

**EGLIN AIR FORCE BASE  
Florida**

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**TEST AREA C-64  
RANGE ENVIRONMENTAL  
ASSESSMENT, REVISION 1**

**FINAL**



**OCTOBER 2010**

# Report Documentation Page

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**TEST AREA C-64  
RANGE ENVIRONMENTAL  
ASSESSMENT, REVISION 1**

**FINAL**

**SUBMITTED TO:**

**96 CEG/CEVSP  
ENVIRONMENTAL ANALYSIS SECTION  
EGLIN AIR FORCE BASE, FLORIDA**

**OCTOBER 2010**

**FINDING OF NO SIGNIFICANT IMPACT**  
*FOR*

**TEST AREA C-64 RANGE ENVIRONMENTAL ASSESSMENT ON  
EGLIN AIR FORCE BASE, FLORIDA  
RCS 99-147 Revision 1, 2010**

This finding, and the analysis upon which it is based, was prepared pursuant to the President's Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) and its implementing regulations as promulgated at 40 Code of Federal Regulations (CFR) Part 1500 (40 CFR 1500–1508) plus:

- U.S. Air Force *Environmental Impact Analysis Process* as promulgated at 32 CFR Part 989.

The Department of the Air Force has conducted a Range Environmental Assessment (REA) of the potential environmental consequences associated with testing activities at Test Area (TA) C-64 on Eglin Air Force Base (AFB), Florida. That October 2010 REA is hereby incorporated by reference into this finding.

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

**Proposed Action**

The Proposed Action is for the 46th Test Wing commander to establish a new authorized level of activity for TA C-64 that is based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline, which is being identified as the Range Environmental Impact Analysis Process Baseline. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment.

The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of testing activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative to adequately cover the environmental analysis needed to support potential increased testing and training requirements as they occur.

**No Action Alternative**

This alternative is defined as authorizing the level of activity approved in the 2001 TA C-64 Programmatic Environmental Assessment, which authorized a 200-percent increase in all testing missions and associated expendables over the baseline level captured in the *Fiscal Year 1998 (FY1998) Range Utilization Report* and anticipated mission additions.

## **Alternative 1**

Alternative 1 would authorize the current level of activity plus foreseeable future activities. No new types of activities, new user groups, or new kinds of expendables have been identified for the foreseeable future at this time. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2008; this approach accounts for periods of low or no activity of a certain mission. Ground-based weapons and weapons component testing constitute the majority of missions on TA C-64, but other testing missions also occur on TA C-64. This alternative would be implemented using management actions identified in the REA.

## **Alternative 2**

This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity; including management actions identified in the REA. A 300-percent increase was chosen as a likely maximum surge increase in military testing during a national defense contingency.

## **Preferred Alternative**

The Preferred Alternative is Alternative 2, which allows a 300-percent increase in TA C-64 operations over the current level of activity plus foreseeable future activities. Implementation of management actions will allow a surge in test and training activities while minimizing impacts to environmental and natural resources.

## **ENVIRONMENTAL IMPACTS**

Analysis was conducted to determine the potential impacts to the human and natural environment resulting from the No Action Alternative and the Preferred Alternative. No significant impacts to resources have been identified, provided the management actions detailed in Section 2.5 of the REA would be implemented. A detailed discussion of issues analyzed and management strategies used to reduce potential impacts is given in Chapter 4 of the REA.

## **PUBLIC NOTICE**

A public notice was published in the *Northwest Florida Daily News* on 14 September 2010 inviting the public to review and comment on the REA and Draft Finding of No Significant Impact. The public comment period closed on 28 September 2010, and no public comments were received. State agency comments were received and have been addressed in Appendix E, *Public Involvement*, of the Final REA.

**FINDING OF NO SIGNIFICANT IMPACT**

Based on my review of the facts and the environmental analysis contained in the attached REA, and as summarized above, I find the proposed decision of the Air Force to implement the Preferred Alternative, will not have a significant impact on the human or natural environment; therefore, an environmental impact statement is not required. This analysis fulfills the requirements of the NEPA, the President's CEQ, and 32 CFR Part 989.



DAVID H. MAHARREY, JR., Colonel, USAF  
Commander, 96th Civil Engineer Group

3 Nov 10

Date



**PRINTED ON RECYCLED PAPER**

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## LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

<b>46 TW</b>	46th Test Wing
<b>46 TW/XP</b>	46th Test Wing, Plans Office
<b>96 CEG</b>	96th Civil Engineer Group
<b>96 CEG/CEVSH</b>	96th Civil Engineer Group/Cultural Resources Section
<b>96 CEG/CEVSN</b>	96th Civil Engineer Group/Natural Resources Section
<b>96 CEG/CEVSP</b>	96th Civil Engineer Group/Environmental Analysis Section
<b>96 CES/CED</b>	96th Civil Engineering Squadron/Explosive Ordnance Disposal
<b>AAC</b>	Air Armament Center
<b>ACM</b>	Asbestos-containing Materials
<b>AFB</b>	Air Force Base
<b>AFI</b>	Air Force Instruction
<b>AFPD</b>	Air Force Policy Directive
<b>AICUZ</b>	Air Installation Compatible Use Zone
<b>ARPA</b>	Archaeological Resources Protection Act of 1979
<b>CAA</b>	Clean Air Act
<b>CATEX</b>	Categorical Exclusion
<b>CBA</b>	Closed Box Assessment
<b>CEQ</b>	Council on Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>CERCLA</b>	Comprehensive Environmental Response, Compensation, and Liability Act
<b>CWA</b>	Clean Water Act
<b>CZMA</b>	Coastal Zone Management Act
<b>dB</b>	Decibels
<b>DDS</b>	Data Delivery System
<b>DoD</b>	U.S. Department of Defense
<b>DOI</b>	U.S. Department of the Interior
<b>DNL</b>	Day–Night Average Sound Level
<b>DU</b>	Depleted Uranium
<b>EBD</b>	Environmental Baseline Document
<b>EIAP</b>	Environmental Impact Analysis Process
<b>EO</b>	Executive Order
<b>EOD</b>	Explosive Ordnance Disposal
<b>ERP</b>	Environmental Restoration Program
<b>EPCRA</b>	Emergency Planning and Community Right-to-Know Act
<b>ESA</b>	Endangered Species Act of 1973
<b>FAA</b>	Federal Aviation Administration
<b>FAC</b>	Florida Administrative Code
<b>FAR</b>	Federal Aviation Regulation
<b>FDEP</b>	Florida Department of Environmental Protection
<b>FICUN</b>	Federal Interagency Committee on Urban Noise
<b>FNAI</b>	Florida Natural Areas Inventory
<b>FWC</b>	Florida Fish and Wildlife Conservation Commission
<b>FWPCA</b>	Federal Water Pollution Control Act
<b>FY</b>	Fiscal Year
<b>HM</b>	Hazardous Materials
<b>HMMP</b>	Hazardous Materials Management Plan
<b>HVAR</b>	High Velocity Air Rocket
<b>HW</b>	Hazardous Waste
<b>INS</b>	Invasive Non-native Species
<b>INRMP</b>	Integrated Natural Resources Management Plan
<b>ISWMP</b>	Integrated Solid Waste Management Plan
<b>IWR</b>	Impaired Waters Rule
<b>LDP</b>	Legacy Debris Pit
<b>L<sub>max</sub></b>	Maximum Sound Level

## LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS, CONT'D

LUC	Land Use Controls
mm	Millimeters
MMPA	Marine Mammals Protection Act
MOU	Memorandum of Understanding
MSL	Mean Sea Level
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NO <sub>x</sub>	Nitrogen Oxides
NRHP	National Register of Historic Places
NRS	Natural Resources Section
ORM	Operational Risk Management
PEA	Programmatic Environmental Assessment
PK <sub>15</sub> (met)	Peak Noise Exceeded by 15 Percent of Firing Events
PPA	Pollution Prevention Act of 1990
ppm	Parts per Million
PSD	Prevention of Significant Deterioration
RBC	Risk-based Criteria
RCW	Red-cockaded Woodpecker
RCRA	Resource Conservation and Recovery Act
REA	Range Environmental Assessment
RIC	Radioisotope Committee
ROI	Region of Influence
SBS	Significant Biological Site
SDWA	Safe Drinking Water Act
SDZ	Surface Danger Zone
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO <sub>2</sub>	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SW	Special Waste
TA	Test Area
TRI	Toxic Release Inventory
USC	U.S. Code
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

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# 1. PURPOSE AND NEED FOR ACTION

## 1.1 INTRODUCTION

The Eglin Military Complex, located in the northwest Florida panhandle (Figure 1-1), is one of 19 component installations categorized as a Department of Defense (DoD) Major Range Test Facility Base. Eglin Air Force Base (AFB) is situated among three counties: Santa Rosa, Okaloosa, and Walton. Eglin AFB's primary function is to support research, development, test, and evaluation of conventional weapons and electronic systems. Eglin AFB also provides support for individual and joint training of operational units. The Eglin Military Complex currently comprises four components (U.S. Air Force, 2001a), which do not include the cantonment or main base areas:

1. Test Areas/Sites
2. Interstitial Areas (areas beyond and between the test areas)
3. The Eglin Gulf Test and Training Range
4. Airspace (overland and water)

The U.S. Air Force Air Armament Center (AAC) has responsibility for the Eglin Military Complex and for all its users, which include DoD, other government agencies, foreign countries, and private companies. For Range operations, the AAC provides environmental analyses and necessary National Environmental Policy Act (NEPA) documentation to ensure compliance with U.S. Air Force policy and applicable federal, state, and local environmental laws and regulations.

The AAC includes two wings and four directorates that collectively operate, manage, and support all activities on the Eglin Military Complex. The AAC accomplishes its Range operations through the 46th Test Wing (46 TW) with support from the 96th Air Base Wing. The 46 TW commander is responsible for day-to-day scheduling, executing, and maintaining of this national asset. Test Area (TA) C-64 makes up a portion of the Eglin Military Complex and supports a variety of test and training missions. The continued DoD utilization of the Eglin Military Complex requires flexible and unencumbered access to land ranges and airspace, which support all of Eglin AFB's operations.

## 1.2 PROPOSED ACTION

The **Proposed Action** is for the 46 TW commander to establish a new authorized level of activity for TA C-64 based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline, which is being identified as the Range Environmental Impact Analysis Process (EIAP) Baseline. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment.



Figure 1-1. Land and Water Ranges of the Eglin Military Complex

The military mission has been broadly identified as the effector of environmental impacts and Eglin AFB's environment has been identified as the receptor. Evaluation and quantification of this effector/receptor relationship is the scientific basis for the environmental analysis performed in this report.

The **purpose and need of the Proposed Action** is twofold as described in the following:

1. **Purpose:** to quickly and efficiently process new programs requesting access to TA C-64 during both routine and crisis situations.
  - **Need:** to provide military users a quick response to priority needs during war or other significant military involvement, as well as maintain the current approval process for routine uses.
2. **Purpose:** to update the NEPA analysis by re-evaluating the mission activities and by performing a cumulative environmental analysis of all mission activities.
  - **Need:** the need associated with this item is multifaceted and is described below.

Eglin AFB previously performed environmental analysis on mission activities on TA C-64 in the *2001 Test Area C-64 Final Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 2001b). Some of Eglin AFB's mission activities have changed since the original environmental analysis was done, requiring new environmental analysis to be performed. Currently, when approval for a new mission is requested, it may be categorically excluded from additional environmental analysis if it is similar in action to a mission that has been previously assessed and the assessment resulted in a finding of no significant environmental impact. The categorical exclusion (CATEX) designation is in accordance with NEPA and Air Force regulations (Council on Environmental Quality [CEQ] 32 Code of Federal Regulations [CFR] 989.13 and Air Force Instruction [AFI] 32-7061).

Since the time that some of these ongoing mission activities were originally assessed, and also since some of the mission activities that are used for CATEX purposes were assessed, changes have occurred at Eglin AFB that could affect environmental analysis. These changes, outlined below, create a need to re-evaluate the NEPA analysis individually and cumulatively.

- Additional species have been given federal and state protected status.
- Species that were not previously known to exist at Eglin AFB have been discovered.
- Additional cultural resources have been discovered and documented.
- The population of communities along Eglin AFB's borders has increased.
- Air Force regulations have changed.
- Military missions and weapons systems have evolved.
- State and federal highway system through the Eglin Range is being significantly upgraded, resulting in more civilians on the range.

The analysis performed in this report allows for a cumulative look at the impact on TA C-64 receptors from all mission activities. By implementing an authorized level of activity, Range management will be streamlined and cumulative environmental impacts will be more fully considered.

### **1.3 SCOPE OF THE PROPOSED ACTION**

The region of influence (ROI) for this analysis is TA C-64, which is located on the eastern side of the Eglin Range Complex in Okaloosa County, approximately 18 miles northeast of Eglin Main Base as shown in Figure 1-2. TA C-64 is clustered in two distinct areas west of Highway 285, south of TA C-61. The two clusters are the original TA C-64 (200 acres) and the sub-ranges C-64A, C-64B, and C-64C (250 acres). TAs C-64A, C-64B, and C-64C are not considered part of the ROI for this Range Environmental Assessment (REA). Munitions Research and Development testing activities are conducted at the sub-ranges as part of the Air Force Research Laboratory and will be analyzed in a separate NEPA document.

Testing operations categorize all missions conducted at TA C-64, which consists of ground-based weapons and weapons component testing. Test missions at TA C-64 are designed to test, verify, validate, demonstrate, or prove that the new or improved hardware, system, software, explosive, or munition will work safely and will accomplish the desired effect. Experiments and tests conducted encompass both nonexplosive and explosive investigations for the full spectrum of ordnance applications. The complex is used to conduct the following typical experiments: small-scale explosive tests to evaluate the explosive train, incendiary projectile experiments, armor plate penetration, projectile fuse arming distance, target and component vulnerability, burning sensitivity, drop tests, bullet impact tests, sympathetic detonation tests, advanced warhead design tests, and depleted uranium (DU) ammunition tests. Live munitions up to 3,000 pounds may be statically tested on this range.

The Gunnery and Ballistics Test Facility within TA C-64 is used for conducting bullet impact tests, including spall pattern analysis, munitions drop tests, firing of DU ammunition for developmental and life cycle tests, missile detonation tests, and armor-piercing warhead tests. Warheads can be tested dynamically using the 800-foot dynamic warhead test track. Digital computer-controlled data collection systems and flash X-ray are used to gather weapons systems performance data. Interior, exterior, and terminal ballistics studies of ammunition can be performed at this facility.

Missions on TA C-64 are under the purview of the 46 TW. Primary user groups include the 46th Ground Weapons Test Flight (46 OG/OGMTG) and the 46th Range Support (46 RANS/DOP). A complete description of all current testing activities and user groups are described in the *Test Area C-64 Final Environmental Baseline Document (EBD), Revision 1*, Chapter 2, Mission Summary (U.S. Air Force, 2007).

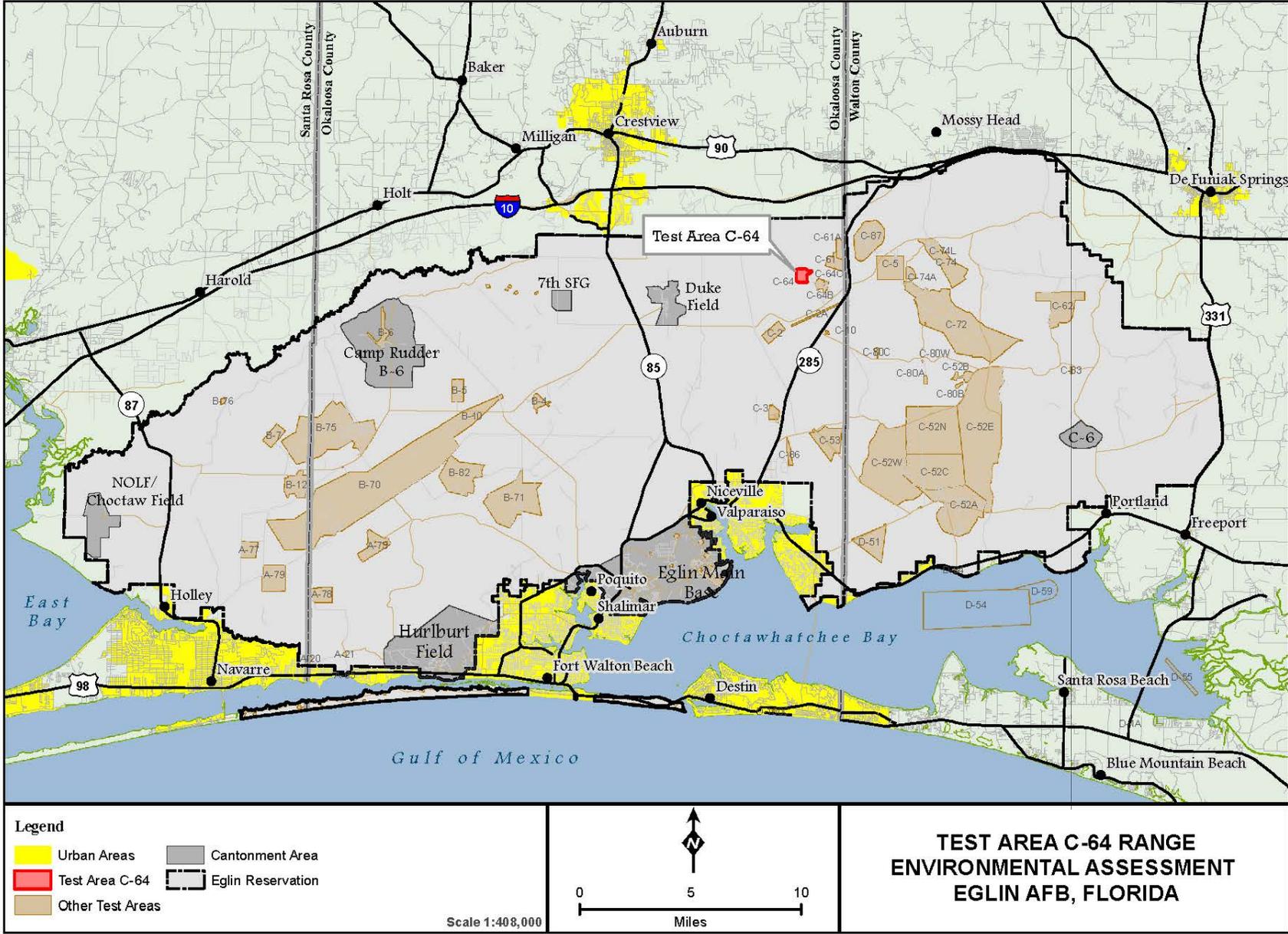


Figure 1-2. Test Area C-64 Region of Influence

10/18/10

Test Area C-64 Range Environmental Assessment, Revision 1

Eglin Air Force Base, Florida

Final

## 1.4 DECISION DESCRIPTION

The 46 TW desires to authorize a new level of activity for TA C-64, replacing the current authorized level, which is discussed in Section 2.2. A decision is to be made on the *level* of activity to be authorized, which includes changes in mission types, the combination of missions, and the level of intensity of missions. By authorizing a new level of activity and analyzing the effects, future similar actions may be categorically excluded from further environmental analysis. This will save both time and money in the review of proposed actions and will enable users to access TA C-64 more quickly and efficiently. Authorization of a new level of activity will streamline the environmental process, enhancing Eglin AFB's ability to quickly respond to high priority or crisis requirements.

## 1.5 ISSUES

Specifically, an issue may be the result of a mission activity or land use activity that may directly or indirectly impact physical, biological, and/or cultural environment resources. A *direct* impact is a distinguishable, evident link between an action and the potential impact, whereas an *indirect* impact may occur later in time and/or may result from a direct impact.

Potential environmental impacts of alternative actions on TA C-64 resource areas were identified through preliminary investigation. Resource areas identified for detailed analysis are described below, with narratives providing a summary of the preliminary screening for potential impacts.

### Chemical Materials/Debris

Chemical materials encompass liquid, solid, or gaseous substances released to the environment as a result of mission activities. These include organic and inorganic materials capable of producing a chemical change or toxicological effect to an environmental receptor. Examples include gaseous air emissions (aircraft exhausts, smokes, and combustion products of explosives), liquid materials (fuels and pesticides), and solid materials such as metals from ordnance and ammunition expenditures (zinc, copper, aluminum, DU, and lead). The byproducts of ordnance expenditures could potentially contaminate soil or underlying groundwater, or affect air quality.

Chemical materials, primarily in the form of air emissions and metals, were introduced to the environment of TA C-64 by mission testing activities. Potential air and soil pollutants produced by mission activity expenditures are evaluated during the environmental consequences analysis. The environmental analysis describes the amounts, extent, and concentration of chemical materials produced by these mission activities with regard to potential impacts to vegetation, sensitive wildlife species, and surface water and groundwater quality. The potential influences of the soil and water environment and food chain on the availability and translocation of chemical contaminants are also evaluated.

### Land Use

Land use generally refers to human management and use of land. Specific uses of land typically include residential, commercial, industrial, agricultural, military, and recreational. Land use also

includes areas set aside for preservation or protection of natural resources, wildlife habitat, vegetation, or unique features. TA C-64 is utilized for military testing activities. No change to current land use is expected; however, nearby land use and recreational activities could potentially be impacted by temporary access restrictions during certain testing activities.

### **Environmental Restoration Program Sites**

There is one Environmental Restoration Program (ERP) site located at TA C-64 requiring land use controls. Potential impacts to the ERP site are evaluated and discussed, as well as any land use control requirements.

### **Soils**

Soils within TA C-64 have the potential to be impacted from testing activities. Analysis addresses the potential for munitions residue to decrease soil quality by introducing new or additional organic and/or inorganic compounds into the soil matrix.

### **Water Resources**

The Proposed Action has the potential to impact water resources within and around the TA C-64 ROI. Water resource analysis addresses the potential for impacts to surface waters, wetlands, floodplains, and groundwater from sedimentation and/or contamination by testing activities and associated expendables.

### **Biological Resources**

The Proposed Action may affect biological resources. Issues to be examined include potential impacts on wildlife and sensitive species, and habitats from direct physical impact, habitat alteration, and noise. Direct physical impact is the physical harm that can occur to an organism (plant or animal) if it comes into contact with an effector, such as a bomb or shrapnel. Habitat alteration could occur from wildfires caused by munitions. Another potential impact issue for TA C-64 is for sensitive species, including the red-cockaded woodpecker (RCW), to be exposed to noise from mission activities.

Habitat alterations are described as the physical damage or perturbations to terrestrial and aquatic habitats. Habitat alteration can occur as a result of fire started by flares or munitions, or from soil disturbance associated with munitions. The major issue on TA C-64 for this category is the potential loss of habitat from noise exposure associated with testing exercises.

Noise produced by ground operations and testing of various munitions occurring onsite may stress some wildlife species or cause hearing loss or damage. Scientific data correlating the effects of noise on humans is well documented; however, information regarding the effects of noise events on wildlife species is limited. The noise generated from artillery and small-caliber guns testing and its potential impacts to biological receptors, such as the RCW, is the major noise issue for TA C-64.

Analysis focuses on identifying sensitive species and habitats within the TA C-64 ROI, analyzing the potential for impacts, and establishing management actions for the avoidance and/or minimization of identified potential impacts.

### **Air Quality**

Testing operations would release emissions from munitions use. Analysis addresses the expected levels of emissions and compares these levels with what is currently permitted from all Eglin AFB sources and county emissions.

### **Noise**

Noise is defined for TA C-64 as the unwanted sound produced by munitions testing activities. Noise may directly inconvenience and/or stress humans and some wildlife species and may cause hearing loss or damage. The impacts of noise to the public and on wildlife, particularly threatened and endangered species, are a primary concern.

Mission activities such as armor-piercing gun ammunition testing, warhead lethality tests, arena testing, and dynamic munitions delivery are the primary sources of noise on TA C-64. The environmental consequences analysis is twofold: (1) evaluate the potential impacts of mission noise events on the public and sensitive wildlife species, and (2) determine the influence of unfavorable weather conditions on individual noise events.

### **Safety/Restricted Access**

Safety involves hazards to military personnel and the public resulting from mission activities. Restricted access is typically the result of safety considerations. Restricted access applies to the restriction of public access, described in terms of the availability of Eglin resources (such as test areas, interstitial/recreational areas, or public roads) to the general public. Receptors potentially impacted include military personnel and the public desiring to use these areas. Guidance for restricted access is utilized to coordinate public and military use of airspace, water space (e.g., the Gulf of Mexico), and land areas within the Eglin ROI. Although the TA C-64 is closed to all forms of public access, restricted access issues may result due to brief closures of recreational areas that fall within the safety footprint of some missions.

Additionally, unexploded ordnance (UXO) poses a potential impact to safety. Test areas with known UXO require Explosive Ordnance Disposal (EOD) escort, and regulations regarding UXO should remain in place and continue to be followed. Potential UXO issues are identified and associated safety regulations are outlined.

### **Socioeconomics**

Potential impacts include those that would expose low-income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old) due to noise, pollutant transport, and other conditions in the TA C-64 ROI. The socioeconomic receptors include nearby communities and property that are impacted by the noise from Eglin AFB ordnance. Analysis focuses on the exposure of these communities to anticipated

environmental effects and identifying whether potential concern areas were disproportionate to other communities in the region.

### **Cultural Resources**

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. There have been no cultural resources identified to date from within TA C-64; however, due to portions of the test areas remaining unsurveyed for cultural resources, coordination with the 96th Civil Engineer Group/Cultural Resources Section (96 CEG/CEVSH) must be made prior to any planned ground-disturbing activities beyond already approved mission activities.

In the event of unexpected discovery of cultural resources, all activity in the immediate vicinity must cease until the proponent makes proper notification to the Base Historic Preservation Officer and the 96 CEG/CEVSH.

## **1.6 FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS**

Components of this action would take place within or otherwise may affect the jurisdictional concerns of the Florida Department of Environmental Protection (FDEP) and, therefore, will require a consistency determination with respect to Florida's Coastal Zone Management Plan under the Federal Coastal Zone Management Act (CZMA) (Appendix D).

Radioactive materials that are a component of 30-millimeter (mm) DU gun ammunition testing at TA C-64 are controlled by the U.S. Air Force Radioisotope Committee (RIC) under the auspices of a master materials license issued to the US Air Force by the Nuclear Regulatory Commission. DU ammunition testing and source materials handling operations are conducted under the authority of RIC source material permit FL-30031-10/00AFP in compliance with the directives and criteria of 10 CFR 20 and 10 CFR 40. To ensure a safe working environment, containment of radioactive materials, and compliance with regulations and permits, all activities involving DU at TA C-64 follow mandatory standard operating procedures contained in EOP-7603-01.

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## 2. ALTERNATIVES

### 2.1 INTRODUCTION

This section introduces the alternatives evaluated for potential environmental impacts in this REA for TA C-64. The proposed alternatives, which are analyzed in this document, are:

- No Action Alternative: Baseline, as defined by the Preferred Alternative in the 2001 TA C-64 PEA (U.S. Air Force, 2001b).
- Alternative 1: Authorize current level of activity plus foreseeable future activities.
- Alternative 2 (Preferred Alternative): Alternative 1 plus a 300-percent mission surge.

A brief description of each alternative, including the alternative-specific expendables, is provided in the following section.

### 2.2 ALTERNATIVES CONSIDERED

The alternatives considered for analysis were determined during an interdisciplinary meeting at Eglin AFB, which included, but was not limited to, representatives from the 46th Test Wing, Plans Office (46 TW/XP), 96th Civil Engineer Group/Environmental Analysis Section (96 CEG/CEVSP), and the 96th Civil Engineer Group/Natural Resources Section (96 CEG/CEVSN). The alternatives chosen were a result of discussions on how foreseeable future activities will expand Eglin AFB’s testing requirements in the upcoming years. There were no alternatives eliminated from detailed analysis.

#### 2.2.1 No Action Alternative

This alternative is defined as authorizing the level of activity approved in the 2001 TA C-64 PEA (U.S. Air Force, 2001b), which authorized a 200-percent increase in all testing missions and associated expendables over the baseline level captured in the *Fiscal Year 1998 (FY1998) Range Utilization Report* (U.S. Air Force, 2000) and anticipated mission additions. Table 2-1 shows the level of activity by type of mission expenditure under the No Action Alternative, which is the previously approved level of activity.

**Table 2-1. Maximum Annual Expendables for Test Area C-64 Under the No Action Alternative, Alternative 1, and Alternative 2**

Expendable Category	Mission Expenditure	No Action <sup>a</sup>	Alternative 1 <sup>b</sup>	Alternative 2 <sup>c</sup>
Bombs (live)	Various submunitions	0	85	340
	Bomb (live)	0	6	24
Flares (live)		0	259	1,036
Mines (live)		0	7	28
Grenades (live)		0	5	20
Guns (inert)	120 mm	12	0	0
	155-mm simulant	0	8	32
	20 mm	0	13	52

**Table 2-1. Maximum Annual Expendables for Test Area C-64 Under the No Action Alternative, Alternative 1, and Alternative 2, Cont'd**

Expendable Category	Mission Expenditure	No Action <sup>a</sup>	Alternative 1 <sup>b</sup>	Alternative 2 <sup>c</sup>
Guns (inert), Cont'd	25 mm	75	0	0
	30 mm	43,932	20,860	83,440
Guns (live)	20 mm	0	338	1,252
	25 mm	450	420	1,680
	30 mm	0	36,821	147,284
	40 mm	765	155	620
	120-mm cartridge	0	12	48
	120-mm primer	0	19	76
Missiles (live)		0	4	16
Rocket (live)		0	27	108
Other (Live)	Ignition compound	0	70	280
	Black powder (pounds)	180	5	20
	Booster	0	139	556
	Demolition charges	0	1	4
	Warhead	81	40	160
	High explosive (pounds)	489	463.5	1,858
	Detonator	75	127	508
	Detonation cord (feet)	0	120	480
	Fuze	0	25	100
	Propellant (pounds)	7,425	883	3,532
	Rocket motor	39	30	120
	Explosive detasheets	30	0	0
	Small Arms (Live)	.338 caliber	0	425
.50 caliber		180	3,203	12,812
5.56 mm		0	160	640
7.62 mm		0	322	1,288
Unknown	RDU	0	1	4
	Unknown	0	226	864

mm = millimeters

a. Source: U.S. Air Force, 2001a.

b. Maximum annual quantity from FY1998–2008; expendables grouped by similar nomenclature, DODIC, and/or NSN.

c. Alternative 1 plus 300 percent.

**2.2.2 Alternative 1: Authorize Current Level of Activity Plus Foreseeable Future Activities**

Alternative 1 would authorize the current level of activity plus foreseeable future activities. No new types of activities, new user groups, or new kinds of expendables have been identified for the foreseeable future at this time. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2008; this approach accounts for periods of low or no activity of a certain mission. Ground-based weapons and weapons component testing constitute the majority of missions on TA C-64, but other testing missions also occur on TA C-64. This alternative would be implemented using management actions identified in Chapter 4 and summarized in Section 2.5, Management Requirements. Table 2-1 shows the estimated level of activity under Alternative 1.

**2.2.3 Alternative 2: Alternative 1 Plus a 300-Percent Mission Surge (Preferred Alternative)**

This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity, including management actions identified in Chapter 4 and summarized in Section 2.5, Management Requirements. Alternative 1 plus a 300-percent increase was chosen as a likely maximum surge increase in military testing during a national defense contingency. Table 2-1 shows the estimated level of activity under Alternative 2.

This alternative includes authorization of the proposed level of activity and performance of a comprehensive environmental analysis to ensure TA C-64 can support this level of activity without suffering significant environmental impact. This is the Preferred Alternative because it includes all mission activities expected to occur and provides capacity for a test surge. This alternative authorizes an expected maximum level of activity, which allows better responsiveness to the customer while ensuring that cumulative environmental effects do not cause significant impact.

**2.3 COMPARISION OF ALTERNATIVES**

Potential impacts under each alternative are summarized in Table 2-2.

**Table 2-2. Summary of Potential Impacts Under All Alternatives**

Resource	No Action	Alternative 1	Alternative 2
Chemical Materials	Munitions fragments and residues would be generated as a result of testing and training missions. Releases to the environment from munitions utilized in proficiency and qualification training require reporting to the USEPA under the Emergency Planning and Community Right-to-Know Act TRI program. Eglin AFB has developed procedures to comply with TRI reporting requirements and would track ordnance use associated with the proposed alternatives. Although the release of some chemicals would increase from the previously assessed baseline under the No Action Alternative, no new TRI thresholds would be exceeded and adverse effects are not anticipated.	Under Alternative 1, the release of toxic chemicals would increase over the No Action Alternative. However, no new TRI thresholds would be exceeded and adverse impacts to the environment are not anticipated.	Under Alternative 2, ordnance expenditures would increase 300 percent over Alternative 1, and therefore the release of hazardous chemicals would increase. Despite this, no new TRI thresholds would be exceeded and adverse impacts to the environment are not anticipated.

**Table 2–2. Summary of Potential Impacts Under All Alternatives, Cont’d**

Resource	No Action	Alternative 1	Alternative 2
Soils	<p>There would be no significant impacts to soils under the No Action Alternative. Metal concentrations in the soil would be below Eglin background and USEPA risk-based concentrations. Training activities could cause soil erosion, particularly on sparsely vegetated slopes. However, adherence to management practices would decrease erosion potential.</p>	<p>There would be no significant impacts to soils under Alternative 1. Increased munitions expenditures would not result in metal concentrations in the soil exceeding USEPA risk-based concentrations. Training activities could cause soil erosion, particularly on sparsely vegetated slopes. However, adherence to management practices would decrease erosion potential.</p>	<p>There would be no significant impacts to soils under Alternative 1. Increased munitions expenditures would not result in metal concentrations in the soil exceeding USEPA risk-based concentrations. Training activities could cause soil erosion, particularly on sparsely vegetated slopes. However, adherence to management practices would decrease erosion potential.</p>
Water Resources	<p>There would be no significant impacts to water resources under the No Action Alternative. Groundwater metal concentrations would not exceed USEPA risk-based thresholds. Surface water resources are located at distances from test sites sufficient to minimize potential for contaminant transport. Sufficient vegetative ground cover exists to function as a pollutant filter. Wetlands would not be impacted, and no actions would modify the floodplain. Adherence to management practices would further decrease impact potential to water resources.</p>	<p>There would be no significant impacts to water resources under Alternative 1. Increased munitions expenditures would not cause groundwater metal concentrations to exceed USEPA risk-based thresholds. Surface water resources are located at distances from test sites sufficient to minimize potential for contaminant transport. Sufficient vegetative ground cover exists to function as a pollutant filter. Wetlands would not be impacted, and no actions would modify the floodplain. Adherence to management practices would further decrease impact potential to water resources.</p>	<p>There would be no significant impacts to water resources under Alternative 2. Increased munitions expenditures would not cause groundwater metal concentrations to exceed USEPA risk-based thresholds. Surface water resources are located at distances from test sites sufficient to minimize potential for contaminant transport. Sufficient vegetative ground cover exists to function as a pollutant filter. Wetlands would not be impacted, and no actions would modify the floodplain. Adherence to management practices would further decrease impact potential to water resources.</p>
Biological Resources	<p>No adverse impacts are expected under any Alternative.</p> <p>Several active and inactive RCW trees exist in proximity to the test areas. RCW foraging habitat exists along the southern and eastern borders of TA C-64. There is some potential for mission activities to ignite wildfires that could spread into RCW foraging habitat. Negative impacts to RCW habitat could result from wildfires or wildfire suppression activities. However, during normal operations the areas of RCW foraging habitat around TA C-64 would not be affected.</p> <p>It is unknown if the federally listed eastern indigo snake is present on TA C-64. Eglin must comply with the USFWS Standard Protection Measures for use on the Eglin reservation as described in the Programmatic Biological Assessment for the eastern indigo snake completed in 2008 through Eglin NRS.</p> <p>Gopher tortoise burrows may exist throughout the test area. Training and heavy munitions use should be avoided near any gopher tortoise burrows and if a gopher tortoise is sighted, activities should cease until the tortoise moves out of harm’s way. Transportation and release of tortoises would follow guidelines established by the FWC.</p> <p>Vehicle strikes are the primary concern for bears on Eglin, thus drivers should be alert to the presence of bears to avoid impacts. The Florida black bear is unlikely to be adversely impacted by activities under this alternative.</p>		

**Table 2–2. Summary of Potential Impacts Under All Alternatives, Cont’d**

Resource	No Action	Alternative 1	Alternative 2
Air Quality	No adverse impacts to air quality are expected.	A slight decrease in emissions is expected from the No Action Alternative due to decreased use of high net explosive weight munitions. No adverse impacts to air quality are expected.	Emissions from munitions use would be higher than in Alternative 1 but would not exceed federal NAAQS or the 10-percent threshold. No adverse impacts to air quality are expected.
Noise	The munitions used on TA C-64 would cause noise levels of less than 115 dBP and receptors would not be adversely affected by noise.	Alternative 1 uses munitions of higher explosive weight than the No Action Alternative. The noise levels would not exceed 115 dBP and would have no adverse impacts to receptors.	Alternative 2 would have increased munitions use which would cause more noise events to occur but the noise levels would not be greater than those described in Alternative 1. No adverse impacts would occur to receptors.
Safety	<p>Since the types of munitions to be used are the same or similar to the types currently used at TA C-64, implementation of the No Action Alternative, Alternative 1, or Alternative 2 would not be expected to prevent or significantly limit the ability of range managers to conduct EOD and range maintenance activities. Safety footprints or surface danger zones (SDZs) would be employed for land based training where live ordnance is used. Public access to TA C-64 is permanently restricted, so no safety risks to the public are expected. Regardless of increased munitions use, established safety procedures and policies would continue to ensure safety of Eglin personnel.</p> <p>Most areas on the Eglin Range, including TA C-64, have the potential for UXO contamination. Consultation and coordination with 96 CES/CED would mitigate any potential adverse impacts to Eglin AFB personnel from UXO. Although increases in the frequency of ordnance use would likely lead to increased instances of UXO, the current safety policies and procedures would continue to insure that there would be no adverse impacts from UXO.</p>		
Land Use	<p>There would be no changes to land use designation so there would be no impacts to land use.</p> <p>Under the No Action Alternative, there would be potential for minor and temporary impacts to recreational resources from the possible closures of recreational areas during certain testing and training missions.</p>	<p>There would be no changes to land use designation so there would be no impacts to land use.</p> <p>Under Alternative 1, there would be an increase in the potential for closures to recreational areas. However, closures would occur only for the duration of the activity and other areas would remain open for recreational activities. Therefore, impacts to recreational resources are anticipated to be minor and temporary.</p>	<p>There would be no changes to land use designation so there would be no impacts to land use.</p> <p>Under Alternative 2, there would be an increase in the potential for closures to recreational areas. However, closures would occur only for the duration of the activity and other areas would remain open for recreational activities. Therefore, impacts to recreational resources are anticipated to be minor and temporary.</p>

**Table 2–2. Summary of Potential Impacts Under All Alternatives, Cont’d**

Resource	No Action	Alternative 1	Alternative 2
Socioeconomics	No significant impacts were identified to the public from the level of activity approved in the 2001 TA C-64 PEA and therefore, no significant impacts are anticipated under the No Action Alternative.	Under Alternative 1, there would be a potential for more frequent noise impacts; however impacts are anticipated to be minor and temporary lasting only for the duration of the activity.  In addition, no special risks to children or disproportionate noise impacts have been identified to areas of environmental justice concerns from activities performed under Alternative 1 at TA C-64. Therefore, only minor and temporary noise impacts from munitions expenditures are anticipated to socioeconomic resources under Alternative 1.	Under Alternative 2, there would be a potential for more frequent noise impacts; however impacts are anticipated to be minor and temporary lasting only for the duration of the activity.  In addition, no special risks to children or disproportionate noise impacts have been identified to areas of environmental justice concerns from activities performed under Alternative 2 at TA C-64. Therefore, only minor and temporary noise impacts from munitions expenditures are anticipated to socioeconomic resources under Alternative 2.
Cultural Resources	All Alternatives would not adversely affect cultural resources. No NRHP-eligible archaeological sites, structures, historic cemeteries, traditional cultural properties, or historic districts are present within TA C-64.  Formal assessments of portions of TA C-64 have not been completed but initial indications are that archaeological surveys will not be permitted within the existing boundaries due to UXO safety concerns. In cases such as these, CRM personnel make efforts to visually identify, to research, and to assess for historic significance all standing structures such as buildings, targets, bridges, bunkers, etc.		

