facility review and include a map indicating the notification area. The checklist should be standardized for all jurisdictions to ensure consistency and eliminate interpretation in how, when and where the checklist is applied. The checklist could be used as a tool for a continuing dialog between local economic development organizations and the military and assist with early notification to developers. The checklist should not be regarded as a mechanism to approve or deny development but should be formally adopted by county commissions and city councils to acknowledge and endorse its use. *Other Primary Partners: local economic development corporations, councils and commissions; City of Sullivan; Town of Crane*	Short-Term	■	■	■	■	■	□			■
COM-8D	NSA Crane Coordination	**Formalize NSA Crane / Lake Glendora Test Facility in Development Reviews**	Mid-Term	■	♦	♦	♦	♦				■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCA / LGTF Coordination MCA	Revise codes to include NSA Crane / Lake Glendora Test Facility in the review process for development applications per the Checklist established in Strategy COM-8B and Indiana Code Section 36-7-30.1-2. Include procedures for military notification and timeframes for review to support a proactive approach for identifying and mitigating potential military incompatibilities. Code provisions should specify: ■ Opportunities for the military to provide technical input and assistance to local jurisdictions to support discussion of projects and potential compatibility issues ■ Defining project types that require military review ■ Identification of the Points of Contact in the development review process ■ Formal procedures for transmitting applications to NSA Crane / Lake Glendora Test Facility ■ Formal procedures for requesting and receiving comments ■ Timeline for military responses considering review timeframes specified by state law and local procedures ■ Notification to NSA Crane / Lake Glendora Test Facility on all public hearings related to development applications This strategy applies to any jurisdiction that establishes a Development Review process in the future as indicated by the ♦symbol. *Other Primary Partner: City of Sullivan*										♦
COM-8E	NSA Crane Coordination	**Adopt Military Notification Procedures for Development Projects through Tax Abatement Process**	Short-Term		■	■	■	■				■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCA / LGTF Coordination MCA	Jurisdictions without a planning regulatory framework should adopt formal requirements for notification and review of development by NSA Crane / Lake Glendora Test Facility per the Checklist identified Strategy COM-8B and Indiana Code Section 36-7-30.1-2. As part of the tax abatement application process require transmittal of a copy of the application to NSA Crane / Lake Glendora Test Facility at the time of application to ensure adequate review prior to the public hearing. Incorporate notification and review requirements per Indiana Code Section 36-7-30.1-2. *Other Primary Partners: local economic development corporations, councils and commissions; Town of Crane*										
COM-8F	NSA Crane Coordination MCA / LGTF Coordination MCA	**Adopt Development Notification Procedures through Jurisdiction Building Permitting Process** City of Sullivan should adopt formal requirements through the building permit process for notification and review to the Lake Glendora Test Facility per the Checklist in Strategy COM-8B and Indiana Code Section 36-7-30.1-2. Adopt requirements that specify: ■ Building project types that require military review ■ Points of Contact in the building permit review process ■ Formal procedures for transmitting building applications to the Lake Glendora Test Facility ■ Formal procedures for requesting and receiving comments from the Lake Glendora Test Facility ■ Timeline for military responses considering review timeframes specified by state law and local procedures *Other Primary Partner: City of Sullivan*	Short-Term									■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
COM-8G	NSA Crane Coordination MCA / LGTF Coordination MCA	**Adopt Development Notification Procedures through State Building Permit Review Process** Jurisdictions that employ the Indiana Department of Homeland Security Division of Fire and Building Safety to review and approve building permits should enter into a Memorandum of Agreement with the Division acknowledging that notification and review procedures for NSA Crane / Lake Glendora Test Facility are conducted as part of the Division review and approval of building permits in compliance with Indiana Code Section 36-7-30.1-2. Note: Requires legislative action to modify procedures for the Indiana Department of Homeland Security Division of Fire and Building Safety – see Strategy LEG-1B *Other Primary Partners: Indiana Department of Homeland Security Division of Fire and Building Safety, Town of Crane*	Short-Term	■	■	■	■	■		□		■
DUST / SMOKE / STEAM (DSS)												
DSS-1	**Dust from Demolition Area** Detonations at the NSA Crane Demolition Range can generate fugitive dust impacts outside the installation.											
DSS-1A	NSA Crane MCAOD / LGTF MCAOD	**Continue to Monitor and Employ Adaptive Management Practices to Control Fugitive Dust** NSA Crane and the Crane Army Ammunition Activity should continue to monitor environmental conditions when Demolition Range activities are required to optimize timing of activities that inherently minimize fugitive dust impacts outside the installation and employ adaptive management practices to reduce the overall impacts when activities are conducted.	On-Going						■			□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
DSS-2	**Smoke from Prescribed Burns** Smoke from prescribed burns at NSA Crane can migrate outside the installation.											
		For a strategy that addresses this issue see Strategy AQ-1B.										
FREQUENCY SPECTRUM CAPACITY (FSC)												
FSC-1	**Potential for Decreased Frequency Capacity** As additional personnel and / or missions come to NSA Crane, the frequency availability and bandwidth has the potential to decrease.											
FSC-1A	NSA Crane MCAOD	**Acquire and improve RF 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.	Mid-Term						■			
FSC-1B	NSA Crane MCAOD	**Ensure compatible frequencies.** The Federal Communications Commission is the government entity responsible for managing frequency usage. The military is assigned certain frequencies to use that generally do not interfere with civilian uses. The continued usage of only assigned frequencies should ensure no interference between military and civilian uses. *Other Partner: Federal Communications Commission.*	Mid-Term						■			□
		For another strategy that addresses this issue see Strategy FSI-1C.										

