

FINDING OF NO SIGNIFICANT IMPACT

FOR

TEST AREA C-80 COMPLEX RANGE ENVIRONMENTAL ASSESSMENT ON EGLIN AIR FORCE BASE, FLORIDA RCS 98-640 Revision 1, 2009

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 on the Test Area (TA) C-80 Complex on Eglin Air Force Base (AFB), Florida. That August 2009 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 the TA C-80 Complex 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 (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.

The Range analysis performed in this report allows for a cumulative look at the impact on Eglin AFB receptors from all mission activities occurring on the TA C-80 Complex. By implementing an authorized level of activity, Range management will be streamlined and cumulative environmental impacts will be more fully considered.

The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of training activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative in order to adequately cover the environmental analysis needed to support potential increases in training requirements as they occur. There were no alternatives eliminated from detailed analysis.

No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *2000 Test Area C-80 Complex Programmatic Environmental Assessment (PEA)*, which authorized the baseline

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activity level (fiscal year (FY) 1995 through FY1997 mission activities and FY1999 sensor-fuzed weapons testing) and analyzed the maximum allowable net explosive weight (NEW) (200 to 3,000 pounds depending on the test area), as well as an increase of 1,000 percent of baseline levels (i.e., 10 times the baseline) of mission activities on TA C-80A, TA C-80B, and TA C-80C. The increase was associated with arena and explosive ordnance disposal (EOD) testing and training on TA C-80A, TA C-80B, and TA C-80C, along with increased testing of sensor-fuzed weapons on TA C-80B.

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

Alternative 1 would authorize the current level of activity plus foreseeable future activities. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Current activities not captured previously analyzed in the *2000 Test Area C-80 Complex PEA* include:

- The completion of an operational ground testing (OGT) facility at TA C-80A in June 2004. The OGT facility provides vibration and weapon system engine-run capabilities for guided munitions nondestructive ground testing. The OGT facility can accommodate the firing of rocket engines and jet engine operation, fire squibs, and initiate fuzes. The facility conducted several tests in 2005.
- The maximum NEW rating for TA C-80A, TA C-80B, and TA C-80C would remain at 200 pounds, 500 pounds, and 3,000 pounds, respectively.

Future activities include expansion of the OGT facility to include larger vibration tables, test larger weapons, and add an acoustic vibration capability. Work on the expansion began in FY2007 with a planned completion date of FY2012.

Alternative 2: Alternative 1 With a 300 Percent Mission Surge Plus Additional Management Actions (Preferred Alternative)

Alternative 2 includes authorization of the current level of activity plus a 300 percent increase in mission activities. This is the Preferred Alternative because it includes all mission activities that are expected to occur and provides capacity for a surge in testing. This alternative authorizes an expected maximum level of activity, which allows better responsiveness to the user group while ensuring that cumulative environmental effects do not cause significant impacts. The addition of management actions to Alternative 2 will allow for a surge of activity while maximizing environmental stewardship.

ENVIRONMENTAL IMPACTS

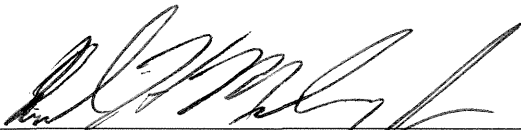
Analysis was conducted to determine the potential impacts to the human and natural environment resulting from the No Action Alternative, Alternative 1, and Alternative 2. No significant impacts to resources have been identified, provided the management actions detailed in Chapter 4 of the REA are implemented. 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* inviting the public to review and comment upon the REA and Draft Finding of No Significant Impact. The public comment period closed on 12 February 2009 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 Alternative 2, a 300 Percent Mission Surge Plus Additional Management Actions, 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.



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Commander, 96th Civil Engineer Group

26 OCT 09

Date

EGLIN AIR FORCE BASE Florida

TEST AREA C-80 COMPLEX

FINAL RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1



AUGUST 2009

TEST AREA C-80 COMPLEX

FINAL

RANGE ENVIRONMENTAL

ASSESSMENT, REVISION 1

Submitted to:

96 CEG/CEVSP
Environmental Analysis Section
Eglin Air Force Base, Florida

RCS 98-640 REV 1, 2009

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

$\mu\text{g}/\text{m}^3$	Micrograms per Cubic Meter
40 FTS	40th Flight Test Squadron
46 RANSS	46th Range Support Squadron
46 TS	46th Test Squadron
46 TW/XP	46th Test Wing, Plans Office
6 RTB	6th Ranger Training Battalion
780 TS	780th Test Squadron
96 CEG	96th Civil Engineer Group
96 CEG/CEVR	96th Civil Engineer Group/Environmental Restoration Branch
96 CEG/CEVSN	Eglin AFB Natural Resources Section
96 CEG/CEVSNP	Eglin AFB Fire Management Section
96 CEG/CEVSP	Eglin AFB Environmental Analysis Section
96 CES/CESD	Explosive Ordnance Disposal
AAC	Air Armament Center
AAC/SE	Safety Office
AFB	Air Force Base
AFDTC	Air Force Development Test Center
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFPAM	Air Force Pamphlet
AOC	Area of Concern
AUP	Advanced Unitary Penetrator
BMP	Best Management Practice
CAA	Clean Air Act
CATEX	Categorical Exclusion
CDNL	C-weighted Day-Night Sound Level
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHABA	Committee on Hearing, Bioacoustics, and Biomechanics
CO	Carbon Monoxide
CS/CSS	Combat Support/Combat Service Support
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibels
dBA	A-weighted Decibels
dB(C)	C-weighted Decibels
dB(P)	Peak Decibels
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DPI	Direct Physical Impact
EBD	Environmental Baseline Document
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EOD	Explosive Ordnance Disposal
EPCRA	Emergency Planning and Community Right-to-Know Act
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FICON	Federal Interagency Committee on Noise

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

FICUN	Federal Interagency Committee on Urban Noise
FNAI	Florida Natural Area Inventories
FY	Fiscal Year
GIS	Geographic Information System
g/mi	Grams per Mile
HAP	Hazardous Air Pollutant
Hz	Hertz
INRMP	Integrated Natural Resource Management Plan
IWR	Impaired Waters Rule
km	Kilometers
lb	Pound
LDP	Legacy Debris Pit
LZ	Landing Zone
mg/kg	Milligrams per Kilogram
MOA	Military Operating Area
mph	Miles per Hour
MSL	Mean Sea Level
NA	Not Applicable
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NEW	Net Explosive Weight
NHPA	National Historic Preservation Act
NO_x	Nitrogen Oxides
NRS	Natural Resources Section
OGT	Operational Ground Testing
ORM	Operational Risk Management
PBT	Persistent Bioaccumulative Toxic
PEA	Programmatic Environmental Assessment
PK₁₅(met)	Peak Noise Exceeded by 15 Percent of Firing Events
PM	Particulate Matter
PM_{2.5}	Particulate Matter With a Diameter of Less Than or Equal to 2.5 Microns
PM₁₀	Particulate Matter With a Diameter of Less Than or Equal to 10 Microns
POI	Point of Interest
ppm	Parts per Million
RCRA	Resource Conservation and Recovery Act
RCW	Red-cockaded Woodpecker
RDT&E	Research, Development, Test, and Evaluation
REA	Range Environmental Assessment
ROI	Region of Influence
SABRE	Shallow Water Assault Breaching
SDZ	Surface Danger Zone
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO₂	Sulfur Dioxide
SO_x	Sulfur Oxides
SPCC	Spill Prevention, Control, and Countermeasures
TA	Test Area
TCP	Traditional Cultural Property
TNT	Trinitrotoluene
TRI	Toxic Release Inventory

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

TRI-DDS	Toxic Release Inventory–Data Delivery System
USACE	U.S. Army Corps of Engineers
USACHPPM	U.S. Army Center for Health Promotion and Preventive Medicine
USC	U.S. Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

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1. INTRODUCTION

1.1 BACKGROUND

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 (RDT&E) of conventional weapons and electronic systems. It also provides support for individual and joint training of operational units.

The Eglin Military Complex currently comprises four components (U.S. Air Force, 1996), 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) Eglin Gulf Test Range
- 4) Airspace (overland and water)

The United States (U.S.) Air Force Air Armament Center (AAC) has responsibility for the Eglin Military Complex and all its users, which include DoD, other government agencies, foreign countries, and private companies. For Range operations, 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.

AAC includes two wings and four directorates that collectively operate, manage, and support all activities on the Eglin Military Complex. AAC accomplishes its Range operations through the 46th Test Wing with support from the 96th Air Base Wing. The 46th Test Wing Commander is responsible for day-to-day scheduling, executing, and maintaining of this national asset.

The Test Area (TA) C-80 Complex 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.