CRM = Cultural Resources Management; dBP = P-weighted decibels; FWC = Florida Fish and Wildlife Conservation Commission; NAAQS = National Ambient Air Quality Standards; NRHP = National Register of Historic Places; NRS = Natural Resources Section; PEA = Programmatic Environmental Assessment; TRI = Toxic Release Inventory; USEPA = U.S. Environmental Protection Agency; USFWS = U.S. Fish and Wildlife Service

**2.4 PREFERRED ALTERNATIVE**

The Preferred Alternative is Alternative 2, which allows a 300-percent increase in TA C-64 operations over the current level of activity plus foreseeable future activities. Implementation of management actions will allow a surge in test activities while minimizing impacts to environmental and natural resources. The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of testing activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative to adequately cover the environmental analysis needed to support potential increased testing requirements as they occur.

The need for additional management actions is driven by legislation, regulations, and policies that protect sensitive habitats, cultural resources, and threatened and endangered species (Appendix A). Legislation pertaining to sensitive habitats, sensitive species, and exotic species includes the Endangered Species Act; AFI 32-7064, *Integrated Natural Resources Management Plan*; Executive Order (EO) 11990, *Protection of Wetlands*; and EO 13112, *Invasive Species*. Regulations on the treatment of threatened and endangered species, many of which are supported

in sensitive habitats, will be further described in the Biological Resources section. Several laws and regulations are pertinent to the treatment of cultural resources, such as the National Historic Preservation Act of 1966 (NHPA), as amended; the Archaeological Resources Protection Act of 1979; and AFI 32-7065, *Cultural Resources Management*, which specifies proper procedures for cultural resource management at Eglin AFB.

## 2.5 MANAGEMENT REQUIREMENTS

The REA was prepared with consideration that the following management requirements will be employed for all TA C-64 missions. The proponents are responsible for ensuring these management activities are adhered to.

### General

- Report violations of any recreation rules to the Natural Resources Section (NRS) or to the security police.
- Restrict wheeled vehicles to existing trails/roads (described in individual test directives), unless there is special authority for off-road vehicle use.
- Log and report the sighting of protected species (tortoise, indigo snake, black bear) to the 96 CEG/CEVSN.
- Adhere to Eglin's Wildfire Specific Action Guide Restrictions for pyrotechnics use. Prior to pyrotechnics use, check the daily fire danger rating at the Eglin Environmental Management Homepage (<https://em.eglin.af.mil/ems/emsnp>).
- Do not conduct military activities within areas designated as forestry research plots or restoration sites unless the NRS has given specific written authorization.

### Water Resources

- Maintain a vegetated buffer between surface waters and bare soil testing areas.
- No new cleared target areas should be established within 200 feet of any natural water body.
- Detonations of explosives should not occur within 200 feet of water bodies.
- If any ordnance lands in stream bank areas, it should be removed immediately in accordance with Air Force regulations.
- Conduct target and ordnance debris removal and dispose of solid debris from blanks, chaff, smokes, and flares in accordance with Air Force regulations.
- Employ bullet containment, lead projectiles management, and lead reclamation to reduce lead concentrations.
- Release flares at altitudes that will ensure complete burnout prior to reaching the surface.
- Allow no deployment of flares when the fire index presents an unacceptable hazard.
- Minimize the placement of targets on sloped areas.

**Noise**

- Monitor weather conditions and coordinate with the Eglin Weather Office to determine when meteorological conditions would cause increased noise impacts.
- Consider postponing specific activities that would result in increased noise impacts to the community. This action depends on the flexibility of the mission and the severity of the potential impact.
- To prevent general disturbance from noise and human presence, follow guidelines presented in the U.S. Army Guidelines for RCWs (U.S. Army, 2006). Limit activities within 200 feet of an active marked cavity tree to those of a transient nature (less than two hours duration).

**Biological Resources**

- Ensure all military activities are in compliance with the 96 CEG/CEVSN and the Florida Fish and Wildlife Conservation Commission (FWC) established hunting, trapping, and fishing regulations, unless the 96 CEG/CEVSN and the FWC grants specific authorization.
- Large scale timber cuts must be approved through the EIAP. For tactical maneuvers, tree cutting is limited to scrub oak and sand pine. Do not cut longleaf pine trees for any reason.
- Coordinate all military activities within or near stands of mature longleaf pine and scheduled during RCW nesting season (late April–July) with the 96 CEG/CEVSN.
- Prior to any clearing or establishment of new targets, a gopher tortoise survey must be conducted. Transportation and release of any relocated tortoises must follow guidelines in the Gopher Tortoise Permitting Guidelines (FWC, 2008).
- If a gopher tortoise, indigo snake, or black bear is sighted, cease activity in the area until the animal is out of harm's way. Report the sighting to the NRS immediately.

**Solid Wastes and Hazardous Materials/Wastes**

- Areas in which small arms with blank ammunition is used must be policed and cleared of debris. Blank cartridges are turned in to be recycled (as described in individual test directives).

**Cultural Resources**

- Any archaeological artifacts discovered shall be left in place and immediately report the location to the 96 CEG/CEVSH (as described in individual test directives).
- The 96 CEG/CEVSH will be consulted prior to any planned construction or ground-disturbing activities to confirm the presence of absence of cultural resources within the project area.

### 3. AFFECTED ENVIRONMENT

The affected environment section of this report describes the receptors within TA C-64 that are potentially impacted by testing and training operations. This chapter is organized by the following resource sections: Chemical Materials, Soils, Water Resources, Biological Resources, Air Quality, Noise, Safety, Land Use, and Socioeconomic Resources.

#### 3.1 CHEMICAL MATERIALS

Chemical materials encompass liquid, solid, or gaseous substances released to the environment as a result of mission activities. These materials would include munitions and pyrotechnic combustion byproducts from items such as bombs, missiles, small arms, and flares. Release of these materials may potentially affect air quality, water quality, soils, and sediments. The environmental analysis of chemical materials describes the potentially adverse environmental impacts from testing and training activities within TA C-64.

##### 3.1.1 Hazardous Materials

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), hazardous materials and waste are defined as substances that, because of “quantity, concentration, or physical, chemical, or infectious characteristics, may cause or significantly contribute to increases in mortality or serious illnesses, or pose a substantial threat to human health or the environment.”

Hazardous materials as referenced here pertain to mission-related hazardous chemicals or substances meeting the requirements found in 40 CFR 261.21.24, are regulated under RCRA, and are guided by AFI 32-7042. The hazardous materials to be transported, stored, and used on site for the Proposed Action consist of fuels, munitions, and pyrotechnics.

Eglin AFB has implemented a *Hazardous Waste Management Plan*, AAC Instruction 32-7003, that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of hazardous wastes. The plan also addresses record keeping, spill contingency and response requirements, and education and training of appropriate personnel in the hazards, safe handling, and transportation of these materials (U.S. Air Force, 2006a).

Specific procedures and responsibilities for responding to a hazardous waste spill or other incident are also described in the Eglin AFB *Spill Prevention, Control, and Countermeasures (SPCC) Plan* (U.S. Air Force, 2005).

Releases to the environment from munitions utilized in proficiency and qualification training require reporting to the U.S. Environmental Protection Agency (USEPA) under the Emergency Planning and Community Right-to-Know Act (EPCRA) Toxic Release Inventory (TRI) program. Training is subject to a TRI reporting threshold of 10,000 pounds per year for most common chemicals, with lower reporting thresholds for chemicals classified as persistent bioaccumulative toxic. These chemicals include mercury, with a reporting threshold of 10 pounds, and lead, with a threshold of 100 pounds. In cases when a threshold is exceeded, the installation must report on

a “Form R” report to the USEPA the quantity of munitions-related waste released to the environment or recovered and recycled.

Eglin AFB has procedures to comply with TRI reporting requirements and would track ordnance use associated with the proposed alternatives. This could require new procedures if proposed training activities would result in reporting thresholds being exceeded at the base for any new chemicals.

## Regulations

Under federal law, the transportation of hazardous materials is regulated in accordance with the Hazardous Materials Transportation Act, 49 U.S. Code (USC) 1801 et seq. For the transportation of hazardous materials, Florida has adopted federal regulations that implement the Hazardous Materials Transportation Act, found at 49 CFR 178.

State laws pertaining to hazardous materials management include the Florida Right-to-Know Act, Florida Statutes Title 17, Chapter 252, and annotated Title 29, Section 403.721, which authorizes the Hazardous Waste Section of the FDEP and the Florida Department of Transportation Motor Carrier Compliance Department to implement 49 CFR 178.

AFI 32-7086 Supplement 1, *Hazardous Materials Management*, describes how Eglin complies with federal, state, Air Force, and DoD laws and instructions. All Eglin AFB organizations and tenants are required to follow this plan.

### 3.1.2 Debris

Debris includes the physical materials that are deposited on the surface of terrestrial or aquatic environments during mission activities. The potential impacts are primarily related to physical disturbances to people, wildlife, or other users of the Range, and chemical alterations that could result from the residual materials. Examples of debris deposited from activities at TA C-64 potentially resulting in environmental impacts include the following:

- Shell casings, canisters from signal smokes, flares, chutes from flares
- UXO (primarily inert items)
- Litter and refuse from daily mission activities, including ground troop movement

### 3.1.3 Legacy Debris Pit Sites

Legacy debris pits (LDPs) are areas where ordnance and explosive waste residues are present or buried in the water, soil, or sediment. Eglin AFB’s Environmental Restoration Branch identifies and manages LDPs to monitor known and potential areas of concern regarding munitions. There are no LDP sites located within TA C-64, but one LDP site is located near the northwestern border (Table 3-1 and Figure 3-1). Detailed information on all LDP sites can be found in the *Archives Search Report for Legacy Debris Pits at Eglin AFB* (U.S. Army Corps of Engineers [USACE], 2002). LDPs are being further investigated under the Air Force Military Munitions Response Program.

**Table 3-1. Legacy Debris Pit Site Located Near Test Area C-64**

Map ID	Location	Description	POI #
21	Test Area C-64 Location A	The area is a large sand/clay pit. There are exposed munitions on the surface and large bomb bodies half buried in the area. The site also has been used for disposal of a cluster bomb unit storage container with munitions inside. There are BLU 22/B Test Units lying on the surface and buried half-exposed in the area. The area is approximately 50 square feet in size.	POI 620

Source: USACE, 2002

POI = point of interest

### 3.1.4 Environmental Restoration Program

The ERP, formerly known as the Installation Restoration Program, is used by the Air Force to identify, characterize, and remediate past environmental contamination on Air Force installations. Although widely accepted at one time, the procedures followed for managing and disposing of wastes resulted in contamination of the environment. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites. Regulations affecting ERP management at Eglin integrate investigative and remedial protocols of the Comprehensive Environmental Response, Compensation, and Liability Act and RCRA processes, as well as state environmental compliance programs, primarily those found in the Florida Administrative Code (FAC) 62-770, Petroleum Contamination Site Cleanup Criteria.

Cleanup of contaminated property to safe levels is the first priority of the ERP at Eglin AFB; however, lack of feasible and/or cost-effective remedies for some site conditions necessitates the use of land use controls (LUCs). LUCs are mechanisms primarily used to limit human activities at or near a contaminated site. In general, LUCs can be implemented at active installations where: (1) typical cleanup measures are not prudent or feasible; (2) the historical and future land use at a site, as reflected in the installation's land use plans, is nonresidential and compatible with LUC concept; (3) long-term LUC management systems can be effectively maintained; (4) LUCs offer advantages; and (5) the potential liabilities are limited.

LUCs may be implemented alone or as components of, or enhancements to, active remediation sites. They permit limited use of property while ensuring the effectiveness of remedial action and the protection of human health and the environment over a long period of time. LUCs are designed to protect the public and the environment from residual hazardous substances during and after remediation.

Only one ERP site on the TA C-64 is subject to internal LUCs (Table 3-2 and Figure 3-1). No other active ERP sites are located within TA C-64. Detailed information on all active and closed ERP sites can be found in the *Eglin Air Force Base Environmental Restoration Program Sites Status Report* (U.S. Air Force, 2009).

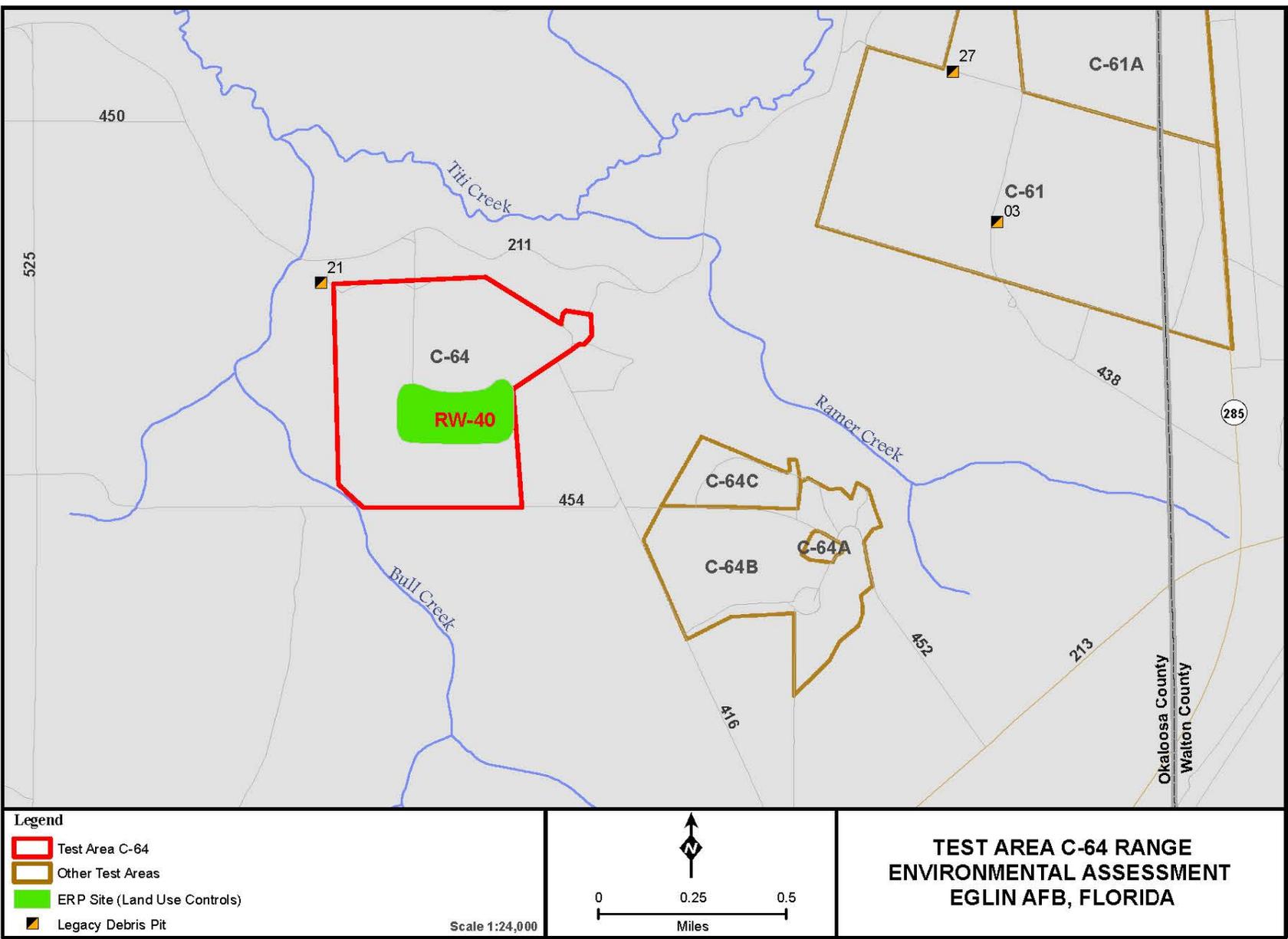


Figure 3-1. Legacy Debris Pit Site Located on Test Area C-64

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**Table 3-2. Active Environmental Restoration Program Sites Located on Test Area C-64**

Location	Site ID	Site Status	Site Description
C-64	RW-40	LUC-internal	This site was identified as a potential source of DU contamination associated with past testing of ammunition containing DU. An SI was performed at the site using a FIDLER and collecting soil samples. DU fragments identified were removed. SI report recommended NFA and release of the land back to range use.

Source: U.S. Air Force, 2009

DU = depleted uranium; ERP = Environmental Restoration Program; LUC = land use control; RW = radioactive waste, NFA = no further action, SI = site investigation, FIDLER = Field Instrument Detection of Low Energy Radiation

### 3.2 SOILS

The relief on TA C-64 is characterized as gently rolling hills, with relatively flat to gently undulating terraces, and broad basins. Elevations generally range from 125 to 230 feet. Steeper slopes on the test area occur at the southwest corner along the riparian zone of Bull Creek. The Lakeland sand soil series is the primary soil type found within TA C-64. Additional soil types include Troup sand and Udorthents (Table 3-3; Figure 3-2).

**Table 3-3. Test Area C-64 Soil Types and Characteristics**

Soil Name	Erosion Risk	Attributes	Soil Type
Lakeland sand	Slight	Yellowish brown to grayish brown	Sand
Udorthents	Slight	Mixed soil attributes. Individual attributes not identifiable.	Mixed loamy, sand, clay
Troup sand, 5- to 8-percent slopes	Slight	Dark yellowish brown to yellowish red	Loamy sand
Troup sand, 8- to 12-percent slopes	Slight	Dark yellowish brown to yellowish red	Loamy sand

#### Lakeland Sands

The Lakeland sand series are very deep, excessively drained, permeable soils that formed from thick, sandy sediments. These soils are abundant on both level and steep uplands and can be up to 80 inches in depth. Lakeland sands vary in acidity from medium to very strong, resulting in varying soil colors ranging from dark, grayish brown, to yellowish-brown (U.S. Department of Agriculture, 1995). Lakeland sand generally has a moderate to high erosion susceptibility due to the high sand content. However, in areas where the soils are mucky, it is less likely to erode since mucks are composed of organic matter and clay. Variation of sediment size with the addition of clay and organic matter helps create soil stability.

#### Troup Sands

The Troup series consists of well-drained, moderately permeable soils that do not have a water table within a depth of 80 inches. These soils range from loamy to loamy sand. Troup sands typically have a convex, moderate slope of 3 percent or less, but can range to greater than 20 percent. Slopes on TA C-64 are characterized as sloping (5- to 8-percent slopes) to strongly sloping (8- to 12-percent slopes). Troup sands are characteristically highly acidic and contain a higher organic level than Lakeland soils. Troup sands occur on TA C-64 in association with Bull Creek.

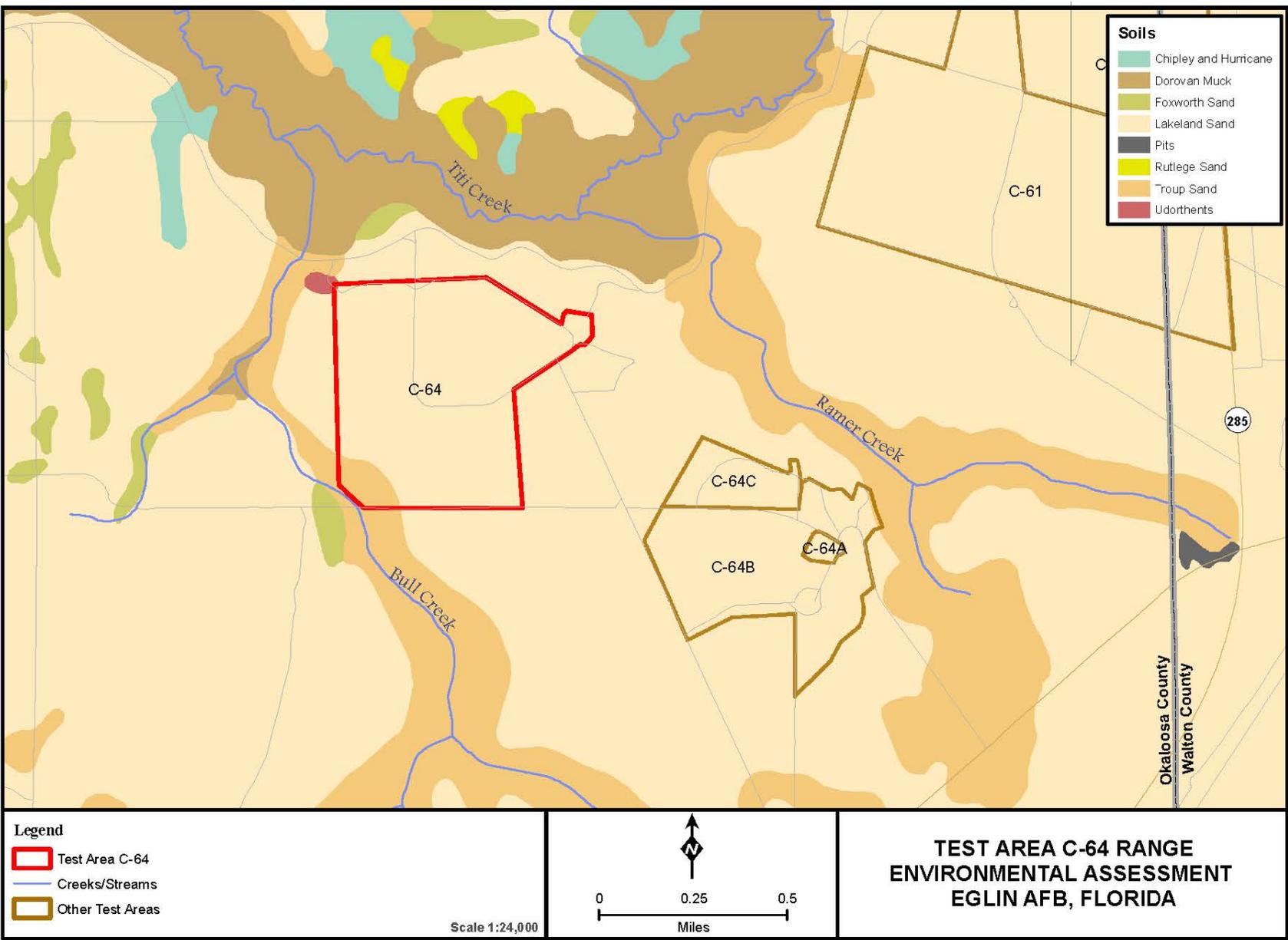


Figure 3-2. Soil Types Within Test Area C-64

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## Udorthents

Udorthents consist of nearly level materials found in areas of open excavations from which sand and loamy material has been removed. Udorthent areas can range in depth from 2 to more than 12 feet, and most of these areas are not suitable for cultivation or timber production. Udorthent soil occurs only in the extreme northwest corner of TA C-64.

### 3.3 WATER RESOURCES

This section provides descriptions of the qualitative and quantitative characteristics of water resources on TA C-64. Water resources include groundwater, surface water, wetlands, floodplains, and the coastal zone. Site-specific information on the water resources associated with TA C-64 is contained in the following paragraphs. Appendix A, *Relevant Laws, Regulations, and Policies*, provides pertinent regulations.

#### 3.3.1 Groundwater

Two major aquifers lie under Eglin AFB: the Surficial Aquifer, also known as the Sand and Gravel Aquifer, and the Floridan Aquifer. The Surficial Aquifer is a generally unconfined (water table), near-surface unit separated from the underlying confined (under pressure) Floridan Aquifer by the low-permeability Pensacola Clay confining bed. The Surficial Aquifer is mainly composed of clean, fine-to-coarse sand and gravel, while the Floridan Aquifer consists of a thick sequence of interbedded limestone and dolomite. Water quality of the Surficial Aquifer is generally good, but is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (U.S. Air Force, 2003a).

Water from the Surficial Aquifer is not a primary source of domestic or public water supply on Eglin because of the large quantities of higher quality water available from the underlying upper limestone of the Floridan Aquifer (U.S. Air Force, 2003a). Water drawn from the upper limestone of the Floridan Aquifer is of suitable quality for most uses, and is the primary source of water used at Eglin AFB. The top of the aquifer is about 50 feet below mean sea level (MSL) in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base (McKinnon and Pratt, 1998).

The Surficial Aquifer system is in direct contact with surface waters on Eglin. Discharge of groundwater constitutes the baseflow for most streams and rivers, such as Bull Creek, Titi Creek, and Ramer Creek located near the test areas. The position of the Surficial Aquifer near the surface and its relatively high percolation rates make the aquifer vulnerable to contamination by surface pollutants. Lateral migration of contaminants towards surface water discharge points potentially facilitates the transfer of groundwater pollutants to area streams, rivers, and wetlands.

#### 3.3.2 Surface Water

Surface waters are any waters that lie above groundwater, such as streams, springs, ponds, lakes, rivers, bayous, and bays. There are no surface waters located within the boundaries of TA C-64. However, three surface water bodies occur within 1 kilometer of the test areas, including Titi

Creek to the north, Ramer Creek to the east, and Bull Creek, which borders the southwest portion of TA C-64 (Figure 3-3). The TA watershed generally drains northward into the Titi Creek floodplains. Bull Creek and Ramer Creek flow north and join Titi Creek, which combines with the Shoal River to form the Yellow River.

The State of Florida has developed and retains jurisdiction for surface water quality standards for all waters of the state in accordance with the provisions of the Clean Water Act (CWA). Section 303 of the CWA requires the state to establish water quality standards for waterways, identify those that fail to meet the standards, and take action to clean up these waterways. Florida recently adopted the Impaired Waters Rule (IWR) (FAC Chapter 62-303), with amendments, as the new methodology for assessing the state's waters for 303(d) listing. FDEP submits names of surface waters that are determined to be impaired, using the methodology in the IWR and adopted by secretarial order, to the USEPA for approval as Florida's 303(d) list. The FDEP submits updates to Florida's 303(d) *List of Impaired Surface Waters* to the USEPA every two years. The 2006 *Integrated Water Quality Assessment for Florida: 2006 305(b) Report* and *303(d) List Update* (FDEP, 2006a) satisfy the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

Surface waters on Eglin AFB are Class III waters, meaning that they are designated for "recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife" (FDEP, 2006a). Impaired waters on or adjacent to Eglin AFB include: Boggy Bayou, Poquito Bayou, Rocky Bayou State Park, Choctawhatchee Bay, East Bay, and Yellow River (FDEP, 2006b; FDEP, 2007). The land areas of TA C-64 that drain into basins constitute a small fraction of the total land area that drains into the receiving waters. Industry, agriculture, and waste processing in these areas are major contributors of water runoff and effluent components to the receiving water bodies. There is no clear association between the status of the basins and activities occurring on TA C-64.

### 3.3.3 Wetlands

Wetlands are areas of transition between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water (USFWS, 1979). Abiotic and biotic environmental factors such as morphology, hydrology, water chemistry, soil characteristics, and vegetation contribute to the diversity of wetland community types. The term *wetlands* describes marshes, swamps, bogs, and similar areas. Local hydrology and soil saturation largely affects soil formation and development, as well as the plant and animal communities found in wetland areas (USEPA, 1995). Wetlands are often categorized by water patterns (the frequency or duration of flooding) and location in relation to upland areas and water bodies. Wetland hydrology is considered one of the most important factors in establishing and maintaining wetland processes (Mitsch and Gosselink, 2000).

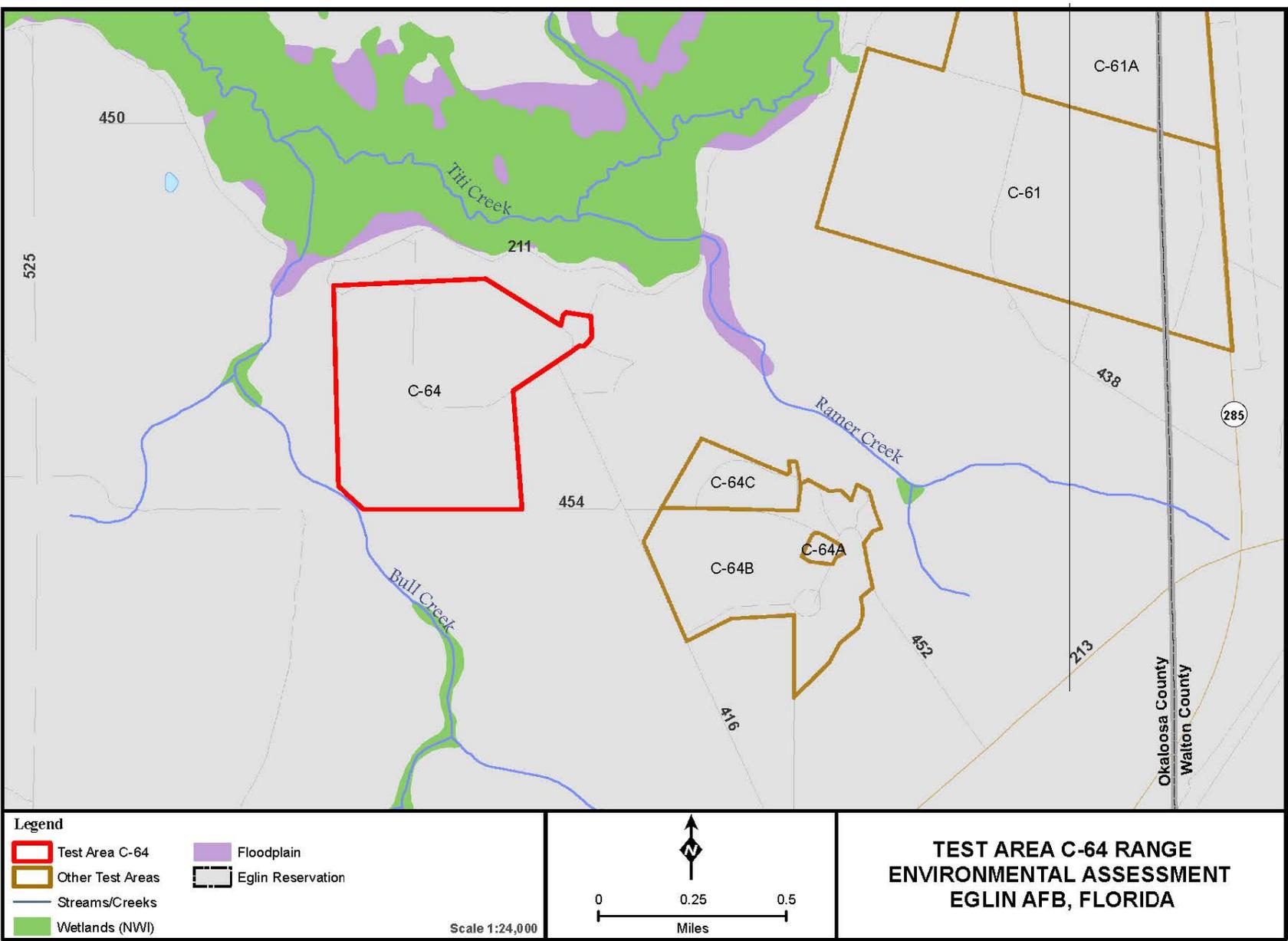


Figure 3-3. Water Resources Located on Test Area C-64

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“Jurisdictional wetlands” are those over which the USACE has regulatory control under Section 404 of the CWA. Wetlands are defined in the USACE Wetland Delineation Manual as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE, 1987). The majority of jurisdictional wetlands in the United States are described using three principal wetland delineation criteria: hydrophytic vegetation, hydric soils, and hydrology (USACE, 1987). USFWS uses a simpler classification system that is satisfied by any one of the above three characteristics.

USACE is the lead agency in protecting wetland resources and invokes jurisdiction over federal wetlands (33 CFR 328.3) under Section 404 of the CWA (30 CFR 330) and Section 10 of the Rivers and Harbors Act (30 CFR 329). The USEPA assists USACE (in an administrative capacity) in the protection of wetlands (40 CFR 225.1 to 233.71). The State of Florida regulates wetlands under the Wetlands/Environmental Resource Permit program under Part IV, Florida Statutes Section 373.

In addition, the USFWS and the National Marine Fisheries Service (NMFS) have important advisory roles. The FDEP’s Chapter 62-312, *Dredge and Fill Program*, affords regulatory protection to wetland resources (i.e., protection from excavating or filling a wetlands area with dirt, rip-rap, etc.) at the state level. FDEP issues a Section 401 certification under the authority of the CWA (40 CFR 230.10[b]). Section 401 of the CWA requires federal agencies to obtain certification from the state before issuing permits that would result in increased pollutant loads to a water body. The certification is issued only if such increased loads would not cause or contribute to exceedances of water quality standards (USEPA, 2006).

No wetland resources occur within the boundaries of TA C-64, although wetlands occur within 1 kilometer of the test areas. Large wetland systems associated with Titi Creek occur north of TA C-64. Other wetlands associated with Bull Creek and Ramer Creek also occur near the test areas (Figure 3-3).

### 3.3.4 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, wetlands, and rivers) that are periodically covered by water during flooding events. Floodplains and riparian habitat are biologically unique and highly diverse ecosystems supporting a rich diversity of aquatic and terrestrial species (Mitsch and Gosselink, 2000). Floodplain vegetation promotes bank stability and provides a shading effect to moderate water temperatures. Vegetation and soils act as water filters, intercepting surface water runoff before it reaches lakes, streams, or rivers, and storing floodwaters during flood events. This filtration process aids in the removal of excess nutrients, pollutants, and sediments from the water and helps reduce the need for costly cleanups and sediment removal. Floodplains also reduce downstream flooding by increasing upstream storage in wetlands, sloughs, back channels, side channels, and former channels.