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
FREQUENCY SPECTRUM IMPEDANCE / INTERFERENCE (FSI)												
FSI-1	**Frequency Interference From Lake Glendora Test Facility Operations** Frequency interference issues have increased as wireless demands and technology use skyrockets. Residents near Lake Glendora Test Facility have experienced wireless and Global Positioning System (GPS) signal loss.											
FSI-1A	LGTF MCAOD	**Conduct a Frequency Spectrum Study** Conduct a Frequency Study to identify the sources and extent of spectrum interference issues experienced in the surrounding community and the extent of correlation with the Lake Glendora Test Facility. Include information from local broadband providers and resident testimony as part of the Study analysis. Employ "radio frequency spectrum analyzer" technologies used to detect interference between frequency bands. Identify interference from on- and off-installation sources including military and public / commercial users. Identify any mitigation measures and share study results with the jurisdictions and public. *Other Partner: Local wireless broadband providers*	Short-Term						■			☐
FSI-1B	LGTF MCAOD	**Update Comprehensive Frequency Management Program** Update the Comprehensive Frequency Management Program at the Lake Glendora Test Facility to ensure a spectrum planning process that considers the current and future availability of spectrum and procedures for deconflicting future spectrum needs. Continue to coordinate with industry and private sector organizations to achieve effective management and use of electromagnetic spectrum per Secretary of the Navy Instruction 2400.1A, Department of Navy Policy 5.d.(4).	Mid-Term						■			

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
FSI-1C	LGTF MCAOD	**Establish Procedures to Avoid Frequency Conflicts** The Lake Glendora Test Facility should coordinate with Sullivan County on review of projects with frequency requirements that could impact communications off-installation. The criteria that triggers coordination includes: ■ Proximity to the Lake Glendora Test Facility ■ Tower height ■ Power emission from tower sources ■ High output transmission devices	Mid-Term					☐	■			
FSI-1D	LGTF MCAOD	**Formalize Communication Procedures** Identify and convene a coalition of spectrum stakeholders to discuss use of frequencies and notification procedures for mitigating and troubleshooting possible service interruptions. *Other Primary Partners: Local wireless broadband providers, Indiana Office of Technology*	Short-Term					■	■			
FSI-1E	LGTF MCAOD	**Ensure Compatible Frequencies** The Federal Communications Commission is the government entity responsible for managing frequency usage. The military is assigned certain frequencies to use that generally do not interfere with civilian uses. The continued usage of only assigned frequencies should ensure no interference between military and civilian uses. *Other Partners: Federal Communications Commission, City of Sullivan*	Mid-Term					☐	■			☐
FSI-1F	LGTF MCAOD	**Develop an Educational Outreach Program with Broadband Providers to Ensure They are Aware of Lake Glendora Test Facility**	Mid-Term						■			☐