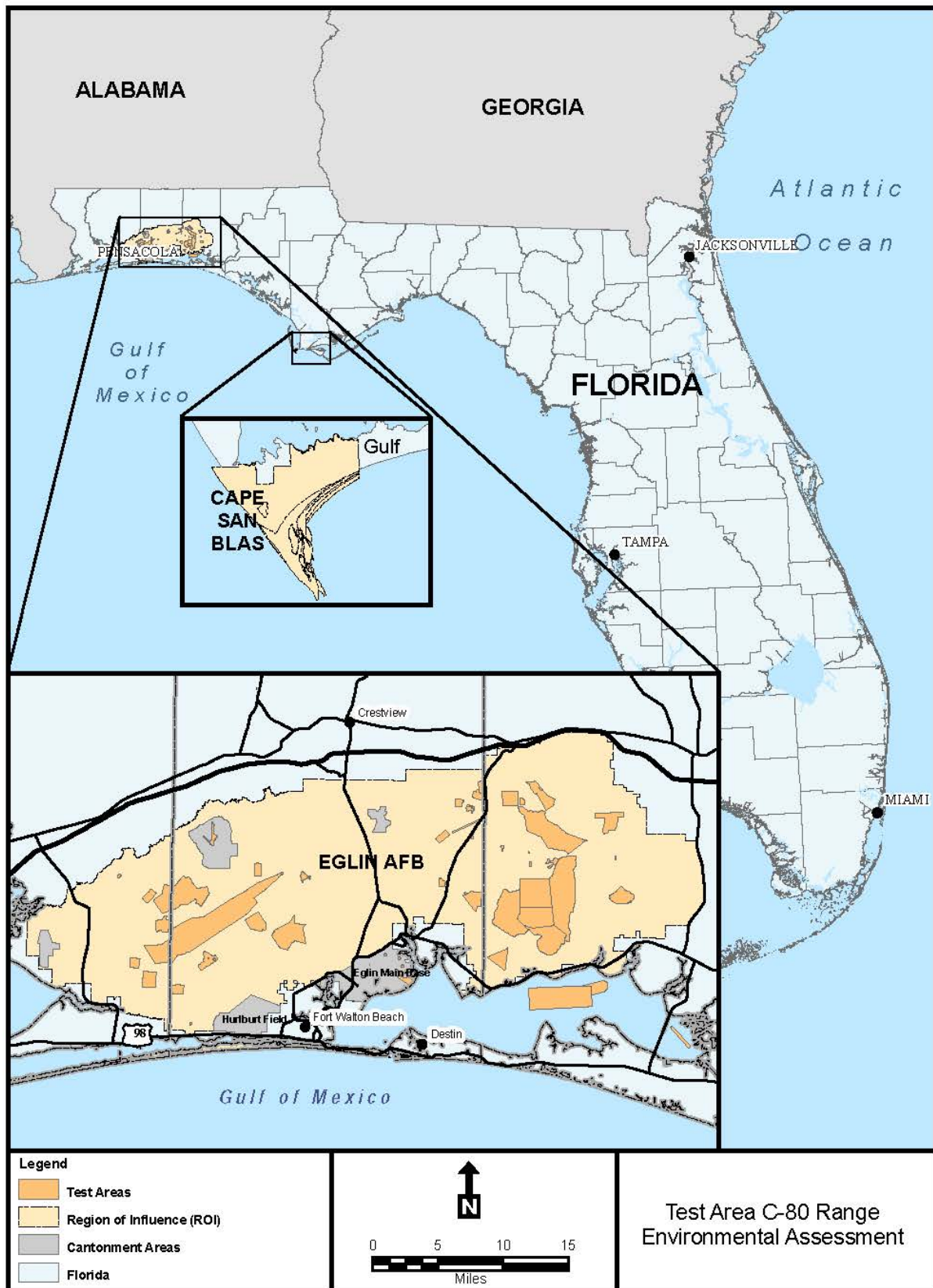


Figure 1-1. Land and Water Ranges of the Eglin Military Complex

1.2 PROPOSED ACTION

The **Proposed Action** is for the 46th Test Wing Commander to establish a new authorized level of activity for the TA C-80 Complex that is based on an anticipated maximum usage. The method for establishing this maximum threshold baseline requires demonstrating that the individual and cumulative effects of this usage level would not have significant environmental impacts. This maximum level is being identified as the *Range Environmental Impact Analysis Process (EIAP) Baseline*.

The environmental analysis evaluated the effects of military mission activities and expendables on Eglin AFB's natural, physical, and cultural environment. 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 detailed in this report.

The **purpose and need of the Proposed Action** is twofold, as described below.

1. Purpose: to quickly and efficiently process new programs requesting access to the TA C-80 Complex 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; and
2. Purpose: to update the NEPA analysis by reevaluating 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 for mission activities at the TA C-80 Complex, as presented in the *2000 Test Area C-80 Complex Final Programmatic Environmental Assessment* (PEA) (U.S. Air Force, 2000a). Many 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 reevaluate 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.

The analysis performed in this report allows for a cumulative look at the impact on TA C-80 Complex 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 TA C-80 Complex is located on the eastern half of the Eglin Range Complex in Walton County, Florida, approximately 12 miles northeast of Eglin Main (Figure 1-2). The TA C-80 Complex is made up of TAs C-80A, C-80B, C-80C, and Test Site (TS) C-80W. Each test area consists of an approximate 800- by 2,000-foot cleared area with a control building, underground instrumentation building, and a test arena. The TA C-80 Complex consists of three arenas designed to determine the lethality of statically (in-place) detonated munitions. The arenas on the C-80 Complex are circular packed clay pads upon which the detonations occur. A wide variety of test instrumentation is arrayed on the clay pads during the static detonations. These include, but are not limited to, fiberboard bundles to collect bomb fragments, velocity screens to measure fragment velocities and distribution, and blast pressure gauges to characterize blast pressures produced. TS C-80W is used as a storage facility, vehicle compound, buildup area, instrumentation calibration area, and for processing and weighing munitions fragments.

TA C-80 Complex has the infrastructure, real estate, communications, and specialized data collection and reduction instrumentation needed to safely conduct a wide variety of static arena tests of munitions with up to 3,000 pounds net explosive weight (NEW). Resources are available to conduct four simultaneous arena tests. Types of tests conducted include conventional munitions and submunitions, warheads, lethality and vulnerability, heating/cook-off testing, bullet impacts, fragment velocity and dispersion, air blast and pressure profile, sympathetic detonation, booster efficiency, fuel air explosives, and insensitive explosives. This resource provides the capability to perform munitions characterization tests, collect the data, automatically sort and catalog the data with computer systems for incorporation into effectiveness models and publish detailed technical reports. The complex is divided into four distinct facilities:

- TA C-80A
 - Water tanks facility for total recovery. NEW: up to 8 pounds (Figure 1-3)
 - Arena test facility. NEW: up to 200 pounds
- TA C-80B
 - Arena test facility. NEW: 0 to 500 pounds
 - Sensor-fuzed weapon submunitions test capabilities (Figure 1-4)

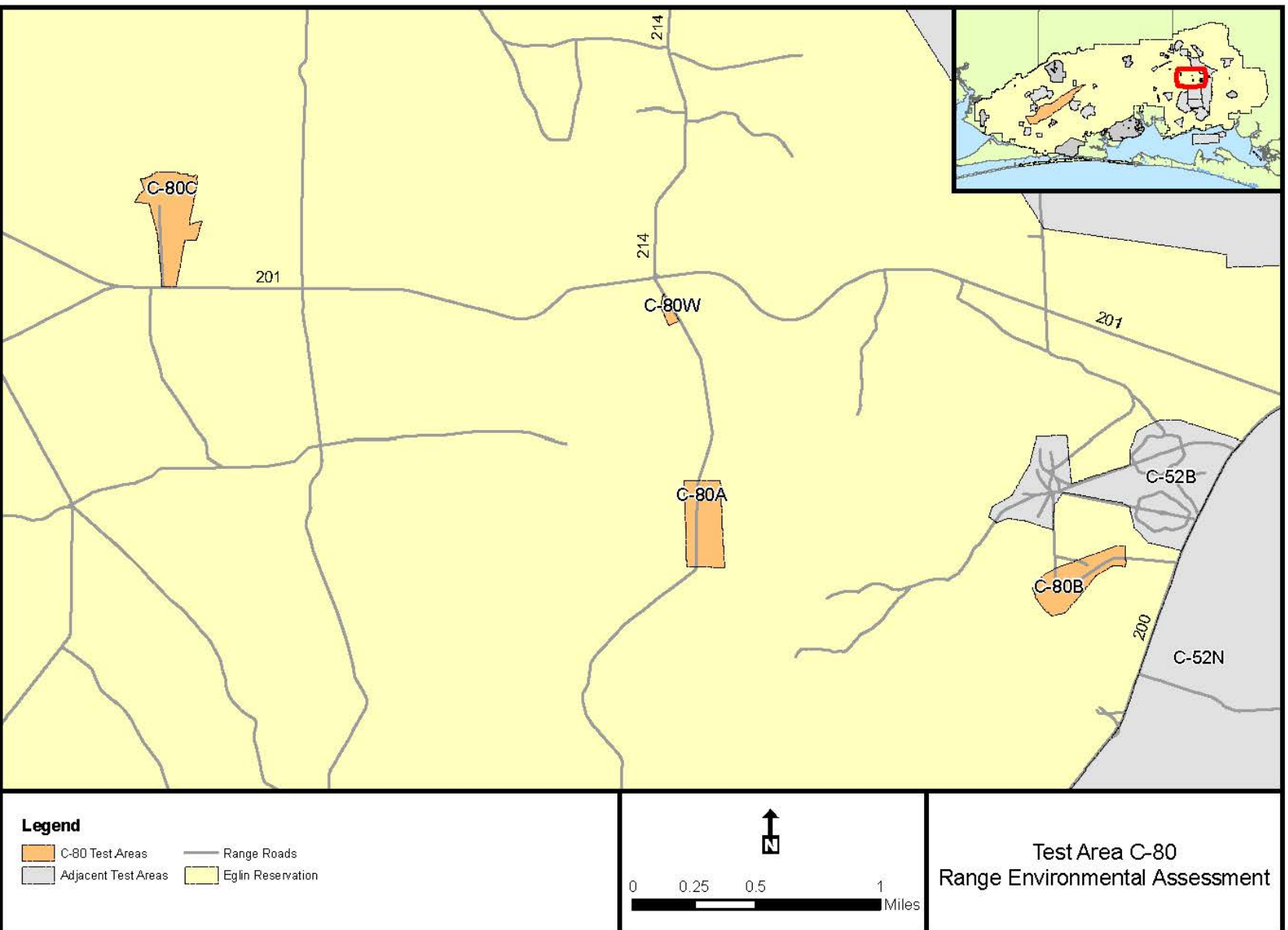


Figure 1-2. Test Area C-80 Region of Influence

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Figure 1-3. Water Tank Facility on Test Area C-80A



Figure 1-4. Sensor-Fuzed Weapon Testing Apparatus on Test Area C-80B

- TA C-80C arena test facility. NEW: 0 to 3,000 pounds
- TS C-80W support facility for fragment weighing, blast pressure transducer calibration, mobile instrumentation van support, and logistics center for the complex

Currently TA C-80A is on active-reduced maintenance status and TA C-80B, TA C-80C, and TS C-80W are active (U.S. Air Force, 2001). Detailed information on the capabilities, users, and missions at each test arena is provided in the *2005 Test Area C-80 Complex Final Environmental Baseline Document (EBD)* (U.S. Air Force, 2005a) (copies of referenced documents can be obtained through Eglin AFB's Public Affairs Office).