Any actions being considered by federal agencies must be evaluated to determine whether they would occur within a floodplain. Floodplains that must be considered include those areas with a 1-percent chance of being inundated by floodwater in a given year (also known as a 100-year

floodplain). EO 11988, *Floodplain Management* (1977, 42 *Federal Register* 26951), requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. Additionally, EO 11988 requires federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains. The order stipulates that federal agencies proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. If adverse effects are unavoidable, the proponent must include mitigation measures in the action to minimize impacts.

Parts of the floodplain that are also considered wetlands will, in addition to floodplain zonings, receive protection from federal, state, and local wetland laws. These laws, such as the USACE Section 404 Permit Program, regulate alterations to wetlands to preserve both the amount and integrity of the nation's remaining wetland resources. Specific wetland regulations are described in Section 3.3.3.

No floodplain resources occur within the boundaries of TA C-64. However, designated floodplains are present within 1 kilometer of the test areas. A large wetland system associated with Titi Creek is located within the Federal Emergency Management Agency Flood Zone (Figure 3-3). In addition, floodplains are located along the northern portions of Bull Creek and Ramer Creek.

### 3.3.5 Coastal Zone

The term *coastal zone* is defined as coastal waters and adjacent shore lands, which strongly influence one another, located in proximity to the several coastal states. The coastal zone includes islands, transitional and inner tidal areas, salt marshes, wetlands, and beaches. Coastal waters are defined as any waters adjacent to the shoreline that contain a measurable amount of sea water, including, but not limited to, sounds, bays, lagoons, bayous, ponds, and estuaries. The seaward boundary of the coastal zone is the limit of state waters, which for the Gulf Coast of Florida is 9 nautical miles from shore. The entire landmass of Florida is considered part of the coastal zone and is subject to the CZMA.

Federal agency activities potentially impacting the coastal zone are required to be consistent, to the maximum extent practicable, with approved state Coastal Zone Management Programs. Federal agencies make determinations as to whether their actions are consistent with approved state plans. Eglin AFB submits consistency determinations to the state for review and concurrence. All relevant state agencies must review the Proposed Action and issue a consistency determination. The Florida Coastal Management Program is composed of 23 Florida statutes that are administered by 11 state agencies and four of the five water management districts.

Components of the Proposed Action would take place within the jurisdictional concerns of FDEP and therefore would require a consistency determination with respect to Florida's Coastal Zone Management Plan and the CZMA (Appendix D).

### 3.4 BIOLOGICAL RESOURCES

Biological resources include the native and introduced terrestrial and aquatic plants and animals found on and around TA C-64. The habitats of Eglin AFB are home to an unusually diverse biological community including several sensitive species and habitats, many of which are present on or within 1 kilometer of TA C-64.

#### 3.4.1 Ecological Associations

Four broad matrix ecosystems exist on Eglin AFB: sandhills, flatwoods, wetlands/riparian, and barrier island. The ecosystems are defined by floral, faunal, and geophysical similarities. Artificially maintained open grasslands/shrublands and urban/landscaped areas also exist on Eglin, primarily on test areas or Main Base. Although grasslands/shrublands and urban/landscaped areas are not true ecological associations, they are included in this section as land uses as they are present within the study area.

TA C-64 is predominately open grasslands/shrublands with interspersed urban/landscaped areas (Figure 3-4). Nearby test areas are open grasslands/shrublands, sand hills and urban/landscaped areas while areas immediately adjacent to TA C-64 are sand hills and wetland/riparian. A list of typical species found within each ecological association is provided in Table 3-4 while detailed descriptions of the ecological associations are found in Appendix B.

#### 3.4.2 Sensitive Habitats

Sensitive habitats include areas that the federal government, state government, or the DoD have designated as worthy of special protection due to certain characteristics such as high species diversity, rare plant species, or other unique features. One Significant Botanical Site (SBS), the Titi Creek Wilderness Area, is located approximately 0.25 mile north of TA C-64 (Figure 3-5). Other sensitive habitats on or near TA C-64 include wetlands and floodplains, which are discussed in detail in the Water Resources section.

#### 3.4.3 Sensitive Species

Sensitive species are those species protected under federal or state law, to include migratory birds and threatened and endangered species. An *endangered* species is one that is in danger of extinction throughout all or a significant portion of its range. A *threatened* species is any species that is *likely* to become endangered within the foreseeable future throughout all or a significant portion of its range.

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531 to 1544; 1997–Supp) was enacted to provide for the conservation of endangered and threatened species and the ecosystems on which they depend. Air Force Policy Directive 32-70 directs the implementation of the ESA. Certain federal activities may require an ESA Section 7 consultation with the USFWS and/or NMFS if impacts to federally listed species are possible.

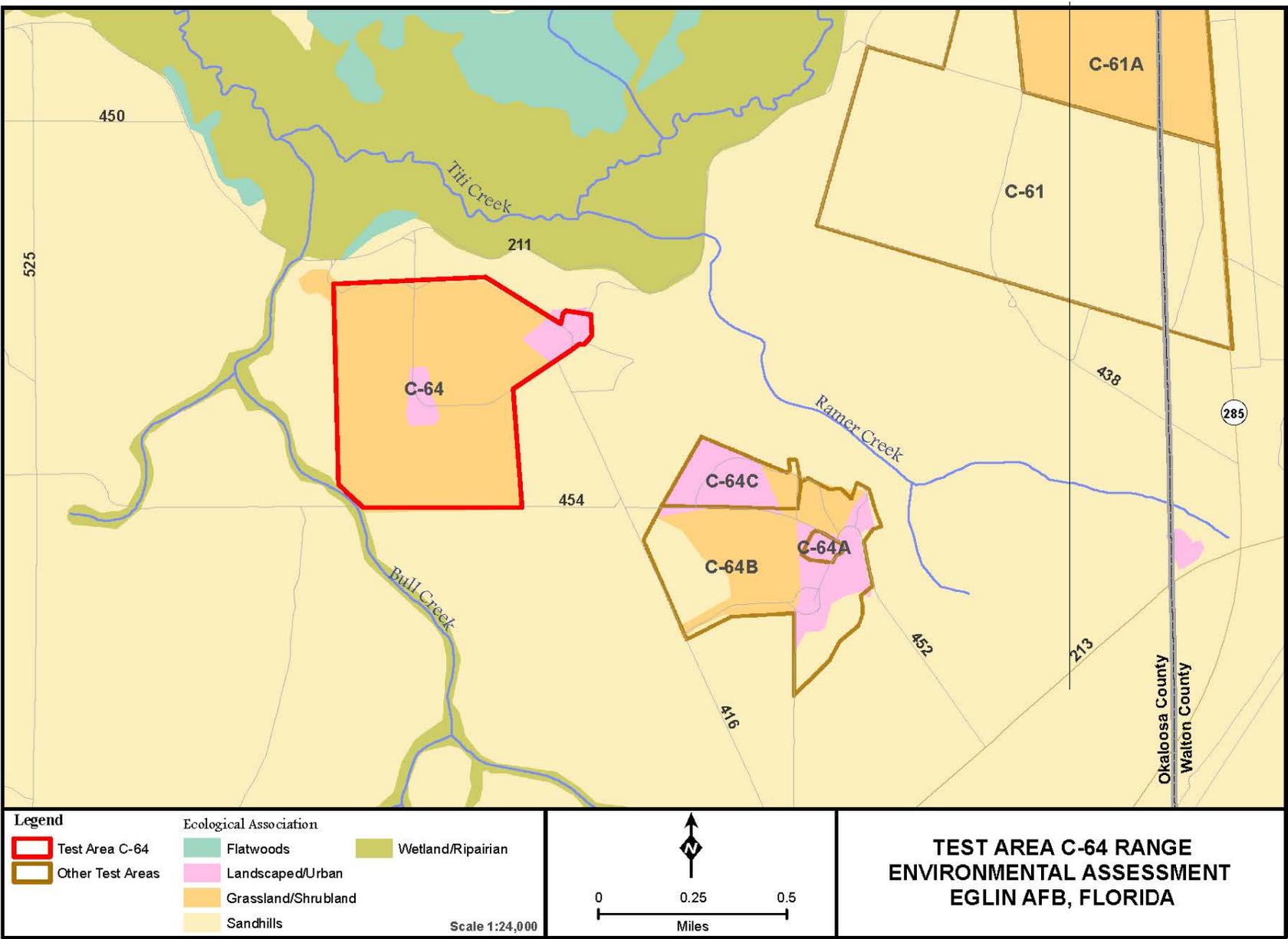


Figure 3-4. Ecological Associations Found on or Near Test Area C-64

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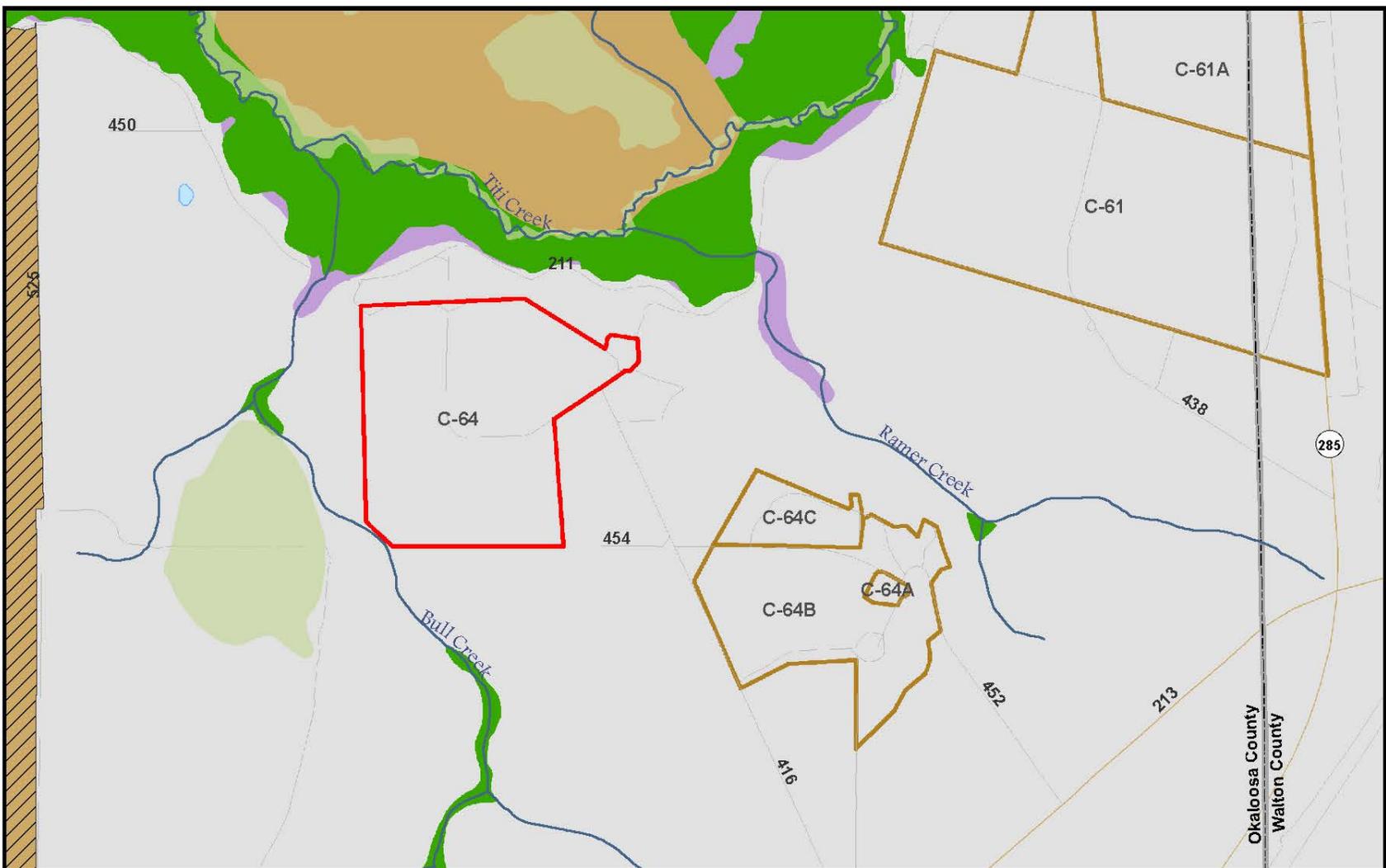
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**Table 3-4. Typical Species Found Within the Sand Hills, Wetland/Riparian, and Open Grassland/Shrubland Ecological Associations**

Plants		Animals	
Common Name	Scientific Name	Common Name	Scientific Name
<b>Sand hills Ecological Association</b>			
Longleaf pine	<i>Pinus palustris</i>	Red-cockaded woodpecker	<i>Picoides borealis</i>
Turkey oak	<i>Quercus laevis</i>	Bobwhite quail	<i>Colinus virginianus</i>
Blackjack oak	<i>Q. marilandica</i>	Great horned owl	<i>Bubo virginianus</i>
Bluejack oak	<i>Q. incana</i>	Gopher tortoise	<i>Gopherus polyphemus</i>
Wiregrass	<i>Aristida stricta</i>	Indigo snake	<i>Drymarchon corais</i>
Saw palmetto	<i>Serona repens</i>	Diamondback rattlesnake	<i>Crotalus adamanteus</i>
Bracken fern	<i>Pteridium aquilinum</i>	Six-lined racerunner	<i>Cnemidophorus sexlineatus</i>
Blueberry	<i>Vaccinium</i> spp.	Florida black bear	<i>Ursus americanus floridanus</i>
Yaupon	<i>Ilex vomitoria</i>	Fox squirrel	<i>Sciurus niger</i>
Gallberry	<i>Ilex glabra</i>	Least shrew	<i>Cryptodius parva</i>
Gopher apple	<i>Licania michauxii</i>	Cottontail rabbit	<i>Sylvilagus floridanus</i>
Blackberry	<i>Rubus cuneifolius</i>	Pocket gopher	<i>Geomys pinetus</i>
Sand pine	<i>Pinus Clausa</i>	Whitetailed deer	<i>Castor canadensis</i>
Pinewoods bluestem	<i>Andropogon arctatus</i>	Feral pig	<i>Sus scrofa</i>
Wiregrass	<i>Aristida stricta</i>	Raccoon	<i>Procyon lotor</i>
<b>Wetland and Riparian Ecological Association (Freshwater)</b>			
Yellow water lily	spp.	Raccoon	<i>Procyon lotor</i>
Saw grass	<i>Cladium jamaicensis</i>	Florida black bear	<i>Ursus americanus floridanus</i>
Cattail	<i>Typha domingensis</i>	Sherman's fox squirrel	<i>Sciuris niger shermani</i>
Phragmites	<i>Phragmites australis</i>	American alligator	<i>Alligator mississippiensis</i>
White cedar	<i>Chamaecyparis thyoides</i>	Pine barrens tree frog	<i>Hyla andersonii</i>
Water tupelo	<i>Nyssa biflora</i>	Five-lined skink	<i>Eumeces fasciatus</i>
Pitcher plant	<i>Sarracenis purpurea</i>	Green anole	<i>Anolis carolinensis</i>
Red titi	<i>Cyrilla racemiflora</i>	Garter snake	<i>Thamnophis sirtalis</i>
Tulip poplar	<i>Liriodendrom tulipifera</i>	Indigo snake	<i>Drymarchon corais</i>
Sweet bay magnolia	<i>Magnolia virginiana</i>	American beaver	<i>Castor canadensis</i>
Red bay	<i>Persea borbonia</i>	Parula warbler	<i>Parula americana</i>
<b>Open Grassland/Shrubland Ecological Association</b>			
Switchgrass	<i>Panicum virgatum</i>	Red-shouldered hawk	<i>Buteo lineatus</i>
Broomsedge	<i>Andropogon virginicus</i>	Southeastern American kestrel	<i>Falco sparverius paulus</i>
Big bluestem	<i>Schizachyrium</i> spp.	Florida burrowing owl	<i>Athene cunicularia</i>
Yellow indian grass	<i>Sorghastrum</i> spp.	Flycatchers	<i>Tyrannidae</i> spp.
Purple lovegrass	<i>Eragrostis spectabilis</i>	Cotton mouse	<i>Peromyscus gossypinus</i>
Woolly panicum	spp.	Slender glass lizard	<i>Ophisaurus attenuatus</i>
Forbs	<i>Panicum virgatum</i>	Gopher tortoise	<i>Gopherus polyphemus</i>

AFI 32-7064 provides details on how to manage natural resources in such a way as to comply with federal, state, and local laws and regulations. This AFI calls for the protection and conservation of state-listed species when not in direct conflict with the military mission. Eglin applies for appropriate permits for actions that may affect state-listed species (such as monitoring and handling), and also cooperates with the FWC to further the goals of the Florida State Wildlife Conservation Strategy.



**Legend**

Test Area C-64	Floodplain	High Quality Natural Communities
Other Test Areas	Significant Botanical Site	
Streams/Creeks	Combined ONA/SBS Area	
Wetlands (NWI)	Eglin Reservation	

Scale 1:24,000

0 0.25 0.5  
Miles

**TEST AREA C-64 RANGE ENVIRONMENTAL ASSESSMENT EGLIN AFB, FLORIDA**

Figure 3-5. Sensitive Habitats Found on or Near Test Area C-64

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Migratory birds are protected under the Migratory Bird Treaty Act (16 USC 703-712; 1997-Supp) and EO 13186. A migratory bird is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. Federal agencies are to integrate bird conservation principles, measures, and practices into agency activities, and avoid or minimize adverse impacts on migratory bird resources. Also, federal agencies must provide notice to the USFWS in advance of conducting an action that is intended to take migratory birds.

Sensitive species found on or near TA C-64 are depicted in Figure 3-6 and Figure 3-7 and are listed in Table 3-5. There are no sensitive plant species found on TA C-64. Detailed descriptions of these species are located in Appendix B.

### 3.4.4 Invasive Non-native Species Management

Invasive non-native species (INS) include plants, animals, insects, diseases, and other organisms that are becoming established and spreading at an alarming rate throughout the world. An invasive species can be defined as a species that is non-native to an ecosystem and whose intentional or accidental introduction causes or is likely to cause environmental or economic damage or harm to human health.

The Eglin AFB INS Management Program focuses on invasive non-native plant and animal species that cause or may cause negative environmental impacts to Eglin ecosystems. Some of the main INS of concern are Chinese tallow, cogon grass, Japanese climbing fern, Chinese privet, torpedo grass, feral pigs, and feral cats (U.S. Air Force, 2006b). The program’s purpose is to protect the integrity of Eglin’s natural ecosystems by reducing and controlling the spread of INS. The plan includes a recommendation to limit foot traffic and vehicle traffic in areas where INS are present to prevent the spread of the invasive and exotic species. Equipment moving through these areas needs to be washed so that all seedlings are removed before the equipment is transferred to a noncontaminated area. Standard operating procedures dictate that all vehicles are cleaned prior to use, which would lessen or eliminate the potential for the spread of INS.

**Table 3-5. Sensitive Species Found on or Near Test Area C-64**

Scientific Name	Common Name	Status
<b>Amphibians</b>		
<i>Ambystoma bishopi</i>	Reticulated flatwoods salamander	FE
<b>Reptiles</b>		
<i>Pituophis melanoleucus mugitus</i>	Florida pine snake	SSC
<i>Drymarchon corias couperi</i>	Eastern indigo snake	FT, ST
<i>Gopherus polyphemus</i>	Gopher tortoise	ST
<b>Birds</b>		
<i>Falco sparverius paulus</i>	Southeastern American kestrel	ST; MBTA
<i>Picoides borealis</i>	Red-cockaded woodpecker	FE, ST; MBTA
<b>Mammals</b>		
<i>Ursus americanus floridanus</i>	Florida black bear	ST

FE = federally endangered; FCE = federal consideration is encouraged; FT = federally threatened; MBTA = protected under the Migratory Bird Treaty Act; ST = state threatened; SSC = state species of special concern.

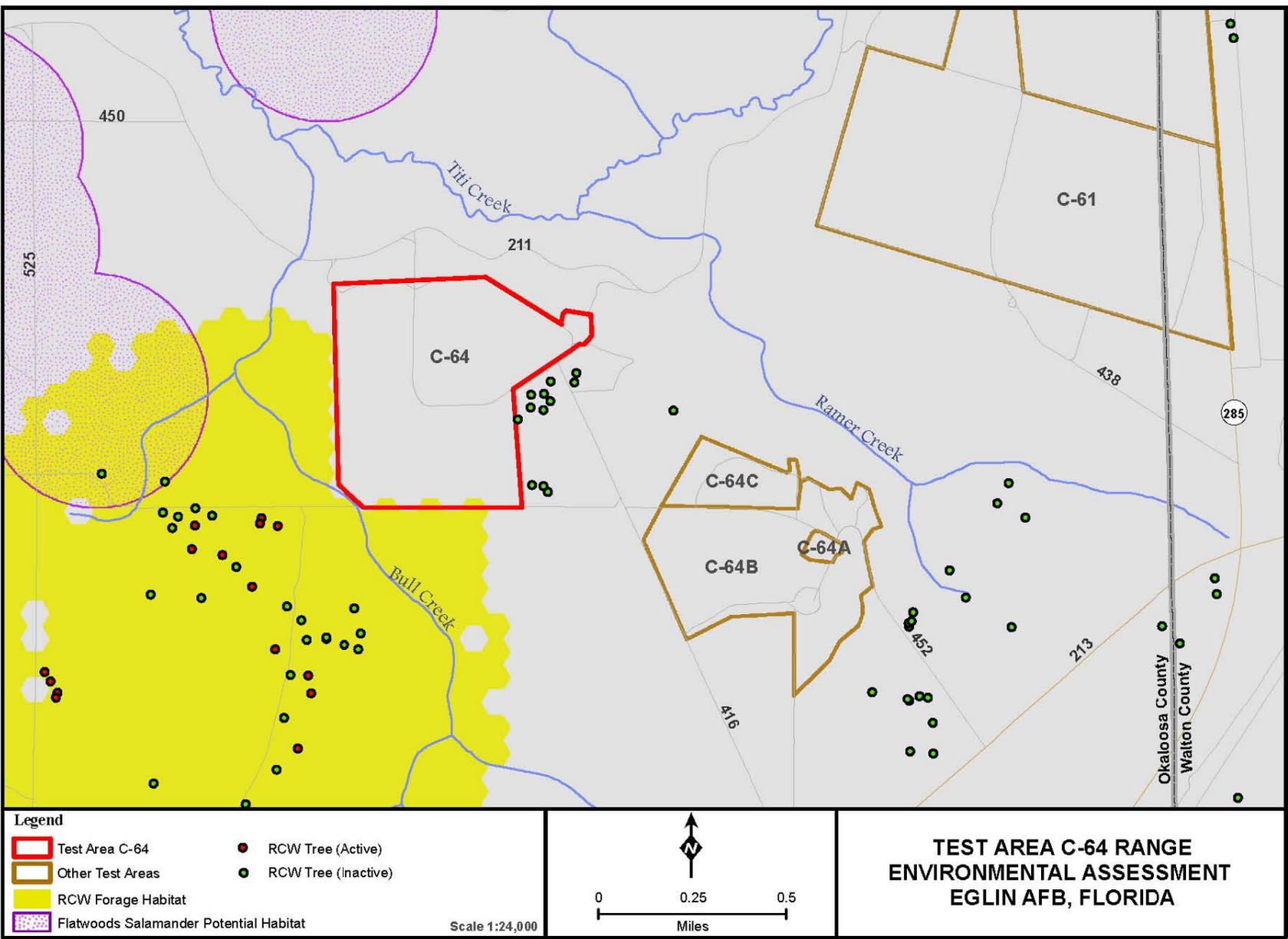


Figure 3-6. Sensitive Animal Species Found on or Near Test Area C-64

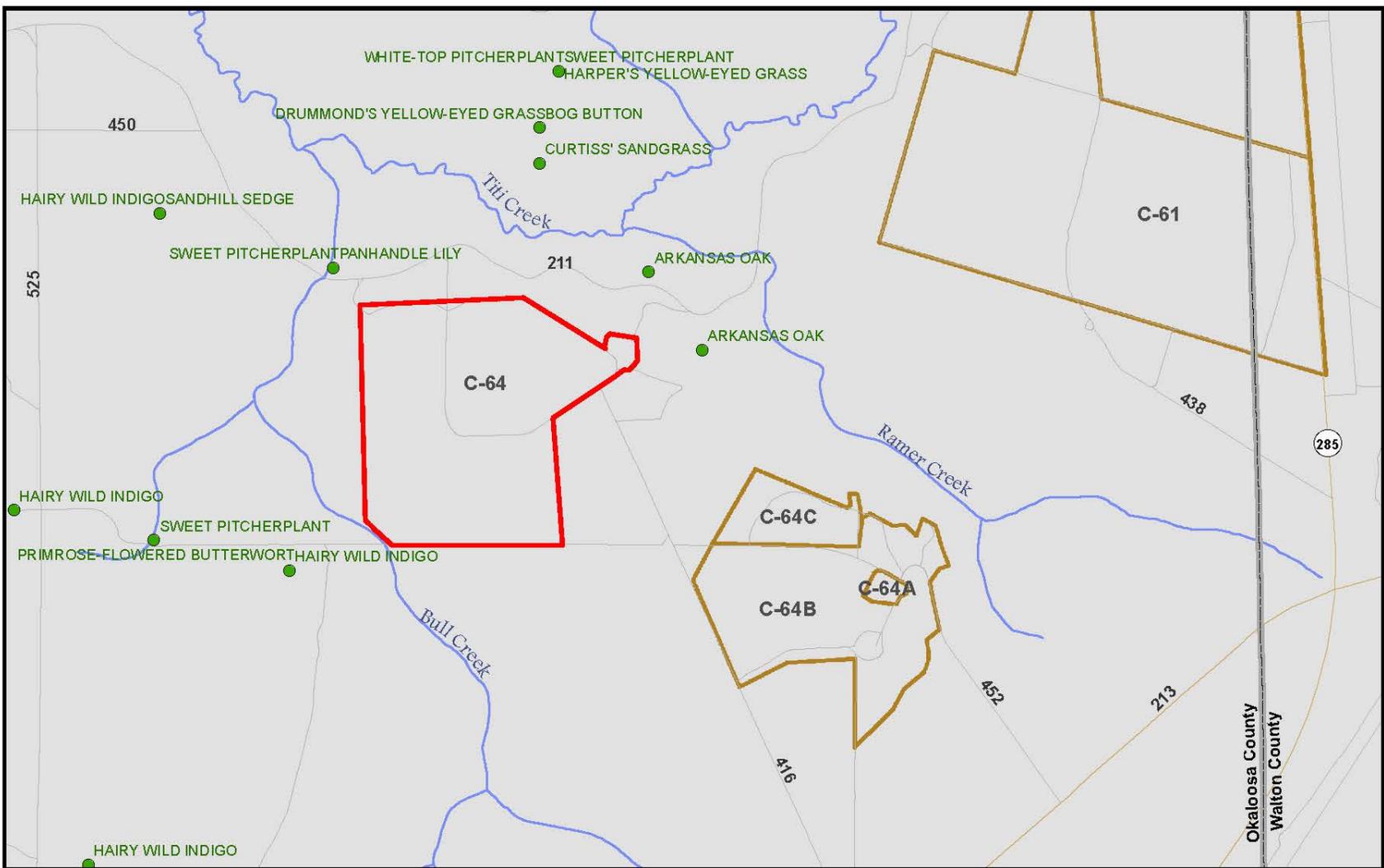
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**Legend**

- Test Area C-64
- Other Test Areas
- Eglin Reservation
- Stream/Creeks
- FNAI Plant

Scale 1:24,000

  
 0      0.25      0.5  
 Miles

**TEST AREA C-64 RANGE  
ENVIRONMENTAL ASSESSMENT  
EGLIN AFB, FLORIDA**

Figure 3-7. Sensitive Plant Species Found on or Near Test Area C-64

### 3.5 AIR QUALITY

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million (ppm) or micrograms per cubic meter ( $\mu\text{g}/\text{m}^3$ ).

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards (Table 3-6). These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. Further discussion of the NAAQS and state air quality standards are included in Appendix C, *Air Quality*. Based on measured ambient air pollutant concentrations, the USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered “attainment” areas, while those that do not demonstrate compliance are known as “nonattainment” areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are “unclassifiable” and are treated as attainment areas until proven otherwise.

**Table 3-6. National Ambient Air Quality Standards**

Time Period	NAAQS Standards ( $\mu\text{g}/\text{m}^3$ )			
	CO	NO <sub>x</sub>	PM	SO <sub>x</sub>
Annual (Primary)		100	50	80
24-hr Avg (Primary)			150	365
8-hr Avg (Primary)	10,000			
3-hr (Secondary)				1,300
1-hr Avg (Primary)	40,000			

$\mu\text{g}/\text{m}^3$  = micrograms per cubic meter; Avg = average; CO = carbon monoxide; hr = hour; NAAQS = National Ambient Air Quality Standards; NO<sub>x</sub> = nitrogen oxides; PM = particulate matter; SO<sub>x</sub> = sulfur oxides

#### 3.5.1 Region of Influence and Existing Conditions

An air emissions inventory qualitatively and quantitatively describes the amount of emissions from a facility or within an area. Emissions inventories are designed to locate pollution source, define the type and size of the sources, characterize emissions from each source, and estimate total mass emissions generated over a period of time, normally a year. These annual rates are typically represented in tons per year. Inventory data establishes relative contributions to air pollution concerns by classifying sources and aircraft operations.

For comparison purposes, Table 3-7 presents the USEPA’s 2002 National Emissions Inventory (NEI) data for Okaloosa County (USEPA, 2002). The county data includes emissions data from point sources, area sources, and mobile sources. Point sources are stationary sources that can be identified by name and location. Area sources are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. Mobile sources are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and non-road. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives,

diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2005).

**Table 3-7. Baseline Emissions Inventory for Okaloosa County**

Source Type	Emissions (tons/year)				
	CO	NO <sub>x</sub>	PM	SO <sub>x</sub>	VOCs
Area sources	1,867	281	8,397	462	4,527
Non-road mobile	16,150	1,099	162	109	1,897
On-road mobile	45,228	5,703	153	256	3,829
Point sources	28	49	24	12	79
<b>Total</b>	<b>63,273</b>	<b>7,132</b>	<b>8,736</b>	<b>839</b>	<b>10,332</b>

Source: USEPA, 2002

CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM = particulate matter; SO<sub>x</sub> = sulfur oxides; VOC = volatile organic compound

The most recent air emissions inventories for Eglin AFB quantify emissions from stationary and mobile sources based on calendar year activities. Stationary sources include equipment/processes such as boilers, electric generators, surface coating, and fuels handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

In order to evaluate air emissions and their impact on the overall ROI, the emissions associated with the project activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 NEI data. Potential impacts to air quality are identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10-percent criterion approach is used in the USEPA's General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas. According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required as the proposed action occurs within an attainment area but is used to provide consistency and a conservative approach. Emissions from activities on TA C-64 would also be compared to the federal NAAQS.

## 3.6 NOISE

### 3.6.1 Definition

Noise is defined as any unwanted sound. Defining characteristics of noise include sound level (amplitude), frequency (pitch), and duration. Each of these characteristics plays a role in determining the intrusiveness and level of impact of the noise on a noise receptor. The term *noise receptor* is used in this document to mean any person, animal, or object that hears or is affected by noise.

Sound levels are measured on a logarithmic decibel (dB) scale, reflecting the relative way in which differences in sound energy levels are perceived. A sound level that is 10 dB higher than another would normally be perceived as twice as loud, while a sound level that is 20 dB higher than another would be perceived as four times as loud. Under laboratory conditions, a person

with normal hearing can detect a change in sound level as small as 1 dB. Under most nonlaboratory conditions, people will notice changes in sound level of approximately 3 dB.

Sound measurement may be further refined through the use of frequency “weighting.” A typical healthy human can detect sounds that range in frequency from about 20 hertz (Hz) to 20,000 Hz (Federal Interagency Committee on Noise, 1992). However, all sounds throughout this range are not heard equally well. In “A-weighted” measurements, the frequencies in the 1,000 to 4,000 Hz range are emphasized because these are the frequencies to which human hearing is most sensitive. Sound level measurements weighted in this way are termed *A-weighted decibels* (dBA). In the case of sonic booms, blast noise, and other impulsive “booming” noises, sound is felt as well as heard. With these types of noise, overpressure may be considered more annoying than the sound itself. For this reason, impulsive sounds are measured using “C-weighting,” which does not attenuate the lower frequencies to the extent that A-weighting does. Sound level measurements weighted in this way are termed *C-weighted decibels* (dBC). Unless otherwise noted, all sound levels referenced in this REA can be assumed to be A-weighted.

Typically, the sound level at any given location changes constantly. For example, the sound level changes continuously when an aircraft flies by, starting at the ambient (background) level, increasing to a maximum when the aircraft passes closest to the receptor, and then decreasing to ambient levels when the aircraft flies into the distance. The term *maximum sound level*, or “ $L_{max}$ ” represents the sound level at its greatest level during an aircraft overflight when sound is at its maximum.

Because munitions noise levels are so strongly influenced by meteorological conditions (e.g., winds), the peak noise level reaching a particular location after a particular noise event may vary significantly. The metric “Peak Noise Exceeded by 15 Percent of Firing Events,” or “ $PK_{15}(met)$ ,” accounts for weather-influenced statistical variation in received single-event peak noise levels.  $PK_{15}(met)$  is the peak noise level, without frequency weighting, expected to be exceeded by 15 percent of all firing events. Because this value is based on probability and actual noise levels would vary higher and lower, it cannot be directly measured in the field. If multiple weapon types are fired from one location, or from multiple firing locations, the reported  $PK_{15}(met)$  level would be based on the loudest weapon type at the closest location. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommends this metric as a supplement to time-averaged noise levels when discussing impulsive noise (USACHPPM, 2005).

Because both the duration and frequency of noise events also play a role in determining overall noise impact, several metrics are used that account for these factors. Each metric discussed below is used in the assessment of noise impacts in this REA.

Sound exposure level (SEL) accounts for both the  $L_{max}$  and the length of time a sound lasts. SEL does not directly represent the sound level heard at any given time. Rather, it provides a measure of the total sound exposure for an entire event compressed into one second. This metric is useful for comparing fast-moving and slow-moving aircraft and is a good predictor of several noise impacts, including sleep disturbance and speech interference.

Day–night average sound level (DNL) represents aircraft noise level averaged over a 24-hour period, with a 10 dB penalty to flights occurring between 10:00 PM and 7:00 AM to account for the added intrusiveness of noise during these hours. It is important to recognize that the DNL metric does not represent the noise heard at any single point in time, but rather a weighted average level of noise events that occur over the course of a day. The DNL metric has been endorsed by several federal agencies as being the best descriptor of general noise conditions in the vicinity of airfields (USEPA, 1974; Federal Interagency Committee on Urban Noise [FICUN], 1980).

C-weighted day–night sound level (CDNL) is the 24-hour day–night averaged C-weighted sound level computed for areas subjected to sonic booms and blasts from high explosives. Use of the C-weighted scale accounts for the dominance of low-frequency components of these types of sounds.

Onset-rate adjusted monthly DNL is the measure used for subsonic aircraft noise in military airspace (ranges, military training routes, military operating areas, or warning areas). This metric accounts for the fact that when military aircraft fly low and fast, the sound can rise from the ambient level to its maximum very quickly. Known as an onset rate, this effect can make noise seem louder due to added “startle” effects. Penalties for up to 11 dB are added to account for this onset rate.

### 3.6.2 Effects of Noise

Annoyance, speech interference, sleep interference, human health impacts, structural damage, and wildlife impacts have all been associated with noise. In this document, the “Noise” section of each chapter addresses general noise impacts on humans and structures, while subsequent sections discuss the impacts of noise on land use, environmental justice, biological resources, and cultural resources.

Annoyance is the most common effect of aircraft noise on humans. Aircraft noise often interferes with activities such as conversation, watching television, using a telephone, listening to the radio, and sleeping. This interference often contributes to individuals becoming annoyed. Whether or not an individual becomes annoyed by a particular noise is highly dependent on emotional and situational variables of the listener as well as the physical properties of the noise (Federal Aviation Administration, 1985). However, when assessed over long periods of time and with large groups of people, a strong correlation exists between the percentage of people highly annoyed by noise and the time-averaged noise exposure level in an area (Schultz, 1978; Finegold et al., 1994). This finding is based on surveys of groups of people exposed to various intensities of transportation noise. A generalized categorization of noise-induced annoyance can be found in Table 3-8. As discussed earlier in this section, DNL (A-weighted) is used to assess noise for which audible sound is the major concern (e.g., subsonic aircraft noise, small arms fire). CDNL is used to assess noise in which vibration and low-frequency components are a major concern (e.g., sonic booms, high-explosive munitions noise).