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		Frequency Requirements The Lake Glendora Test Facility should work with local wireless broadband providers to ensure that providers are aware of the installation frequency requirements when planning wireless broadband transmission facilities to deconflict and prevent future interference with required installation frequencies. *Other Partner: Local wireless broadband providers*										
FSI-1G	LGTF MCAOD	**Develop Outreach Materials** Work with affected jurisdictions to develop public outreach materials including website updates and public service announcements to inform the public about any potential for interruption of cellular service and GPS devices associated with the Lake Glendora Test Facility testing. *Other Primary Partner: City of Sullivan*	Mid-Term					■	■			■
FSI-1H	LGTF MCAOD	**Roadway Signage** Pending the outcome of the Frequency Spectrum Study recommended in Strategy FSI-1A and identification of any affected areas, work with affected county and transportation departments on the placement of signs noting that GPS and cellular technologies could be impacted by local testing operations and that appropriate care should be taken when entering these areas.	Mid-Term					■	■			
FSI-2	**Impacts to NSA Crane Operations** Uses from outside NSA Crane can impact installation operations and affect mission activities.											
		For strategies that address this issue see Strategies FSI-1A, FSI-1B, FSI-1C, FSI-1D, FSI-1E, FSI-1F, FSI-1G, and FSI-1H.										

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
HOUSING AVAILABILITY (HA)												
HA-1	**Lack of Housing Availability Proximate to NSA Crane** Need for high quality housing accommodations proximate to NSA Crane to attract and retain personnel in the local area.											
HA-1A	Study Area	**Update Comprehensive Plans for Housing** Jurisdictions should update their comprehensive plans to incorporate a housing element or housing vision, goals, and objectives that consider providing a variety of housing options to accommodate transient and permanent party military personnel.	Mid-Term	■	■	■	■		□			
HA-1B	Study Area	**Develop Housing Plan** Jurisdictions should develop a regional plan for housing that executes the housing vision, goals, and objectives identified per Strategy HA-1A. *Other Partners: Indiana Office of Community and Rural Affairs; Radius Indiana; local economic development corporations, councils and commissions*	Mid-Term	■	■	■	■		□			□
HA-1C	Study Area	**Evaluate "P4" Partnerships** Investigate the feasibility of a local government / Navy / private development venture through public-public and public private partnerships to develop housing option for the military personnel. *Other Primary Partners: local developers; Indiana Office of Defense Development; Indiana Office of Community and Rural Affairs; Radius Indiana; local economic development corporations, councils and commissions; WestGate Authority*	Mid-Term	■	■	■	■		■			■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
LAND / AIR/ SEA SPACES (LAS)												
LAS-1	**Potential for Seaplane Base on Kayak Lake Near the Lake Glendora Test Facility** Concern that the approval of private seaplane base on Kayak Lake located near Lake Glendora Test Facility could potentially interfere with the restricted airspace.											
LAS-1A	LGTF Coordination MCA	**Coordinate with Lake Glendora Test Facility about Proposed Seaplane Base** The property owner considering the seaplane base should coordinate with the Lake Glendora Test Facility in the planning and development of the base and on a consistent basis when operational to ensure the military testing mission is considered. *Other Primary Partner: property owner*	On-Going						☐			■
LAND USE (LU)												
LU-1	**Future Development Associated with Interstate 69** Potential for incompatible development associated with the development of Interstate 69.											
LU-1A	NSA Crane Coordination MCA	**Update Comprehensive Plans for Military Compatibility** Jurisdictions should update their comprehensive plans to incorporate provisions that integrate military compatibility planning with the future growth. Updates should include maps from NSA Crane per Strategy COM-1D and the Military Compatibility maps from the JLUS. *Other Primary Partner: Town of Crane*	Mid-Term	■	■	■	■					■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
LU-1B	NSA Crane Coordination MCA	**Amend Zoning Ordinance for Military Compatibility** Amend the zoning ordinance to incorporate provisions and regulations that integrate military compatibility planning. Updates should include maps from NSA Crane per Strategy COM-1D and the Military Compatibility maps from the JLUS.	Mid-Term	■								
LU-1C	NSA Crane Coordination MCA	**Adopt Land Use Planning in Three-Mile Military Notification Buffer** Jurisdictions without land use planning should adopt land use controls specific to military compatibility within the three-mile military notification buffer in conjunction with Strategy LEG-1D. This guidance is intended to minimize conflicts between military installations and surrounding communities and should consider consultation with the installation command to determine the needs of the military installation with respect to questions of installation expansion and environmental impact; issues of installation safety, noise pollution, air pollution, electrical emissions; and potential for obstructed visibility or surveillance. *Other Primary Partner: Town of Crane*	Mid-Term		■	■	■		□			■
LU-1D	NSA Crane Coordination MCA	**Coordination on Infrastructure Planning** Notify and coordinate infrastructure expansion plans with NSA Crane such as water and sewer extensions and transportation improvements. This coordination can be done in conjunction with Strategies COM-2A, COM-2B, COM-2C, COM-3B and COM-8A.	On-Going	■	■	■	■		□		■	