1.4 DECISION DESCRIPTION

The 46th Test Wing desires to authorize a new level of activity for the TA C-80 Complex, 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 of that level of activity, 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 the TA C-80 Complex 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-80 Complex resource areas were identified through preliminary investigation. Resource areas eliminated from further analysis are discussed in Section 1.5.1. Resource areas identified for detailed analysis are described in Section 1.5.2, with narratives providing a summary of the preliminary screening for potential impacts.

1.5.1 Resource Areas Eliminated From Detailed Analysis

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. The TA C-80 Complex is solely utilized for military activities. There are no plans to change land use areas within the TA C-80 Complex; therefore, land use is not discussed further.

Legacy Debris Pits

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 (96 CEG/CEVR) identifies and manages LDPs to monitor known and potential areas of concern regarding munitions. No LDP sites are located on the TA C-80 Complex; therefore LDP sites are not discussed further.

1.5.2 Resource Areas Identified for Detailed Analysis

Chemical Materials/Debris

Chemical materials encompass liquid, solid, or gaseous substances that are released into the environment as a result of mission activities. These include organic and inorganic materials that can produce a chemical change or toxicological effect to an environmental receptor. Examples of chemical materials on the TA C-80 Complex include gaseous chemical materials from current use of ordnance, smokes, and flares, as well as depleted uranium on TA C-80B from historical arena testing.

Debris includes the physical materials that are deposited on the surface of terrestrial or aquatic environments during mission activities, analogous to litter. This category differs from chemical materials by focusing on the physical disturbance rather than the chemical alterations that could result from the residual materials. Examples of debris include shrapnel deposited from bombs and missiles, chaff and flare cartridges, and intact inert bombs. There are not expected to be major debris issues for the TA C-80 Complex, because the debris is periodically removed from the test area in accordance with Eglin standard operating procedures. However, the potential for direct physical impacts from munitions debris or shrapnel to an object or organism is a concern, and is covered under the appropriate resource area.

Soils

Soils within the TA C-80 Complex have the potential to be impacted from testing and training 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-80 Complex ROI. Water resource analysis addresses the potential for impacts to surface waters, wetlands, floodplains, and ground water from sedimentation and/or contamination by testing and training activities and associated expendables.

Biological Resources

Biological resources may be affected by the Proposed Action. Issues examined include potential impacts on wildlife and sensitive species and habitats from direct physical impact (DPI), habitat alteration, and noise. DPI is the physical harm that can occur to an organism (plant or animal) if it comes into contact with an effector. Examples of DPI on the TA C-80 Complex include wildlife being struck by ordnance or shrapnel.

Habitat alterations are described as the physical damage or perturbations to the habitats of the terrestrial or aquatic environments. Examples of habitat alterations include potential destruction of vegetation and sensitive habitats of the surrounding interstitial areas through wildfire related to static detonations, which occur on the TA C-80 Complex.

Analysis focuses on identifying sensitive species and habitats within the TA C-80 Complex ROI, analyzing the potential for impacts, and establishing management requirements for the avoidance and/or minimization of identified potential impacts.

Air Quality

Testing and training operations would release emissions from munitions. 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 as the unwanted sound produced by test and training missions and their associated expendables. Noise may directly inconvenience and/or stress humans and some wildlife species and may 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. Analyses of potential noise impacts include discussions of two noise components: the physical overpressure and the acoustic sound. Noise is a potential issue for TA C-80 Complex missions involving static detonations. Examples of noise impacts include exposure of sensitive species to harmful levels of noise.

Cultural Resources

Potential adverse effects to cultural resources would include disturbance or destruction of sites or artifacts. Physical disturbance and/or the destruction of cultural resources could occur from testing and training mission activities. Analysis will focus on cultural site locations and the likelihood of site disturbance and or destruction.

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 the military 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 region of influence (ROI). Although the TA C-80 Complex 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, 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) associated with noise, pollutant transport, and other conditions in the TA C-80 Complex 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.

1.6 FEDERAL PERMITS, LICENSES, AND ENTITLEMENTS

No federal or state licenses or permits are necessary to conduct the TA C-80 Complex mission activities. Consultation with the U. S. Fish and Wildlife Service would not be required for the implementation of the Preferred Alternative in this REA.

Some 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).

2. ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the alternatives that will be evaluated for potential environmental impacts. The proposed alternatives are:

- No Action Alternative: Baseline activity, as defined by the Preferred Alternative in the *Test Area C-80 Complex PEA*, dated May 2000 (U.S. Air Force, 2000a).
- Alternative 1: Authorize current level of activity plus foreseeable future activities.
- Alternative 2 (Preferred Alternative): Alternative 1 with a 300-percent mission surge.

Section 2.1 summarizes the alternatives, including the alternative-specific activities and expendables.

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 46 TW/XP, 96 CEG/CEVSP, and 96 CEG/CEVSN. The alternatives were chosen based on how foreseeable future activities will expand Eglin AFB's testing requirements in the near future. None of the alternatives considered were eliminated from detailed analysis.

2.2.1 No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a), which authorized the baseline activity level (FY1995 through FY1997 mission activities and FY1999 sensor-fuzed weapons testing) and analyzed the maximum allowable NEW (200 to 3,000 pounds depending on the test area), as well as an increase of 1,000 percent of baseline levels (i.e., 10 times the baseline) of mission activities on TA C-80A, TA C-80B, and TA C-80C. The increase was associated with arena and EOD testing and training on TA C-80A, TA C-80B, and TA C-80C, along with increased testing of sensor-fuzed weapons on TA C-80B. The expendables associated with this alternative are listed in Table 2-1.

**Table 2-1. Summary of Test Area C-80 Complex Expendables
Under the No Action Alternative**

Test Area	Number of Missions per Year	Ordnance Type	Number of Expendables
C-80A	220	30-mm HEI warhead	10
		40-mm HEDP warhead	10
		MON-200 antipersonnel mine	50
		Pipe bomb	10
		Suitcase bomb	180
		C-4 (0.125-lb block)	10
		UK tungsten warhead	10
		Sensor shelter warhead	10
		AUP warhead	20
		Orlon quip foreign weapon exploitation	10
		AUP-1 warhead	10
		C-4 (0.5-lb block)	20
		Explosive sheets, detasheet	10
		PSM-1 foreign weapon exploitation	20
C-80B	466	TM-62P3 foreign weapon exploitation	10
		PSM-1 foreign weapon exploitation	10
		C-4 (0.5-lb block)	10
		Mk-82	190
		Demo charge (0.0032 lb)	210
		Demo charge (30-lb block)	250
		Detonation cord (0.0093 lb/ft)	38,700
		M2 timer, igniter	1,000
		M112 demo charge (1.25 lb)	800
		Skeet, live (0.14 lb NEW)	250
		P3I projectile, live (2.5 lb NEW)	1,000
		Smoke grenades (various)	430
		Flares (various)	430
		OS-4 smoke pot	430
		Fog oil	1,000 gallons
C-80C	530	Ictus nickel foreign weapon exploitation	20
		JAST-1000 warhead	20
		Mk-82, live	20
		Mk-83, live	36
		Mk-84, live	10
		C-4 (0.5-lb. block)	24
		C-4 (1-lb block)	20
		High explosive (HE) ball	10
		Sabre charge	256
		Suitcase bomb	80
		1,000-lb warhead	10
		I-800 hardened target warhead	20
		MMTD warhead	80
		MRUD warhead	10
		40-mm fragment warhead	40
		BLU-109, live	10
		French FCT warhead	20
		HE ball (125 lb)	10
		HE ball (260 lb)	10
		M112 demo charge (1.25 lb)	5,000

Source: U.S. Air Force, 2005a
AUP = advanced unitary penetrator

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

Alternative 1 consists of authorizing the current level of activity (i.e., the Range EIAP Baseline) plus foreseeable future activities. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Current activities not captured in the 2000 PEA include:

- The completion of an operational ground testing (OGT) facility at C-80A in June 2004. The OGT facility provides vibration and weapon system engine-run capabilities for guided munitions nondestructive ground testing. The OGT facility can accommodate the firing of rocket engines and jet engine operation, fire squibs, and initiate fuzes. The facility conducted several tests in 2005.
- The maximum NEW rating for Test Areas C-80A, C-80B, and C-80C would remain at 200, 500, and 3,000 pounds, respectively.

Future activities include expansion of the OGT facility to include larger vibration tables, test larger weapons, and add an acoustic vibration capability. Work on the expansion began in FY2007 with a planned completion date of FY2012 (Moyer, 2008).

Table 2-2 lists the maximum annual munitions items that were tested between 1998 and 2007 at the TA C-80 Complex. The percent breakdown of expended item categories in Table 2-3 provides an overview of TA C-80 Complex missions from the contributing major test organizations. Items are categorized by NEW, sensor-fuzed weapon testing, and OGT facility tests to facilitate future comparisons based on potential impact. The size and NEW or weight of constituents drive the potential for impacts from noise, emissions, and safety concerns. Items are expected to change somewhat from year to year, but the categories should remain relatively constant. For the purposes of analysis, all rocket motors and boosters were assumed to have been tested as part of the OGT facility. All explosive bolts and skeets were assumed to have been tested as part of the SFW testing program associated with the tower on TA C-80B.

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

Alternative 2 includes authorization of the current level of activity plus a 300-percent increase in mission activities. This is the Preferred Alternative because it includes all mission activities that are expected to occur and provides capacity for a surge in testing. This alternative authorizes an expected maximum level of activity, which allows better responsiveness to the user group while ensuring that cumulative environmental effects do not cause significant impacts. Table 2-2 presents a representation of specific items to be tested under Alternative 2 based on their expenditure during the Alternative 1 current period (1998 through 2007), though with a 300-percent increase. In reality, item type is likely to vary.