**Table 3-8. Relationship Between Noise Level and Percent of Population Highly Annoyed**

Criteria	Noise Level		
A-weighted average noise levels (continuous noise)	< 65 dB	65–75 dB	> 75 dB
C-weighted average noise levels (impulsive noise)	< 62 dBC	62–70 dBC	>70 dBC
Unweighted peak noise levels (small arms noise)	< 87 dBP	87–104 dBP	>104 dBP
	Percent of Population Highly Annoyed		
	< 15%	15%–39%	>39%

Source: USACHPPM, 2005; U.S. Army, 1997

< = less than; > = greater than; dB = decibels; dBC = C-weighted decibels; dBP = P-weighted decibels

Note: The primary noise metric used by the U.S. Army to describe small arms noise is PK<sub>15</sub>(met)

The USEPA has recommended that noise level in sleeping areas be less than 45 dB DNL (USEPA, 1974). As modern homes typically provide an exterior–interior noise level reduction of greater than 20 dB (U.S. Navy, 2005), residential areas in areas where noise is higher than 65 dB DNL are assumed to not meet this recommendation. Studies indicate a tendency for humans to habituate to regularly occurring nighttime noise over time, eventually reducing susceptibility to noise-induced sleep disturbance (Fidell et al., 1995; Pearsons et al., 1995; Kryter, 1984).

The USEPA recommends that, to protect public health with an adequate margin of safety, exterior noise levels should not exceed 55 dB DNL and interior noise levels should not exceed 45 dB DNL in noise-sensitive locations (USEPA, 1974). FICUN took these recommendations into consideration when developing its recommendations on compatibility of land uses with noise (FICUN, 1980). These recommendations have been adopted, with minor modifications, by the DoD (DoD Instruction 4165.57).

Noise is generally viewed as being one of a number of general biological stressors. Some studies have indicated that excessive exposure to intense noise might contribute to the development and aggravation of stress-related conditions such as high blood pressure, coronary disease, ulcers, colitis, and migraine headaches. Other studies have found no correlation between noise and various health conditions. Non-auditory health effects of noise are not well established at this time, but are likely only experienced at extremely high noise levels (USEPA, 1981).

A considerable amount of data on noise-related hearing loss has been collected and analyzed. For example, it has been established that 8 hours of continuous exposure to 85 dB increases the risk for potential permanent hearing loss over a 40-year period (USEPA, 1974). The National Academy of Sciences Committee on Hearing, Bioacoustics, and Biomechanics (CHABA) identified 75 dB DNL as the minimum level at which hearing loss may occur (CHABA, 1977). However, it is important to note that CHABA assumed long-term exposure (40 years) before hearing loss would occur. The U.S. Army has established a peak noise level of 140 dB as the threshold above which a temporary threshold shift (measured as increase in lowest level at which a sound is audible) may occur (USACHPPM, 2005).

Sonic booms and other impulsive noises have the potential to damage structures in addition to causing annoyance. The probability of damage has been linked to the peak overpressure of the boom. At a peak, unweighted noise level of 128 dB, the probability of a window in good

condition breaking ranges from 1 in 100,000 to 1 in 100 million, depending on the type of glass and other situation-specific factors (Haber and Nakaki, 1989). The probability of breakage increases dramatically if the window is cracked before the impulsive noise occurs. The probability of damage to plaster at this same overpressure ranges between 1 in 1,000 to 1 in 10 million depending on the strength of the wall, as quantified by static failure pressure in pounds per square foot. Plaster failure may also occur as a result of sonic booms. Both glass and plaster failure probabilities are highly dependent on the condition of the structure at the time of the overpressure event.

### 3.6.3 Existing Noise Environment

Ambient noise is the combination of all sounds, near and far, at a particular location, excluding the sound source of interest, such as a mission activity. Natural wind, wildlife (for example, birds), aircraft, and vehicular traffic are primary contributors to the ambient noise environment at TA C-64. Vehicles associated with nearby highways and aircraft operating in the vicinity also contribute to the daily noise environment. Ambient noise is an important consideration when determining potential impact from an action. Generally, USEPA and Air Force studies predict that noise from a given sound source that raises the average noise level 5 dB above ambient levels is intrusive and will likely generate widespread complaints. For noise levels over 20 dB above ambient levels, a more negative reaction may be expected (U.S. Army, 2007).

The most likely receptors of noise would be passing vehicles on Highway 285. The nearest residential area is approximately 4.5 miles to the north of the test area. The primary sensitive species of concern is the RCW which is discussed under Biological Resources, Sensitive Species.

## 3.7 SAFETY

The existing safety environment encompasses risk to public health and, with respect to training activities, risk to the health of military personnel, and those measures designed to minimize that risk. For actions occurring on military property with inherent safety risks, procedures are in place that minimize or eliminate altogether risks to the public. Such measures include the designation of areas as “restricted” or “closed” to the public, either permanently or temporarily. Such closures are driven by the dimensions of the “safety footprint” of a particular action that may have potentially harmful noise, blast, or other effects, or by the existence of UXO from historical missions.

This section presents information concerning the existing range safety conditions at Eglin AFB. It includes a discussion of the safety regulations and process, safety organizations and responsibilities, and other safety procedures.

### 3.7.1 Regulatory and Management Overview

This section discusses the regulations, policies, and management protocols in place at Eglin AFB for range safety that impact TA C-64 use. The primary regulations that establish relevant safety policy and define requirements and procedures for conducting tests on Eglin AFB and areas under its jurisdiction are found in AAC Instruction 91-201, *Test Safety Review Process*. This guidance is implemented by the AAC Range Safety Office and supporting organizations. The Test Safety Review Process described in AAC Instruction 91-201 implements the Operational Risk Management (ORM) process, as specified in AFI 90-901 for all AAC test programs, and reflects the practical application of ORM as outlined in Air Force Pamphlet 90-902, *ORM Guidelines and Tools*. The steps in the ORM process, as they relate to the Test Safety Review Process are:

1. Identify the hazards. Personnel involved with the test or activity act as a team to identify all potential hazards.
2. Assess the potential risk. Assess the probability and severity of loss from exposure to the identified hazard.
3. Analyze risk control measures. Investigate specific strategies and tools that reduce, mitigate, or eliminate the risk.
4. Make control decisions. Approve the best risk control or combination of controls based on the analysis of overall costs and benefits.
5. Implement risk controls. Once procedures to minimize identified hazards have been determined and approved at the appropriate level, those procedures are implemented during the test.
6. Supervise and review. Continue the ORM process throughout the accomplishment of every test program.

This instruction affects all test operations that are conducted under a 46 TW Test Directive. It includes ground-training activities involving personnel, aircraft, equipment, or airspace. It applies to system program managers, program engineers, test engineers, range safety engineers, and aircrews that are responsible for incorporating safety planning and review into the conduct of test and training programs. Safety procedures associated with routine training operations are implemented through the individual organization, based on its specific training protocols/guidance.

A number of standard safety procedures exist to ensure limited public access to affected training areas during test implementation. These procedures require every practical effort to keep the designated training areas clear of all nonparticipating persons and vehicles.

Large portions of Eglin AFB are closed to public use, which facilitates range clearance operations. Depending on the type of training being conducted, contingency personnel may stand by in case of emergencies (U.S. Air Force, 2003b).

### 3.7.2 Unexploded Ordnance

UXO is defined as any munitions device containing explosive material (i.e., live) that did not detonate upon impact with the surface but still has the potential to detonate. UXO is a potential problem across much of the Eglin Range Complex as a result of past mission activities. Eglin AFB has been testing munitions for over 60 years. During its long history, a vast number of different munitions items have been expended throughout the Range as part of routine training and special testing activities. While UXO is an unintended but unavoidable consequence of any operation involving energetic material, only recently has the Air Force published standards for munitions residue maintenance, remediation, and documentation.

Eglin has conducted an archive search in order to document the locations of formerly used ranges but has yet to conduct any basewide assessment of UXO contamination suitable to support an analysis of risk to training units. Previous informal analyses have centered on identifying areas with low enough risk to allow public recreation or to outgrant nonexcess real property. Currently, the AAC Directorate of Safety office handles requests on a case-by-case basis and controls the risk by limiting the type, location, or frequency of the requested action based on an informal risk assessment using local historical knowledge, the USACE Archive Search Report, and the Eglin Reservation Explosives Contamination Study from July 1976.

Some areas of Eglin AFB have been classified as clean and do not have access restrictions. These areas either have never been used for munitions and/or the near surface has been checked for the presence of UXO. However, much of the range is considered potentially contaminated with UXO that may have resulted from historical activities (U.S. Air Force, 1998b). TA C-64 is known to have been used for munitions testing and therefore is considered likely to be contaminated with UXO. Therefore, TA C-64 is permanently closed to public access (Figure 3-8).

### 3.7.3 Restricted Access

Restricted access pertains to the temporary closure of areas on Eglin AFB because of mission activities. The purpose of restricting access to the public during these times is to ensure their safety while maintaining mission integrity. Receptors potentially impacted would include the military and the public desiring to use recreational areas. Guidance for restricted access is utilized to coordinate public and military use of land within the Eglin AFB Range. Range areas in use are closed to all forms of public recreation. Areas permanently closed to the public are shown in (Figure 3-8). Some military missions may require certain areas to be closed to the public for various periods of time. Recreational access information is available on a daily basis by calling the Base Information Line, (850) 882-1110.

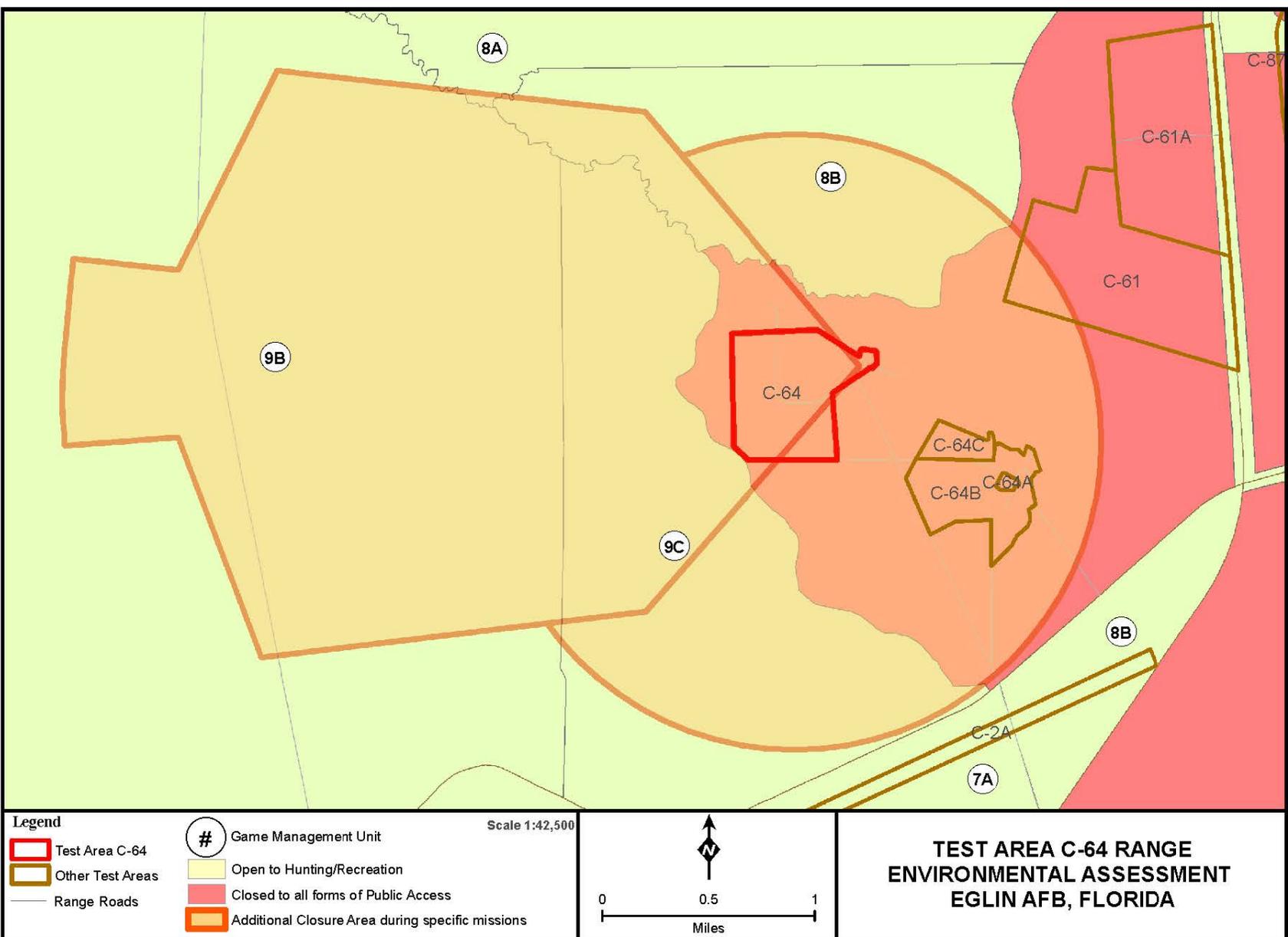


Figure 3-8. Restricted Access, Land Use, and Recreation at and Around Test Area C-64

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### 3.8 LAND USE

Land use generally refers to human management and use of land. At TA C-64, the current land uses consist of only military testing. Nearby land use also includes recreational and natural resources management, which is discussed in detail in the *Integrated Natural Resources Management Plan* (U.S. Air Force, 2007).

Eglin has 465,693 acres of land range with 50 land test areas in Okaloosa, Santa Rosa, and Walton Counties, and a small section in Gulf County. Approximately 14,000 acres are improved, 46,000 acres are semi-improved, and 405,000 acres are unimproved. Eglin manages the Joint Gulf Range Complex, a complex that has over 120,000 square miles of overland and overwater airspace. Management of adjacent land and water areas provide Eglin AFB a sea-to-land transition area necessary for modern weapons system research, development, testing, and evaluation. The armed services also use Eglin land and water ranges to train.

#### Existing Conditions

TA C-64 is utilized for military testing activities and therefore, closed to the public. Recreational areas are only located within interstitial areas on Eglin and not within the boundaries of the test areas. However, at times military related activities can overlap with other land uses, including recreation.

There are approximately 280,000 acres of land open for outdoor recreation (Johnson, 2010). Public recreation on Eglin is permitted during daylight hours only, with the exception of approved campsites after sunset. Outdoor activities include hunting, fishing, hiking, and camping, the most popular being hunting and fishing. The total number of recreational permits sold for fishing, camping, and recreation use on Eglin AFB is available (see Table 3-9); however, the number on the frequency of use or the specific areas where permit holders visit is not available (Johnson, 2010).

**Table 3-9. Total Number of Recreational Permits Sold at Eglin AFB, FY2009**

Activity	Number of Permits
Hunting	5,725
Fishing	5,207
Camping	614
Recreational	5,786
<b>Total</b>	<b>17,332</b>

Source: Johnson, 2010

There are 15 management units on Eglin AFB, each having its own regulations associated with seasons, mission activities, and access to the public and DoD-affiliated persons. The closest management units to TA C-64 are 9C, 9B, 8A, 8B, and 7A. Management unit 9C is adjacent to the southwestern corner of TA C-64 and 8B is located less than 0.5 mile north of the test area. The other management units are located within 2 miles of the test area. All management units in the area are open to hunting and recreation (Figure 3-8). All persons that engage in outdoor recreational activities are required to adhere to applicable Eglin AFB, federal, and state laws, rules, and regulations. General regulations are in place that address prohibited actions; for

example, disturbing or removing any government property from the Eglin Reservation is prohibited. Entry into “closed” areas is prohibited unless the Commander of Eglin AFB has granted special permission. Areas designated as “seasonally closed” are typically closed except during hunting season and areas designated as “open” are available for all types of outdoor recreation. Annual rules, regulations, permits, and maps for recreational activities can be obtained from Natural Resources Section (96 CEG/CEVSN) at Eglin AFB.

### 3.9 SOCIOECONOMIC RESOURCES

This section discusses the socioeconomic resources that have the potential to be impacted by activities occurring on and surrounding TA C-64 at Eglin AFB. The primary issues of concern include the disproportionate impact of noise from testing activities occurring on TA C-64 to environmental justice concern areas as well as to areas containing a high concentration of children.

#### 3.9.1 Environmental Justice

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (Environmental Justice)*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority populations and low-income populations. The EO was established to ensure that disproportionately high and adverse human health or environmental effects of federal actions on these populations are identified and addressed. The environmental justice analysis addresses the characteristics of race, ethnicity, and poverty status of populations residing in areas potentially affected by the proposed federal action. The purpose of this analysis is to identify disproportionate human health and safety and environmental impacts on minorities and low-income communities and to identify appropriate alternatives.

The DoD Strategy on Environmental Justice was adopted on 24 March 1995. It includes a summary report, strategy on environmental justice, and implementation plan, and states that DoD will use NEPA as the primary mechanism to implement the provisions of EO 12898. AFI 32-7061, 1995, *The Environmental Impact Analysis Process*, addresses the need for consideration of environmental justice issues in the impact analysis process. Areas of concern for Environmental Justice in relation to TA C-64 are given in Figure 3-9.

For the purpose of this analysis, minority and low-income populations are defined as follows:

*Minority Populations:* All persons identified by the U.S. Census Bureau’s Census of Population and Housing to be of Hispanic or Latino origin, regardless of race, plus non-Hispanic persons who are Black or African American, American Indian, and Alaskan Native, Asian, Native Hawaiian and Other Pacific Islander, Some Other (i.e., non-White) Race, or Two or More Races. For purposes of the analysis, the minority population is calculated by subtracting the number of persons who are White but not Hispanic, from the total population.

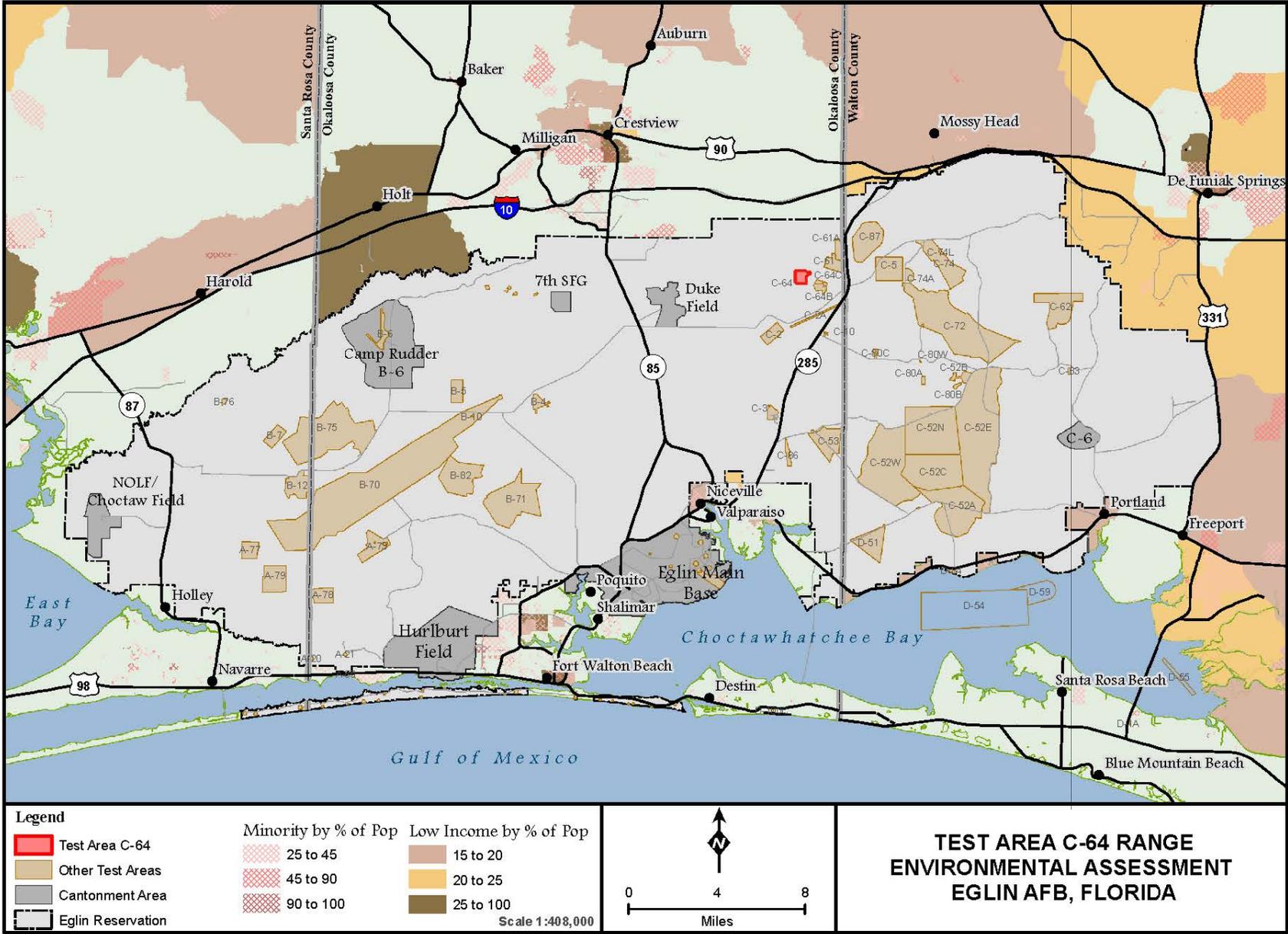


Figure 3-9. Communities With High Minority and Low-Income Populations

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*Low-Income Populations:* All persons that fall within the statistical poverty thresholds published by the U.S. Census Bureau in the Current Population Survey are considered to be low-income. For the purposes of this analysis, low-income populations are defined as persons living below the poverty level (\$16,895 for a family of four with two children, adjusted based on household size and number of children), as reported in the 2000 Census. The 2000 Census asked people about their income in the previous calendar year. Therefore, poverty estimates reported in the 2000 Census compare family income in 1999 with the corresponding 1999 poverty thresholds. If the total income for a family or unrelated individual falls below the relevant poverty threshold, then the family or unrelated individual is classified as being below the poverty level.

The percentage of low-income persons is calculated as the percentage of all persons for whom the Census Bureau determines poverty status, which is generally a slightly lower number than the total population because it excludes institutionalized persons, persons in military group quarters and college dormitories, and unrelated individuals under 15 years old.

### **3.9.2 Risks to Children**

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks (Protection of Children)*, was issued to identify and address issues that affect the protection of children. The EO states that “environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).” Higher concentrations of children occur in schools, community child care facilities, and hospitals than in residential areas. The facilities that have the potential to be impacted by activities in the test areas at Eglin are shown in Figure 3-10.

### **3.9.3 Noise Complaints**

People and physical structures that are potentially susceptible to noise effects from the activities conducted at TA C-64 are in communities surrounding the Eglin Reservation. In the past, the majority of noise complaints from military activities at Eglin AFB have generally come from Navarre. In recent years a larger proportion of noise complaints have come from the city of Niceville. Table 3-10 shows the total number of complaints per city in 2008 and the actual number of complainants, and Table 3-11 provides examples of noise complaints received during 2008 from activities performed on the Eglin Complex.

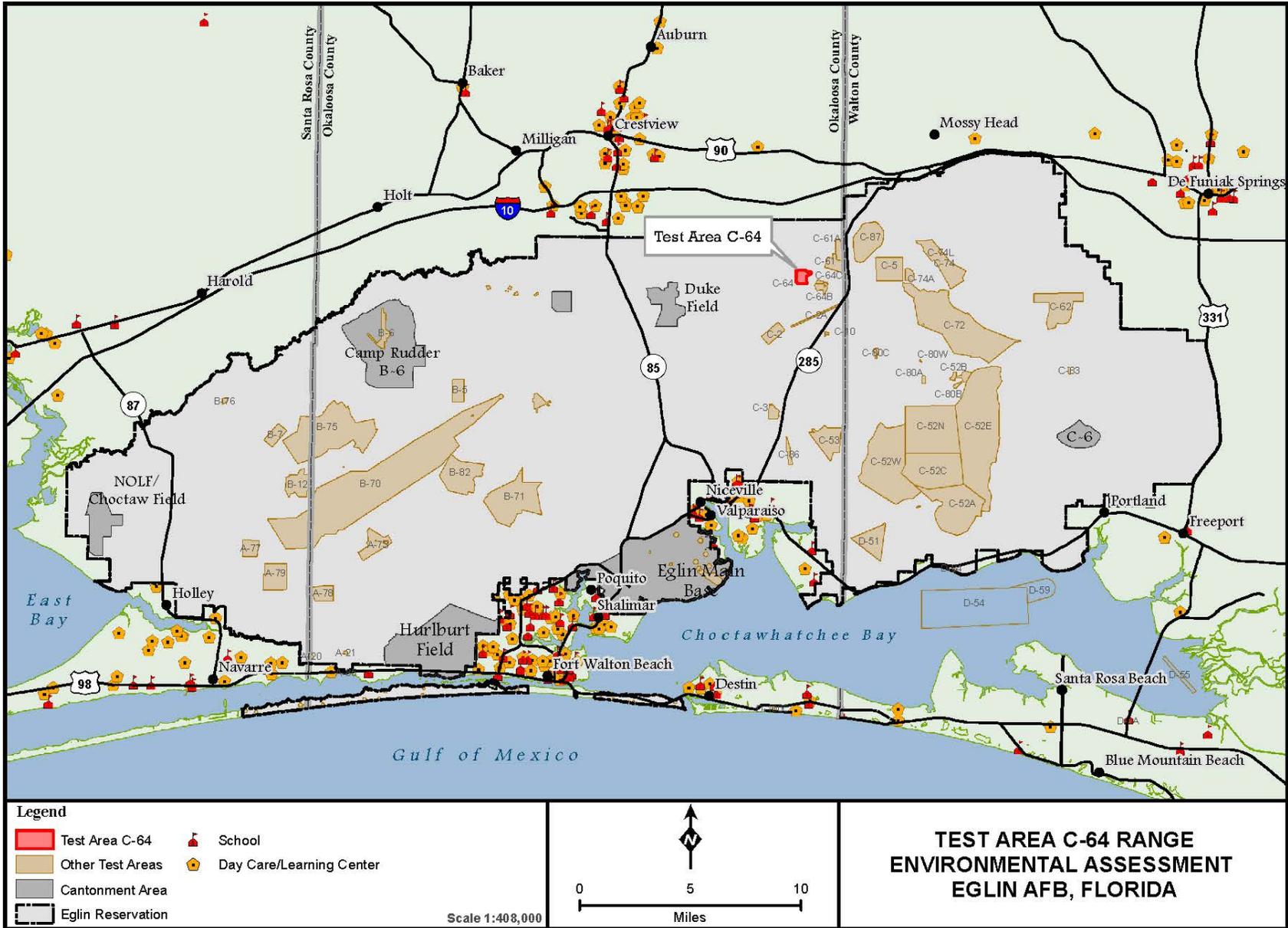


Figure 3-10. Communities with a High Percentage of Children Under 18

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**Table 3-10. 2008 Noise Complainant Data per City**

City	Total Number of Complaints	Total Number of Complainants
Crestview	2	2
DeFuniak Springs	6	5
Destin	2	2
Eglin	1	1
Freeport	1	1
Fort Walton Beach	2	1
Laurel Hill	1	1
Mary Esther	2	1
Milton	2	2
Miramar Beach	2	2
Navarre	2	2
Niceville	33	7
Pensacola	1	1
Santa Rosa Beach	3	3
Seagrove Beach	2	2
Shalimar	1	1
Valparaiso	1	1

Source: Walsh, 2009

Note: Noise complaint data listed is not attributed to any specific test area or activity.

**Table 3-11. Eglin AFB 2008 Noise Complaint Data by City and Type of Complaint**

Location	Complaint	Number of Complaints
Crestview	Low flying/noise	1
Crestview	Explosion	1
DeFuniak Springs	Low flying/noise	2
DeFuniak Springs	Explosion	2
DeFuniak Springs	Sonic boom	2
Destin	Explosion	2
Eglin	Noise	1
Freeport	Noise	1
Fort Walton Beach	Low flying/noise	2
Laurel Hill	Low flying/noise	1
Mary Esther	Explosion	2
Milton	Sonic boom	1
Milton	Explosion	1
Miramar Beach	Explosion	2
Navarre	Sonic boom	1
Navarre	Explosion	1
Niceville	Low flying/noise	22
Niceville	Explosion	7
Niceville	Sonic boom	4
Pensacola	Explosion	1
Santa Rosa Beach	Explosion	1
Santa Rosa Beach	Low flying/noise	1
Santa Rosa Beach	Sonic boom	1
Seagrove Beach	Explosion	1
Seagrove Beach	Sonic boom	1
Shalimar	Low flying/noise	1
Valparaiso	Explosion	1

Source: Walsh, 2009

Note: Noise complaint data listed is not attributed to any specific test area or activity.

### 3.10 CULTURAL RESOURCES

As a federal agency, Eglin AFB is legally required to consider the effects its actions may have on historic properties. These requirements are considered under AFI 32-7065 (U.S. Air Force, 2004), which addresses requirements of the NHPA of 1966 as amended. The NHPA of 1966 was enacted to set federal policy for managing and protecting significant historic properties. Federal agencies must identify historic properties and consult with the Advisory Council on Historic Preservation and State Historic Preservation Officer (SHPO) (U.S. Air Force, 2004). Section 106 of the NHPA requires that federal agencies analyze the impacts of federal activities on historic properties, or cultural resources included in, or eligible for inclusion in, the National Register of Historic Places (NRHP). Section 110 of the NHPA requires that federal agencies inventory any cultural resources located on their property or within their control and to nominate those found to be significant for inclusion into the National Register.

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered relevant to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, American Indian sacred sites, and traditional cultural properties. Historic properties (as defined in 36 CFR 60.4 and 36 CFR 800.15(1)(1)) are significant archaeological, architectural, or traditional resources defined as either eligible or ineligible for listing in the NRHP. Under the NHPA, Eglin AFB is required to consider the effects of its undertakings on historic properties listed or eligible for listing in the NRHP.

#### 3.10.1 Affected Environment

No historic properties have been identified within TA C-64. Three archaeological sites (8OK377, 8OK378, and 8OK379) are located outside of the boundaries of TA C-64 (more than 50 meters from the outside boundary of TA C-64). All three sites are NRHP ineligible, diffuse prehistoric artifact scatters. While the possibility exists that errant munitions could land in one of these areas the chance of striking an identified buried cultural resource would be very remote (CRIMS, 2010).

Archaeological surveys have been completed around the northern and southwestern edge of the TA. TA C-64 contains portions of a 96-acre parcel of historic high probability area and 155 acres of historic high probability area which remain to be surveyed (CRIMS, 2010).

## 4. ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential impacts associated with TA C-64 test and training activities (described in Chapter 2) on the affected environment (described in Chapter 3). The analysis examines the potential impacts of each of the proposed alternatives on the following resource areas:

- Chemical Materials
- Soils
- Water Resources
- Biological Resources
- Air Quality
- Noise
- Safety
- Land Use
- Socioeconomic Resources

### 4.1 CHEMICAL MATERIALS

The potential environmental impact of hazardous materials and waste were assessed as they pertain to debris from ground troop movement and chemical materials from ordnance for testing and training activities within TA C-64. Additionally, the transport, storage, use, and disposal of hazardous materials and waste associated with activities within TA C-64 should be coordinated with Eglin's Environmental Compliance Branch, Pollution Prevention Section and disposed of appropriately according to regulations and AAC Plan 32-5, *Hazardous Waste Management Plan*. AAC Plan 32-9, *Hazardous Materials Management*, describes how Eglin AFB complies with federal, state, Air Force, and DoD laws and instructions. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. All spills and accidental discharges of petroleum products, hazardous materials, or hazardous waste would be reported.

Eglin AFB has developed emergency response procedures and site-specific contingency plans for all hazardous materials locations. Procedures and responsibilities for responding to a hazardous material spill or other incidents are described in the Hazardous Waste Management Plan (U.S. Air Force, 2006a) and the Eglin AFB SPCC Plan (U.S. Air Force, 2005).

#### 4.1.1 No Action Alternative

##### Debris

Debris, such as cartridges, shrapnel deposited from bombs and missiles, intact inert bombs, canisters from smokes, chaff, and flares, as well as litter and refuse from ground troop

movement, may be deposited from test and training activities. If these items are left in place and not properly disposed, packed out, or periodically cleared, the debris and refuse has the potential to cause adverse environmental impacts. AAC Plan 32-5 and AAC Plan 32-9 should be adhered to during training activities for recycling, hazardous materials management, and proper disposal of wastes.

### **Ordnance Use**

Hazardous materials/solid wastes, as they pertain to the analysis in this section, are the explosives and metals associated with the expenditure of ordnance on TA C-64. These materials may degrade the quality of soil or water, or may be toxic to plants, wildlife, or people. For the mission activities occurring on TA C-64, metals and explosives from bombs, missiles, guns, mines, small arms, smokes, chaff, and flares are the primary chemical materials of concern. Munitions and pyrotechnics use on TA C-64 has increased since the previous baseline, and in some cases has exceeded the levels authorized in the *2001 Test Area C-64 Programmatic Environmental Assessment* (U.S. Air Force, 2001b). Under current practice, munitions debris is recovered and/or removed from the ranges for the purpose of storage, reclamation, treatment, and disposal as solid waste. These practices are necessary for compliance with AFI 13-212, which requires the range to be cleared of munitions debris on a regular basis.

### ***Toxic Release Inventory–Data Delivery System***

Quantification of chemical constituents in ordnance was determined using the TRI–Data Delivery System (TRI–DDS) (DoD, 2010). The TRI–DDS is a tool that is a product of the EPCRA Workgroup and is intended to provide a consistent method to assess chemical releases and waste management data across DoD. The EPCRA Workgroup supplies information for the DoD EPCRA TRI-reporting database for munitions and range activities.

The TRI–DDS draws on both constituent information and emission factor data to determine the quantities of chemicals released from demilitarization (e.g., open–burn/open–detonation), live fire, and training activities. Calculations in the TRI–DDS begin with identifying and selecting or entering the specific munitions item used. Munitions items are identified in the TRI–DDS by DoD Identification Code, Navy Ammunition Logistics Code, National Stock Number, or common name-pick lists. The resulting TRI–DDS report lists the chemical constituents that comprise each munitions item. These quantities are used to determine quantities of chemicals emitted. Because it is assumed that all munitions debris, and inert and duded munitions will be removed from the Range annually, this analysis addresses air emissions only from inert munitions and blanks. It is assumed that emissions to the air from detonation will not only enter the air environment, but will also have the potential to settle back onto the soil and possibly be transported by water.

### ***Expenditures***

TRI–DDS analysis included the chemical constituents in bombs, missiles, guns, mines, small arms, smokes, chaff, and flares used for testing and training within TA C-64. Numerous types of munitions are used on TA C-64; however, for the purposes of analysis, the items listed in the following table were used as surrogates, in some cases as representatives, and where constituent

data was not available. Ordnance expenditures listed were provided by user groups, and maximum annual expendables for TA C-64 under the No Action Alternative are detailed in Chapter 2, Table 2-1. (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

The DoD's TRI-DDS website was used to determine constituent chemical emissions from the discharge of these representative munitions on TA C-64. Expenditures were analyzed on an annual basis. Although 33 toxic chemical constituents are listed in the output of the various munitions, only those totaling greater than or equal to 1 pound annually (rounded to the nearest pound) are listed here, in Table 4-1. This includes the six insoluble chemicals that would be the most persistent in the environment.

**Table 4-1. Munitions-Related Residue  
Under No Action Alternative**

Chemical	Quantity Released on TA C-64 (pounds)
1,3-Butadiene	1
Acetaldehyde	2
Antimony	2
Barium	2
Benzene	6
Cyanide	1
Cyclohexane	67
Ethylbenzene	1
Ethylene	9
Formaldehyde	2
Hydrazine	3
Hydrochloric acid	1
Hydrogen cyanide	1
Hydrogen fluoride	95
Lead	5
Nitric acid	3
Ozone	3
Propylene	2
n-Hexane	1

Source: DoD, 2010

No new TRI reporting thresholds would be exceeded by munitions expenditures associated with the No Action Alternative.

#### 4.1.2 Alternative 1

##### Debris

Under Alternative 1, training activities occurring at TA C-64 would increase significantly over the currently approved levels under the No Action Alternative. However, there would be no new types of training or expenditures and no new user groups. Management practices are in place that ensure training areas will be scanned for debris and dudged munitions and that they would be removed. Any dudged munitions or UXO would be flagged and removed according to

standard procedures. Therefore, no impacts are expected due to debris associated with the training activities under Alternative 1.

### Ordnance Use

Ordnance use would increase under Alternative 1. Ordnance expenditures were provided by user groups, and maximum annual expendables for TA C-64 under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-1). (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

The same methodology used for Table 4-2 was used to determine the chemical emissions associated with ordnance expenditure as a result of testing and training on TA C-64. Table 4-2 shows that the chemical output under Alternative 1 would be lower than under the No Action Alternative, specifically for the aromatic hydrocarbon emissions due to open burning of JP-8. It was calculated that the chemical load from all munitions would be distributed over 200 acres. Therefore, the overall concentration of any chemical at any given location would be minute. Additionally, because lead expenditures already require TRI reporting, no new TRI thresholds would be exceeded under Alternative 1.