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
LU-2	**Development of WestGate@Crane Technology Park** Need for coordinated development at WestGate@Crane Technology Park to ensure future development is compatible with NSA Crane mission.											
LU-2A	NSA Crane Coordination MCA	**Adopt a Master Plan for WestGate@Crane Technology Park** Adopt a Master Plan for the WestGate@Crane Technology Park that includes industry clusters, facility types, timeframes for the buildout, and prospective job creation to help identify supporting community services, long-term housing needs, etc. so that they can be built into jurisdiction Comprehensive Plans and planned for at the community level. *Other Primary Partner: WestGate Authority*	Mid-Term									■
LU-3	**Adequate Commercial Rest Facilities and Staging Areas** The lack of adequate commercial truck rest facilities and staging areas outside of NSA Crane has resulted in trucks overnighting in a gravel strip of land opposite of the Town of Crane.											
LU-3A	NSA Crane Coordination MCA	**Continue to Pursue Truck Travel Center Development** Daviess and Greene counties should continue to pursue the development of a truck travel center near Interstate 69 interchanges to alleviate the uncontrolled overnighting of trucks across from the Town of Crane and provide professional drivers with amenities. *Other Primary Partners: local developers; Indiana Office of Community and Rural Affairs; Radius Indiana; Daviess County Economic Development Corporation; Greene County Economic Development Corporation*	On-Going	■	■							■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
LU-4	**Development Surrounding Lake Glendora Test Facility** Potential for incompatible land uses surrounding the Lake Glendora Test Facility or interference from incompatible uses with mission capabilities.											
LU-4A	LGTF Coordination MCA	**Coordination on Infrastructure Planning** Notify and coordinate infrastructure expansion plans with the Lake Glendora Test Facility such as water and sewer extensions and transportation improvements. This coordination can be done in conjunction with Strategies COM-2A, COM-2B, COM-2C, COM-3B and COM-8A.	On-Going					■	□		■	
		For strategies that address this issue see Strategies COM-2B, COM-2C, COM-3A, COM-3B, COM-8A, COM-8B and COM-8C.										
LU-5	**Development Surrounding NSA Crane** Potential for incompatible land uses surrounding the NSA Crane or interference from incompatible uses with mission capabilities.											
		For strategies that address this issue see Strategies COM-2C, Com-3A, COM-3B, COM-8A, COM-8B, COM-8C, LU-1A, LU-1B, LU-1C, and LU-2A.										
LEGISLATIVE INITIATIVES (LEG)												
LEG-1	**Legislative Tools for Indiana's Military Base Protection Act** Need for implementation tools and enforcement procedures in Indiana Code intended to protect military installations in the state.											
LEG-1A	NSA Crane Coordination MCA / LGTF Coordination MCA	**Amend Indiana Code Annotated Title 36, Article 7, Section 30.1 Planning and Zoning Affecting Military Bases** The Indiana Legislature should amend IC 36-7-30.1 to improve on existing legislation for military compatibility. Consider appointing a committee to determine the most effective changes to clarify and	Mid-Term							■		□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		enhance the compatibility language. At minimum the legislation should be amended to: ■ Clarify that the code applies to permitting, in addition to planning and regulating ■ Specify development types for coordination with the military so that it is focused on relevant plans and developments with the potential to adversely impact military operations ■ Specify the form of notification required to ensure consistent interpretation and application across jurisdictions ■ Specify that plans/ documentation is required that adequately explain the activity and location such that the military can provide informed feedback on any potential impact on their operations ■ Provide for the ability to impose conditions, require modifications to eliminate or mitigate potential adverse impacts, or include a mediation process to resolve compatibility conflicts where other remedies cannot be applied ■ Incorporate compliance enforcement provisions. This will require the identification of an appropriate state authority, procedures to track compliance and a progressive (stepped) framework to attain compliance, perhaps beginning with education and assistance. *Other Partner: Indiana Office of Defense Development; Indiana Commission on Military and Veteran's Affairs; Indiana Military Base Council*										
LEG-1B	NSA Crane Coordination MCA / LGTF Coordination	**Amend State Building Permit Review Procedures** Amend Indiana Code 4-21.5-3-1 to require the Indiana Department of Homeland Security Division of Fire and Building Safety as the authority for building permits within counties not employing local	Mid-Term							■		☐