Table 2-2. Expendables for Test Area C-80 Complex Under Alternatives 1 and 2

Test Area	Expendable Type	Alternative 1 ^a		Alternative 2
		Max Annual	Year	
C-80A	AGM-65A	1	2004	4
	Practice bomb, 25-lb BDU-33D/B	2	2006	8
	Bomb general purpose, Mk-82-1 tritonal w/lugs	1	2006	4
	C-4, 1 lb HE	2	1998	8
	Cartridge, impulse BBU-35/B	26	2006	104
	Cartridge, signal Mk-4 mod 3	2	2006	8
	Cup, nose support Mk-81, 82, 83, 84	1	2006	4
	Fin assembly, bomb	1	2006	4
	Flare, IR CM, M-206	22	2006	88
	Fuze set, bomb FMU-139A/B	1	2006	4
	I-800 hardened target warhead	2	1998	8
	M-211	30	2006	120
	MJU-50	1	2004	4
	Nose plug bomb 750-lb M-117	1	2006	4
	Roland warhead	1	2004	4
C-80B	Booster	12	1999	48
	C-4, 1 lb HE	20	1999	80
	CBU-97 skeet (submunition)	76	2000	304
	Detonator, RP-87	12	1999	48
	Explosive bolts	152	2000	608
	L8A3 grenades	16	1999	64
	Grenade launcher smoke screening RP UK L8A3	24	2005	96
	Hand grenade, HE frag	1	2004	4
	Smoke, M76	12	1999	48
	XM-81 smoke grenade	12	1999	48
	SFW pellets	2	2003	8
	30 mm	1	2006	4
	Bolts	8	2006	32
	Cartridge, 30-mm HEI PGU-13/B (Aerojet)	2	2006	8
	Det, EBW,Rp1	5	2006	20
	Cartridge, impulse BBU-35/B	1	2006	4
	Cartridge, impulse BBU-35/B	24	2006	96
	Flare, IR CM, M206	22	2006	88
	M-211	30	2006	120

Table 2-2. Expendables for Test Area C-80 Complex Under Alternatives 1 and 2, Cont'd

Test Area	Expendable Type	Alternative 1 ^a		Alternative 2
		Max Annual	Year	
C-80B (Cont'd)	Bomb, practice 25-lb BDU-33D/B	2	2006	8
	Bomb general purpose, Mk82-1 tritonal w/lugs	1	2006	4
	Cartridge, signal Mk4 mod 3	2	2006	8
	Cup, nose support Mk 81, 82, 83, 84	1	2006	4
	Fin assembly, bomb	1	2006	4
	Fuze set, bomb FMU-139A/B	1	2006	4
	Nose plug bomb 750-lb M117	1	2006	4
C-80C	.50 cal AP	4	1998	16
	120-mm cartridge	2	2006	8
	122 mm	1	2007	4
	152-mm projectile	9	2007	36
	AIN-120	2	1999	8
	ATACM	1	2007	4
	ATCMS warhead	1	2006	4
	AUP-3 warhead	4	2001	16
	BLU-111	1	2007	4
	BLU-119	2	2003	8
	BLU-121	5	2005	20
	BLU-122	2	2004	8
	Bomb GP 2,000-lb Mk-84 Mod2	35	2004	140
	Bomb GP 500-lb BLU-111 A/B thermal protect	2	2007	8
	Boom assembly	1	2006	4
	Booster pellet	2	2003	8
	Booster, A-5	4	1998	16
	Booster, comp B, small	3	1998	12
	Booster, Mk-44	15	2002	60
	Broach warhead	2	1998	8
	Booster, guided missile, Mk 44 mod 1	5	2006	20
	C-4 (no weight designation)	2	2007	8
	C-4, 0.5 lb HE	5	2001	20
	C-4, 1 lb HE	26	1998	104
	C-4, 1.25 lb HE	2	2002	8

Table 2-2. Expendables for Test Area C-80 Complex Under Alternatives 1 and 2, Cont'd

Test Area	Expendable Type	Alternative 1 ^a		Alternative 2
		Max Annual	Year	
C-80C (Cont'd)	CBU-97 skeet (submunition)	1	2002	4
	Charge demo M112 w/taggant	3	2007	12
	Det cord	140	2002	560
	Det, EBW, RP-83	12	2007	48
	Detonator, RP-80	6	2000	24
	Detonator, RP-83	9	2001	36
	Electric blasting cap	12	2002	48
	Explosive wire bridge PR83	1	2007	4
	Explosive bolts	34	2002	136
	Fin assembly Mk-84 w/o lugs	5	2005	20
	FMU-139	3	2004	12
	FMU-143	2	2005	8
	FMU-152	17	2005	68
	FMU-156 fuze	1	1998	4
	Fuze	1	2004	4
	Fuze, blasting time	200	2002	800
	Guided multiple launch rocket (GMLRS) system booster	1	2007	4
	GMLRS rocket	1	2007	4
	Gnostic mine	5	2002	20
	Gnostic mine part I	2	2001	8
	Gnostic mine part II	4	2001	16
	Hamdy AP mine	1	2003	4
	Hamdy mine	1	2003	4
	High explosives research & development (HERD) HE ball	2	1998	8
	HERD HE, claw 5, ball	1	1998	4
	I-800 hardened target warhead	2	1998	8
	Igniter, blasting M81	22	2002	88
	Joint Air-to-Surface Standoff Missile (JASSM) electronic safe and fuze (ESAF)	1	2007	4
	JASSM warhead	2	2000	8
	JASSM warhead (WDU-42/B)	2	1999	8
	JASSM warhead (WDU-42/B), live	1	2002	4

Table 2-2. Expendables for Test Area C-80 Complex Under Alternatives 1 and 2, Cont'd

Test Area	Expendable Type	Alternative 1 ^a		Alternative 2
		Max Annual	Year	
C-80C (Cont'd)	JP-8 fuel	4,900 gal	1998	19,600 gal
	KB-1 grenades	7	2006	28
	Limpet MPR M85 mine	2	1998	8
	MIM-104 Patriot missile	4	1998	16
	Mine (unnamed)	3	2004	12
	Mine, antitank w/o fuze	2	2004	8
	MJU-50	25	2004	100
	Mk-44 booster	18	2002	72
	Mk-58 motor	6	2002	24
	Mk-82	10	2005	40
	Mk-84	3	2006	12
	Mse le	1	2007	4
	Mse tip	2	2007	8
	ORKAN at mine	2	2002	8
	PAC-3 LE/SRM	1	2007	4
	Patriot missile 4-pack canister	1	1998	4
	Patriot missile altitude controls	2	1998	8
	Patriot Pac 3 rocket motors	2	1998	8
	Pipe bomb, 20 lb HE	2	2000	8
	Pipe bomb, 50 lb HE	3	2001	12
	Propellant, 1 lb	32,000 lb	2000	128,000 lb
	RDU	3	2007	12
	RP-80	2	2007	8
	RP-81	4	2004	16
	RP-83	19	2002	76
	RP-87	5	2006	20
	SDB fuze	4	2004	16
	SDB warhead	3	2007	12
	SDB sled	1	2005	4
	Shape charge RDX 230-120	24	2002	96
	Shape charge RDX 230-900	40	2002	160
	Shaped charge, 7 lb HE (HERD)	4	2000	16

Table 2-2. Expendables for Test Area C-80 Complex Under Alternatives 1 and 2, Cont'd

Test Area	Expendable Type	Alternative 1 ^a		Alternative 2
		Max Annual	Year	
C-80C (Cont'd)	TNT ball	1	1999	4
	WAU-10	3	2002	12
	WAU-17	9	2002	36
	WAU-23	3	2006	12
	WDU-33	9	2002	36
	WDU-41 (AMRAAM) warhead	15	2002	60
	WDU-42	2	2004	8

a. Maximum annual munitions expended between 1998 and 2007.

Table 2-3. Percent Breakdown of Expendables by Test Organization by General Munitions Category Under Alternatives 1 and 2

ACTIVITY	ARENA TESTING						SENSOR-FUZED WEAPON TESTING ⁵	OPERATIONAL GROUND TESTING ⁶
	Large NEW Ordnance ¹	Medium NEW Ordnance ²	Small NEW Ordnance ³	Misc. Explosive Components ⁴	Gunnery & Projectiles	Smokes/Flares	Skeets & Explosive Bolts	Rocket Motors & Boosters
USER GROUP	PERCENT (%) CONTRIBUTION BY ORGANIZATION							
46 OG	96	71	44	41	33	33	100	54
46 RANS	0	0	0	35	0	67	0	0
780 TS	0	21	31	17	67	0	0	46
40 FTS	4	8	25	7	0	0	0	0

1. NEW of 500 lb or higher (max of 3,000 lb). Most common was Mk-84 with 945 lb of H-6 or tritonal, Minol II, or H-6 explosive.

2. NEW of 100 to 500 lb. Most common was Mk-82 with 192 lb of tritonal,

3. NEW of less than 100 lb. Most common was small diameter bomb (SDB) with 50 lb of explosive.

4. Detonation cord, squibs, fuzes.

5. Explosive bolt.

6. Rocket motors.

NEW = net explosive weight

2.3 COMPARISON OF ALTERNATIVES

Potential impacts under each alternative are summarized below in Table 2-4.

2.4 PREFERRED ALTERNATIVE

Alternative 2 is the Preferred Alternative, which allows a 300-percent increase in TA C-80 operations over the current level of activity plus foreseeable future activities. This alternative

includes new mission capabilities while retaining previous capacity, maximum net explosive weight ratings and anticipates any surge in mission requirements. The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the new test capabilities, new weaponry, or mission surge requirements at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative because it would support potential increases and changes in testing and munitions as they occur.

Impacts to or from chemical materials, soils, water resources, biological resources, cultural resources, air quality, noise, safety, and socioeconomic resources are not considered significant under Alternative 2, with the implementation of management actions discussed in the sections devoted to the particular resources and summarized in Section 2.5, Management Requirements. Long-term and cumulative impacts to the affected environment have not been identified under this alternative.