**Table 4-2. Munitions-Related Residue  
Under Alternative 1**

Chemical	Quantity Released on TA C-64 (pounds)
Acetaldehyde	1
Ammonia	1
Antimony	2
Barium	4
Benzene	1
Cyanide	1
Ethylene	3
Formaldehyde	1
Hydrazine	3
Hydrogen cyanide	3
Hydrogen fluoride	393
Lead	4
Nitric acid	2
Ozone	3
Propylene	2
n-Hexane	1

Source: DoD, 2010

### 4.1.3 Alternative 2

#### Debris

Under Alternative 2, testing and training activities occurring at TA C-64 would increase 300 percent over the levels analyzed under Alternative 1. However, management practices would remain in place that assure training areas will be scanned for debris and duded munitions

and that they would be removed. Any dudged munitions or UXO would be flagged and removed according to standard procedures.

Therefore, no impacts are expected due to debris associated with the training activities under Alternative 2.

### Ordnance Use

Under Alternative 2, ordnance use would increase a great deal from the levels analyzed in Alternative 1. Ordnance expenditures were provided by user groups, and maximum annual expendables for TA C-64 under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-1). (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

The same methodology was used to determine the chemical emissions associated with ordnance expenditure as a result of training and testing at TA C-64. Chemical emissions under Alternative 2 are shown in Table 4-3. Increases are approximately threefold over Alternative 1. Again, since these emissions are shown on an annual basis and the affected area is so large, the concentration at any time at any given location would be insignificant. No new TRI thresholds would be exceeded under Alternative 2.

**Table 4-3. Munitions-Related Residue  
Under Alternative 2**

Chemical	Quantity Released on TA C-64 (pounds)
Acetaldehyde	6
Ammonia	6
Antimony	9
Barium	14
Benzene	3
Cyanide	2
Ethylbenzene	1
Ethylene	14
Fluorine	1
Formaldehyde	6
Hydrazine	12
Hydrogen cyanide	11
Hydrogen fluoride	1,573
Lead	18
Nitric acid	7
Ozone	11
Propylene	6
n-Hexane	2

Source: DoD, 2010

## 4.2 SOILS

Testing and training activities on TA C-64 may affect soils by deposition of munitions residue and erosion. Potential munitions impacts to soils pertain to substances that can be released into the ground as a result of mission activities. Examples of such substances include lead and copper. Chemical substances absorbed into the soil may eventually be released into groundwater and surface waters. Under current practice, munitions debris is recovered and/or removed from the ranges for the purpose of storage, reclamation, treatment, and disposal as solid waste. These practices are in accordance with AFI 13-212, which requires the range to be cleared of munitions debris on a regular basis. Munitions use and associated ordnance retrieval, may initiate or accelerate erosion in sloped areas with reduced vegetative cover. The management requirements identified in Section 2.5 can substantially decrease erosion and chemical impacts to soils on TA C-64.

### 4.2.1 No Action Alternative

The No Action Alternative represents the previously approved level of activity at TA C-64, as described in the *Test Area C-64 Final Programmatic Environmental Assessment* (U.S. Air Force, 2001b). This level of activity was found to have no significant adverse effects to soils. Lead contamination was considered the issue most likely to affect soil resources. However, conservative scenarios were used to estimate that soil lead concentrations would be substantially less than Eglin's background concentrations and USEPA Region III Risk-Based Criteria (RBC). Further analysis of materials transported through soils to water sources is discussed in Section 4.2, *Water Resources*.

Under all alternatives, conservative scenarios were used to estimate that lead air emissions average 13 times greater than the NAAQS standard and estimated soil lead concentrations would be substantially less than Eglin's background concentrations and USEPA Region III RBC.

### 4.2.2 Alternative 1

No adverse impacts are anticipated to the underlying geology of the area from the proposed activities at TA C-64. Despite this, the interaction between storm water runoff and the soil surface, in association with land disturbances, can periodically create conditions prone to erosion that may result in adverse impacts to land and potentially to water resources. Soil erosion can significantly affect ecosystem health and function. Erosion can reduce land productivity, pollute waters, and degrade habitats. Human-induced soil disturbances, whether minor, transitory, or drastic, generally determine the nature of environmental effects. Under normal conditions, the Lakeland soils that are prevalent on TA C-64 are relatively stable and typically not prone to erosion if covered with vegetation. Land clearing and heavy munitions use could modify the terrain such that best management practices would be required to minimize potential adverse impacts from loss of soil.

Metals and chemical residue from munitions can leach into local soils and sediments. Activities identified in the 2001 PEA and the *Test Area C-64 Environmental Baseline Document* (U.S. Air Force, 2007) as most likely to introduce such substances into the soil environment include armor-piercing gun ammunition testing, warhead lethality testing, arena testing, and dynamic

munitions delivery. Metals such as lead, copper, and aluminum, which are components of explosives, propellants, and ordnance, may be deposited on the ground surface following mission activities. Soil contaminant concentrations potentially resulting from each of the mission types are calculated and compared with standards in the following paragraphs. Standards refer to the USEPA Region III RBC. The primary purpose of the RBCs is for screening chemicals during risk assessments. Risk is defined as the expected frequency or probability of undesirable effects resulting from exposure to known or expected chemical stressors that could induce an adverse response in biological receptors. RBC concentrations are represented as cancerous or noncancerous effects.

Armor-piercing gun ammunition testing primarily involves use of 30-mm projectiles. The 30-mm ammunition does not contain a high explosive warhead. The source of thermal combustion emissions is the ammunition propellant, and most of the byproducts are gaseous. However, airborne lead particles may settle onto the ground surface and leach into soils. The amount of lead in one 30-mm round is approximately 0.023 grams. Analysis provided in the 2001 PEA assumed that 50 percent of the lead would be deposited on the surface within 152.4 meters (500 feet) of the gun bay, while the remaining 50 percent would remain suspended and be transported in the air column. It was further assumed that of the deposited lead, approximately 56 percent would adhere long term to the surrounding asphalt pad. The remaining 44 percent would be distributed on nearby soils in an area of 18,300 square meters (4.5 acres) and to a depth of 0.0508 meters (2 inches), or a total volume of 932 cubic meters. Using the average bulk density of the soils on TA C-64 of 1.7 grams per cubic centimeter, a soil concentration for lead can then be calculated. The total number of 30-mm rounds associated with Alternative 1 is 57,681 expenditures. The resulting estimated concentration of lead in the soil would be substantially below Eglin background levels and the USEPA RBC (Table 4-4). Assuming this rate of deposition was ongoing, it would require over 200 years to reach the average background level on Eglin, and over 2,000 years to reach the USEPA RBC level. Therefore, no adverse impacts to soils due to armor-piercing gun ammunition testing are anticipated.

**Table 4-4. Lead Analysis for Soils**

Potential Soil Lead Concentration due to Armor-Piercing Gun Ammunition Testing (mg/kg)	Range of Lead Concentrations in Eglin Surface Soils (mg/kg)	Average Background Screening Concentration of Lead in Eglin Surface Soils (mg/kg)	USEPA Region III RBC Lead Concentration (mg/kg)
0.18	0.78 - 340	39.64	400

Source: U.S. Air Force, 2001b

mg/kg = milligrams per kilogram; ; RBC = risk-based criteria; USEPA = U.S. Environmental Protection Agency

Warhead lethality testing involves the use of .50-caliber, 25-mm, 40-mm, and mounted 120-mm guns. The guns are used to launch warheads, simulants, or fragment simulants at targets. Chicken Little missions are also included in this category. Chicken Little events were identified in the 2001 PEA as the activities considered to release the highest quantity of byproducts. Using calculation methods similar to those used for armor-piercing gun ammunition testing, each Chicken Little mission was estimated to result in a soil lead concentration of 0.003 mg/kg. Up to 32 Chicken Little missions may occur annually under Alternative 1, resulting in a total lead concentration of 0.096 mg/kg. Therefore, no adverse impacts to soils due to warhead lethality testing are anticipated.

During arena testing activities, the arena test area is used to measure the effects of high-explosive warhead detonations, evaluate the impacts of warhead fragment simulants, and test the effectiveness of explosive detasheets. Effectors include 25-mm and 40-mm warheads, RDX explosive, and propellant. The mission event scenario considered in the 2001 PEA to produce the greatest amount of byproduct emissions is SA-8 rocket motor expenditures. During these missions, an SA-8 (or, presumably, an SA-7) motor containing propellant is impacted by a 40-mm stimulant. Using calculation methods similar to those used for armor-piercing gun ammunition testing, it was estimated that for each rocket motor mission, the total resulting soil concentration of lead would be 0.001 mg/kg. Up to 10 rocket motor missions could occur annually under Alternative 1, resulting in a lead concentration of 0.01 mg/kg. Therefore, no adverse impacts to soils due to arena testing are anticipated.

Dynamic munitions delivery missions are associated with rocket and warhead use in the 2001 PEA. The focus of chemical emissions analysis is the high-velocity air rocket (HVAR) motor. The rocket propellant and warhead high explosive contain lead that may be deposited on test area soils. Using calculation methods similar to those used for armor-piercing gun ammunition testing, it was estimated that for each rocket/warhead sled test mission, the total resulting soil concentration of lead would be 0.004 mg/kg. Up to 10 HVAR motor missions could occur annually under Alternative 1, resulting in a lead concentration of 0.04 mg/kg. Therefore, no adverse impacts to soils due to dynamic munitions delivery testing are anticipated.

Further analysis of materials transported through soils to water sources is discussed in Section 4.2, *Water Resources*.

**4.2.3 Alternative 2**

The mission types considered to have the greatest potential for impacts to soil resources are the same as those described for Alternative 1. However, the number of expendables associated with these missions would increase under Alternative 2. The total number of 30-mm rounds expended would increase to 230,724 for armor-piercing gun ammunition testing (assuming all 30-mm expenditures are used for this mission type). The number of Chicken Little missions would increase to a maximum of 128 annually. Up to 40 rocket motor missions and 10 HVAR motor missions could occur annually under arena testing and dynamic munitions delivery missions, respectively.

The potential concentration of lead in the soil resulting from increased expenditures would not approach Eglin background levels or USEPA RBC levels (Table 4-5). Therefore, no adverse impacts to soils under Alternative 2 are anticipated. Further analysis of materials transported through soils to water sources is discussed in Section 4.2, *Water Resources*.

**Table 4-5. Potential Soil Lead Concentrations for Missions Under Alternative 2**

Armor-Piercing Gun Ammunition Testing (mg/kg)	Warhead Lethality Testing (mg/kg)	Arena Testing (mg/kg)	Dynamic Munitions Delivery (mg/kg)
0.74	0.38	0.04	0.16

mg/kg = milligrams per kilogram

### 4.3 WATER RESOURCES

Previous environmental analysis of TA C-64 missions identified the following issues with regard to water resources:

- Potential for munitions components and sediments to be transported through surface runoff and groundwater recharge (2001 Test Area C-64 Final PEA, U.S. Air Force, 2001b; 2007 EBD, U.S. Air Force, 2007)
- Potential for munitions components to be transported through soil erosion (2001 Test Area C-64 Final PEA, U.S. Air Force, 2001b)
- Potential for airborne munitions components to be deposited directly on water surfaces (2001 Test Area C-64 Final PEA, U.S. Air Force, 2001b)

All of the above issues were found to not have adverse impacts at the level of activity that was analyzed in the *2001 Test Area Programmatic Environmental Assessment* and the *2007 Environmental Baseline Update*. Although the level of mission activity has increased, no new types of water resource issues from missions have been identified since the writing of those documents, or are presumed to increase in the future.

#### 4.3.1 No Action Alternative

There would be no significant impacts to water resources under the No Action Alternative. The level of activity under the No Action Alternative (Section 2.2.1) is identical to that analyzed and approved as the Preferred Alternative of the *2001 Test Area C-64 Final Programmatic Environmental Assessment* (U.S. Air Force, 2001b). Therefore, water resource issues for the No Action Alternative have been adequately addressed in those documents. The following subsections summarize the analysis conclusions that are applicable to the No Action Alternative for this REA. Activities identified in the 2001 PEA and the 2007 EBD as potentially impacting water resources include armor-piercing gun ammunition testing, warhead lethality testing, arena testing, and dynamic munitions delivery.

#### Groundwater

Impacts to groundwater would not be significant under the No Action Alternative. Previous analysis of missions on TA C-64 examined the primary metal and explosive constituents from items expended on the test area, and their potential effect on groundwater. The potential for lead to leach into groundwater is considered the most important issue. Analysis of impacts to soil resources in this REA (Section 1.1) determined that the amount of lead potentially deposited on test area soils would be well below Eglin background and USEPA RBC levels for all mission types.

At the area identified in the 2001 PEA for piercing gun ammunition testing, the depth to Surficial Aquifer groundwater is estimated to be approximately 70 feet and the general direction of groundwater flow is estimated to be to the northwest towards Titi Creek. The Surficial Aquifer is in direct contact with the Titi Creek floodplain at the area where warhead lethality testing was identified in the 2001 PEA. Rainfall recharges the aquifer, which enters the streams at discharge

points (steepheads, springs, and seepage) along stream valley walls. Most of the flow in the aquifer is in a lateral, down gradient direction towards steam outflows. These conditions could substantially increase the exposure potentials of the area groundwater to lead. No surface water sampling or analysis for potential contamination is known to have been performed for Titi Creek.

However, lead is removed and recycled regularly as part of the test evaluations. Only a small portion of the lead is pulverized or vaporized sufficiently to be transportable in water. Munitions are jacketed, so lead that could be considered a pollutant occurs only in the primer, powder, or in lubricants. Tests run under cover or indoors are expected to result in almost no lead particles reaching the groundwater. Although the Lakeland soils within the area are prone to leaching, it is possible that organic matter in surface soils and iron oxides in the lower subsurface soils could complex and bind some available lead, thereby reducing the potential for lead to leach into groundwater. In addition, the management practices identified for water resources in Section 2.5 would reduce potential groundwater impacts. Although not a required management practice, the soil potential of hydrogen could be raised (thereby reducing the potential for lead to leach into groundwater) by adding lime, ash, or organic material.

At the arena testing site, subsurface transport of lead particulate deposited within the soil was considered to be inconsequential to groundwater resources. The compacted soils of the arena test area restrict infiltration and percolation of water-borne lead particulate into subsurface soils. Similarly, impacts to groundwater were considered unlikely due to dynamic munitions delivery activities.

### Surface Water

Impacts to surface waters would not be significant under the No Action Alternative. Analysis of the piercing gun ammunition area in the 2001 PEA determined that lead transport to streams by soil erosion is unlikely. The nearest waterway is Titi Creek, which is 0.2 mile to the north. No land surface corridors amenable to sheet, rill, or gully erosion were identified. The vegetative cover over the area between the gun bay facility and the Titi Creek floodplain is comprised of grassland at an estimated average coverage of 90 percent. The test area perimeter road does not connect with the stream, which limits its storm water conveyance potentials. The topography is relatively flat with slopes of less than 1 percent. Surface transport of lead particulate by water erosion to Titi Creek is not considered a concern.

During warhead lethality test, lead and other particulates could enter surface waters by direct deposition on water surfaces and transport by soil erosion. The 2001 PEA identified a sloped area northeast of the testing site that could transport lead to Titi Creek. There is an approximate 20-foot drop in surface elevation from the point of origin on the test area to the outer perimeter of the slope. Lead particulate deposition on the sensitive slope area could concentrate lead on soils prone to surface runoff and erosion. Based on the change in elevation and proximity of the slope area to the Titi Creek floodplain area, there is also the potential for the slope area to experience groundwater seepage. The sloped has substantial vegetative cover, which minimizes erosion potentials. No active sheet erosion, rill, or gullies or direct deposition of lead particulate on water surfaces has been identified. Management practices identified for water resources in Section 2.5 would reduce potential groundwater impacts.

At the arena testing area, soil erosion potentials are limited by the relatively flat to gently sloping topography and soil binding properties of the native grasses. No natural or constructed (ditch) drainage corridors that could accumulate and transport contaminants to Bull Creek or Titi Creek were identified in the 2001 PEA.

At the dynamic munitions delivery area, the topography of the sled track area is relatively flat to gently sloping with substantial grass cover. Runoff generally occurs as sheet flow with no evidence of channelized flow or active erosion. Therefore, no issues related to surface water resources were identified in the 2001 PEA.

### **Wetlands**

Impacts to wetlands would not be significant under the No Action Alternative. No wetland resources are located within the boundaries of TA C-64. Water quality and quantity to the wetlands associated with Titi, Ramer, and Bull Creeks is not anticipated to be negatively affected by activities at the test area.

### **Floodplains**

Impacts to floodplains would not be significant under the No Action Alternative. None of the actions on TA C-64 involve changes to the floodplain. Further, there are no habitable structures at risk from any changes to the floodplain. None of the testing activities would alter flow regimes of 100-year floods.

### **Coastal Zone**

Components of the Proposed Action would take place within the jurisdictional concerns of FDEP and therefore would require a consistency determination with respect to Florida's Coastal Zone Management Plan and the CZMA. Eglin AFB has prepared a CZMA determination to address the potential impacts to the coastal zone (Appendix D).

#### **4.3.2 Alternative 1**

The types of mission activities considered to have potential to impact water resources under Alternative 1 are the same as those identified for the No Action Alternative, although the number of expendables generally increases. The following subsections address specific water resources. Activities identified in the 2001 PEA and the 2007 EBD as potentially impacting water resources include armor-piercing gun ammunition testing, warhead lethality testing, arena testing, and dynamic munitions delivery.

### **Groundwater**

There would be no significant impacts to groundwater under Alternative 1. Analysis of soil resources in Section 1.1 determined that lead concentration in the test area soils due to missions would be substantially below Eglin background and USEPA RBC levels for all mission types, limiting the possible effects of lead leaching into groundwater. Although the Lakeland soils within the test area are considered prone to leaching, organic matter in surface soils and iron

oxides in the lower subsurface soils could complex and bind available lead, thereby further reducing the potential for lead to leach into groundwater.

### **Surface Water**

There would be no significant impacts to surface water under Alternative 1. Groundwater is not likely to discharge lead or other contaminants to surface waters in amounts that would be of environmental concern. The distance between testing sites at TA C-64 and the three perennial streams systems (Titi, Ramer, and Bull Creeks) adjacent to the TA is fairly extensive (Figure 3-3). The ground cover is likely to serve as a pollution filter, intercepting surface runoff before it reaches surface waters and the associated wetlands and floodplains. Surface water quality at Titi, Ramer, and Bull Creeks is not anticipated to be negatively affected by runoff from TA C-64.

### **Wetlands**

There would be no significant impacts to wetlands under Alternative 1. No wetland resources are located within the boundaries of TA C-64. Water quality and quantity to the wetlands associated with Titi, Ramer, and Bull Creeks is not anticipated to be negatively affected by the increased number of expendables at TA C-64.

### **Floodplains**

There would be no significant impacts to floodplains under Alternative 1. None of the actions on TA C-64 involve changes to the floodplain. Further, there are no habitable structures at risk from any changes to the floodplain. None of the testing activities would alter flow regimes of 100-year floods.

### **Coastal Zone**

Components of the Proposed Action would take place within the jurisdictional concerns of FDEP and, therefore, would require a consistency determination with respect to Florida's Coastal Zone Management Plan and the CZMA. Eglin AFB has prepared a CZMA determination to address the potential impacts to the coastal zone (Appendix D).

#### **4.3.3 Alternative 2**

The types of mission activities considered to have potential to impact water resources under Alternative 2 are the same as those identified for the No Action Alternative, although the number of expendables would increase compared to the No Action Alternative and Alternative 1. The following subsections address specific water resources. Activities identified in the 2001 PEA and the 2007 EBD as potentially impacting water resources include armor-piercing gun ammunition testing, warhead lethality testing, arena testing, and dynamic munitions delivery.

### **Groundwater**

There would be no significant impacts to groundwater under Alternative 2. Analysis of soil resources in Section 1.1 determined that lead concentration in the test area soils due to missions

would be substantially below Eglin background and USEPA RBC levels for all mission types, limiting the possible effects of lead leaching into groundwater. Although the Lakeland soils within the test area are considered prone to leaching, organic matter in surface soils and iron oxides in the lower subsurface soils could complex and bind available lead, thereby further reducing the potential for lead to leach into groundwater.

### **Surface Water**

There would be no significant impacts to surface water under Alternative 2. Groundwater is not likely to discharge lead or other contaminants to surface waters in amounts that would be of environmental concern. The distance between testing sites at TA C-64 and the three perennial streams systems (Titi, Ramer, and Bull Creeks) adjacent to the test area is fairly extensive (Figure 3-3). The ground cover is likely to serve as a pollution filter, intercepting surface runoff before it reaches surface waters and the associated wetlands and floodplains. Surface water quality at Titi, Ramer, and Bull Creeks is not anticipated to be negatively affected by runoff from TA C-64.

### **Wetlands**

There would be no significant impacts to wetlands under Alternative 2. No wetland resources are located within the boundaries of TA C-64. Water quality and quantity to the wetlands associated with Titi, Ramer, and Bull Creeks is not anticipated to be negatively affected by the increased number of expendables at TA C-64.

### **Floodplains**

There would be no significant impacts to floodplains under Alternative 2. None of the actions on TA C-64 involve changes to the floodplain. Further, there are no habitable structures at risk from any changes to the floodplain. None of the testing activities would alter flow regimes of 100-year floods.

### **Coastal Zone**

Components of the Proposed Action would take place within the jurisdictional concerns of FDEP and, therefore, would require a consistency determination with respect to Florida's Coastal Zone Management Plan and the CZMA. Eglin AFB has prepared a CZMA determination to address the potential impacts to the coastal zone (Appendix D).

## **4.4 BIOLOGICAL RESOURCES**

This section describes the potential impacts to the ecological associations, sensitive habitats, and sensitive species that were identified in the previous chapter. The analysis covers the No Action alternative as well as Alternative 1 and Alternative 2 and their respective potential impact on each biological resource group.

#### 4.4.1 No Action Alternative

This alternative would continue the level of activity analyzed in the *2001 Test Area C-64 Programmatic Environmental Assessment* (U.S. Air Force, 2001b).

##### Sensitive Habitats

TA C-64 is predominantly open grassland or urban/landscaped areas and is subject to frequent military activity. As such, it does not contain areas designated as sensitive habitats and would not be considered preferred habitat for sensitive species (Figure 3-4). There is one SBS, the Titi Creek Wilderness Area, located approximately 0.25 mile north of TA C-64. Also, the southern and western edges of TA C-64 border RCW foraging habitat (Figure 3-6). However, normal mission activities should not impact areas outside of the boundaries of the established test area. Some potential exists for munitions to ignite wildfires that could spread beyond the borders of the test area that could negatively impact the SBS or the RCW foraging habitat. RCW cavity trees could be damaged by wildfire or wildfire suppression activities. However, adherence to the *Wildland Specific Action Guidelines for Eglin* (which include restrictions during extreme fire danger) (U.S. Air Force, 2002) would reduce the likelihood of a mission-induced wildfire and its potential negative impacts to these areas.

##### Sensitive Species

RCWs—Based on the growth trend of the RCW tracked by the Eglin NRS (96 CEG/CEVSN) current levels of military activity in established test areas such as TA C-64 have not adversely affected RCW populations (U.S. Air Force, 2010). The potential impacts to RCW from test and training activities include the direct physical impact from munitions and disturbance from noise. During normal procedures the areas of RCW foraging habitat around TA C-64 would not be affected. Therefore the potential risk of physical impact to RCW would be negligible.

While there are no documented RCW cavity trees within the boundaries of TA C-64, there are numerous inactive trees present in close proximity. The nearest active RCW trees are approximately 0.25 mile away (Figure 3-6). The associated forage habitat from these RCW clusters extends inside the boundary of the test area. Eglin geographic information system data shows that the associated forage habitat from these RCW clusters extends inside (approximately 2.3 acres) the southern boundary of TA C-64 (Figure 3-6). This acreage is based on the polygons generated during the calculation of potential foraging habitat surrounding RCW clusters. In actuality, the southern edge of TA C-64 is bounded by Range Road 454 and there are no trees on the north side of this road. Therefore, there is no suitable RCW habitat within the boundary of TA C-64. The foraging habitat to the south and west of the test area is subject to special protection and before any tree clearing, units must coordinate with Eglin NRS. Eglin applies the *Management Guidelines for the Red-Cockaded Woodpecker on Army Installations* (U.S. Army, 2006) to activities near RCW trees. The 2006 Army *Guidelines* detail the allowed and restricted activities near active RCW trees. Activities that occur within 200 feet of a marked cavity tree are limited to those of a transient nature (less than two hours duration). Therefore, any test or training action that is expected to occur in a single location for more than two hours within a 200-foot buffer of an active RCW tree must be coordinated through Eglin NRS

(96 CEG/CEVSN). Such activities would be evaluated on a case-by-case basis for their potential impact to RCW.

Observation of RCW exposed to noise from range activities, vehicular traffic and other mission-related activities have shown the RCW has some tolerance to disturbance (Delaney et al., 2002). Suitable habitat appears to outweigh any negative influences associated with noise (whether that is construction or military bombing). Observations have indicated that many animals become adapted to human activities and noises (Busnel, 1978). Scientists who have researched the effects of noise on wildlife report that animals may initially react with a startle effect from noises, but adapt over time, so that even this behavior is eradicated (Busnel, 1978). Based on the fact that the RCW population continues to grow at Eglin including areas in close proximity to test areas, it appears that they have adapted to all of the noises associated with military missions. Training may temporarily disturb individuals or populations. This could affect the growth of the RCW population adjacent to the proposed activity area. However, based on the existence of RCW habitat despite historical mission impact, future mission activities on C-64 are not likely to adversely affect the RCW.

*Eastern indigo snake* – TA C-64 is considered suitable habitat for Eastern indigo snake and gopher tortoise. Because it uses a variety of habitat types, the eastern indigo snake could occur anywhere on the Eglin mainland reservation including test areas. The species is uncommon; therefore, the likelihood of impact from test and training activities is considered extremely remote. In 2008, Eglin NRS submitted a programmatic biological assessment to the USFWS to address impacts to the eastern indigo snake from testing and training activities, general range road usage and maintenance, construction activities, and general range usage. Within this document, the NRS has adapted and modified the USFWS Standard Protection Measures for the eastern indigo snake for use on the Eglin reservation (U.S. Air Force, 2008). The document also outlines procedures to be used for implementing those protection measures.

Eastern indigo snakes could also be impacted by direct physical means such as trampling by personnel or crushing by vehicular movements. These potential direct physical impacts would be minimized through the observation of the avoidance measures described in Section 2.5, *Management Requirements*, specifically: (1) vehicular traffic would be limited to established trails/roads unless special authorization is given for off-road vehicles and (2) if any sensitive species are observed all activity within that area would cease until the animal has vacated the area.

*Gopher tortoise* – TA C-64 was partially surveyed for gopher tortoise burrows in 2005 and several were documented (U.S. Air Force, 2010). Based on the similar areas that have been recently surveyed they are likely to exist there. Potential for significant habitat alteration exists from munitions and training missions resulting in the collapse of gopher tortoise burrows, however this potential is infrequent. Training and heavy missions should be avoided near known gopher tortoise burrows. If a gopher tortoise or gopher tortoise burrow is identified within the proposed site of one of these activities, personnel must contact the Eglin NRS to inspect, evaluate, and possibly relocate the gopher tortoise. Also, prior to any clearing or establishment of new targets, a gopher tortoise survey must be conducted. Transportation and release of any relocated tortoises must follow guidelines in the *Gopher Tortoise Permitting Guidelines* (FWC, 2008).

Gopher tortoises could also be impacted by direct physical means such as trampling by personnel or crushing by vehicular movements. These potential direct physical impacts would be minimized through the observation of the avoidance measures described in Section 2.5, *Management Requirements*, specifically: (1) vehicular traffic would be limited to established trails/roads unless special authorization is given for off-road vehicle and (2) if any sensitive species are observed all activity within that area would cease until the animal has vacated the area.

*Reticulated Flatwoods Salamander* – Potential habitat for the reticulated flatwoods salamander does not exist within close proximity to TA C-64. Restriction of ground-disturbing activities applies within a 1,500-foot habitat buffer, which is well outside of the TA C-64 boundary. Potential impact to the reticulated flatwoods salamander and its habitat are unlikely.

*Florida black bear* – The Florida black bear may be found in and around TA C-64, however, because the majority of the test area is cleared, it is unlikely that bears would traverse the open area. Vehicle strikes are the primary concern for bears on Eglin, thus drivers should be alert to the presence of bears to avoid impacts. The Florida black bear is unlikely to be adversely impacted by test and training activities.

#### **4.4.2 Alternative 1**

For Alternative 1, the potential impact to biological resources is expected to be similar to the No Action Alternative. Since no new types of activities, new user groups, or new kinds of expendables have been identified for the foreseeable future, the risks to sensitive habitats and sensitive species are the same as discussed for the No Action Alternative. The increase in frequency of missions and training is not anticipated to significantly impact biological resources.

Alternative 1 would result in increased munitions expenditures associated with training activities. Although some risk of wildfire would result from increased munitions use, no direct impacts to sensitive species or habitats are anticipated from munitions. Adherence to the Wildland Specific Action Guidelines for Eglin (which include restrictions during extreme fire danger) (U.S. Air Force, 2002) would reduce the likelihood of a mission-induced wildfire and its potential negative impacts.

#### **4.4.3 Alternative 2**

For Alternative 2, the potential impact to biological resources is expected to be similar to the No Action Alternative and Alternative 1. However since Alternative 2 provides for a significant increase in frequency of testing and training above the No Action Alternative there may be additional likelihood of impact.

Alternative 2 would result in increased munitions expenditures associated with training activities. Although some risk of wildfire would result from increased munitions use, no direct impacts to sensitive species or habitats are anticipated from munitions. Adherence to the Wildland Specific Action Guidelines for Eglin (which include restrictions during extreme fire danger) (U.S. Air Force, 2002) would reduce the likelihood of a mission-induced wildfire and its potential negative impacts.

*RCW* – Increased frequency of missions on TA C-64 may increase potential encounters with RCWs. Eglin would continue to apply the *Management Guidelines for the Red-Cockaded Woodpecker on Army Installations* (U.S. Army, 2006) to activities near RCW trees. However, the RCW population continues to grow at Eglin including areas in close proximity to test areas. Therefore it appears that they have adapted to the noise associated with military missions and the increase in missions described for Alternative 2 would not significantly impact RCW or their habitat.

*Eastern indigo snake* – Increased frequency of missions may increase the likelihood of encountering an eastern indigo snake. However, given the recluse nature of the species and their assumed rarity, the potential impact from Alternative 2 is not significant.

*Gopher tortoise* – Increased mission activity under Alternative 2 must continue to comply with management requirements that are designed to protect the species. The greatest risk to gopher tortoise from Alternative 2 is the potential for significant habitat alteration from munitions and training missions. If possible, training and heavy missions should be planned to avoid known gopher tortoise burrows. If gopher tortoise burrows cannot be avoided due to mission requirements, a gopher tortoise survey must be conducted. Transportation and release of any relocated tortoises must follow guidelines in the *Gopher Tortoise Permitting Guidelines* (FWC, 2008).

*Florida black bear* – Increased mission activity under Alternative 2 must continue to comply with management requirements that are designed to protect the species. Increased frequency is not expected to change the potential impacts to the Florida black bear as discussed under the No Action Alternative.

## 4.5 AIR QUALITY

Air quality is evaluated using a 10 percent threshold of Okaloosa County emissions. Emissions are also compared to the NAAQS to verify air emissions are not exceeding federal levels. Air emissions were calculated based on a representative munitions for each expenditure category (i.e., bombs, countermeasures, rockets, etc.) in which the net explosive weight (NEW) was obtained and multiplied by the quantity and appropriate emission factors. Emissions from vehicles and the use of unpaved roads was estimated using road usage data from the 2002 Range Road EBD and the total miles of roads located on TA C-64. The vehicle and dust emissions are included in the total TA C-64 emissions reported under each Alternative.

### 4.5.1 No Action Alternative

The No Action Alternative authorizes the level of activity approved in the 2001 TA C-64 PEA. Table 4-6 summarizes the munitions emissions compared to the region of influence while Table 4-7 shows the emissions compared to the NAAQS. Emissions would be below the federal standards and the 10-percent threshold. No impacts to air quality are expected for the No Action Alternative.

**Table 4-6. Munitions Emissions for the No Action Alternative Compared to Okaloosa County**

Location	Emissions (tons/yr)				
	CO	NO <sub>x</sub>	PM	SO <sub>x</sub>	VOCs
Total Okaloosa County	63,274	7,132	8,736	839	10,333
TA C-64 Emissions	3.56	0.76	58.40	0.05	0.25
% Okaloosa County Emissions	0.006%	0.011%	0.669%	0.007%	0.002%

CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxide; PM = particulate matter; SO<sub>x</sub> = sulfur oxide; VOC = volatile organic compound

**Table 4-7. Munition Emissions for the No Action Alternative Compared to the NAAQS**

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-hour	35	5.578E-06
	8-hour	9	3.905E-06
NO <sub>x</sub>	Annual	0.053	1.748E-08
SO <sub>2</sub>	3-hour	0.5	6.324E-08
	24-hour	0.14	2.811E-08
	Annual	0.03	5.622E-09
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	93.900 µg/m <sup>3</sup>
	Annual	50 µg/m <sup>3</sup>	18.780 µg/m <sup>3</sup>

ppm = parts per million; µg/m<sup>3</sup> = micrograms per cubic meter; CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; SO<sub>2</sub> = sulfur dioxide; PM<sub>10</sub> = particulate matter diameter of 10 microns

#### 4.5.2 Alternative 1

This alternative authorizes current level and foreseeable future which means the maximum annual expenditures were used to determine impacts for Alternative 1. Although there is a net increase in expenditures there is a decrease in the use of high NEW munitions thus there is a decrease in emissions from the No Action Alternative. Emissions would not exceed federal standards (Table 4-8) or the 10-percent threshold (Table 4-9). Emissions would be minimal and would have no adverse effect on air quality for Alternative 1.

**Table 4-8. Munitions Emissions for Alternative 1 Compared to the NAAQS**

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-hour	35	8.661E-07
	8-hour	9	6.063E-07
NO <sub>x</sub>	Annual	0.053	1.914E-09
SO <sub>2</sub>	3-hour	0.5	5.569E-09
	24-hour	0.14	2.475E-09
	Annual	0.03	4.950E-10
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	3.608 µg/m <sup>3</sup>
	Annual	50 µg/m <sup>3</sup>	0.722 µg/m <sup>3</sup>

µg/m<sup>3</sup> = micrograms per cubic meter; CO = carbon monoxide; NAAQS = National Ambient Air Quality Standards; PM<sub>10</sub> = particulate matter diameter of 10 microns; NO<sub>x</sub> = nitrogen oxides; ppm = parts per million; SO<sub>2</sub> = sulfur dioxide

**Table 4-9. Munitions Emissions for Alternative 1 Compared to Okaloosa County**

Location	Emissions (tons/year)				
	CO	NO <sub>x</sub>	PM	SO <sub>x</sub>	VOCs
Total Okaloosa County	63,274	7,132	8,736	839	10,333
Test Area Emissions	2.227	0.278	2.469	0.013	0.249
% Okaloosa County Emissions	0.004%	0.004%	0.028%	0.002%	0.002%

CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxide; PM = particulate matter; SO<sub>x</sub> = sulfur oxide; VOC = volatile organic compound

### 4.5.3 Alternative 2

This alternative authorizes the level of activity under Alternative 1 plus a 300-percent increase in mission activity. There would be a slight increase in air emissions from munitions use under this Alternative but would not exceed the federal NAAQS or the 10-percent general conformity threshold (Table 4-10 and Table 4-11). No adverse impacts are expected from mission activities related to Alternative 2 are expected.

**Table 4-10. Munitions Emissions for Alternative 2 Compared to Okaloosa County**

Location	Emissions (tons/year)				
	CO	NO <sub>x</sub>	PM	SO <sub>x</sub>	VOCs
Total Okaloosa County	63,274	7,132	8,736	839	10,333
Test Area Emissions	2.385	0.335	9.051	0.018	0.249
% Okaloosa County Emissions	0.004%	0.005%	0.104%	0.002%	0.002%

CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxide; PM = particulate matter; SO<sub>x</sub> = sulfur oxide; VOC = volatile organic compound

**Table 4-11. Munitions Emissions for Alternative 2 Compared to the NAAQS**

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-hour	35	1.421E-06
	8-hour	9	9.944E-07
NO <sub>x</sub>	Annual	0.053	3.745E-09
SO <sub>2</sub>	3-hour	0.5	1.236E-08
	24-hour	0.14	5.492E-09
	Annual	0.03	1.098E-09
PM <sub>10</sub>	24-hour	150 µg/m <sup>3</sup>	14.233 µg/m <sup>3</sup>
	Annual	50 µg/m <sup>3</sup>	2.847 µg/m <sup>3</sup>

µg/m<sup>3</sup> = micrograms per cubic meter; CO = carbon monoxide; NO<sub>x</sub> = nitrogen oxides; PM<sub>10</sub> = particulate matter diameter of 10 microns; ppm = parts per million; NAAQS = National Ambient Air Quality Standards ; SO<sub>2</sub> = sulfur dioxide

### 4.6 NOISE

Generally individual noise events are expressed in decibels, weighted to consider specific noise aspects. In the case of impulsive noise, such as munitions, the common weighting used is sound pressure level (SPL). The actual noise level is indicated as dBP. This weighs the sound energy contained in all frequencies equally. C-weighting (dBC) is also often used for impulsive noise.