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCA	building inspection program to notify a military installation of construction pursuant to IC 36-7-30.1. Amend Title 675 Indiana Administrative Code 12-10-6: Required Administrative Provisions to include a provision that no building permit would be issued that would cause a violation of IC 36-7-30.1. *Other Partner: Indiana Department of Homeland Security Division of Fire and Building Safety; Indiana Office of Defense Development; Indiana Commission on Military and Veteran's Affairs; Indiana Military Base Council*										
LEG-1C	NSA Crane Coordination MCA / LGTF Coordination MCA	**Consider State Funding Program Set Asides and Incentives for Rural Military Communities** Amend the Rural Economic Development Fund and Indiana Main Street programs to include a set-aside for rural communities who host military installations and are subject to encroachment impacts including development constraints. Consider incentive criteria such as community actions which demonstrate ongoing commitment to military compatibility.	Long-Term							■		
LEG-1D	NSA Crane Coordination MCA / LGTF Coordination MCA	**Designate State Areas of Interest** Designate a three-mile boundary around military installations as "state areas of interest." Require jurisdictions to adopt planning guidance specific to compatibility with military installations for land within the three-mile boundary. *Other Partners: Other Partner: Indiana Office of Defense Development; Indiana Commission on Military and Veteran's Affairs; Indiana Military Base Council*	Mid-Term							■		□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
LIGHT AND GLARE (LG)												
LG-1	**Solar Farm at NSA Crane** Potential for the future solar farm at the NSA Crane Eagle View Golf Club to create glare impacting adjacent residences in Burns City.											
LG-1A	NSA Crane Coordination MCA	**Coordination on Solar Energy Development** NSA Crane should coordinate with adjacent residents on the Duke Energy solar energy project at the Eagle View Golf Club; identify any impacts outside the installation including glint and glare, and how those impacts can be addressed. *Other Primary Partner: Duke Energy* *Other Partners: Residents of Burns City*	On-Going				☐		■			☐
NOISE (NOI)												
NOI-1	Noise from NSA Crane Ranges Noise from the NSA Crane Ranges extends off installation and has the potential to affect noise sensitive land uses.											
NOI-1A	NSA Crane Noise MCA / LGTF Noise MCA	**Prepare an Annual Noise Summary** NSA Crane / Lake Glendora Test Facility should prepare an annual Noise Summary of reported community noise disturbances summarizes all noise disturbance calls received during a calendar year and describes initiatives to enhance the sustainability of NSA Crane / Lake Glendora Test Facility to provide useful information to stakeholders at the installation with a vested interest noise disturbances. The Noise Summary should include: ■ A summary of disturbances	Mid-Term						■			

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		■ Annual comparison of disturbance calls ■ Disturbance calls by county ■ Disturbance calls by month ■ Disturbance calls by activity ■ Mitigation tools ■ Noise briefs ■ Analysis tools ■ Proactive approaches taken such as public notifications										
NOI-1B	Study Area	**Broaden Land Use Recommendations** NSA Crane should consider initiating an addendum to Navy instructions or adopting installation-level guidance for recommended compatible land uses for small caliber arms noise based on the PK(15)met measurement. *Other Primary Partner: US Department of the Navy*	Long-Term						■			■
NOI-1C	NSA Crane MCAOD / LGTF MCAOD	**Require Real Estate Disclosures** Require any property owner to notify potential purchasers of the property and any potential lessees or renters that the property is: ■ Located in a noise zone per the Noise MCA and subject to noise impacts generated from military operations ■ Located within the 3-mile military notification area and development or redevelopment is subject to review by the military to ensure there is no adverse impact on military operations	Mid-Term	■	■		■	■		■		
		For other strategies that address this issue see Strategies COM-1D, COM-1E, COM-6A, COM-6B, COM-6C, COM-6D, and COM-7B.										