Table 2-4. Summary of Potential Impacts Under All Alternatives

Resource	No Action Alternative	Alternative 1	Alternative 2
Chemical Materials	Munitions fragments and residues would be generated as a result of testing missions. 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. Eglin Air Force Base (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 approximately three-fold 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.
Soils	No adverse effects to soils would be expected under any of the alternatives.		

Table 2-4. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Water Resources	Activities performed on Test Area (TA) C-80 have the potential to impact ground water and surface water resources. However, Eglin AFB has outlined prevention and management processes to reduce or minimize the impacts of pollutants into the environment. Therefore, no significant impacts are anticipated to ground water or surface water. There are also no significant impacts anticipated to floodplains or wetlands since neither resource occur within the TA C-80 Complex.		
Biological Resources	There would be no effect to biological resources expected under any of the alternatives, given the implementation of specific management requirements identified within this REA.		
Cultural Resources	No adverse effects to cultural resources would be expected under any of the alternatives. Future construction project or ground-disturbing activities would need to be considered on a case by case basis.		
Air Quality	Air quality would have minimal increases in levels of criteria pollutants emissions from the No Action Alternative.	An increase in activity to current levels plus the foreseeable future activities would have no significant impact to regional air quality. Criteria pollutants would increase emissions by less than one percent of the regional air quality.	Air quality would have minimal increases in levels of criteria pollutants with the increase of activity by 300 percent. Each criteria pollutant emission would be less than 1 percent of Walton County emissions. No adverse impacts are expected.
Noise	There would be no adverse noise effects to the community. The intensity of the noise experienced by the community would not change. Significant impacts to the community are not anticipated.	There would be no adverse noise effects to the community. Noise from rocket motor testing would not affect the public. Significant impacts to the community are not anticipated.	The increase in frequency of large detonations could result in an increase in noise complaints. Prior to detonation, the Air Force should consider noise modeling for conditions of strong winds and temperature inversions. Significant impacts to the community are not anticipated.
Safety	Since the types of munitions to be used are the same or similar to the types currently used at TA C-80, 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 explosive ordnance disposal (EOD) and range maintenance activities. Safety footprints or surface danger zones (SDZs) would be employed for land-based training where live ordnance is used. In the case of the proposed live-fire ranges, personnel exclusion zones and appropriate safety buffers would be developed and implemented. Public access to TA C-80 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. Most areas on the Eglin Range, including TA C-80, have the potential for unexploded ordnance (UXO) contamination. Consultation and coordination with Explosive Ordnance Disposal (96 CES/CESD) 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 ensure that there would be no adverse impacts from UXO.		

Table 2-4. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Socioeconomics	None of the alternatives are expected to create significantly adverse socioeconomic or environmental justice impacts. No disproportionately high and adverse human health or environmental impacts to minority and/or low-income populations have been identified. In addition, there are no known environmental health or safety risks that may disproportionately affect children under any of the alternatives.		

2.5 MANAGEMENT REQUIREMENTS

The REA was prepared with consideration that the following management requirements will be employed for all TA C-80 Complex missions. The proponents are responsible for ensuring these management activities are adhered to.

Soils

Use of the following practices and procedures would serve to reduce the potential for runoff from munitions to impact water quality:

- Proactive monitoring for potential migration of metals.
- Runoff control through the use of vegetative ground cover, mulches and compost, surface covers, and engineered runoff controls.
- Provision for training areas to be scanned for debris and have dudded munitions removed.

Biological Resources

The following management actions for the TA C-80 Complex would minimize the potential for impacts to biological resources:

Sensitive Habitats

- Each user group that utilizes pyrotechnics or conducts other activities that have the potential to ignite wildfires must follow Eglin's Wildfire Specific Action Guide Restrictions, which rate fire danger from low to extreme.
- Continue prescribed burning as much as possible in High Quality Natural Communities.
- To reduce potential seed sources, treat areas with known invasive nonnative species problems.

Sensitive Species

- Continue monitoring of red-cockaded woodpeckers (RCWs) by the Eglin Natural Resources Section.

- Do not use smokes, simulators, or flares within 100 feet of natural water bodies (Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek), and never throw these items directly into a water body.
- Do not release chemicals or metals into streams. Do not release toxic aerosols within 300 feet of streams. If any ordnance lands in stream bank areas or interior objectives, they should be removed immediately in accordance with Air Force regulations.
- Pyrotechnics use will be restricted near Okaloosa darter streams.
- Vehicles should remain on established roads.
- Appropriate erosion control measures must be utilized during construction to reduce potential sediment runoff issues into Okaloosa darter streams.
- Follow the guidelines in *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004a).
- Follow the relevant Army guidelines for RCWs (U.S. Army, 2006).
- Prohibit military vehicles from occupying a position or traversing within 50 feet of a marked RCW cavity tree, unless on an existing road or maintained trail or firebreak.
- Continue prescribed burning as much as possible in fire-dependent habitats, particularly RCW foraging habitat.
- In accordance with Section 12.5.13.2 of AFI 32-7064, Integrated Natural Resources Management, cooperate with and support the NRS to ensure that sufficient resources (i.e., fire management personnel and equipment) are available to respond to fire emergencies.
- Eglin AFB Wildfire Specific Action Guide Restrictions (U.S. Air Force, 2007a) regarding forest fire danger ratings for munitions and pyrotechnics use will be adhered to.
 - Per the Wildfire Specific Action Guide Restrictions, if fire danger is:
 - Moderate: No restrictions on pyrotechnics. A fire watch is required to be posted for a minimum of 20 minutes after use of pyrotechnics has been completed.
 - High: Use caution with pyrotechnics and post a fire watch for a minimum of 30 minutes after use of pyrotechnics has been completed.
 - Very High: Restrict pyrotechnics to hand-thrown simulators or smoke grenades. No flares below 1000 feet above ground level. Limit BDU 33s and other munitions that may start fires to "Safe" areas. Use simulators or grenades only on roads or in pits. Cleared areas for pyrotechnics should be a minimum of 1.5 times the blast radius.
 - Extreme: No pyrotechnics allowed without prior approval from the Wildland Fire Program Manager or their designee at Eglin AFB Natural Resources (Jackson Guard) (96 CEG/CEVSNP, 882-6233 or FAX 882-5321).
 - Fire danger can be determined by calling the dispatch office or referring to the Fire Management section on the Environmental Management website.
 - Immediately notify Eglin AFB Fire Department Dispatch of any wildfire.
- Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary.

3. AFFECTED ENVIRONMENT

This chapter describes the receptors within the TA C-80 Complex that are potentially impacted by testing and training operations. The following resources are addressed: chemical materials, soils, water resources, biological resources, cultural resources, air quality, noise, safety, and socioeconomics.

3.1 CHEMICAL MATERIALS

Chemical materials encompass liquid, solid, or gaseous substances that are released to the environment as a result of mission activities. These would include munitions and pyrotechnic combustion byproducts from items such as smokes 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 the TA C-80 Complex.

3.1.1 Hazardous Materials

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), hazardous materials and wastes 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 consist of fuels, munitions, and pyrotechnics.

Eglin AFB has implemented a hazardous waste management plan, Air Armament Center (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). 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, 2005b).

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 (PBT). 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 Florida Department of Environmental Protection and the Florida Department of Transportation (FDOT) 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 that may potentially result in environmental impacts include the following:

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

A study of legacy debris pits (LDPs) that was compiled for the Eglin Range did not reveal any sites located on the TA C-80 Complex (U.S. Army Corp of Engineers [USACE], 2002).

3.1.3 Environmental Restoration Program (ERP)

The Environmental Restoration Program (ERP), formerly known as the Installation Restoration Program (IRP), 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 (CERCLA) and RCRA processes, as well as state environmental compliance programs, primarily those found in the 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). Only one ERP site on the TA C-80 Complex is subject to internal LUCs. LUCs are mechanisms that are 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.

The only ERP site subject to internal LUCs is located on TA C-80B (Table 3-1 and Figure 3-1). No other active ERP sites are located within the TA C-80 Complex. 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, 2007b).

Table 3-1. Active ERP Sites Located on the Test Area C-80 Complex

Location	Site ID	Site Status	Site Description
C-80B	POI 402	LUC - Internal	Test Area C-80B was designed to measure lethality parameters of conventional munitions. Historical records indicate that, in the early 1970s, approximately 100 rounds of DU were expended at the test area. The Site Investigation Report recommended no further action with land use restrictions for industrial land use scenarios, which has been approved. Eglin will manage the site with internal LUCs.