This metric emphasizes the lower frequency aspect of the noise spectrum which addresses the additional annoyance from vibration of structures.

There are no guidelines or criteria for assessing annoyance related to single noise events. The amount of annoyance is dependent on several factors, such as the characteristics of the noise (i.e., intensity), duration, repetitions, abruptness of onset or cessation, and the ambient noise against which a particular noise event occurs. The factors influencing annoyance, based on surveys, are

- The degree of interference of the noise with activity
- Previous experience of the community with the particular noise
- The time of day during which the noise occurs
- The extent the people believe that the noise output could be controlled.

Noises with less than 115 dBP sound level generally do not cause complaints. Sound levels of 115 to 130 dBP have a moderate complaint response and high potential for annoyance and possible structural damage at levels 130 to 140 dBP. Noise levels greater than 140 dBP can cause physiological and structural damage. Also, the threshold of permanent physiological damage to unprotected human ears is set at 140 dBP.

SPLs were used in this analysis to assess potential noise impacts resulting from testing and training activities on TA C-64. The analysis compared the munitions with the highest NEW to the known value from the detonation of two Poseidon rocket motors with a combined NEW of 31,720 pounds measured at maximum peak noise level of 125 dBP (Utah Test and Training Range, 2002). For the following alternatives munitions noise was compared against this known sound level. A sound 125 dBP would attenuate to 65 dB or below in 51,000 feet. The nearest resident is located 15,000 feet at which the sound would have decreased to approximately 75 dBP. This is assuming that sound pressure decreases by 6 dB per doubling of distance from the source (Tontechnik-Rechner, 2010).

It should be noted that there will be a decrease in noisy munitions and increase in small arms and guns which would mean a decrease in loud munitions use. The MOAB (40,000 pounds) was audible 15 miles away, but was not at harmful levels or considered loud.

#### **4.6.1 No Action Alternative**

Under the No Action Alternative the munitions with the greatest NEW is a HVAR Rocket Motor with 24.9 pounds of explosive weight. This is 0.08 percent the explosive weight of the reference munition which means that the detonation of these munitions and others of lesser NEW is not expected to produce sound levels greater than 115 dBP. Atmospheric conditions (temperature and humidity) affect the impacts of noise more than the quantity of explosive used during the bomb detonation event. At higher temperatures and low humidity sound propagates further. Noise levels reduce in intensity with distance thus potential receptors would not be subject to harmful noise levels. No adverse impacts are expected from noise under the No Action Alternative.

#### 4.6.2 Alternative 1

Alternative 1 would expend munitions with NEWs of 208 pounds from the AFX-757. This is 0.6 percent the explosive weight of the two Poseidon rocket motors. The resultant noise from the detonation of these munitions is not expected to exceed 115 dBP. This level of noise is not expected to attenuate beyond the Eglin range borders or adversely affect the public. No adverse impacts from Alternative 1 are expected from noise.

#### 4.6.3 Alternative 2

Alternative 2 would have the same munitions as described in Alternative 1 that would have the potential to cause the greatest noise impacts. Under this alternative the potential for noise impacts would be greater in that the number of munitions increases. Therefore the frequency of noise would be higher. The level of noise would not increase from Alternative 1 unless multiple operations are occurring simultaneously. No adverse impacts from noise are expected from operations on TA C-64.

### 4.7 SAFETY

Military lands are open to recreational use as long as public use and safety does not interfere with the military mission. The use of Reservation lands for mission activities is a higher priority. The Sikes Act authorizes and encourages Air Force bases to open areas for outdoor recreation, and requires the Air Force to manage the natural resources of reservations to provide for sustained multipurpose use. The Air Base Wing Commander has inherent administrative authority to revoke outdoor recreation privileges (U.S. Air Force, 2003b). In general, testing missions on Eglin are using longer-range weapons and are requiring larger safety footprints extending over more interstitial area with time. Other actions currently undergoing NEPA assessment, such as actions associated with the Eglin Base Realignment and Closure implementation and Alabama Army National Guard training expansion, may also affect access to recreational areas on the Range. Consequently, future conflicts between recreational use and mission use may arise.

However, TA C-64 is located in an area that is permanently closed to the public. There are open recreation areas in the interstitial area to the southwest of TA C-64. However, that area is part of Management Unit 9B which is only accessible during weekends and holidays during designated hunting seasons and requires all persons entering to check in and out at the established game check station. Further, air-to-surface targets are located in the interior portions of TA C-64, which are surrounded by permanently closed restricted access areas. Therefore, there would be no effects to restricted access based on the No Action Alternative, Alternative 1, or Alternative 2.

#### 4.7.1 No Action Alternative

##### Ordinance Use

A number of standard safety procedures exist to ensure limited public access to affected test areas during testing or training activities. These procedures require every practical effort to keep the designated areas clear of all nonparticipating vehicles and personnel. A key part of these

procedures includes development of weapon safety footprints, also referred to as surface danger zones (SDZs). SDZs are employed for land-based training where live ordnance is used. These SDZs act as overlays that restrict activities that could normally occur within and adjacent to test or training areas. In general, for aircraft-launched weapons, as the distance from the weapons release to the target increases, so does the footprint. The same is true for altitude and speed at launch or release; as the launch altitude and/or aircraft speed increases, so does the size of the footprint (U.S. Air Force, 2003b).

The methodology for footprint formulation combines munitions system science, computer modeling, and best management practices. These footprints include safety zones for initial impacts as well as ricochets. A buffer zone is typically built into the footprint to further minimize the risk to the public or other resources from the testing of hazardous items on the range. Safety footprints are also employed for land-based training where live ordnance is used. Weapons safety footprints act as overlays that restrict activities that could normally occur within and adjacent to test areas (U.S. Air Force, 2003b).

All ordnance would be handled by trained and qualified personnel in accordance with Air Force and Army explosive safety standards and detailed published technical data. If any unauthorized personnel or vehicles are detected within the area during training, all activity is temporarily halted until the area is again cleared and secured (U.S. Air Force, 2003b).

Weapon safety footprints would be employed for land- and aircraft-based training where live or inert ordnance would be used. Standard safety procedures, such as closing range gates and blocking all passable trails, would be implemented in all cases to ensure limited public access to affected areas during training activities. As a result, there are no safety concerns based on the levels of activity authorized by the *2001 Test Area C-64 Programmatic Environmental Assessment* (U.S. Air Force, 2001b) under the No Action Alternative.

## Unexploded Ordnance

For the 60 years the Eglin Range has been in use, the location of impact areas and the SDZs have changed many times. Impact areas and SDZs are locations where ordnance might have been accidentally dropped long or short of their target or might have landed after ricocheting. In 2000, Congress dictated an inventory of land contaminated by UXO to gain an understanding of the UXO liability nationwide. The Eglin inventory classified 724 square miles as active range using two subcategories: current impact areas (50,000 acres) and historic impact areas (335,000 acres). Test areas, some cantonment areas on historic ranges (not UXO contaminated but restricted due to the mission), and some interstitial areas are closed to the public due to high UXO risk (U.S. Air Force, 2001a).

Eglin has strict safety policies and procedures in place to minimize the risk posed by UXO to personnel. For example, areas that may contain UXO have signs posted to warn of potential danger. Also, Eglin's Outdoor Recreation Map shows areas of probable and possible UXO contamination. Members of the public are required to observe a UXO awareness video prior to being issued recreation permits to access the Range. No injuries to the public are known to have occurred at Eglin AFB as a result of UXO (Caldwell, 2008). However, UXO could potentially pose a danger to the people involved in training, as personnel must sometimes enter potentially

hazardous test areas to set up targets or instrumentation in support of test or training activities. However, other controls are in place for personnel involved in range management and/or engaged in missions on the range.

The 96th Civil Engineering Squadron (96 CES/CED) manages the risks posed by UXOs on the Range. Equipment such as metal detectors, robots, and protective bomb suits are routinely employed to find and deal with UXOs. Once a potentially dangerous item is found, 96 CES/CED determines the best way to disarm it. The item may be removed to another location for disposal or it may be destroyed in place (a small amount of plastic explosive is placed next to the item and detonated from a safe distance). 96 CES/CED will then verify that no dangerous components from the item remain on the Range.

As the result of 60 years of use, most areas on the Eglin Range, including TA C-64 have the potential for UXO contamination. While a detailed records search of range use and potential UXO contamination on the Eglin Range has been accomplished by the USACE and a number of other studies have been completed, records of UXO contamination remain incomplete. Eglin has published a UXO Management Plan, which addresses historic use and contamination, current management practices, and future needs. A number of procedures are in place to minimize risks to Eglin personnel and members of the public who access the Eglin Range. To mitigate any potential adverse impacts from UXO, consultation and coordination with 96 CES/CED personnel would be required to address UXO on TA C-64. Therefore, there are no adverse affects to safety under the No Action Alternative.

#### **4.7.2 Alternative 1**

##### **Ordnance Use**

Under Alternative 1, the current level of activity at TA C-64 would be authorized. There would be no new user groups, types of activities, or kinds of munitions. Safety procedures and policies that are currently established would remain in effect, and all ordnance would be handled by trained and qualified personnel. As a result, no impacts to safety would occur.

##### **Unexploded Ordnance**

Similarly, current procedures and policies for UXO monitoring and clearing would remain in place under Alternative 1. These procedures minimize the risk to Eglin personnel operating on TA C-64. Users would continue to coordinate with 96 CES/CED with regard to UXO encounters on TA C-64. This would mitigate any potential adverse impacts to safety from UXO on TA C-64.

#### **4.7.3 Alternative 2**

Under Alternative 2, the frequency and total quantity of munitions used will increase by 300 percent. Despite this increase, the policies and procedures already in place would ensure that safety of Eglin AFB personnel is not jeopardized. Due to the increased use of munitions, the likelihood of UXO encounter is increased, but because of the policies in place and the continued coordination with 96 CES/CED, no new impacts to safety are anticipated.

## 4.8 LAND USE

### 4.8.1 No Action Alternative

The No Action Alternative is defined as authorizing the level of activity approved in the 2001 Test Area C-64 PEA which authorized a 200-percent increase in all testing missions and associated expendables over the baseline level captured in the *Fiscal Year 1998 (FY1998) Range Utilization Report* and anticipated mission additions. Land use and recreational resources were not specifically discussed and analyzed in the 2001 PEA. Land use was not covered because TA C-64 has a specific land use designation that is crucial to the support of the National Security and Military Strategy of the DoD. Therefore, no significant impacts are anticipated to land use under the No Action Alternative.

There are, however, potential impacts to recreational resources under the No Action Alternative. During certain testing activities, the safety footprint often requires recreation management units be closed. Any impacts to recreational users are anticipated to be minor and temporary given the large percentage of available recreational areas in other management units on Eglin AFB. The duration of closure depends on many factors but only last for the duration of the activity. Therefore, no significant impacts are anticipated to land use and recreation resources under the No Action Alternative.

### 4.8.2 Alternative 1

Under Alternative 1, the level of activity would increase by the amount of foreseeable future activities as outlined in Table 2-1. The land use designation would remain as a test area for the primary purpose of supporting weapons system; therefore no impacts are anticipated to land use under Alternative 1.

Expansion of current missions on TAs C-64 would mean that potential impacts to recreational users from area closures would increase in frequency. Similar to the No Action Alternative, closures to these areas would only last for the duration of the activity and are anticipated to be minor and temporary. Therefore, no significant impacts to land use or recreation resources are anticipated under Alternative 1.

### 4.8.3 Alternative 2

Under Alternative 2, the impacts to land use and recreational areas would be the same as those described under Alternative 1. There would be no changes to land use designation so there would be no impacts to land use. Under this alternative, there is a possibility of a mission surge by 300 percent. This would likely result in more frequent closures to certain recreational areas in order to support mission activities performed at TA C-64. However, impacts to recreational resources are anticipated to be minor and temporary since other areas would be available to recreational users and closures would only last for the duration of the activity. Therefore, no significant impacts are anticipated to land use or recreational resources.

## 4.9 SOCIOECONOMIC RESOURCES

### 4.9.1 No Action Alternative

The No Action Alternative is defined as authorizing the level of activity approved in the 2001 TA C-64 PEA, which authorized a 200-percent increase in all testing missions and associated expendables over the baseline level captured in the *Fiscal Year 1998 (FY1998) Range Utilization Report* and anticipated mission additions. Socioeconomic resources were not explicitly covered in the PEA; however, noise impacts to the public were considered. The 2001 TA C-64 PEA concluded that the exposure of the public to noise levels of 115 dBP is limited to population densities of between three and 39 individuals per square mile in the region just outside the northern boundary of Eglin. Therefore, communities with a population density of 39 individuals or greater per square mile could be potentially impacted by noise events on TA C-64 during unfavorable weather conditions. The two closest communities to TA C-64 are Crestview, approximately 10 miles to the west, and Mossy Head, approximately 10 miles to the east. Both communities have population densities greater than 39 individuals per square mile and therefore, could be impacted by noise events on TA C-64.

According to Table 3-10, in 2008 there were only two noise complaints originating from two individuals in the Crestview area and zero complaints originating from Mossy Head. The two noise complaints originating in Crestview were due to low flying noise and explosion. Neither of the noises had been confirmed to originate from activities at TA C-64. Therefore, impacts to socioeconomic resources are anticipated to be minor and temporary.

### 4.9.2 Alternative 1

Under Alternative 1, the level of activity would increase by a foreseeable amount above the approved level in the 2001 TA C-64 PEA. Under this alternative, it is anticipated that there would be more frequent noise impacts to the public from additional munitions expenditures at TA C-64. Although more frequent, noise impacts are anticipated to be minor and temporary lasting only for the duration of the activity. Therefore, only minor and temporary noise impacts from munitions expenditures are anticipated to socioeconomic resources under Alternative 1.

No special risks to children or disproportionate noise impacts have been identified to areas of environmental justice concerns from activities performed at TA C-64. The potential realm of influence associated with the missions performed on TA C-64 are indiscriminately inclusive of the diversity of ethnic and socioeconomic population variables that occur outside the boundaries of Eglin Air Force Base, with no exercise of disparity toward any one group or affiliation.

### 4.9.3 Alternative 2

Under Alternative 2, there would be an increase of activity by 300 percent. Under this alternative, noise impacts to local communities would be similar to those described under Alternative 1. Similar to Alternative 1, an expansion of test missions would indicate that noise produced from missions in Alternative 1 would remain the same in terms of intensity but the number of noise events are anticipated to be more frequent than under Alternative 1. However,

any noise impacts to the local communities are anticipated to be minor and temporary, lasting only the duration of the activity.

In addition, no special risks to children or disproportionate noise impacts have been identified to areas of environmental justice concerns from activities performed under Alternative 2 at TA C-64. Therefore, only minor and temporary noise impacts from munitions expenditures are anticipated to socioeconomic resources under Alternative 2.

## **4.10 CULTURAL RESOURCES**

### **4.10.1 No Action Alternative**

The No Action Alternative represents the previously approved level of activity at TA C-64 and would not adversely affect cultural resources. No NRHP-eligible archaeological sites, structures, historic cemeteries, traditional cultural properties, or historic districts are present within TA C-64.

Formal assessments of portions of TA C-64 have not been completed, but initial indications are that archaeological surveys will not be permitted within the existing boundaries due to UXO related safety concerns. In cases such as these, Cultural Resource Management personnel make efforts to visually identify, to research, and to assess for historic significance all standing structures such as buildings, targets, bridges, bunkers, etc. All future proposed actions must adhere to standards and guidelines outlined in the Eglin AFB Integrated Cultural Resources Management Plan (U.S. Air Force, 2006c) and the previously developed Programmatic Agreement between the AAC, the Florida SHPO, and the Advisory Council on Historic Preservation (U.S. Air Force, 2003c).

In areas where survey has not been completed, the potential exists to encounter subsurface cultural resources. In the event that unknown cultural resources are discovered during a mission activity, all activity in the immediate vicinity must cease until the Base Historic Preservation Officer and 96 CEG/CEVSH have been notified and a determination of significance has been rendered.

### **4.10.2 Alternative 1**

Impacts to cultural resources would be similar to those proposed under the No Action Alternative. As described under the No Action Alternative, no adverse effects to cultural resources would be expected under the level of activities under Alternative 1.

### **4.10.3 Alternative 2**

Impacts to cultural resources under Alternative 2 would be similar to those proposed under the No Action Alternative. As described under the No Action Alternative, no adverse effects to cultural resources would be expected under the level of activities under Alternative 2.

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**APPENDIX A**

**RELEVANT LAWS, REGULATIONS, AND POLICIES**



## RELEVANT LAWS, REGULATIONS, AND POLICIES

The Range Environmental Assessment was prepared with consideration and compliance of relevant environmental laws, regulations, and policies, including federal and state laws and regulations, Department of Defense (DoD) directives, and Air Force instructions (AFI). A brief description of specific laws and regulations that legally define issues of compliance associated with the mission activities of this document are outlined below.

### *General*

42 U.S. Code (USC) 4321 et seq; 1969; National Environmental Policy Act of 1969 (NEPA); Requires that federal agencies (1) consider the consequences of an action on the environment before taking the action and (2) involve the public in the decision-making process for major Federal actions that significantly affect the quality of the human environment.

Executive Order (EO) 12372; 14-Jul-82; Intergovernmental Review of Federal Programs; Directs federal agencies to inform states of plans and actions, use state processes to obtain state views, accommodate state and local concerns, encourage state plans, and coordinate states' views.

EO 12856; 3-Aug-93; Right-to-Know Laws and Pollution Prevention Requirements; Directs all Federal agencies to incorporate pollution planning into their operations and to comply with toxic release inventory requirements, emergency planning requirements, and release notifications requirements of Emergency Planning and Community Right-to-Know Act (EPCRA).

EO 12898; 11-Feb-94; Environmental Justice; Directs federal agencies to identify disproportionately high and adverse human health or environmental impacts resulting from programs, activities or policies on minority populations.

Air Force Policy Directive (AFPD) 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention.

AFI 32-7045; 1-Apr-94; Environmental Compliance and Assessment; Implements AFPD 32-70 by providing for an annual internal self-evaluation and program management system to ensure compliance with Federal, State, local, DoD, and Air Force environmental laws and regulations.

32 Code of Federal Regulations (CFR) 989; 1-Jul-01; Environmental Impact Analysis Process--; This regulation provides a framework for how the Air Force is to comply with NEPA and the Council on Environmental Quality regulations.

AFI 32-7062; 1-Apr-94; Air Force Comprehensive Planning; Implements AFPD 32-70 by establishing Air Force Comprehensive Planning Program for development of Air Force Installations, ensuring that natural, cultural, environmental, and social science factors are considered in planning and decision making.

*Physical Resources**Air Quality*

42 USC 7401 et seq.; 40 CFR Parts 50 & 51; Clean Air Act (CAA), National Ambient Air Quality Standards (NAAQS); Emission sources must comply with air quality standards and regulations established by federal, state, and local regulatory agencies.

AFPD 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements CAA.

AFI 32-7040; 9-May-94; Air Quality Compliance; This AFI sets forth actions for bases to implement to achieve and maintain compliance with applicable standards for air quality compliance, and responsibilities for who is to implement them. Includes requirements for NEPA and Resource Conservation and Recovery Act (RCRA) as well as CAA.

Florida Statute Ch. 403, Part I; Florida Air and Water Pollution Control Act; Regulates air pollution within the state.

Florida Administrative Code (FAC) Chap. 62-204; Florida State Implementation Plan, with Ambient Air Quality Standards and Prevention of Significant Deterioration (PSD) Program; Establishes state air quality standards and requirements for maintaining compliance with NAAQS.

FAC Chap. 62-213; Operation Permits for Major Sources of Air Pollution; Adopted PSD permit program, designed to control the impact of economic growth on areas that are already in attainment.

*Air Space Use*

49 USC 106 & Subtitle VII; 1997; Federal Aviation Act of 1958 (FAA); Created the FAA and establishes administrator with responsibility of ensuring aircraft safety and efficient utilization of the National Airspace System.

14 CFR Part 71; 1997; Federal Aviation Regulation (FAR); Defines federal air routes, controlled airspace, and flight locations for reporting position.

14 CFR Part 73; 1997; FAR (SFAR No. 53); Defines and prescribes requirements for special use airspace.

14 CFR Part 91; 1997; FAR; Governs the operation of aircraft within the United States, including the waters within 3 nautical miles of the U.S. coast. In addition, certain rules apply to persons operating in airspace between 3 and 12 nautical miles from the U.S. coast.

*Land Resources*

16 USC 670a to 670o; 1997; Sikes Act, Conservation Programs on Military Reservations; DoD, in a cooperative plan with Department of the Interior (DOI) and State, opens Air Force bases to outdoor recreation, provides the state with a share of profits from sale of resources (timber), and conserves and rehabilitates wildlife, fish, and game on each reservation. Air Force is to manage the natural resources of its reservations to provide for sustained multipurpose use and public use.

16 USC 1451 to 1465; 1997; Coastal Zone Management Act of 1972; Federal agency activities in coastal zones should be consistent with state management plans to preserve and protect coastal zones. Lands for which the Federal Government has sole discretion or holds in trust are excluded from the coastal zone.

USC 1701 et seq., Public Law 94-579; 1997; Federal Land Policy and Management Act of 1976; Provides that the Sec. of Interior shall develop land use plans for public lands within Bureau of Land Management jurisdiction to protect scientific, scenic, historical, ecological, environmental and archeological values, and to accommodate needs for minerals, food, and timber.

16 USC 3501 to 3510; 1997; Coastal Barrier Resources Act; Limits Federal expenditure for activities on areas within the Coastal Barrier Resources System. An exception is for military activities essential to national security, after the Federal agency consults with the Secretary of the Interior.

AFI 32-7062; 1-Apr-94; Air Force Comprehensive Planning; Implements AFPD 32-70 by establishing Air Force Comprehensive Planning Program for development of Air Force Installations, ensuring that natural, cultural, environmental, and social science factors are considered in planning and decision making.

AFI 32-7063; 31-Mar-94; Air Installation Compatible Use Zone Program (AICUZ); Provides a framework to promote compatible development within area of AICUZ area of influence and protect Air Force operational capability from the effects of land use which are incompatible with aircraft operations.

AFI 32-7064 22-Jul-94; Integrated Natural Resources Management; Provides for development of an integrated natural resources management plan to manage the installation ecosystem and integrate natural resources management with the rest of the installation's mission. Includes physical and biological resources and uses.

*Noise*

42 USC 4901 to 4918, Public Law 92-574; 1972; Noise Control Act of 1972; Provides that each Federal agency must comply with Federal, State, interstate and local requirements for control and abatement of environmental noise.

49 USC 44715; 1997; Controlling Aircraft Noise and Sonic Boom; Provides that the FAA will issue regulations in consultation with the U.S. Environmental Protection Agency (USEPA) to control and abate aircraft noise and sonic boom.

EO 12088; 1978; Federal Compliance with Pollution Control Standards; Requires the head of each executive agency to take responsibility for ensuring all actions have been taken to prevent, control, and abate environmental (noise) pollution with respect to federal activities.

AFI 32-7063; 1-Mar-94; AICUZ; The AICUZ study defines and maps noise contours. Update when noise exposure in air force operations results in a change of Day-Night Average Sound Level of 2 decibels or more as compared to the noise contour map in the most recent AICUZ study.

#### *Water Resources*

33 USC 426, 577, 577a, 595a; 1970; River and Harbor Act of 1970; Keeps navigable waterways open, authorizing the U.S. Army Corps of Engineers (USACE) to investigate and control beach erosion and to undertake river and harbor improvements.

33 USC 1251 et seq.; 1997; Clean Water Act (CWA) (Water Pollution Prevention and Control Act, Federal Water Pollution Control Act [FWPCA]); In addition to regulating navigable water quality, the CWA establishes National Pollutant Discharge Elimination System permit program for discharge into surface waters and storm water control; USACE permit and state certification for wetlands disturbance; regulates ocean discharge; sewage wastes control; and oil pollution prevention.

33 USC 1344-Section 404; 1997; FWPCA/CWA, Dredged or Fill Permit Program; Regulates development in streams and wetlands by requiring a permit from the USACE for discharge of dredged or fill material into navigable waters. A Section 401 (33 USC 1341) Certification is required from the State as well.

42 USC 300f et seq.; 1997; Safe Drinking Water Act (SDWA); USEPA-Requires the promulgation of drinking water standards, or Maximum Contaminant Levels, which are often used as cleanup values in remediation; establishes the underground injection well program; and establishes a wellhead protection program.

42 USC 6901 et seq.; 29-May-05; RCRA; Establishes standards for management of hazardous waste so that water resources are not contaminated: RCRA Corrective Action Program requires cleanup of groundwater that has been contaminated with hazardous constituents.

42 USC 9601 et seq., Public Law 96-510; 11-Dec-80; Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA); Establishes the emergency response and remediation program for water and groundwater resources contaminated with hazardous substances.

EO 12114, 44 FR, No. 62; 01-04-79; Environmental Effects Abroad of Major Federal Actions. Activities outside the jurisdiction of the United States which significantly harm the natural or physical environment shall be evaluated. An Environmental Impact Statement shall be prepared for major federal actions having significant environmental effects within the global commons (i.e., Antarctica, oceans).

DoD Directive 6050.7; 03-31-79; Environmental Effects Abroad of Major Department of Defense Actions. Implements EO 12114.

AFPD 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements CWA, SDWA, and Water Quality Act of 1987.

AFI 32-7006 04-29-94; Environmental Program in Foreign Countries; Implements DoD Directive 6050.7.

AFI 32-7041; 13-May-94; Water Quality Compliance; Instructs the Air Force on maintaining compliance with the CWA; other federal, state, and local environmental regulations; and related DoD and Air Force water quality directives.

AFI 32-7064; 22-Jul-94; Integrated Natural Resources Management; Sets forth requirements for addressing wetlands, floodplains and coastal and marine resources in an Integrated Natural Resources Management Plan (INRMP) for each installation.

Florida Statue, Chaps. 253, 258; Florida Aquatic Preserves Act; Establishes state aquatic preserves.

Florida Statue, Chap. 403, Part I; Florida Air and Water Pollution Control Act; establishes the regulatory system for water resources in the State of Florida.

FAC Chap. 62-302; Surface Water Quality Standards; Classify Florida surface waters by use. Identify Outstanding Florida Waters.

FAC Chap. 62-312; Florida Dredge and Fill Activities; Requires a State permit for dredging and filling conducted in, on, or over the surface waters of the State.

### *Biological Resources*

#### *Animal Resources*

16 USC 668 to 668d; 1995; Bald and Golden Eagle Protection Act; Makes it illegal to take, possess, sell, barter, offer to sell, transport, export or import Bald and Golden eagles in the United States. Taking may be allowed for scientific, exhibition, or religious purposes, or for seasonal protection of flocks.

16 USC 703 - 712; 1997; Migratory Bird Treaty Act; Makes it illegal to take, kill or possess migratory birds unless done so in accordance with regulations. An exemption may be obtained from the DOI for taking a listed migratory bird.

16 USC 1361 et seq.; 1997; Marine Mammal Protection Act (MMPA) of 1972, as amended; Makes it illegal for any person to “take” a marine mammal, which term includes significantly disturbing a habitat, unless activities are conducted in accordance with regulations or a permit.

AFI 32-7064; 22-Jul-94; INRMP; Explains how to manage natural resources on Air Force property, and to comply with Federal, State, and local standards for resource management.

EO 13112; 1999; Instructs federal agencies to monitor for, control, and prevent the introduction of non-native, invasive species of plants and animals.

EO 13186; 2001; Directs federal agencies whose actions may affect migratory birds to establish and implement a Memorandum of Understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to promote the conservation of migratory birds.

DoD and USFWS MOU; 2006; Requires the DoD to acquire permits for normal and routine operations, such as installation support functions, that may result in pursuit, hunting, taking, capturing, killing, possession, or transportation of any migratory bird.

50 CFR 21; 2007; Exempts the Armed Forces from the incidental taking of migratory birds during military readiness activities, except in cases where an activity would likely cause a significant adverse effect on the population of a migratory bird species. In this situation, the Armed Forces, in cooperation with the USFWS, must develop and implement conservation measures to mitigate or minimize the significant adverse impacts.

### *Threatened & Endangered Species*

16 USC 1361 et seq., Public Law 92-574; 1997; MMPA, as amended; Makes it illegal for a person to “take” a marine mammal, which term includes significantly disturbing the habitat, unless done in accordance with regulations or a permit.

16 USC 1531 to 1544-16 USC 1536(a); 1997; Endangered Species Act of 1973 (ESA); Federal agencies must ensure their actions do not jeopardize the continued existence of any endangered or threatened species or destroy or adversely modify the habitat of such species and must set up a conservation program.

50 CFR Part 402; ESA Interagency Cooperation; These rules prescribe how a Federal agency is to interact with either the USFWS or the National Marine Fisheries Service in implementing conservation measures or agency activities.

50 CFR Part 450; Endangered Species Exemption Process; These rules set forth the application procedure for an exemption from complying with Section 7(a)(2) of the ESA, 16 USC

1536(a)(2), which requires that Federal agencies ensure their actions do not affect endangered or threatened species or habitats.

AFPD 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements ESA.

AFI 32-7064; 22-Jul-94; Integrated Natural Resources Management; This AFI directs an installation to include in its INRMP procedures for managing and protecting endangered species or critical habitat, including State-listed endangered, threatened or rare species; and discusses agency coordination.

### *Human Safety*

29 CFR 1910.120; Occupational Safety and Health Act (OSHA), Chemical Hazard Communication Program; Requires that chemical hazard identification, information and training be available to employees using HM and institutes material safety data sheets which provide this information.

DoD Instruction 6055.1; Establishes occupational safety and health guidance for managing and controlling the reduction of radio frequency exposure.

DoD Flight Information Publication; Identifies regions of potential hazard resulting from bird aggregations or obstructions, military airspace noise sensitive locations, and defines airspace avoidance measures.

AFI 13-212v1 and v2; 1994; Weapons Ranges and Weapons Range Management; Establishes procedures for planning, construction, design, operation, and maintenance of weapons ranges as well as defines weapons safety footprints, buffer zones, and safest procedures for ordnance and aircraft malfunction.

AFI 32-2001; 16-May-94; The Fire Protection Operations and Fire Prevention Program; Identifies requirements for Air Force fire protection programs (equipment, response time, and training).

AFI 32-7063; 1-Mar-94; AICUZ. The AICUZ Study defines and maps accident potential zones and runway clear zones around the installation, and contains specific land use compatibility recommendations based on aircraft operational effects and existing land use, zoning and planned land use.

Air Force Manual 91-201; 12-Jan-96; Explosives Safety Standards; Regulates and identifies procedures for explosives safety and handling as well as defining requirements for ordnance quantity distances, safety buffer zones, and storage facilities.

AFI 91-301; 1-Jun-96; Air Force Occupational and Environmental Safety, Fire Protection and Health Program); Identifies occupational safety, fire prevention, and health regulations governing Air Force activities and procedures associated with safety in the workplace.

#### *Habitat Resources*

EO 11990; 24-May-77; Protection of Wetlands; Requires federal agencies to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands in their activities. Construction is limited in wetlands and requires public participation.

EO 11988; 24-May-77; Floodplain Management; Directs Federal agencies to restore and preserve floodplains by performing the following in floodplains: not supporting development; evaluating effects of potential actions; allowing public review of plans; and considering in land and water resource use.

AFPD 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements EO 11988 and 11990.

#### *Anthropogenic Resources*

##### *Hazardous Materials*

7 USC 136 et seq., Public Law 92-516; 1997; Federal Insecticide, Fungicide, and Rodenticide Act Insecticide and Environmental Pesticide Control; Establishes requirements for use of pesticides that may be relevant to activities at Eglin Air Force Base (AFB).

42 USC Sect. 2011 - Sect. 2259; Atomic Energy Act; Assure the proper management of source, special nuclear, and byproduct material.

42 USC 6901 et seq.; 1980; RCRA and Solid Waste Disposal Act of 1980; Subchapter III sets forth hazardous waste management provisions; Subchapter IV sets forth solid waste management provisions; and Subchapter IX sets forth underground storage tank provisions; with which Federal agencies must comply.

42 USC 9601 et seq., Public Law 96-510; 1997; CERCLA, as amended; Establishes the liability and responsibilities of federal agencies for emergency response measures and remediation when hazardous substances are or have been released into the environment.

42 USC 11001 to 11050; EPCRA; Provides for notification procedures when a release of a hazardous substance occurs; sets up community response measures to a hazardous substance release; and establishes inventory and reporting requirements for toxic substances at all facilities.

42 USC 13101 to 13109; 1990; Pollution Prevention Act of 1990 (PPA); Establishes source reduction as the preferred method of pollution prevention, followed by recycling, treatment, then

disposal into the environment. Establishes reporting requirements to submit with EPCRA reports. Federal agencies must comply.

Air Armament Center (AAC) Plan 32-3; January 2004; Asbestos Management Plan; This plan establishes procedures for the Eglin AFB facility asbestos management program. It contains the policies and procedures used in controlling the health hazards created by asbestos-containing materials (ACM), and the procedures used in ACM removal required to protect the health of personnel and to comply with applicable federal, state, and Air Force laws and inspections.

AAC Plan 32-4; January 2004. Lead-Based Paint Management Plan; This plan establishes procedures for the Eglin AFB lead-based paint management program. It contains policies and procedures used in controlling health hazards from exposure to lead-based based paint.

AAC Plan 32-7; February 2003; Integrated Solid Waste Management Plan (ISWMP); The Eglin AFB ISWMP documents guidance and procedures with regard to regulatory compliance in the handling, reduction, recycling and disposal of solid waste. It contains requirements necessary to reach the mandated incremental waste diversion goal of 40 percent diversion of municipal solid waste from landfill disposal by Fiscal Year 2005. These policies and procedures are designed to preserve landfill space, increase recycling and reuse, address revenues and cost avoidance, provide pollution prevention alternatives and promote Affirmative Procurement. This plan draws from the aspects of two programs, the ISWMP and the Qualified Recycling Program.

AAC Plan 32-9; February 2003; Hazardous Materials Management Plan (HMMP); The Eglin AFB HMMP documents existing policy and procedures for organizations requesting, procuring, issuing, handling, storing and disposing of hazardous material (HM) in accomplishment of the AAC mission. These policies provide guidance for compliance with federal, state, and local occupational safety, health, and environmental regulations.

AFPD 32-70; 20-Jul-94; Environmental Quality; Provides for developing and implementing an Air Force Environmental Quality Program composed of four pillars: cleanup, compliance, conservation and pollution prevention. Implements RCRA, CERCLA, EPCRA, PPA, EO 12088, EO 12777, and EO 12586. Implements DoD Instruction 4120.14, DoD Directive 4210.15, and DoD Directive 5030.41.

AAC Instruction 32-7003; 26July2004; Hazardous Waste (HW) Management; This instruction is intended to provide a framework for complying with environmental standards applicable to HW, Universal Waste, Special Waste (SW), and used petroleum products on Eglin AFB.

AFI 32-7020; 19-May-94; The Environmental Restoration Program; Introduces the basic structure and components of a cleanup program under the Defense Environmental Restoration Program. Sets forth cleanup program elements, key issues, key management topics, objectives, goals, and scope of the cleanup program.

AFI 32-7042; 12-May-94; Solid and Hazardous Waste Compliance; Provides that each installation must develop a HW and a SW management plan; characterize all HW streams; and dispose of them in accordance with the AFI. Plans must address pollution prevention as well.

AFI 32-7080; 12-May-94; Pollution Prevention Program; Each installation is to develop a pollution prevention management plan that addresses ozone depleting chemicals; USEPA 17 industrial toxics; hazardous and solid wastes; obtaining environmentally friendly products; energy conservation, and air and water.

AFFD 40-2; 8-Apr-93; Radioactive Materials; Establishes policy for control of radioactive materials, including those regulated by the U.S. Nuclear Regulatory Commission, but excluding those used in nuclear weapons.

### *Cultural Resources*

10 USC 2701 note, Public Law 103-139; 1997; Legacy Resource Management Program; Provides funding to conduct inventories of all scientifically significant biological assets of Eglin AFB.

16 USC 431 et seq.; PL 59-209; 34 Stat. 225; 43 CFR 3; 1906; Antiquities Act of 1906; Provides protection for archeological resources by protecting all historic and prehistoric sites on Federal lands. Prohibits excavation or destruction of such antiquities without the permission (Antiquities Permit) of the Secretary of the department that has the jurisdiction over those lands.