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
NOI-2	**Noise from Lake Glendora Test Facility** Noise from Lake Glendora Test Facility operations extends outside the property and has the potential to affect noise sensitive land uses.											
NOI-2A	LGTF Noise MCA	**Update the Operational Noise Consultation for the Lake Glendora Test Facility Component** NSA Crane should update the Operational Noise Consultation for the Lake Glendora Test Facility to use actual and not predicted noise levels. NSA Crane should consider conducting a pre-blast seismograph survey as part of the update and incorporate those findings into the Operational Noise Consultation to determine a precise measure of affected geography.	Mid-Term						■			
NOI-2B	LGTF Noise MCA	**Voluntary Acquisition of Property Surrounding the Lake Glendora Test Facility** NSA Crane / Lake Glendora Test Facility should consider the acquisition of property surrounding the Lake Glendora Test Facility from willing sellers at fair market value. Potential funding for property acquisition could come from the State Funding Program in Strategy LEG-1C.	Mid-Term						■			
		For other strategies that address this issue see Strategies COM-1D, COM-1E, COM-6A, COM-6B, COM-6C, COM-6D, COM-6E, COM-7B, NOI-1A, NOI-1B, and NOI-1C.										
NOI-3	**Regional Ground Noise Sources** There are other regional sources of noise which can be misattributed to activities at NSA Crane.											
NOI-3A	NSA Crane MCAOD / LGTF	**Increase Public Understanding of Noise Sources** Increase community awareness of military overflight and operations throughout the entire NSA Crane / Lake Glendora Test	Long-Term	□	□	□	□	□	■			□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
	MCAOD	Facility area of influence through the use of local media sources, newsletters, brochures, and annual outreach functions hosted by NSA Crane / Lake Glendora Test Facility in cooperation with each Study Area jurisdiction. Include information that there are other noise generating uses such as quarries and mines within the Study Area. *Other Partners: City of Sullivan, Town of Crane, Indiana Office of Defense Development, Indiana Air National Guard*										
PUBLIC TRESPASSING (PT)												
PT-1	**Potential for Trespassing Related to Future Milwaukee Road Transportation Trailway** Future Phase 4 of the Milwaukee Road Transportation Trailway will terminate at Indian Springs, Indiana adjacent to the eastern border of NSA Crane raising a concern for trespassing into the installation.											
PT-1A COMPLETED	NSA Crane Coordination MCA	**Communicate Concerns with Indian Springs Trailhead** NSA Crane should coordinate with the Indiana Trails Fund and Hoosier Rails-To-Trails Council to identify concerns with the Phase 4 terminus of the Milwaukee Road Transportation Trailway at Indian Springs and to consider design mitigations that would discourage travelers to the trailhead from traveling beyond the trailhead to the NSA Crane property line. *Other Partner: Indiana Trails Fund, Hoosier Rails-To-Trails Council*	Mid-Term						■			□
PT-2	**Cattle Migrations onto NSA Crane** Cattle from adjacent farms have the potential to migrate on the installation. Area farmers who enter the property to retrieve their cattle can become a safety risk.											