Source: U.S. Air Force, 2007b

DU = depleted uranium; ERP = Environmental Restoration Program; LUC = land use control; POI = point of interest

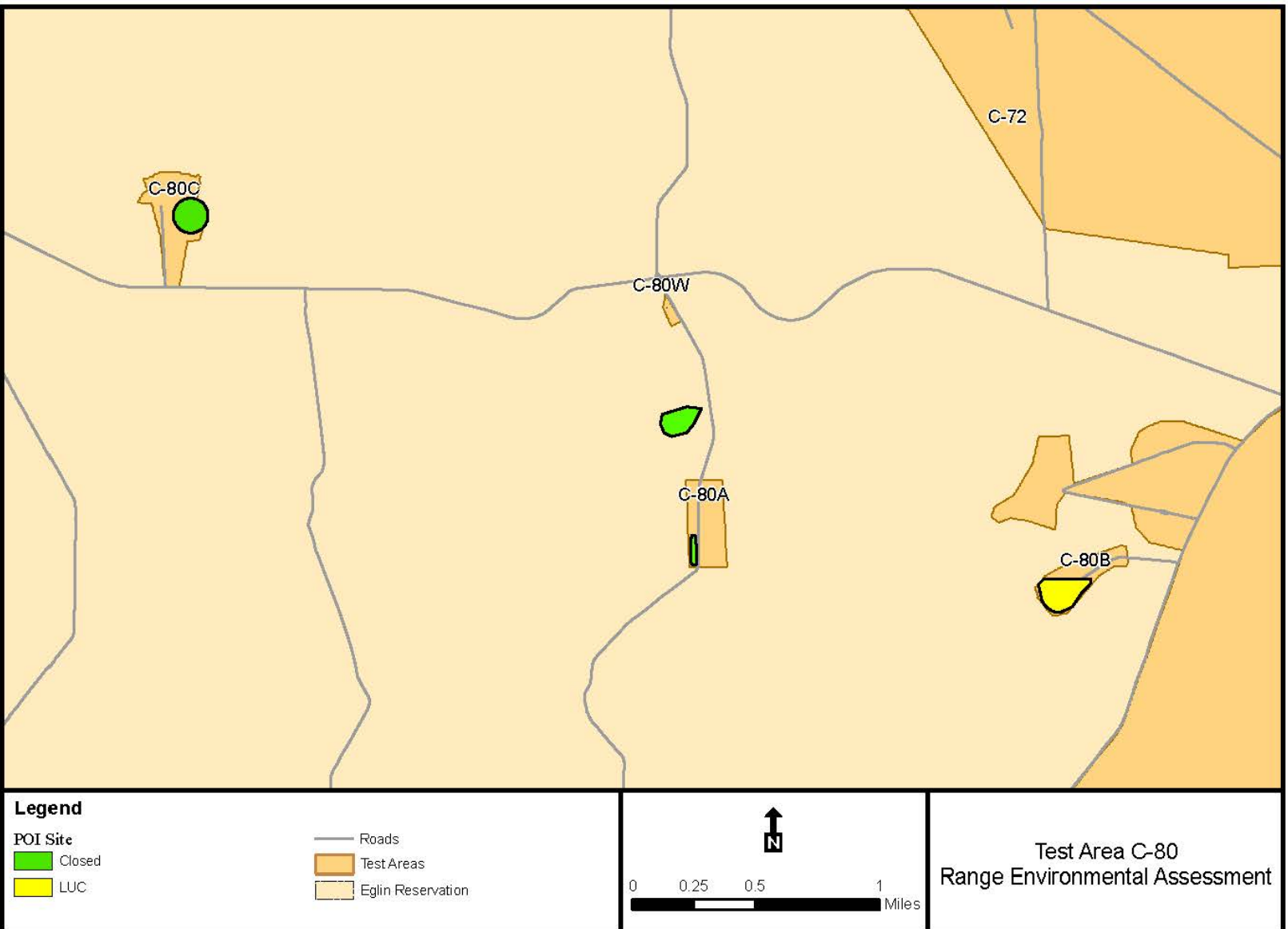


Figure 3-1. Active Environmental Restoration Program Sites Located on the
Test Area C-80 Complex

3.2 SOILS

Soil Types

Table 3-2 lists the major soils of interest on the TA C-80 Complex; soil types are depicted in Figure 3-2. The primary soil type for TA C-80 Complex is Lakeland sand. Very deep, excessively drained permeable soils that formed in thick sandy sediments characterize Lakeland sands. These soils are abundant on both level and steep uplands and can extend to 80 inches in depth. Lakeland soils are associated with a number of soil types present at Eglin AFB. Lakeland sands vary in acidity from medium to very strong; thus, soil colors vary and range in color from dark, grayish brown to brownish-yellow to yellowish-brown (Overing et al., 1995). The Lakeland sand soil series has a moderate-to-high susceptibility to erosion. This is due to the high sand content.

Two other soil types are present at TA C-80C. Troup sand (approximately 8 percent of the TA C-80 Complex) and Troup-Orangeburg-Cowarts loamy sand (approximately 10 percent) occur on the eastern portion of TA C-80C. The Troup series consists of very deep, somewhat excessively drained, moderately permeable soils that formed in sandy and loamy marine sediments. These soils are found on summits, shoulders, and side slopes in upland areas where slopes range from 0 to 12 percent. The Troup-Orangeburg-Cowarts loamy sand consists of very deep, well drained, moderately slow permeable soils. They are found on summits and side slopes and have a thick, sandy epipedon. The soils of the TA C-80 Complex are shown in Figure 3-2. Physical properties of the soil types found at the TA C-80 Complex are listed in Table 3-2. Additional soil types may occur on the TA C-80 Complex; however, the soils discussed above and listed in Table 3-2 are the dominant soils present.

Table 3-2. Soil Types and Characteristics

Soil Name	Erosion Risk	Attributes	Soil Type
Lakeland sand	Moderate to high	Yellowish brown to grayish brown	Sand
Troup sand	Moderate to high	Low organic matter; limited water-holding capacity	Sand
Troup-Orangeburg-Cowarts loamy sand	Moderate	Low organic matter; limited water-holding capacity	Sand

Risk of soil erosion across the TA C-80 Complex is moderate to high, based on soil data. Slopes associated with two water tanks located on the southwest portion of TA C-80A and west of RR 214 are responsible for high amounts of soil erosion. Erosion and loss of sand will likely continue without added protection and restoration of damaged area.

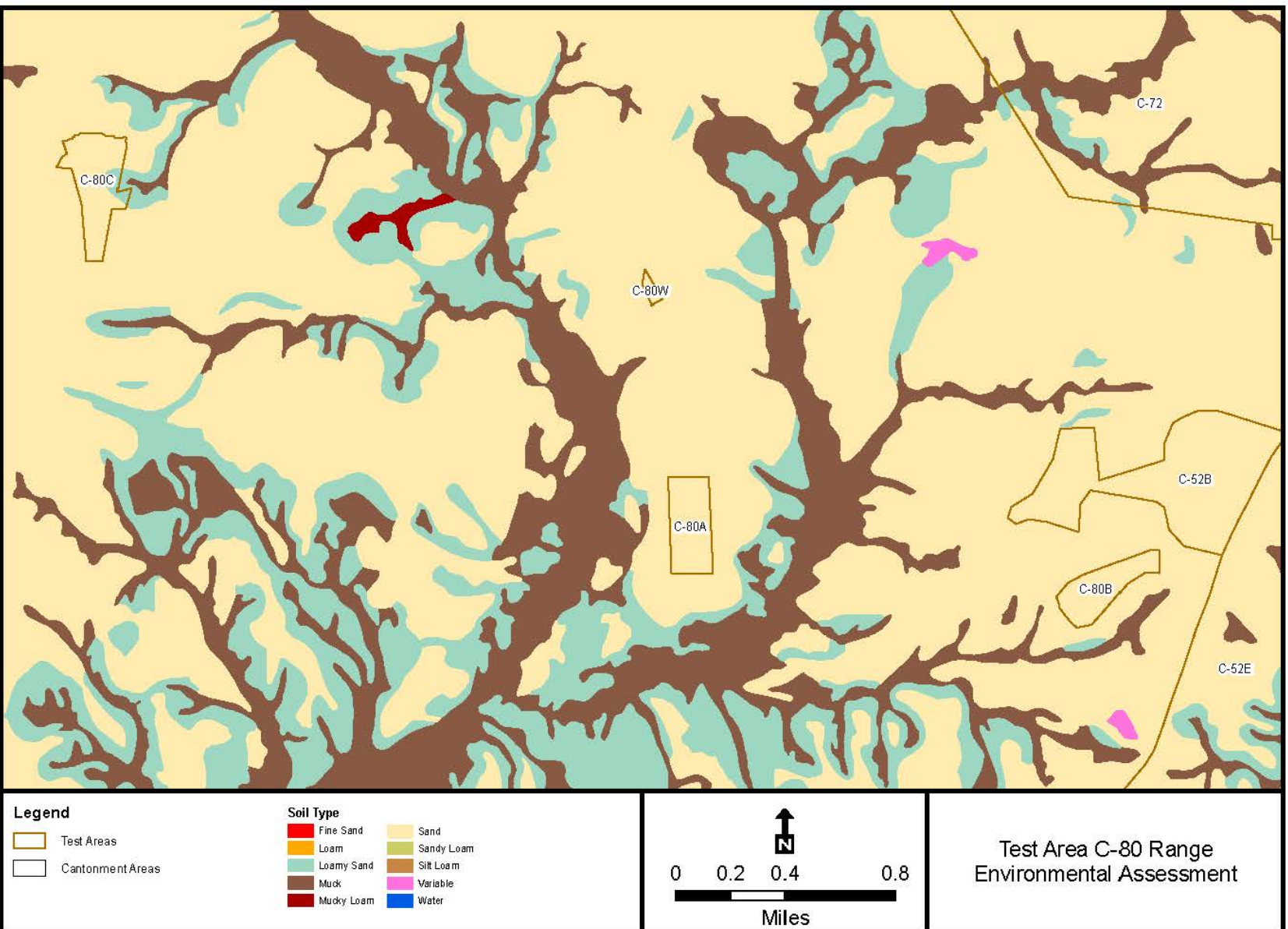


Figure 3-2. Soil Types Within the Test Area C-80 Complex

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3.3 WATER RESOURCES

This section provides descriptions of the qualitative and quantitative characteristics of water resources on the TA C-80 Complex at Eglin AFB. This includes wetlands, floodplains, surface waters, and ground water. Site-specific information on the water resources associated with the TA C- 80 Complex is provided below. Appendix A provides pertinent regulations.

3.3.1 Ground Water Resources

Two major aquifers underlie Eglin AFB: the Surficial aquifer, also known as the Sand and Gravel aquifer, and the Floridan aquifer. The Sand and Gravel aquifer is a generally unconfined, near-surface unit separated from the underlying confined Floridan aquifer by the low-permeability Pensacola Clay confining bed. The Sand and Gravel 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 Sand and Gravel aquifer is generally good, but it is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (U.S. Air Force, 2003).

Water from the Sand and Gravel 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, 2003). 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).

3.3.2 Surface Water

Surface waters are any waters that lie above ground water, such as streams, springs, ponds, lakes, rivers, bayous, and bays. Dogwood Head Branch crosses TA C-80C on the eastern portion (Figure 3-3). Other surface waters located within 1 kilometer (km) of the TA C-80 Complex include Bear Branch, Bully Horselot Branch, East Rocky Creek, Green Head Branch, Painter Head Branch, Rocky Creek, and Watering Creek. The majority of the surface waters at or near the complex flow south into Choctawhatchee Bay (U.S. Air Force, 2003).