16 USC 461 to 467; 1997; Historic Sites, Buildings, and Antiquities Act; Establishes national policy to preserve for public use historic sites, buildings and objects of national significance: the Secretary of the Interior operates through the National Park Service to implement this national policy.

16 USC 469 to 469c-1; 1997; Archaeological and Historic Preservation Act of 1974; Directs Federal agencies to give notice to the Secretary of the Interior before starting construction of a dam or other project that will alter the terrain and destroy scientific, historical or archeological data, so that the Secretary may undertake preservation.

16 USC 470aa-470mm, Public Law 96-95; 1997; Archaeological Resources Protection Act of 1979 (ARPA); Establishes permit requirements for archaeological investigations and ensures protection and preservation of archaeological sites on federal property.

16 USC 470 to 470w-6-16 USC 470f, 470h-2; 1997; National Historic Preservation Act (NHPA); Requires Federal agencies to (1) allow the Advisory Council on Historic Preservation to comment before taking action on properties eligible for the National Register and (2) preserve such properties in accordance with statutory and regulatory provisions.

25 USC 3001 - 3013), (Public Law 101-601; 1997; Native American Graves Protection and Repatriation Act of 1991; Federal agencies must obtain a permit under the ARPA before excavating Native American artifacts. Federal agencies must inventory and preserve such artifacts found on land within their stewardship.

42 USC 1996; American Indian Religious Freedom Act; Federal agencies should do what they can to ensure that American Indians have access to sites, use and possession of sacred objects,

and the freedom to worship through ceremonial and traditional rites in the practice of their traditional religions.

32 CFR Part 200; Protection of Archaeological Resources: Uniform Regulations; Provides that no person may excavate or remove any archaeological resource located on public lands or Indian lands unless such activity is conducted pursuant to a permit issued under this Part or is exempted under this Part.

36 CFR Part 60; Nominations to National Register of Historic Places (NRHP); Details how the Federal agency Preservation Officer is to nominate properties to the Advisory Council for consideration to be included on the National Register.

36 CFR Part 800; Protection of Historic and Cultural Properties; Sets out the Section 106 process for complying with Sections 106 and 110 of the NHPA: the Agency official, in consultation with the State Historic Preservation Officer, identifies and evaluates affected historic properties for the Advisory Council.

Executive Order 11593, 16 USC 470; 13-May-71; Protection and Enhancement of the Cultural Environment; Instructs federal agencies to identify and nominate historic properties to the NRHP, as well as avoid damage to Historic properties eligible for NRHP.

EO 13007; 24-May-96; Directs federal agencies to provide access to and ceremonial use of sacred Indian sites by Indian religious practitioners as well as promote the physical integrity of sacred sites.

DoD Directive 4710.1; Archaeological and Historic Resources Management; Establishes policy requirements for archaeological and cultural resource protection and management for all military lands and reservations.

AFPD 32-70; 20-Jul-94; Environmental Quality; Develops and implements the Air Force Environmental Quality Program composed of cleanup, compliance, conservation, and pollution prevention. Implements NHPA, EO 11593, and DoD Directive 470.1.

AFI 32-7065; 13-Jun-94; Cultural Resource Management; Directs Air Force bases to prepare cultural resources management plans to comply with historic preservation requirements, Native American considerations; and archeological resource protection requirements, as part of the Base Comprehensive Plan.

Air Force Policy Letter; 4-Jan-82; Establishes Air Force policy to comply with historic preservation and other federal environmental laws and directives.

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**APPENDIX B**  
**BIOLOGICAL RESOURCES**



## ECOLOGICAL ASSOCIATIONS AND OTHER LAND USES

### Sand hills Ecological Association

The Sand Hills ecological association encompasses approximately 46 acres (13 percent) of Test Area (TA) C-64. Longleaf pine sand hills are characterized by an open, savanna-like structure with a moderate to tall canopy of longleaf pine, a sparse midstory of oaks and other hardwoods, and a diverse groundcover composed mainly of grasses, forbs, and low-stature shrubs. The structure and composition was maintained by frequent fires (every 3 to 5 years), which controlled hardwood, sand pine, and titi encroachment.

Longleaf pine sand hills consist of a high diversity of species adapted to fire and the heterogeneous conditions that fires create. Variation within the sand hills is recognized by two associations differing in the dominance of grass species (wiregrass versus bluestem). Sand hills are often associated with and grade into scrub, upland pine forest, xeric hammock or slope forests. Associated trees include longleaf pine turkey oak, longleaf pine-xerophytic oak, longleaf pine-deciduous oak, or high pine (U.S. Air Force, 2007). The functional significance of the Sand hill ecological association is to provide maintenance of regional biodiversity. Additionally, the sand hills, due to their wide coverage on Eglin, are the ecological association across which fire carries into the other imbedded fire-dependent systems. Eglin Air Force Base (AFB) is the largest and least fragmented single longleaf pine ownership in the world, and has the best remaining old growth longleaf pine. Seepage slopes are a common embedded wetland feature found within Eglin's sand hill matrix.

### Wetland/Riparian Ecological Association

Wetlands and Riparian ecological associations on Eglin AFB can be divided into the following categories: (1) wetlands, which are dominated by plants adapted to anaerobic substrate conditions imposed by saturation or inundation for more than 10 percent of the growing season; (2) lacustrine wetlands that occur in nonflowing wetlands of natural depressions; and (3) riverine communities, which are natural, flowing waters from their source to the downstream limits of tidal influence and are bounded by channel banks. The above categories are further broken down into the following natural community types.

**Floodplain wetlands** have alluvial sand or peat substrates associated with riverine natural communities and are subject to flooding but not permanent inundation.

1. **Bottomland forest**—Bottomland forest occurs on low-lying flatlands, usually bordering streams with distinct banks, where water rarely inundates the forest, such as areas along the Yellow River. On Eglin, these communities are also found on low terraces along the larger streams, such as Alaqua Creek.
2. **Floodplain forest**—This term is used to designate river bottoms and low creek bottoms. In swamps with a recent fire history, the common tree is the black titi.

**Basin wetlands** are shallow, closed basins with an outlet usually only in time of high water. Bottom substrate is typically peat or sand and is usually inundated. Basin wetland vegetation is woody and/or herbaceous.

1. Depression marsh—These systems are shallow, usually rounded depressions in sand substrate with herbaceous vegetation often in concentric bands. Peaty soil accumulates in the deepest sections where water is most permanent.
2. River floodplain lake—Fresh water ponds support a variety of aquatic vegetation. Not all ponds on the Reservation support the same vegetation.
3. Sand hills upland lake—Shallow, rounded depressions, sandy bottom, low nutrient.

**Riparian zones** may be classified into the following ravine natural community types.

1. Alluvial stream—Clay and silt carrying, larger streams, perennial (Yellow River). Alluvial streams are characterized as perennial or intermittent seasonal watercourses originating in high uplands that are primarily composed of sandy clays and clayey-silty sands. Surface runoff generally predominates over subsurface drainage.
2. Blackwater stream—Blackwater streams are characterized as perennial or intermittent seasonal water courses originating deep in sandy lowlands where extensive wetlands with organic soils function as reservoirs, collecting rainfall and discharging it slowly to the stream. The dark, tea-colored water typical of blackwater streams are laden with tannins, particulates, dissolved organic matter, and iron derived from drainage through swamps and marshes.
3. Seepage stream—Seepage streams are characterized as perennial or intermittent seasonal water courses, originating from shallow ground waters that have percolated through deep, sandy, upland soils. These streams are typically clear to lightly colored and are relatively short, shallow, and narrow.

Table B-1 shows the type of Wetlands/Riparian ecological associations found on or adjacent to Eglin AFB. The Wetland/Riparian ecological association accounts for less than 1 percent of TA C-64.

**Table B-1. Wetland Types by Wetland/Riparian Ecological Association on or Adjacent to Eglin AFB**

Type of Wetlands	Source of Hydrology	Substrate	Vegetation	Functional Significance
Depression wetlands	Groundwater or rainwater	Peat or sand	Woody and/or herbaceous	Maintains regional biodiversity Floodwater storage Filters pollutants Maintains water quality
Seepage slopes	Downslope seepage (sheet flow)	High in clay	Herbaceous	Rare habitats High biodiversity
Floodplain wetlands	Rivers, streams, and creeks	Peat or sand	Woody and/or herbaceous	Maintains regional biodiversity Floodwater storage Wildlife corridors Maintains water quality

Source: U.S. Air Force, 2007

## Other Land Uses

### *Open Grasslands/Shrublands*

Open grasslands/shrublands are the largest land use area found on TA C-64 and comprise approximately 242 acres (67 percent) of the test area. The open grasslands/shrublands occurs in areas of heavily disturbed Sand Hills, Flatwoods, and Wetlands/Riparian ecological sites (U.S. Air Force, 2003) and predominantly occurs within the test areas on Eglin AFB. The open grassland/shrubland association is characterized by grasses and low shrubs and is maintained with machinery or fire that removes or prevents future growth. Riparian zones are found throughout these areas.

### *Urban/Landscaped Areas*

TA C-64 contains approximately 70 acres (20 percent) of urban/landscaped areas. Eglin AFB currently has approximately 46,000 acres of semi-improved areas and 14,000 acres of improved areas. Bahia grass (*Panicum notatum*) is the primary turf grass that is used in the semi-improved areas while St. Augustine grass (*Stenotaphrum secundatum*) and centipede grass (*Eremochloa ophiuroides*) are the primary turf grasses used in the improved areas. Ground maintenance encourages low-maintenance landscaping and uses native plants whenever possible (U.S. Air Force, 2007).

## SENSITIVE HABITATS

### *High Quality Natural Communities, Significant Botanical Sites, and Outstanding Natural Areas*

Specific areas exist within Eglin AFB that are ecologically unique due to their status as high quality examples of natural communities or the presence of rare species. These areas were identified by the Florida Natural Areas Inventory (FNAI) through a project funded by the Department of Defense (DoD) Legacy Resource Management Program (LRMP).

Termed “High Quality Natural Communities,” these areas are distinguished by the uniqueness of the community, ecological condition, species diversity, and presence of rare species. These high quality areas total 75,246 acres and cover approximately 16 percent of the Eglin Reservation.

FNAI also identified special habitats that support rare plants on Eglin called Significant Botanical Sites (SBS), as well as larger-scale landscapes containing complexes of rare species, which they named Outstanding Natural Areas (ONA) (FNAI 1995, 1997). Large portions of these two areas overlap. Combined on the Eglin Reservation, these ONA and SBS total 39,709 acres, or approximately 9 percent of the installation. These landscapes contain the highest quality examples of the natural communities on the installation, and, by extension, the highest quality examples of these natural communities globally.

The 16 ONAs are designated as follows:

- A-77 ONA
- Alaqua–Blount Creek Confluence
- Alice Creek
- Boiling Creek–Little Boiling Creek
- Brier Creek
- East Bay Flatwoods and Scrub Mosaic
- Live Oak Creek
- Lower Weaver River
- Patterson ONA and Extension
- Piney Creek
- Prairie Creek (A-78) Sand Hill
- Scrub Pond
- Spencer Flats Wetlands
- White Point
- Whitmier Island
- Yellow River Basin

The 14 SBSs are designated as follows:

- East Bay Savannahs
- Boiling Creek–Little Boiling Creek
- Hicks Creek Prairie
- Whitmier Island
- Malone Creek
- Patterson Natural Area Expansion
- Live Oak Creek
- Turkey Gobbler Creek Cypress Swamp
- Titi Creek Wilderness Area
- Blue Spring Creek Lakes
- Brier Creek
- Hickory Branch Hardwood Forest
- Piney Creek
- Turkey Hen Creek Swamp

## SENSITIVE SPECIES

### Eastern Indigo Snake (*Drymarchon corais couperi*)

The federally threatened eastern indigo snake is the largest nonvenomous snake in North America and can grow up to 125 inches in length. The primary reason for its listing is population declines resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats also exposes the snake to danger from increased contact with humans. The snake frequents flatwoods, hammocks, stream bottoms, canebrakes, riparian thickets, and high ground with deep, well-drained to excessively drained, sandy soils. Habitat preferences vary seasonally. Xeric sand hill winter dens are used from December to April; from May to July they shift from winter dens to summer territories; from August through November they are frequently located in shady creek bottoms.

The indigo snake is strongly associated with gopher tortoise burrows. They use abandoned burrows in winter and spring for egg laying, shedding, and protection from dehydration and temperature extremes. They also use stump holes, armadillo and gopher holes, and other wildlife ground cavities.

**Red-cockaded Woodpecker (*Picoides borealis*)**

The Red-cockaded Woodpecker (RCW) primarily inhabits the interstitial areas of the Eglin Reservation, although RCW cavity trees can be found on some test areas as well. On Eglin AFB, the RCW typically inhabits mature, open stands of longleaf pine. The RCW does not migrate and maintains year-round territories near nesting and roosting trees. An RCW cluster typically encompasses about 10 acres with most cavity trees within a 1,500-foot diameter circle. The RCW has shown some preference for mature longleaf pine over other pine species as a cavity tree with the average age of longleaf pines in which new cavities have been excavated being 95 years. Currently, 110,834 acres of the interstitial area on Eglin AFB is designated as RCW foraging habitat.

The woodpeckers primarily feed on spiders, ants, cockroaches, centipedes, and insect eggs and larvae that are excavated from trees. Dead, dying, and lightning-damaged trees that are infested with insects are a preferred feeding source. High-quality RCW forage habitat consists of open pine stands with tree diameter at breast height averaging 9 inches and larger. The birds forage in intermediate-aged (30-year-old) and older pine stands, which also provide an important source of future trees for the construction of cavities. The Eglin population has been increasing since 1994, and the current population has 420 active clusters and an estimated 371 potential breeding groups.

Figure B-1 outlines this increase in population trends on Eglin AFB.

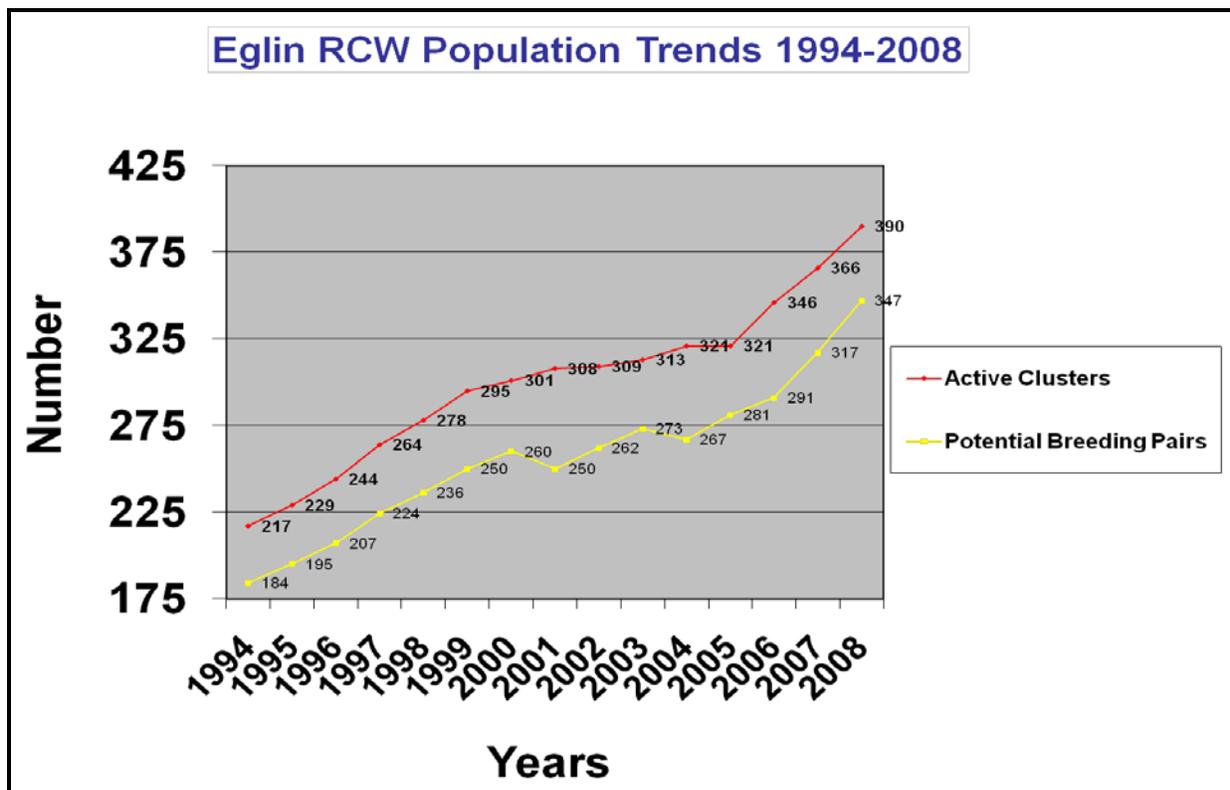


Figure B-1. Red-cockaded Woodpecker Population Trends from 1994-2008

**Reticulated Flatwoods Salamander** (*Ambystoma bishopi*)

The reticulated flatwoods salamander is listed as federally endangered and is a state species of special concern. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola–Flint Rivers with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders (*A. cingulatum*) ranging to the east of the rivers. There are 18 known breeding ponds for the reticulated flatwoods salamander on the Eglin Range. Additionally, the Eglin Range supports approximately 17,000 acres of potential salamander habitat in mesic flatwoods. On February 10, 2009, the U.S. Fish and Wildlife Service (USFWS) issued a notification in the *Federal Register* that no critical habitat would be designated for the reticulated flatwoods salamander on Eglin AFB (*Federal Register*, 2009).

Optimal habitat for this small mole salamander is open, mesic (moderately wet) woodlands of longleaf or slash pine flatwoods maintained by frequent fires and that contain shallow, ephemeral wetland ponds. Males and females migrate to these ephemeral ponds during the cool, rainy months of October through December. The females lay their eggs in vegetation at the edges of the ponds. Flatwoods salamanders may disperse long distances from breeding sites to upland sites where they live as adults (U.S. Air Force, 2006).

The primary threat to the flatwoods salamander is loss of mesic habitat through the filling in of wetlands and other alterations to the landscape hydrology. Flatwoods salamander habitat is also threatened by the introduction of invasive non-native species (INS). Flatwoods salamanders and their active breeding wetlands both appear to have declined in number since the original Eglin surveys in 1993 and 1994. This is possibly due in part to several years of drought in the late 1990s and early 2000s. Wetlands used for breeding may not have remained wet long enough for larvae to complete metamorphosis if rainfall amounts were not sufficient. This has resulted in little population recruitment over the last decade at Eglin's wetlands (U.S. Air Force, 2006).

The USFWS guidelines in the *Federal Register*, dated 1 April 1999, establish a 450-meter (1,476-foot) buffer area from the wetland edge of confirmed breeding ponds. Within the buffer area, the guidelines restrict ground-disturbing activities in order to minimize the potential for direct impacts to salamanders, the introduction and spread of plant INS, and alterations to hydrology and water quality.

**Gopher Tortoise** (*Gopherus polyphemus*)

The gopher tortoise is a state-threatened species. The tortoise is found primarily within the Sand Hills and Open Grassland ecological associations on the Eglin Range, where it excavates a tunnel-like burrow for shelter from climatic extremes and refuge from predators. The primary features of good tortoise habitat are sandy soils, open canopy with plenty of sunlight, and abundant food plants (forbs and grasses). Prescribed fire is often employed to maintain these conditions. Nesting occurs during May and June and hatching occurs from August through September. Gopher tortoise burrows serve as important habitat for many species, including the federally listed eastern indigo snake (U.S. Air Force, 2006).

**Florida Black Bear** (*Ursus americanus floridanus*)

The Florida black bear was proposed for federal listing in 1990, however, in 1998 the USFWS removed it from listing consideration. The Florida black bear is currently listed as a state-threatened species except in Baker and Columbia Counties and Apalachicola National Forest. Black bear populations are currently found in Florida, Georgia, and a small population in Alabama. Eglin AFB is considered to be the smallest population, with an estimated 60 to 100 individuals; however, Eglin's black bear population has shown signs of increase since the early 1990s (U.S. Air Force, 2002). Eglin's Natural Resources Section (NRS) frequently receives reports of bear sightings and has responded to a growing number of bear-vehicle collisions and nuisance bear complaints. Most black bears on Eglin utilize the large swamps and floodplain forests in the southwest and northern portions of the Reservation. Black bear sightings have occurred in numerous locations throughout the Eglin Reservation, the majority of which have been within the interstitial areas.

Black bears eat a wide variety of food items. Their seasonal and annual diet consists primarily of fruits, acorns, beetles, and yellow jackets. Black bear in Florida breed in June-July. Implantation is delayed about 4 months. Gestation lasts 7 to 7.5 months (average 220 days) (U.S. Air Force, 2002). Females give birth every 2 years at most. Young are born in January-February, and stay with their mother until fall of the second year. Litter size is typically two to four cubs and females generally give birth at 3 to 4 years old (U.S. Air Force, 2002).

**Southeastern American Kestrel** (*Falco sparverius paulus*)

The Southeastern American kestrel is state listed as threatened. The kestrel is a small falcon with pointed wings, a reddish back and tail, and two black stripes on each side of the white sides of its head. Kestrels are relatively common on Eglin AFB. The clutch size is three to seven (usually four to five). Incubation is conducted mainly by females, and usually lasts 29 to 31 days. Young are cared for by both parents and usually leave the nest in about 29 to 31 days. Kestrels will readily re-nest if the first clutch is lost.

Kestrels prefer open or partly open sand hills habitat. On Eglin, kestrels frequently utilize the cleared test areas as foraging areas and nest in cavities most often in longleaf pine trees. Cavity trees may be dead or alive. Kestrels frequently nest in old growth longleaf pines that contain cavities originally excavated by RCWs. These cavities are usually enlarged by fox squirrels, pileated woodpeckers, or fire, making them large enough for kestrel use. Kestrels will readily use nest boxes; however, Eglin appears to contain an abundance of suitable nesting habitat. Kestrels feed on insects (e.g., grasshoppers and crickets) and small vertebrates (e.g., snakes, lizards, birds, mice, and sometimes bats). They often utilize the tree line or utility poles adjacent to and within cleared test areas.

**Gopher Frog** (*Rana capito*)

The gopher frog is listed as a species of special concern by the State of Florida. These frogs are typically 2.5 to 4 inches long, excluding their legs, and have a wide body characterized by cream-colored, gray, or brown blotches (USFWS et al., 2003). Their chin and throat are spotted, and the belly is usually plain. Gopher frogs prefer habitats of the Sand Hills ecological

association and are typically found in dry, sandy uplands. They are nocturnal and spend most of the day in tunnels or gopher tortoise burrows. Breeding occurs in ponds and other permanent water bodies. The gopher frog is found throughout Florida, with the exception of the Everglades and the Keys (USFWS et al., 2003).

### **Florida Pine Snake (*Pituophis melanoleucus mugitus*)**

The Florida pine snake has physically adapted to digging in the loose sand and also enters rodent burrows and occasionally gopher tortoise burrows. It is currently listed as a species of special concern by the State of Florida. Adults of this species are generally between 4 and 7 feet long, with an indistinct pattern of light brown blotches with a rusty background (USFWS et al., 2003). The Florida pine snake prefers sand hills, sand pine scrub, and pastures with dry, sandy soils and open canopies. They are found throughout most of the state, however are absent from the Keys. Pine snake habitat is best managed by maintaining gopher tortoise populations and by keeping soil and ground disturbance to a minimum.

## **MIGRATORY BIRDS**

The Migratory Bird Treaty Act (16 USC 703-712; 1997-Supp) and Executive Order (EO) 13186, Responsibilities of Federal Agencies to Protect Migratory Birds, protect migratory birds and their habitats and establish a permitting process for legal taking. A migratory bird is defined by the USFWS as any species or family of birds that lives, reproduces, or migrates within or across international borders at some point during their annual life cycle. For normal and routine operations such as installation support functions, actions of the DoD may not result in pursuit, hunting, taking, capturing, killing, possession, or transportation of any migratory bird, bird part, nest, or egg thereof, except as permitted. The DoD must address these routine operations through the Memorandum of Understanding developed in accordance with EO 13186 (DoD and USFWS, 2006). Under the 2003 National Defense Authorization Act, the Armed Forces are exempted from the incidental taking of migratory birds during military readiness activities, except in cases where an activity would likely cause a significant adverse effect to the population of a migratory bird species. As detailed in the final rule in the *Federal Register* (50 Code of Federal Regulations 21), in this situation the Armed Forces, in cooperation with the USFWS, must develop and implement conservation measures to mitigate or minimize the significant adverse impacts (*Federal Register*, 2007).

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## **APPENDIX C**

### **AIR QUALITY**



## AIR QUALITY SUPPLEMENTAL INFORMATION

This appendix provides a general overview of the federal and state regulatory air quality programs. Additionally, the appendix discusses emission factor development and calculations including assumptions employed in the air quality analyses presented in the Air Quality sections of this Range Environmental Assessment (REA).

### AIR QUALITY PROGRAM OVERVIEW

In order to protect public health and welfare, the U.S. Environmental Protection Agency (USEPA) has developed numerical concentration-based standards or National Ambient Air Quality Standards (NAAQS) for six “criteria” pollutants (based on health-related criteria) under the provisions of the Clean Air Act (CAA) Amendments of 1970. There are two kinds of NAAQS: primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (Government Printing Office, no date).

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the federal program. The Division of Air Resource Management within Florida Department of Environmental Protection (FDEP) administers the state’s air pollution control program under authority of the Florida Air and Water Pollution Control Act and the Environmental Protection Act.

Florida has adopted the NAAQS as written in the federal regulations (40 Part 51) except Florida has established a more conservative standard for sulfur dioxide (SO<sub>2</sub>). USEPA has set the annual and 24-hour standards for SO<sub>2</sub> at 0.03 parts per million (ppm) (80 micrograms per cubic meter [ $\mu\text{g}/\text{m}^3$ ]) and 0.14 ppm (365  $\mu\text{g}/\text{m}^3$ ) respectively. Florida has adopted the more stringent annual and 24-hour standards of 0.02 ppm (60  $\mu\text{g}/\text{m}^3$ ) and 0.1 ppm (260  $\mu\text{g}/\text{m}^3$ ) respectively. In addition, Florida has adopted the national secondary standard of 0.50 ppm (1300  $\mu\text{g}/\text{m}^3$ ). Federal and State of Florida ambient air quality standards are presented in Table C-1.

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than (attainment), worse than (nonattainment) the NAAQS, and unclassifiable. Those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant are “unclassifiable” and are treated as attainment until proven otherwise. Attainment areas can be further classified as “maintenance” areas. Maintenance areas are those areas previously classified as nonattainment and that have successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of the State of Florida are in compliance with the NAAQS.

Table C-1. National and State Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	Federal Primary NAAQS <sup>8</sup>	Federal Secondary NAAQS <sup>8</sup>	Florida Standards
Carbon monoxide (CO)	8-hour <sup>1</sup>	9 ppm (10 mg/m <sup>3</sup> )	No standard	9 ppm (10 µg/m <sup>3</sup> )
	1-hour <sup>1</sup>	35 ppm (40 mg/m <sup>3</sup> )	No standard	35 ppm (40 µg/m <sup>3</sup> )
Lead (Pb)	Quarterly	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>	1.5 µg/m <sup>3</sup>
Nitrogen dioxide (NO <sub>2</sub> )	Annual	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )	0.053 ppm (100 µg/m <sup>3</sup> )
Particulate matter ≤10 micrometers (PM <sub>10</sub> )	24-hour <sup>2</sup>	150 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
Particulate matter <2.5 micrometers (PM <sub>2.5</sub> )	Annual <sup>3</sup>	15 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>	150 µg/m <sup>3</sup>
	24-hour <sup>4</sup>	35 µg/m <sup>3</sup>	35 µg/m <sup>3</sup>	15 µg/m <sup>3</sup>
Ozone (O <sub>3</sub> )	1-hour <sup>7</sup>	0.12 ppm (235 µg/m <sup>3</sup> )	0.12 ppm (235 µg/m <sup>3</sup> )	65 µg/m <sup>3</sup> 0.12 ppm
	8-hour <sup>5</sup>	0.075 ppm (2008 std)		(235 µg/m <sup>3</sup> )
	8-hour <sup>6</sup>	0.08 ppm (1997 std) (157 µg/m <sup>3</sup> )	0.08 ppm (157 µg/m <sup>3</sup> )	
Sulfur Dioxide (SO <sub>2</sub> )	Annual	0.03 ppm (80 µg/m <sup>3</sup> )	No standard	0.02 ppm (60 µg/m <sup>3</sup> )
	24-hour <sup>1</sup>	0.14 ppm (365 µg/m <sup>3</sup> )	No standard	0.10 ppm (260 µg/m <sup>3</sup> )
	3-hour <sup>1</sup>	No standard	0.50 ppm (1300 µg/m <sup>3</sup> )	0.50 ppm (1300 µg/m <sup>3</sup> )

Source: USEPA, 2008 (Federal Standards); FAC 62-204.240, 2006 (Florida Standards)

ppm = parts per million; mg/m<sup>3</sup> = milligrams per cubic meter; µg/m<sup>3</sup> = micrograms per cubic meter

1. Not to be exceeded more than once per year.
2. Not to be exceeded more than once per year on average over 3 years
3. To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.
4. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m<sup>3</sup> (effective 17 December 2006).
5. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective 27 May 2008).
6. (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.  
(b) The 1997 standard-and the implementation rules for that standard will remain in place for implementation purposes as USEPA undertakes rule making to address the transition from the 1997 ozone standard to the 2008 ozone standard.
7. (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.  
(b) As of 15 June 2005 USEPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact Areas.

Each state is required to develop a state implementation plan (SIP) that sets forth how CAA provisions will be imposed within the state. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS within each state and includes control measures, emissions limitations, and other provisions required to attain and maintain the ambient air quality standards. The purpose of the SIP is twofold. First, it must provide a control strategy that will result in the attainment and maintenance of the NAAQS. Second, it must demonstrate that progress is being made in attaining the standards in each nonattainment area.

Florida has a statewide air quality-monitoring network that is operated by the state (*FDEP State Air Monitoring Reports*). Ambient air quality data from these monitors are used to assess the region's air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and SO<sub>2</sub>. The monitors tend to be concentrated in areas with the largest population densities. Not all pollutants are monitored in all areas. The air quality monitoring network is used to identify areas where the ambient air quality standards are being violated and plans are needed to reduce pollutant concentration levels to be in attainment with the standards; also included are areas where the ambient standards are being met but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

The end-result of this attainment/maintenance analysis is the development of local and statewide strategies for controlling emissions of criteria air pollutants from stationary and mobile sources. The first step in this process is the annual compilation of the ambient air monitoring results, and the second step is the analysis of the monitoring data for general air quality exceedances of the NAAQS as well as pollutant trends.

The FDEP Northwest District operates monitors in several northwest counties, including Bay, Escambia, and Santa Rosa Counties. Over the years of record there have been exceedances (pollutant concentration greater than the numerical standard) of a NAAQS. However, there has not been a violation (occurrence of more exceedances of the standard than is allowed within a specified time period) of an ambient standard (*FDEP State Air Monitoring Reports*). Currently, the State of Florida is attainment for all criteria pollutants.

## **PROJECT CALCULATIONS: AIR EMISSIONS**

### **Regulatory Compliance Methodologies**

Mission-generated air emissions were analyzed to enable comparison to NAAQS and the cumulative impact to the air shed within the affected Region of Influence (ROI). Activities occurring within the Test Area (TA) C-64 range that have the greatest potential to impact air quality are munitions and vehicle activities including particulate emissions resulting from the dust of unpaved roads and trails. Aircraft emissions have been omitted from this REA, since all aircraft emissions are addressed in the Air Operations Environmental Baseline Document. In order to conservatively estimate the potential impact of these operations with short-term ambient air quality, a "Closed Box Assessment" (CBA) was performed. Additionally, the annual emissions were compared to the USEPA 2002 National Emissions Inventory (NEI) for the ROI. Both techniques are described below as well as the emissions calculations and project assumptions.

### **The Closed Box Assessment**

The CBA provides a means to estimate maximum short-term impacts from emissions in a given element of space. Several assumptions are incorporated into this technique. First, it assumes that emissions are homogeneously mixed and contained within a defined volume of space throughout which the activities occur. For this assessment, this volume of air is defined by

vertical and lateral boundaries. The vertical boundary of altitude established was 3,000 feet above sea level and the dimensional area within the TA C-64 Range was utilized for lateral boundaries.

Second, it assumes that the calculated concentrations of criteria pollutants within the defined box resulting from the operations are representative activities of the maximum resultant ground-level (i.e., sea level) concentrations. Because of these assumptions, the results of these calculations are expected to indicate somewhat higher air quality impacts than those that would result from a more structured dispersion model. However, the results do provide a maximum impact scenario for comparison with established ambient air quality standards.

For this assessment, it was assumed that activities occurring within the TA C-64 range operated randomly. The ceiling altitude of 3,000 feet was chosen as a conservative estimate of the average height for stable temperature inversion common to the area. This type of inversion can significantly inhibit, if not effectively block, vertical mixing and widespread dispersion of some air pollutants. Therefore, pollutants can be considered confined between the base of the inversion and the ground, or that portion of the lower atmosphere commonly termed the mixing layer. The mixing-layer height determines the vertical extent of the dispersion process for pollutant releases below the mixing height.

A conservative one-hour scenario was developed encompassing the individual emissions associated with mobile sources as well as ordnance and munitions activities. The scenario assumes that all activities within the year occurred during the same time frame. These calculated one-hour emissions contributions were then compared to the appropriate NAAQS. For averaging times greater than 1 hour, the maximum concentration will generally be less than the calculated one-hour value. The comparison is limited to those criteria pollutants directly associated with range activities.

## **CUMULATIVE IMPACT COMPARISON**

To evaluate the range emissions and their impact to the overall ROI (i.e., Okaloosa County), the emissions associated with the range activities were compared to the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 NEI data. Potential impacts to air quality are then identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10-percent criteria approach is used in the General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas.

In accordance with Section 176(c) of the Clean Air Act, USEPA promulgated the General Conformity Rule that is codified at 40 Code of Federal Regulations (CFR) 51, Subpart W. The provisions of this rule apply to state review of all federal actions submitted pursuant to 40 CFR 51, Subpart W, and incorporated by reference at Rule 62-204.800, Florida Administrative Code (FAC). The Conformity Rule only affects federal actions occurring in nonattainment areas (areas that do not meet the NAAQS) and maintenance areas (areas that were classified as nonattainment but now are in attainment). Since the Proposed and Alternative Actions are located in attainment areas, Eglin AFB would not be required to prepare a conformity

determination for the activities described. However, the general concept of the conformity rule was used as a criterion although not necessary.

For impacts screening in this analysis, however, a more restrictive criteria than required in the General Conformity Rule was used. Rather than comparing emissions from test activities to regional inventories (as required in the General Conformity Rule), emissions were compared to the individual counties potentially impacted, which is a smaller area.

### **National Emissions Inventory**

The NEI is operated under USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, from tribes, as well as from industry. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes emission estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emission estimates for individual points or major sources (facilities), as well as county level estimates for area, mobile, and other sources, are available currently for years 1996, 1999, and 2002 for criteria pollutants and HAPs.

Criteria air pollutants are those for which USEPA has set health-based standards. Four of the six criteria pollutants are included in the NEI database.

- Carbon monoxide (CO)
- Nitrogen oxides (NO<sub>x</sub>)
- Sulfur dioxide (SO<sub>2</sub>)
- Particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

The NEI also includes emissions of volatile organic compounds (VOCs), which are ozone precursors, emitted from motor vehicle fuel distribution and chemical manufacturing, as well as other solvent uses. VOCs react with NO<sub>x</sub> in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources.

- Point sources—Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A “major” source emits a threshold amount (or more) of at least one criteria pollutant and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.
- Area sources—Small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example (i.e., a single dry cleaner within an inventory area typically will not qualify as a point source), but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.

- Mobile Sources—Any kind of vehicle or equipment with a gasoline or diesel engine; airplane; or ship.

The main sources of criteria pollutant emissions data for the NEI are:

- For electric generating units—USEPA's Emission Tracking System—Continuous Emissions Monitoring Data and Department of Energy fuel use data.
- For other large stationary sources—State data and older inventories where state data was not submitted.
- For on-road mobile sources—The Federal Highway Administration's estimate of vehicle miles traveled and emission factors from USEPA's MOBILE Model.
- For non-road mobile sources—USEPA's NONROAD model.
- For stationary area sources—State data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data was not submitted.

State and local environmental agencies supply most of the point source data. USEPA's Clean Air Market program supplies emissions data for electric power plants.

## REFERENCES

Florida Department of Environmental Protection (FDEP), 1996. FAC 62-204.240 (1)(a-b). Ambient Air Quality Standards. March.