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
PT-2A	NSA Crane Coordination MCA	**Develop a Livestock Trespass Management Plan** NSA Crane should work with the willing landowners adjacent to the installation to develop a Livestock Trespass Management Plan. The plan should at minimum: ■ Explain the need for the plan and importance of keeping livestock outside NSA Crane ■ Identify the cattle and livestock owners and willing land owners ■ Delineate points of contact and contact information ■ Develop procedures for ceasing activity and operations until the cattle can be diverted to an area where the owner can retrieve the cattle ■ Stress the importance of mutual fencing upkeep ■ Include procedures for maintenance of the plan and opportunity to modify management actions *Other Primary Partners: cattle farmers adjacent to NSA Crane; Indiana Farm Bureau; County Cattlemen's Associations*	Mid-Term						■			☐
PT-2B	NSA Crane Coordination MCA	**Plan and Budget for Fence Reinforcements** NSA Crane should plan and budget for fence reinforcements, particularly in areas where cattle trespass is reoccurring.	On-Going						■			

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
PT-3	**Public Trespassing at NSA Crane** Safety concern for public trespassing on the eastern side of NSA Crane.											
PT-3A	NSA Crane Coordination MCA	**Plan and Budget for Visible Signage** NSA Crane should plan and budget for signage that would be installed so as to be visible at key points along the fenceline. The signage should also be strategically installed in areas prone to trespass and placed at least 200 feet apart.	On-Going						■			
PT-4	**Public Recreational Fishing Outside the Lake Glendora Test Facility** Security and safety concern for public trespassing from recreational fishing outside the Lake Glendora Test Facility.											
PT-4A	LGTF Coordination MCA	**Plan and Budget for Visible Signage** Lake Glendora Test Facility should plan and budget for signage that delineates the property boundary outside the fenceline at the right-of-way with E County Road 300 N, at the outfall from Little Glendora Lake.	Short-Term						■			
		For other strategies that addresses this issue see Strategies COM-1D, COM-1E and COM-5A.										
ROADWAY CAPACITY												
RC-1	**Short Queuing area at Bloomington Gate** The short queuing area at the Bloomington Gate presents a potential safety concern for traffic stacking at intersection of State Roads 45 and 58.											
RC-1A	NSA Crane Coordination MCA	**Conduct Feasibility Study for Additional Vehicle Queuing Area at Bloomington Gate** NSA Crane should conduct a feasibility study to assess the extent of traffic stacking outside the Bloomington Gate at the intersection of	Mid-Term						■			□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		State Roads 45 and 58, whether additional queuing is required, and what options are available to alleviate vehicle stacking at the intersection. *Other Partner: Indiana Department of Transportation*										
RC-1B	NSA Crane Coordination MCA	**Plan and Budget for Gate Improvements** Based on the conclusions of the Feasibility Study for Additional Vehicle Queuing Area at Bloomington Gate in Strategy RC-1A, plan and budget for improvements that address the queuing issue within the NSA property.	Long-Term						■			
SAFETY ZONES												
SA-1	**Explosive Safety Quantity Distance Arcs** Concern that ESQD arcs have potential to extend outside of NSA Crane with mission changes.											
SA-1A	NSA Crane Coordination MCA	**Monitor Changing Need for ESQD Arcs** NSA Crane and CAAA should continue to monitor the geographic impact of ESQD Arcs to ensure the footprints of the arcs are contained within the installation.	On-Going						■			□
SA-2	**Methane Gas Wells and Mine Shafts Located Near Lake Glendora Test Facility** There are various methane gas wells and underground mine shafts located near the Lake Glendora Test Facility, including a pipeline that runs along N County Road 225 E connecting gas wells with a pipeline located along E County Road 300 N. Location of several of these wells and mine shafts are unknown.											
SA-2A	LGTF Coordination MCA	**Develop a Composite Map of the locations of Methane Wells, High-Pressure Pipelines and Coal Mines and Incorporate into Hazard Mitigation Planning**	Long-Term					■				□