Stream flow remains fairly constant all year because of a close relationship between ground water and surface water (U.S. Air Force, 2003). Rainfall that falls on the land surface rapidly infiltrates the soil profile to recharge the shallow ground water. Stored ground water slowly releases to the surface water (Becker et al., 1989). An increase in drainage on the Eglin land base from the west to the east results from higher elevations in the east where the TA C-80 Complex is located. Also, there is an increased clay content and hardpan development in the soils and underlying sediments to the east. This produces lower permeability, more surface runoff, and attendant channel development.

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. The 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) satisfies the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

The Section 303(d) List does not list any of the surface waters within 1 km of the TA C-80 Complex as impaired. However, Choctawhatchee Bay, which is the receiving water body for streams within the study area, is listed as impaired (FDEP, 2006a).

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 where the land is covered by shallow water (U. S. Fish and Wildlife Service, 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, 2000).

“*Jurisdictional wetlands*” are those over which the U.S. Army Corps of Engineers (USACE) has regulatory control under Section 404 of the Clean Water Act. Wetlands are defined in USACE's *Wetlands Delineation Manual* as “those areas that are inundated or saturated by surface or ground water 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 the three 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. This agency maintains jurisdiction over federal wetlands (33 Code of Federal Regulations [CFR] 328.3) under Section 404 of the CWA (30 CFR 330) and Section 10 of the Rivers and Harbors Act (30 CFR 329). 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. Executive Order (EO) 11990, *Protection of Wetlands*, offers additional protection to these resources. In addition, the USFWS and the National Marine Fisheries Service have important advisory roles. FAC 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-80 Complex. However, sizable wetland ecosystems occur in association with Rocky Creek and East Rocky Creek and are present within 1 km of TA C-80 Complex (Figure 3-3). Activities that may affect wetlands (protected by the Clean Water Act) go through a permit process with the state as well as with the USACE. Activities minimizing impacts to wetlands are preferred, and the planning process should reduce or minimize ground-disturbing projects or actions occurring in a wetland (U.S. Air Force, 2003).

3.3.4 Floodplains

Floodplains are lowland areas adjacent to surface water bodies (i.e., lakes, rivers, and bays) that water periodically covers during flooding events. Any actions being considered by federal agencies must be evaluated to determine whether they would occur within a floodplain. EO 11988, *Floodplain Management* (1977, 42 Fed. Reg. 26951), requires federal agencies to avoid adverse impacts associated with the occupancy and modification of floodplains and to avoid floodplain development whenever possible. 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).

No floodplain resources occur within the boundaries of the TA C-80 Complex, however, designated floodplains are present within 1 km of the TA C-80 Complex. A large portion of the wetlands associated with Rocky Creek and East Rocky Creek (east of Eglin Road 485 and west of Eglin Road 413) are located within the Federal Emergency Management Agency (FEMA) Flood Zone (Figure 3-3).

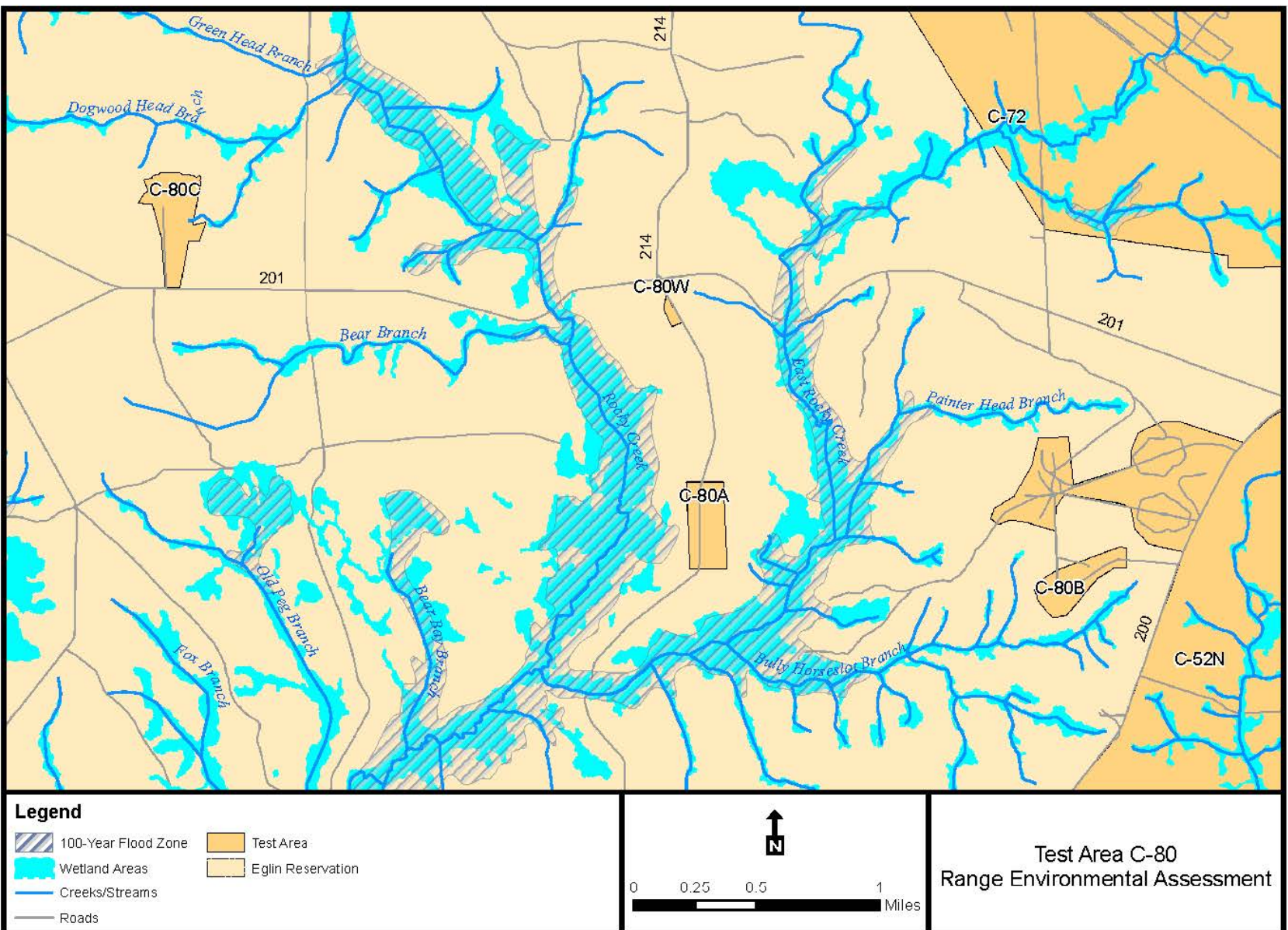


Figure 3-3. Water Resources Within the Test Area C-80 Complex

3.4 COASTAL ZONE

The term *coastal zone* is defined as coastal waters and adjacent shore lands strongly influenced by each other and in proximity to the several coastal states; and including islands, transitional and inner tidal areas, salt marshes, wetlands, and beaches. The entire state of Florida is considered part of the coastal zone and is subject to the CZMA. 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 outer boundary of the coastal zone is the limit of state waters, which for the Gulf coast of Florida is 9 nautical miles from shore.

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, which 11 state agencies and 4 of the 5 water management districts administer.

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).

3.5 BIOLOGICAL RESOURCES

Biological resources include the native and introduced terrestrial and aquatic plants and animals found on and around the TA C-80 Complex. The habitats of Eglin AFB are home to an unusually diverse biological community, including several sensitive species and habitats, many of which are present within the TA C-80 Complex.

3.5.1 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.

The TA C-80 Complex test areas are all sandhills, with surrounding interstitial areas consisting of wetland/riparian (swamp), sandhills, and flatwoods (Figure 3-4). Nearby test areas are open grasslands/shrublands. A list of typical species found within each ecological association is

provided in Table 3-3, and detailed descriptions of the ecological associations are found in Appendix A, Biological Resources.

3.5.2 Sensitive Habitats

Sensitive habitats include areas that the federal government, state government, or the Department of Defense (DoD) have designated as worthy of special protection due to certain characteristics such as high species diversity, rare plant species, or other unique features. Sensitive habitats on or near the TA C-80 Complex include high quality natural communities (HQNCs), wetlands, and floodplains. Wetlands and floodplains are detailed in Section 3-3.

High Quality Natural Communities

Specific areas exist within Eglin AFB that are ecologically unique due to their high quality examples of natural communities or presence of rare species. These areas were identified by the Florida Natural Areas Inventory (Kindell et al, 1997) through a project funded by the DoD Legacy Resource Management Program. Termed *high quality natural communities*, these areas are distinguished by the uniqueness of the community, ecological condition, species diversity, and presence of rare species. The TA C-80 Complex has approximately 3,422 acres of HQNCs (Figure 3-5).

3.5.3 Sensitive Species

Sensitive species are those species protected under federal or state law, including 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 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 USC 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 United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Service (NMFS) if impacts to federally listed species are possible.

Air Force Instruction (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 USFWS to further the goals of the Florida State Wildlife Conservation Strategy.