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## **APPENDIX D**

### **FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA) CONSISTENCY DETERMINATION**



**FEDERAL AGENCY COASTAL ZONE MANAGEMENT ACT (CZMA)  
CONSISTENCY DETERMINATION**

**Introduction**

This document provides the State of Florida with the U.S. Air Force's Consistency Determination under CZMA Section 307 and 15 C.F.R. Part 930 sub-part C. The information in this Consistency Determination is provided pursuant to 15 C.F.R. Section 930.39 and Section 307 of the Coastal Zone Management Act, 16 U.S.C. § 1456, as amended, and its implementing regulations at 15 C.F.R. Part 930.

This federal consistency determination addresses the Proposed Action associated with testing and training activities on Test Area (TA) C-64, Eglin Air Force Base (AFB), Florida (Figure 1).

**Proposed Federal agency action:**

The Proposed Action would authorize the current level of activity at TA C-64 as well as foreseeable future activities, plus a 300 percent increase in mission activity, and would include avoidance and minimization measures as part of the Proposed Action. A 300 percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency.

The region of influence (ROI) for this analysis is TA C-64, which is located in the eastern portion of the Eglin Range Complex in Okaloosa Counties, approximately 18 miles northeast of Eglin Main Base. TA C-64 is clustered in two distinct areas west of Highway 285, south of TA C-61. The two clusters are the original TA C-64 (200 acres) and the sub-ranges C-64A, C-64B, and C-64C (250 acres). Test Areas C-64A, C-64B, and C-64C are not considered part of the ROI for this analysis (Figure 2). Testing operations conducted at TA C-64 consist of ground-based weapons and weapons component testing. Testing conducted includes the following typical experiments: small-scale explosive tests to evaluate the explosive train, incendiary projectile experiments, armor plate penetration, projectile fuse arming distance, target and component vulnerability, burning sensitivity, drop tests, bullet impact tests, sympathetic detonation tests, advanced warhead design tests, and depleted uranium ammunition tests. Live munitions up to 3,000 pounds may be statically tested on this range.

The Gunnery and Ballistics Test Facility within TA C-64 is used for conducting bullet impact tests, including spall pattern analysis, munitions drop tests, firing of depleted uranium ammunition for developmental and life cycle tests, missile detonation tests, and armor piercing warhead tests. Warheads can be tested dynamically using the 800-foot dynamic warhead test track. Digital computer-controlled data collection systems and flash X-ray are used to gather weapons systems performance data. Interior, exterior, and terminal ballistics studies of ammunition can be performed at this facility.

Missions on TA C-64 are under the purview of the 46<sup>th</sup> Test Wing (TW). Primary user groups include the 46<sup>th</sup> Ground Weapons Test Flight (46 OG/OGMTG) and the 46<sup>th</sup> Range Support (46 RANS/DOP). A complete description of all current testing activities and user groups are described in the *Test Area C-64 Final Environmental Baseline Document (EBD), Revision 1, Chapter 2, Mission Summary*.

#### **Federal Review**

Statutes addressed as part of the Florida Coastal Zone Management Program consistency review and considered in the analysis of the Proposed Action are discussed in the following table.

Pursuant to 15 C.F.R. § 930.41, the Florida State Clearinghouse has 60 days from receipt of this document in which to concur with, or object to, this Consistency Determination, or to request an extension, in writing, under 15 C.F.R. § 930.41(b). Florida's concurrence will be presumed if Eglin AFB does not receive its response on the 60th day from receipt of this determination.

## Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 161 <i>Beach and Shore Preservation</i>	The Proposed Action would not affect beach and shore management, specifically as it pertains to: <ul style="list-style-type: none"> <li>• The Coastal Construction Permit Program.</li> <li>• The Coastal Construction Control Line (CCCL) Permit Program.</li> <li>• The Coastal Zone Protection Program.</li> </ul> All activities would occur on federal property.	Authorizes the Bureau of Beaches and Coastal Systems within DEP to regulate construction on or seaward of the states' beaches.
Chapter 163, Part II <i>Growth Policy; County and Municipal Planning; Land Development Regulation</i>	The Proposed Action would not affect local government comprehensive plans.	Requires local governments to prepare, adopt, and implement comprehensive plans that encourage the most appropriate use of land and natural resources in a manner consistent with the public interest.
Chapter 186 <i>State and Regional Planning</i>	The Proposed Action would not affect state plans for water use, land development, or transportation.	Details state-level planning requirements. Requires the development of special statewide plans governing water use, land development, and transportation.
Chapter 252 <i>Emergency Management</i>	The Proposed Action would not affect the state's vulnerability to natural disasters.  The Proposed Action would not affect emergency response and evacuation procedures.	Provides for planning and implementation of the state's response to, efforts to recover from, and the mitigation of natural and manmade disasters.
Chapter 253 <i>State Lands</i>	All activities would occur on federal property; therefore the Proposed Action would not affect state public lands.	Addresses the state's administration of public lands and property of this state and provides direction regarding the acquisition, disposal, and management of all state lands.
Chapter 258 <i>State Parks and Preserves</i>	The Proposed Action would not affect state parks, recreational areas and aquatic preserves.	Addresses administration and management of state parks and preserves.
Chapter 259 <i>Land Acquisition for Conservation or Recreation</i>	The Proposed Action would not affect tourism and/or outdoor recreation.	Authorizes acquisition of environmentally endangered lands and outdoor recreation lands.
Chapter 260 <i>Recreational Trails System</i>	The Proposed Action would not include the acquisition of land and would not affect the Greenways and Trails Program.	Authorizes acquisition of land to create a recreational trails system and to facilitate management of the system.
Chapter 375 <i>Multipurpose Outdoor Recreation; Land</i>	The Proposed Action would not affect opportunities for recreation on state lands.	Develops comprehensive multipurpose outdoor recreation plan to document recreational

Statute	Consistency	Scope
<i>Acquisition, Management, and Conservation</i>		supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs.
Chapter 267 <i>Historical Resources</i>	<p>There have been no cultural resources identified within TA C-64 to date. Portions of the test area have not been surveyed for cultural resources, therefore continued coordination would occur with the 96<sup>th</sup> Civil Engineering Group/Cultural Resources Branch (96 CEG/CEVH) prior to future proposed activities. In the event that unknown cultural resources are discovered during a mission activity, all activity in the immediate vicinity must cease until the Base Historic Preservation Officer and 96 CEG/CEVH have been notified and a determination of significance has been rendered.</p> <p>No adverse effects to cultural resources are expected from implementation of the Proposed Action.</p> <p>Therefore, the Proposed Action would be consistent with the State's policies concerning historical resource management.</p>	Addresses management and preservation of the state's archaeological and historical resources.
Chapter 288 <i>Commercial Development and Capital Improvements</i>	The Proposed Action would not affect future business opportunities on state lands, or the promotion of tourism in the region.	Provides the framework for promoting and developing the general business, trade, and tourism components of the state economy.
Chapter 334 <i>Transportation Administration</i>	The Proposed Action would not affect transportation.	Addresses the state's policy concerning transportation administration.
Chapter 339 <i>Transportation Finance and Planning</i>	The Proposed Action would not affect the finance and planning needs of the state's transportation system.	Addresses the finance and planning needs of the state's transportation system.
Chapter 370 <i>Saltwater Fisheries</i>	The Proposed Action would not affect saltwater fisheries.	Addresses management and protection of the state's saltwater fisheries.
Chapter 372 <i>Wildlife</i>	<p>A 300-percent mission surge would increase the frequency, and in some cases the severity, of impacts to biological resources on and near TA C-64.</p> <p>Mission operations have the potential to affect sensitive habitats and species through direct encounters, noise, chemical impacts, and habitat alteration. The management actions in Section 2.5 and 4.4 of the TA C-64</p>	Addresses the management of the wildlife resources of the state.

Statute	Consistency	Scope
	<p>REA would serve to eliminate or minimize many of the potential impacts from proposed activities.</p> <p>Eglin Natural Resources has determined that the Proposed Action would have “No Effect” on applicable species based on the implementation of the management requirements discussed in Section 4.4 of the TA C-64 REA.</p> <p>No adverse impacts are expected under any alternative; therefore, the Proposed Action would be consistent with the State’s policies concerning the protection of wildlife and other natural resources.</p>	
<p>Chapter 373 <i>Water Resources</i></p>	<p>Increased munitions expenditures would not result in metal concentrations in groundwater exceeding USEPA risk-based concentrations. Surface water resources are located at distances from targets sufficient to minimize potential for contaminant transport, and sedimentation due to erosion would be controlled by management requirements. Wetlands would not be impacted, and no actions would modify the floodplain.</p> <p>Eglin Water Resources (96 CEG/CEVCE) would ensure that any applicable permitting requirements would be satisfied in accordance with Florida Administrative Code.</p> <p>Therefore, the Proposed Action would be consistent with Florida’s statutes and regulations regarding the water resources of the state.</p>	<p>Addresses the state’s policy concerning water resources.</p>
<p>Chapter 376 <i>Pollutant Discharge Prevention and Removal</i></p>	<p>Munitions fragments and residues would be generated as a result of testing and training missions. Ordnance expenditures would increase three-fold, therefore the release of hazardous chemicals would increase. Despite this, no Toxic Release Inventory thresholds would be exceeded and adverse impacts to the environment are not anticipated.</p> <p>Management practices would remain in place that assure testing and training areas will be scanned for debris and dud munitions and that they would be removed. Any dud munitions or unexploded ordnance would be flagged and removed according to standard procedures.</p> <p>Therefore, the Proposed Action would be consistent with Florida’s statutes and</p>	<p>Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.</p>

Statute	Consistency	Scope
	regulations regarding the transfer, storage, or transportation of pollutants.	
Chapter 377 <i>Energy Resources</i>	The Proposed Action would not affect energy resource production, including oil and gas, and/or the transportation of oil and gas.	Addresses regulation, planning, and development of oil and gas resources of the state.
Chapter 380 <i>Land and Water Management</i>	The Proposed Action would not affect development of state lands with regional (i.e. more than one county) impacts. The Proposed Action would not include changes to coastal infrastructure such as capacity increases of existing coastal infrastructure, or use of state funds for infrastructure planning, designing or construction.	Establishes land and water management policies to guide and coordinate local decisions relating to growth and development.
Chapter 381 <i>Public Health, General Provisions</i>	The Proposed Action would not affect the state's policy concerning the public health system.	Establishes public policy concerning the state's public health system.
Chapter 388 <i>Mosquito Control</i>	The Proposed Action would not affect mosquito control efforts.	Addresses mosquito control effort in the state.
Chapter 403 <i>Environmental Control</i>	<p>The increase in munitions expenditures would cause an increase in air emissions to the region that would be minimal and temporary. The pollutant that has the potential to emit the most is particulate matter. Emissions would remain under the 10 percent threshold and would not exceed National Ambient Air Quality Standards (NAAQS). Air emissions would have no adverse impacts on air quality from the Proposed Action.</p> <p>Therefore, the Proposed Action would be consistent with Florida's statutes and regulations regarding water quality, air quality, pollution control, solid waste management, or other environmental control efforts.</p>	Establishes public policy concerning environmental control in the state.
Chapter 582 <i>Soil and Water Conservation</i>	<p>The Proposed Action would not have any significant impacts to soils Increased munitions expenditures would not result in metal concentrations in the soil exceeding USEPA risk-based concentrations. Increased munitions training and foot and vehicle traffic could cause soil erosion, particularly on sparsely vegetated slopes. However, adherence to management practices would decrease erosion potential.</p> <p>Therefore, the Proposed Action would be consistent with the Florida's statutes and regulations regarding soil and water conservation efforts.</p>	Provides for the control and prevention of soil erosion.



Figure 1. Overview of Eglin AFB

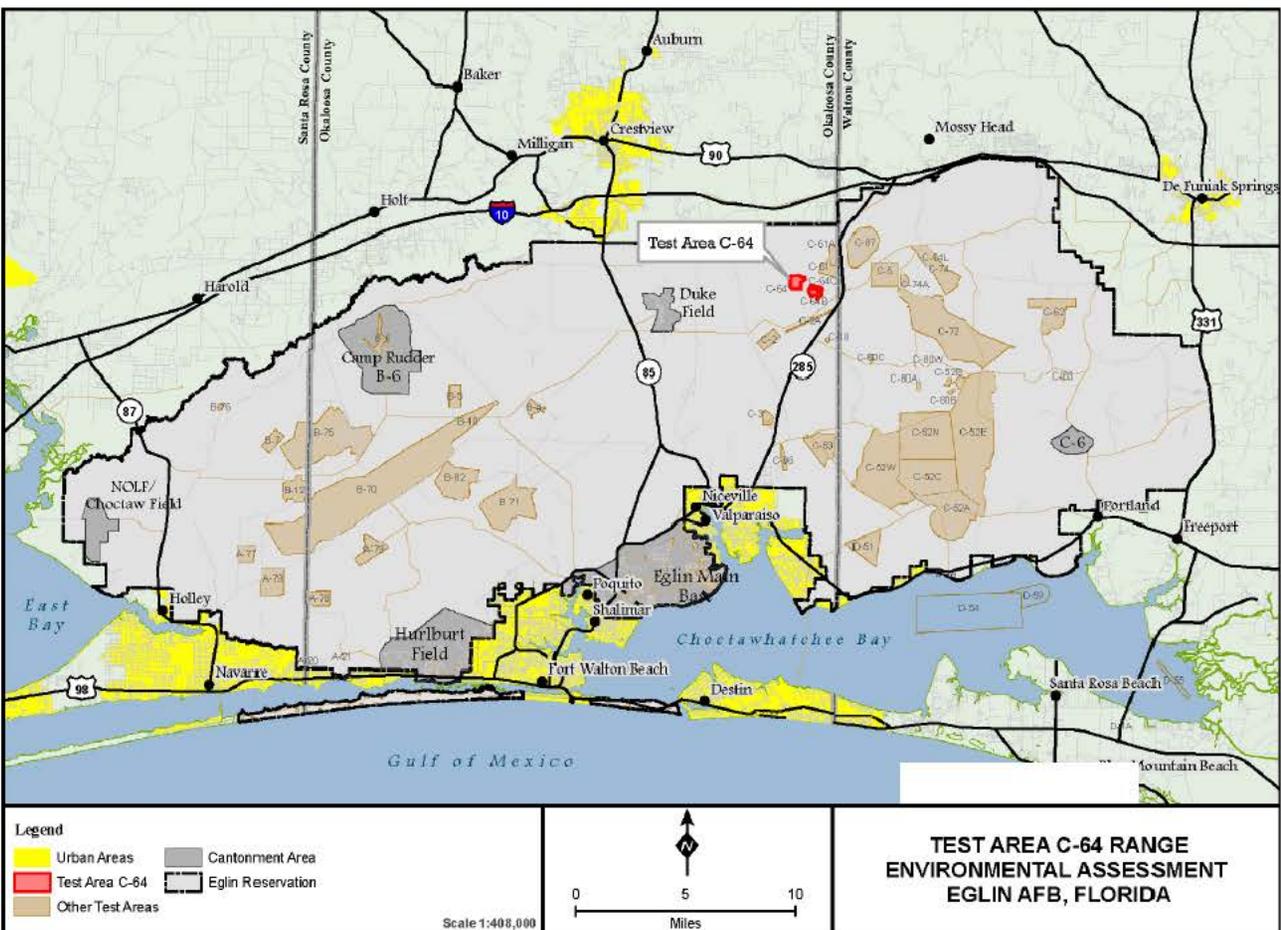


Figure 2. Overview of Test Area C-64

# **APPENDIX E**

## **PUBLIC INVOLVEMENT**

### **NOTICE OF AVAILABILITY, AGENCY COMMENTS, AND AIR FORCE RESPONSES TO COMMENTS**



## NOTICE OF AVAILABILITY

The following Notice of Availability was published in the *Northwest Florida Daily News* on 14 September 2010. No public comments were received.

### Public Notification

In compliance with the National Environmental Policy Act, Eglin Air Force Base (AFB) announces the availability of the *Test Area C-64 Draft Range Environmental Assessment (REA), Revision 1, at Eglin Air Force Base, FL*, and Draft Finding of No Significant Impact (FONSI) for public review.

The Proposed Action is to establish a new authorized level of activity for Test Area (TA) C-64 on Eglin AFB that is based on an anticipated usage, with known or minimal environmental impacts. The Preferred Alternative, Alternative 2, would authorize the current level of activity plus an increase in TA C-64 operations over the current level of activity. The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of testing activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative to adequately cover the environmental analysis needed to support potential increased testing and training requirements as they occur.

Your comments on this Draft REA are requested. Letters and other written or oral comments may be published in the Final REA. As required by law, comments will be addressed in the Final REA and made available to the public. Any personal information provided, including private addresses, will be used to identify your desire to make a statement during the public comment period and/or to compile a mailing list to fulfill requests for copies of the Final REA or associated documents. However, only the names and respective comments of respondent individuals will be disclosed; personal home addresses and phone numbers will not be published in the Final EA.

The Draft Range Environmental Assessment is available on the web at [www.eglin.af.mil/environmentalassessments.asp](http://www.eglin.af.mil/environmentalassessments.asp), from September 14th until September 28th, 2010. Comments must be received by October 1st, 2010. Each of the libraries in Crestview, Fort Walton Beach, Navarre, Milton and Niceville have computers available to the general public and librarians who can provide assistance linking to the document. Hard copies of the document may be available for a limited time by contacting: Mike Spaits, 96th Air Base Wing Environmental Public Affairs, 501 De Leon Street, Suite 101, Eglin AFB, Florida 32542-5133 or email: [spaitsm@eglin.af.mil](mailto:spaitsm@eglin.af.mil). Tel: (850) 882-2836; Fax: (850) 882-3761.

For more information or to comment on these proposed actions, contact: Mike Spaits, Environmental Public Affairs, at one of the contacts above.

2072110

## AGENCY COMMENTS



Florida Department of  
Environmental Protection

Marjory Stoneman Douglas Building  
3900 Commonwealth Boulevard  
Tallahassee, Florida 32399-3000

Charlie Crist  
Governor

Jeff Kottkamp  
Lt. Governor

Mimi A. Drew  
Secretary

September 29, 2010

Ms. Amy L. Sands, Project Manager  
Science Applications International Corp.  
1140 North Eglin Parkway  
Shalimar, FL 32579

RE: Department of the Air Force - Draft Range Environmental Assessment, Revision 1  
for Test Area C-64 on Eglin Air Force Base - Okaloosa County, Florida.  
SAI # FL201008255428C

Dear Ms. Sands:

The Florida State Clearinghouse has coordinated a review of the subject Draft Range Environmental Assessment (EA) under the following authorities: Presidential Executive Order 12372; Section 403.061(40), *Florida Statutes*; the Coastal Zone Management Act, 16 U.S.C. §§ 1451-1464, as amended; and the National Environmental Policy Act, 42 U.S.C. §§ 4321-4347, as amended.

The Florida Department of Environmental Protection's (DEP) Northwest District Office in Pensacola notes that, based upon the scope of this proposal, the applicant will likely be required to apply for and obtain an Environmental Resource Permit under Chapter 62-346, *Florida Administrative Code (F.A.C.)*, for the proposed activities. If an application is received after November 1, 2010, the Rule 62-346, *F.A.C.*, authorization will cover the requirements for both wetlands effects and stormwater management. Depending on the scope and size of the actual impacts, the applicant will need to apply to either the DEP or the Northwest Florida Water Management District (NFWFMD). The applicant is advised to contact the DEP or the NFWFMD prior to submitting an application to discuss the specific scope of the proposed project.

The West Florida Regional Planning Council (WFRPC) recommends that the proposed activities avoid impacts to surface waters, streams, creeks, steepheads, tributaries and potential groundwater recharge areas. Direct, secondary and cumulative impacts to areas known as habitat for federal and state-listed species should also be avoided and wildlife surveys (i.e., gopher tortoise habitat) conducted prior to the initiation of activities. Please see the enclosed WFRPC memorandum for additional information.

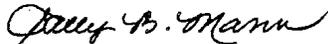
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[www.dep.state.fl.us](http://www.dep.state.fl.us)

Ms. Amy L. Sands  
September 29, 2010  
Page 2 of 2

Based on the information contained in the Draft Range EA and the enclosed state agency comments, the state has determined that, at this stage, the proposed activities are consistent with the Florida Coastal Management Program (FCMP). To ensure the projects' continued consistency with the FCMP, the concerns identified by our reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activities' compliance with FCMP authorities, including federal and state monitoring of the activities to ensure their continued conformance, and the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the projects' consistency with the FCMP will be determined during the environmental permitting process, if applicable.

Thank you for the opportunity to review the Draft Range EA. Should you have any questions regarding this letter, please contact Ms. Jillian Schatzman at (850) 245-2187.

Yours sincerely,



Sally B. Mann, Director  
Office of Intergovernmental Programs

SBM/js  
Enclosures

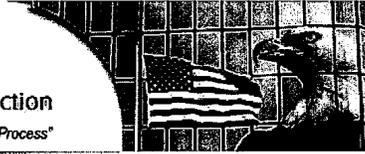
cc: Darryl Boudreau, DEP, Northwest District  
John Gallagher, WFRPC



**Florida**

Department of Environmental Protection

"More Protection, Less Process"



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Project Information	
<b>Project:</b>	FL201008255428C
<b>Comments Due:</b>	09/28/2010
<b>Letter Due:</b>	10/08/2010
<b>Description:</b>	DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1 FOR TEST AREA C-64 ON EGLIN AIR FORCE BASE - OKALOOSA COUNTY, FLORIDA.
<b>Keywords:</b>	USAF - DREA, TEST AREA C-64 ON EGLIN AFB - OKALOOSA CO.
<b>CFDA #:</b>	12.200
Agency Comments:	
<b>WEST FLORIDA RPC - WEST FLORIDA REGIONAL PLANNING COUNCIL</b>	
The WFRPC recommends that the proposed activities avoid impacts to surface waters, streams, creeks, steepheads, tributaries and potential groundwater recharge areas. Direct, secondary and cumulative impacts to areas known as habitat for federal and state-listed species should also be avoided and wildlife surveys (i.e., gopher tortoise habitat) conducted prior to the initiation of activities. Please see the enclosed WFRPC memorandum for additional information.	
<b>OKALOOSA - OKALOOSA COUNTY</b>	
No Comments	
<b>FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION</b>	
NO COMMENT BY PAUL SCHARINE ON 9/7/10.	
<b>STATE - FLORIDA DEPARTMENT OF STATE</b>	
No Comment/Consistent	
<b>ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION</b>	
The DEP Northwest District Office in Pensacola notes that, based upon the scope of this proposal, the applicant will likely be required to apply for and obtain an Environmental Resource Permit under Chapter 62-346, F.A.C., for the proposed activities. If an application is received after November 1, 2010, the Rule 62-346, F.A.C., authorization will cover the requirements for both wetlands effects and stormwater management. Depending on the scope and size of the actual impacts, the applicant will need to apply to either the DEP or NWFWM. The applicant is advised to contact the DEP or NWFWM prior to submitting an application to discuss the specific scope of the proposed project.	
<b>NORTHWEST FLORIDA WMD - NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT</b>	
No Comment/Consistent	

For more information or to submit comments, please contact the Clearinghouse Office at:

3900 COMMONWEALTH BOULEVARD, M.S. 47  
 TALLAHASSEE, FLORIDA 32399-3000  
 TELEPHONE: (850) 245-2161  
 FAX: (850) 245-2190

Visit the [Clearinghouse Home Page](#) to query other projects.

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Bill Dozier, Chairman  
 Cindy Frakes, Vice-Chairman  
 Terry A. Joseph, Executive Director

**E-MAIL TRANSMITTAL (S)**

**TO:** Ms. Lauren Milligan, Environmental Manager  
**STATE CLEARINGHOUSE** ■  
 Phone: 850-245-2161 Lauren.Milligan@dep.state.fl.us

**DATE:** 9/7/10

**FROM:** John Gallagher, Director, Housing & Homeland Security & Emergency Mgmt.  
 John.Gallagher@wfrpc.org

**SUBJECT:** State Clearinghouse Review(s) Transmittals:

SAI #	Project Description	RPC #
FL201008255428C	Eglin AFB Draft Range Environmental Assessment, Revision 1 for Test Area C-64	OK 122 9-1-10

	No Comments – Generally consistent with the WFSRPP
X	See Attached

*If you have any questions, please call.*

P.O. Box 11399 • Pensacola, FL 32524-1399 • P: 850.332-7976 • 1.800.226.8914 • F: 850.637-1923  
 4081 East Olive Road, Suite A; Pensacola, FL 32514  
 651 West 14<sup>th</sup> Street, Suite E • Panama City, FL 32401 • P: 850.769.4854 • F: 850.784.0456  
[www.wfrpc.org](http://www.wfrpc.org)



Cindy Frakes, Chairman  
JD Smith, Vice-Chairman

Terry A. Joseph, Executive Director

**MEMORANDUM**

**To:** Lauren Milligan, Environmental Manager- Florida State Clearinghouse Florida  
Department of Environmental Protection 5900 Commonwealth Boulevard  
M.S. 47, Tallahassee, FL 32399

**Through:** John Gallagher, Comprehensive Planning Director

**From:** Mary F. Gutierrez, Environmental Planner

**Date:** Tuesday, September 07, 2010

**Subject:** Test Area (TA) C-64 Eglin AFB, Okaloosa County, Florida FL201008255428C,  
RPC#OK-122-9-1-10

**Project:** The proposal is for the 46<sup>th</sup> Test Wing commander to establish a new authorized level of activity for TA C-64 that is based on an anticipated maximum usage. This proposal allows for a 300% increase in TA C-64 operations over the current level of activity plus foreseeable future activities.

Based on the information provided, the Council would like to make the following recommendations. Please note that the recommendations below are based on the Strategic Regional Policy Plan, established under Chapter 93-206, Laws of Florida. Responses to these recommendations are not required.

**Priority 1 - Protection of the Region's Surface Water Resources:**

**Policy 1.1:** Prevent the introduction of hazardous toxins and chemicals into the Region's surface water system by business, industrial, and private interests.

**Policy 1.4:** Protect all surface waters from pollution and degradation, with particular emphasis on SWIM priority water bodies, Class I and II waters, Outstanding Florida Waters and State Aquatic Preserves.

**Recommendation 1:** Avoid impacts to surface waters, streams, creeks, steepheads, and tributaries.

**Priority 2 – Protection of the Region's Ground Water Resources:**

**Policy 1.6:** Protect groundwater supply identified in groundwater basin resource inventories prepared by the Northwest Florida Water Management District.

**Policy 1.16:** Prohibit any activities that would introduce wastes or other by-products into the groundwater system via recharge areas.

**Recommendation 1:** Avoid impacts to surface waters, streams, creeks, steepheads, tributaries and other potential recharge areas.

P.O. Box 11399 • Pensacola, FL 32524-1399 • P: 850.595.8910 • 1.800.226.8914 • F: 850.595.8967  
651 West 14<sup>th</sup> Street, Suite E • Panama City, FL 32401 • P: 850.769.4854 • F: 850.784.0456  
www.wfipc.org

**Priority 5 - Protection of Endangered, Threatened, and Rare Species:**

**Goal 1:** Protect native species in the Region that are on the Florida Game and Fresh Water Fish Commission, Florida Wildlife Service, Florida Wildlife Commission list of endangered, threatened, and rare species of Florida.

**Recommendation 1:** Avoid direct, secondary and cumulative impacts to areas known as habitat for endangered, threatened and rare species.

**Recommendation 2:** Conduct all wildlife surveys (i.e. gopher tortoise habitat) prior to any activities.

**Priority 6 - Land Management and Use**

**Policy 1.2:** Conserve and protect the natural functions of soils, wildlife habitat, floral habitat and wetlands.

**Policy 1.4:** Protect state or federally owned ecologically sensitive lands from land uses that would impair or destroy the important habitats and plant and animal species occurring on those lands.

**Recommendation 1:** Avoid direct, secondary and cumulative impacts to areas known as habitat for endangered, threatened and rare species.

P.O. Box 11399 • Pensacola, FL 32524-1399 • P: 850.595.8910 • 1.800.226.8914 • F: 850.595.8967  
651 West 14<sup>th</sup> Street, Suite E • Panama City, FL 32401 • P: 850.769.4854 • F: 850.794.0456  
[www.wfrpc.org](http://www.wfrpc.org)

COUNTY: OKALOOSA  
 SCH-106-03AF-EG  
 2010-3998

DATE: 8/25/2010  
 COMMENTS DUE DATE: 9/28/2010  
 CLEARANCE DUE DATE: 10/8/2010  
 SAI#: FL201008255428C

MESSAGE:

<b>STATE AGENCIES</b>	<b>WATER MNGMNT. DISTRICTS</b>	<b>OPB POLICY UNIT</b>	<b>RPCS &amp; LOC GOVS</b>
ENVIRONMENTAL PROTECTION	NORTHWEST FLORIDA WMD		
FISH and WILDLIFE COMMISSION			
X STATE			

The attached document requires a Coastal Zone Management Act/Florida Coastal Management Program consistency evaluation and is categorized as one of the following:

- Federal Assistance to State or Local Government (15 CFR 930, Subpart F). Agencies are required to evaluate the consistency of the activity.
- X Direct Federal Activity (15 CFR 930, Subpart C). Federal Agencies are required to furnish a consistency determination for the State's concurrence or objection.
- Outer Continental Shelf Exploration, Development or Production Activities (15 CFR 930, Subpart E). Operators are required to provide a consistency certification for state concurrence/objection.
- Federal Licensing or Permitting Activity (15 CFR 930, Subpart D). Such projects will only be evaluated for consistency when there is not an analogous state license or permit.

Project Description:

DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1 FOR TEST AREA C-64 ON EGLIN AIR FORCE BASE - OKALOOSA COUNTY, FLORIDA.

To: Florida State Clearinghouse

EO. 12372/NEPA Federal Consistency

AGENCY CONTACT AND COORDINATOR (SCH)  
 3900 COMMONWEALTH BOULEVARD MS-47  
 TALLAHASSEE, FLORIDA 32399-3000  
 TELEPHONE: (850) 245-2161  
 FAX: (850) 245-2190

- No Comment  
 Comment Attached  
 Not Applicable
- No Comment/Consistent  
 Consistent/Comments Attached  
 Inconsistent/Comments Attached  
 Not Applicable

From: Division of Historical Resources  
 Division/Bureau: Bureau of Historic Preservation

Reviewer: S. Edwards Laura A. Kammerer  
 Date: 9/5/2010 9.16.2010  
*Deputy S780*

RECEIVED  
 BUREAU OF  
 HISTORIC PRESERVATION  
 2010 AUG 31 A 9:05

RECEIVED

SEP 22 2010

DEP Office of Intergov't Programs

## AIR FORCE RESPONSES TO COMMENTS ON THE DRAFT REA

Reviewer	Comment	Response
Florida Department of Environmental Protection's Northwest District Office, Pensacola	The Florida Department of Environmental Protection's (DEP) Northwest District Office in Pensacola notes that, based upon the scope of this proposal, the applicant will likely be required to apply for and obtain an Environmental Resource Permit under Chapter 62-346, Florida Administrative code (F.A.C.), for the proposed activities. If an application is received after November 1, 2010, the Rule 62-346, F.A.C., authorization will cover the requirements for both wetlands effects and stormwater management. Depending on the scope and size of the actual impacts, the applicant will need to apply to either the DEP or the Northwest Florida Water Management District (NFWWMD). The applicant is advised to contact the DEP or the NFWWMD prior to submitting an application to discuss the specific scope of the proposed project.	Thank you for your comment. Eglin AFB will coordinate with FDEP and/or NFWWMD regarding applicable permitting requirements.
West Florida Regional Planning Council	The West Florida Regional Planning Council (WFRPC) recommends that the proposed activities avoid impacts to surface waters, streams, creeks, steepheads, tributaries and potential groundwater recharge areas. Direct, secondary and cumulative impacts to areas known as habitat for federal and state-listed species should also be avoided and wildlife surveys (i.e., gopher tortoise habitat) conducted prior to the initiation of activities. Please refer to the enclosed WFRPC memorandum for additional information.	Thank you for your comment. The recommendations provided have been reviewed and noted.
West Florida Regional Planning Council	Based on the information provided, the Council would like to make the following recommendations. Please note that the recommendations below are based on the Strategic Regional Policy Plan, established under Chapter 93-206, Laws of Florida. Responses to these recommendations are not required. [see original letter for recommendations]	Thank you for your comment. The recommendations provided have been reviewed and noted.
Florida Department of Environmental Protection	Based on the information contained in the Draft Range EA and the enclosed state agency comments, the state has determined that, at this stage, the proposed activities are consistent with the Florida Coastal Management Program (FCMP). To ensure the projects' continued consistency with the FCMP, the concerns identified by our reviewing agencies must be addressed prior to project implementation. The state's continued concurrence will be based on the activities' compliance with FCMP authorities, including federal and state monitoring of the activities to ensure their continued conformance, and the adequate resolution of issues identified during this and subsequent reviews. The state's final concurrence of the projects' consistency with the FCMP will be determined during the environmental permitting process, if applicable.	Thank you for your comment, comment noted.

10/18/10

 Test Area C-64 Range Environmental Assessment, Revision 1  
 Eglin Air Force Base, Florida  
 Final

Page E-9

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**FINDING OF NO SIGNIFICANT IMPACT**  
*FOR*

**TEST AREA C-64 RANGE ENVIRONMENTAL ASSESSMENT ON  
EGLIN AIR FORCE BASE, FLORIDA  
RCS 99-147 Revision 1, 2010**

This finding, and the analysis upon which it is based, was prepared pursuant to the President's Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) and its implementing regulations as promulgated at 40 Code of Federal Regulations (CFR) Part 1500 (40 CFR 1500–1508) plus:

- U.S. Air Force *Environmental Impact Analysis Process* as promulgated at 32 CFR Part 989.

The Department of the Air Force has conducted a Range Environmental Assessment (REA) of the potential environmental consequences associated with testing activities at Test Area (TA) C-64 on Eglin Air Force Base (AFB), Florida. That October 2010 REA is hereby incorporated by reference into this finding.

**DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES**

**Proposed Action**

The Proposed Action is for the 46th Test Wing commander to establish a new authorized level of activity for TA C-64 that is based on an anticipated maximum usage. Demonstrating that the individual and cumulative effects of this usage level do not have significant environmental impact is the method for establishing the maximum threshold baseline, which is being identified as the Range Environmental Impact Analysis Process Baseline. The environmental analysis is accomplished by evaluating the effect that the military mission activities and expendables have on Eglin AFB's natural, physical, and cultural environment.

The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of testing activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative to adequately cover the environmental analysis needed to support potential increased testing and training requirements as they occur.

**No Action Alternative**

This alternative is defined as authorizing the level of activity approved in the 2001 TA C-64 Programmatic Environmental Assessment, which authorized a 200-percent increase in all testing missions and associated expendables over the baseline level captured in the *Fiscal Year 1998 (FY1998) Range Utilization Report* and anticipated mission additions.

## **Alternative 1**

Alternative 1 would authorize the current level of activity plus foreseeable future activities. No new types of activities, new user groups, or new kinds of expendables have been identified for the foreseeable future at this time. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2008; this approach accounts for periods of low or no activity of a certain mission. Ground-based weapons and weapons component testing constitute the majority of missions on TA C-64, but other testing missions also occur on TA C-64. This alternative would be implemented using management actions identified in the REA.

## **Alternative 2**

This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity; including management actions identified in the REA. A 300-percent increase was chosen as a likely maximum surge increase in military testing during a national defense contingency.

## **Preferred Alternative**

The Preferred Alternative is Alternative 2, which allows a 300-percent increase in TA C-64 operations over the current level of activity plus foreseeable future activities. Implementation of management actions will allow a surge in test and training activities while minimizing impacts to environmental and natural resources.

## **ENVIRONMENTAL IMPACTS**

Analysis was conducted to determine the potential impacts to the human and natural environment resulting from the No Action Alternative and the Preferred Alternative. No significant impacts to resources have been identified, provided the management actions detailed in Section 2.5 of the REA would be implemented. A detailed discussion of issues analyzed and management strategies used to reduce potential impacts is given in Chapter 4 of the REA.

## **PUBLIC NOTICE**

A public notice was published in the *Northwest Florida Daily News* on 14 September 2010 inviting the public to review and comment on the REA and Draft Finding of No Significant Impact. The public comment period closed on 28 September 2010, and no public comments were received. State agency comments were received and have been addressed in Appendix E, *Public Involvement*, of the Final REA.

**FINDING OF NO SIGNIFICANT IMPACT**

Based on my review of the facts and the environmental analysis contained in the attached REA, and as summarized above, I find the proposed decision of the Air Force to implement the Preferred Alternative, will not have a significant impact on the human or natural environment; therefore, an environmental impact statement is not required. This analysis fulfills the requirements of the NEPA, the President's CEQ, and 32 CFR Part 989.



DAVID H. MAHARREY, JR., Colonel, USAF  
Commander, 96th Civil Engineer Group

3 Nov 10

Date