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		Through shared data from different sources, develop a composite map that identifies the locations of methane wells, high-pressure pipelines and active and abandoned coal mines. Incorporate the maps into hazard mitigation planning documents for the area. *Other Partners: Pipeline and Hazardous Materials Safety Administration, Mine Safety and Health Administration, Indiana Department of Homeland Security, Indiana Office of Technology*										
SA-2B	LGTF Coordination MCA	**Coordinate with the Lake Glendora Test Facility** Sullivan County should use the composite map developed in Strategy SA-2A to coordinate with the Lake Glendora Test Facility regarding locations of wells, pipelines, and mines to ensure operations at the Lake Glendora Test Facility do not trigger impacts to these facilities / conveyances and conversely so that new development will not trigger impacts to wells and transport pipelines that could impact the mission at the Lake Glendora Test Facility. *Other Partner: City of Sullivan*	Long-Term					■	☐			☐
SA-3	**Hazardous Materials Transportation Routes** There are no designated hazardous materials transportation routes in association with daily shipments to and from NSA Crane. Because the same route is never used in sequence, many local roads are used for transport of hazardous materials.											
SA-3A	Study Area	**Designate Primary Materials Transport Corridors** The State of Indiana does not have a designated statewide truck route program but local jurisdictions have the authority to develop their own truck route designations. While a diversity of routes ensures carries have alternative routes in the event of an incident, designated truck routes can reduce heavy wear and tear making	Mid-Term	■	■	■	■	■	☐		■	■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		roadway maintenance easier to manage and control. Designated truck routes can be used to reduce safety, noise, pollution, and congestion impacts in residential or other areas where these issues are a concern. Jurisdictions should consider designating hazardous materials routes through a coordinated effort with county emergency management agencies. Coordinate with NSA Crane and Crane Army Ammunition Activity to establish appropriate routes based on criteria and need. Post designated routes with signage and develop and publish maps that can be used by truck drivers.										
VIBRATION (V)												
V-1	**Vibration from the Demolition Range** Vibration from the demolition range at NSA Crane has impacted buildings nearby the installation, causing damage and shattered windows.											
		For strategies that address this issue see Strategies COM-1D, COM-5A, COM-6D, COM-7A, COM-7B, NOI-1A, and NOI-1C.										
WATER QUALITY / QUANTITY (WQQ)												
WQQ-1	**Shared Use of the NSA Crane Wastewater Treatment Plant** Concern for capacity of NSA Crane wastewater treatment plant to continue serving the Town of Crane.											
WQQ-1A	NSA Crane Coordination MCA	**Conduct a Wastewater Feasibility Study** Conduct a wastewater feasibility study to identify wastewater treatment options, cost scenarios, and potential funding assistance programs under treatment scenarios including an agreement with Greene County for treatment at their new treatment plant or from	On-Going		☐		☐					■

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		a town-owned package plant. *Other Primary Partners: Town of Crane; Greene County Regional Sewage District, Southern Indiana Development Commission, US Department of Agriculture, WestGate Authority*										
WQQ-1B	NSA Crane Coordination MCA	**Wastewater Treatment Agreement with Greene County** Pending a favorable outcome in the Study in Strategy WQQ-1A, work with Greene County to design and develop a plan for the county to provide wastewater treatment services to the town. *Primary Partners: Town of Crane, Greene County Regional Sewage District*	Short-Term		☐							■
WQQ-2	**Stormwater Runoff at Northern Boundary of NSA Crane** Concern for the quality of stormwater runoff flowing into NSA Crane from adjacent land uses along the northern boundary.											
WQQ-2A	NSA Crane Coordination MCA	**Update Lake Greenwood Diagnostic Study** Conduct an update to the Lake Greenwood Diagnostic Study conducted in 2001 including watershed conditions, land use changes outside the installation, and improvements and their impacts that have been made per the 2001 recommendations. *Other Partner: Greene County Soil & Water Conservation District*	Mid-Term						■			☐
WQQ-2B	NSA Crane Coordination MCA	**Consider Adopting Low Intensity Land Uses** In conjunction with Strategies LEG-1D and LU-1C, consider adopting land use controls that stipulate low intensity land uses within the limited area of the Lake Greenwood Watershed to agriculture and residential uses. Consider adopting minimum lot sizes that conform	Long-Term		■							☐

Issue / Strategy ID #	Geographic Area	Strategy	Timeframe	Daviess County	Greene County	Lawrence County	Martin County	Sullivan County	NSA Crane / LGTF	Indiana Legislature	Indiana DOT	Other
		to requirements for septic systems. Grandfather existing uses. *Other Partners: Indiana Farm Bureau*										

NSA CRANE JOINT LAND USE STUDY

Matrix DESIGN GROUP

Photo Credit: Serge Melki, *Brown County Ogle Lake,* CC BY 2.0, Wikimedia Commons

NSA CRANE

JOINT LAND USE STUDY

Matrix DESIGN GROUP