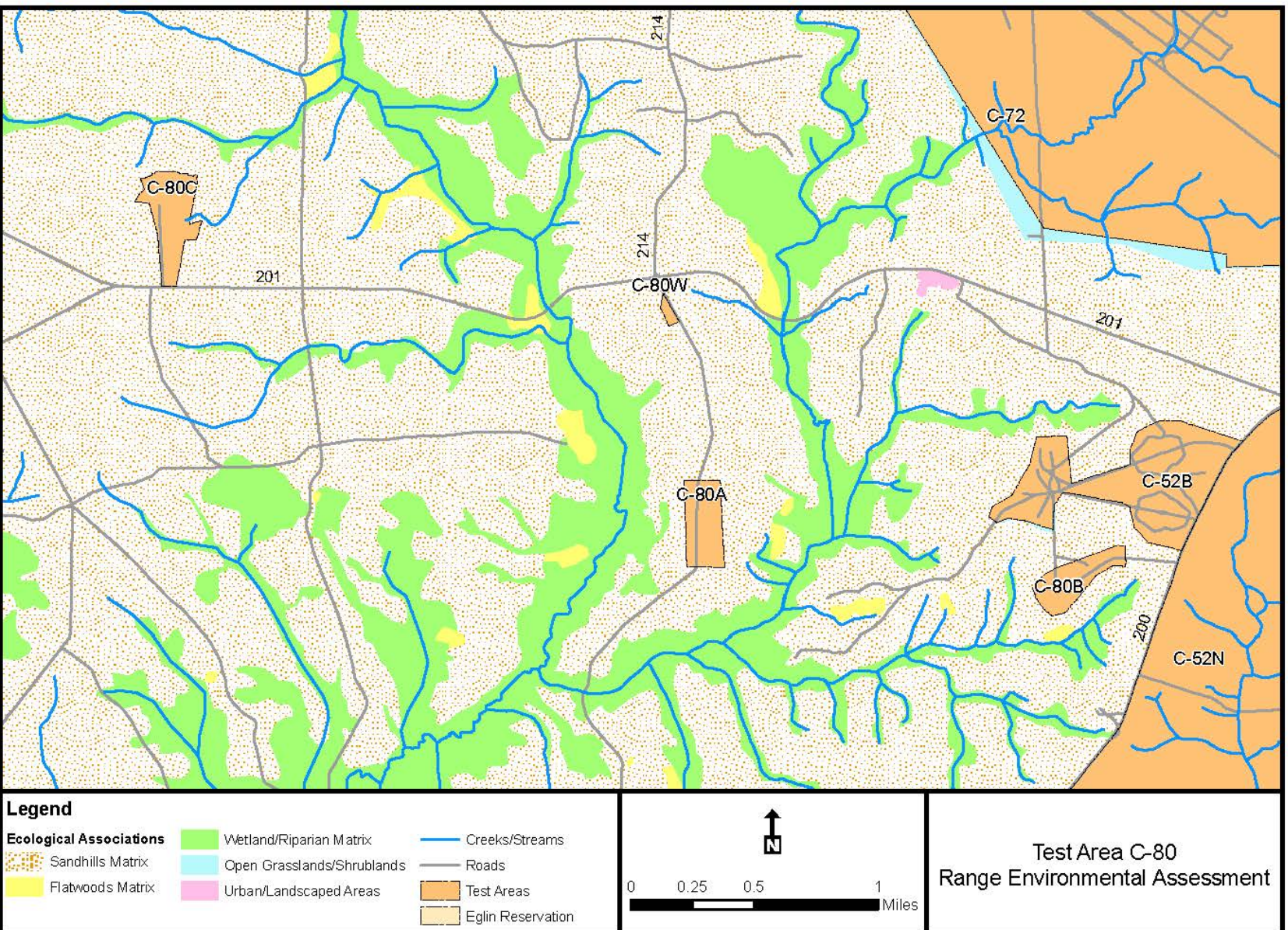


Figure 3-4. Ecological Associations on or Near the Test Area C-80 Complex

Table 3-3. Typical Species Found Within the Sandhills, Wetland/Riparian, Flatwoods, and Open Grassland/Shrubland Ecological Associations

Plants		Animals	
Common Name	Scientific Name	Common Name	Scientific Name
Sandhills Ecological Association			
Long leaf 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>	White-tailed deer	<i>Castor canadensis</i>
Pine-woods bluestem	<i>Andropogon arctatus</i>	Feral pig	<i>Sus scrofa</i>
Wiregrass	<i>Aristida stricta</i>	Raccoon	<i>Procyon lotor</i>
Wetland and Riparian Ecological Association (Freshwater)			
Yellow water lily	<i>Nymphaea Mexicana</i>	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>Sciurus 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>Sarracenia 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>
Flatwoods Ecological Association			
Longleaf pine	<i>Pinus palustris</i>	Wood duck	<i>Aix sponsa</i>
Runner oak	<i>Quercus pumila</i>	Red-winged blackbird	<i>Agelaius phoeniceus</i>
Saw palmetto	<i>Serona repens</i>	Cottonmouth	<i>Agkistridon piscivorus</i>
St. John's wort	<i>Hypericum brachyphyllum</i>	Flatwoods salamander	<i>Ambystoma cingulatum</i>
Slash pine	<i>Pinus elliotii</i>	River otter	<i>Lutra canadensis</i>
Black titi	<i>Cliftonia monophylla</i>	Beaver	<i>Castor canadensis</i>
Milkweed	<i>Asclepias humistrata</i>	Florida black bear	<i>Ursus americanus floridanus</i>
Pitcherplant	<i>Sarracenia</i> spp.	Gray fox	<i>Urocyon cinereoargenteus</i>
Open Grassland/Shrubland Ecological Association			
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	<i>Panicum</i> spp.	Slender glass lizard	<i>Ophisaurus attenuatus</i>
Forbs	<i>Panicum virgatum</i>	Gopher tortoise	<i>Gopherus polyphemus</i>

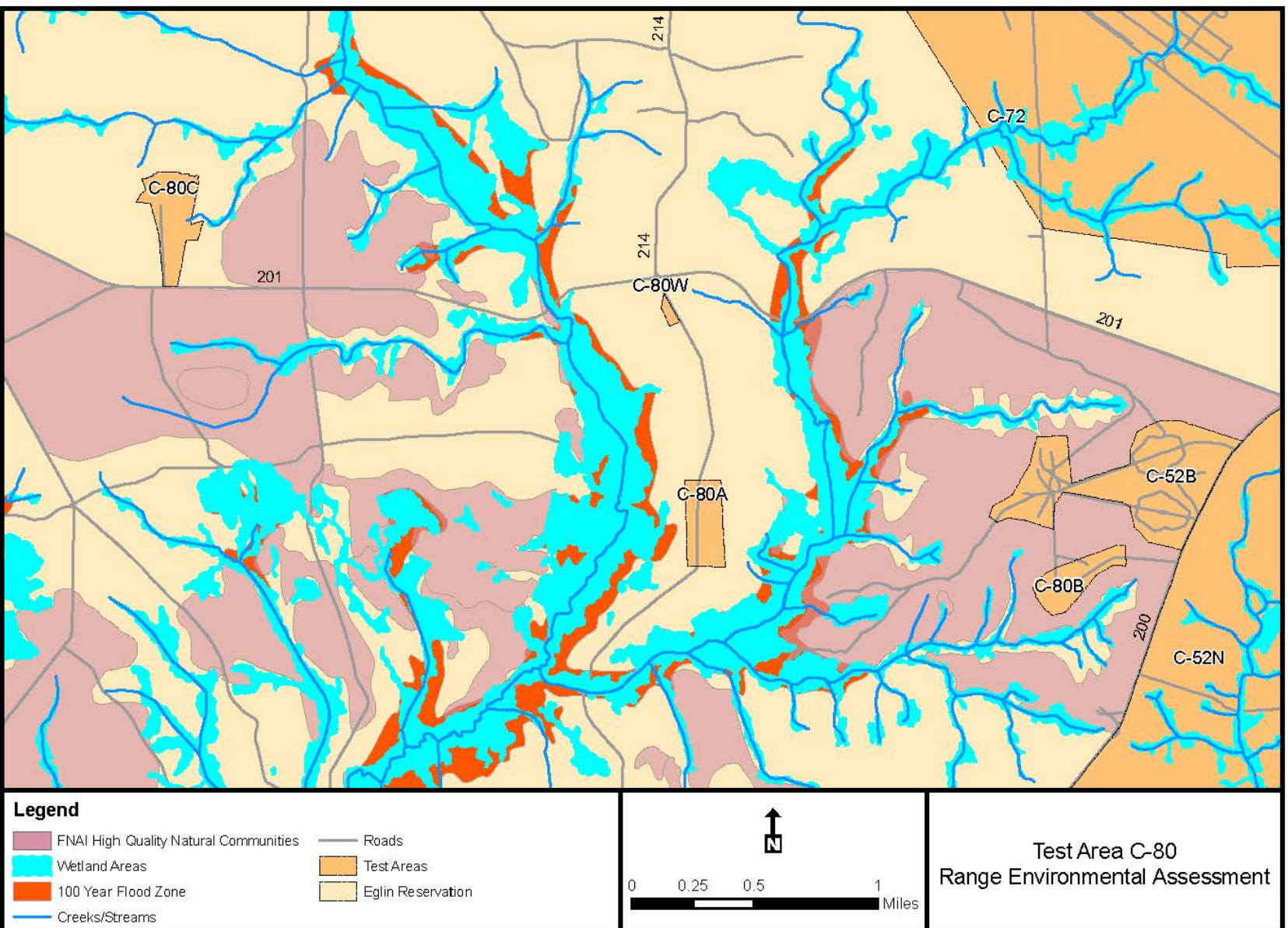


Figure 3-5. Sensitive Habitats Found on or Near the Test Area C-80 Complex

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Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) (16 USC 703-712; 1997-Supp) and Executive Order (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 the TA C-80 Complex are listed in Table 3-4 and are depicted in Figure 3-6 and Figure 3-7. Detailed descriptions of these species are located in Appendix A, Biological Resources.

Table 3-4. Sensitive Species Found on or Near the Test Area C-80 Complex

Scientific Name	Common Name	Status
Fishes		
<i>Etheostoma okaloosae</i>	Okaloosa darter	FE, SE
Reptiles		
<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
Birds		
<i>Falco sparverius paulus</i>	Southeastern American kestrel	ST; MBTA
<i>Picoides borealis</i>	Red-cockaded woodpecker	FE, ST; MBTA
<i>Aimphila aestivalis</i>	Bachman's sparrow	FCE; MBTA
Mammals		
<i>Ursus americanus floridanus</i>	Florida black bear	ST
Plants		
<i>Baptisia calycosa var villosa</i>	Hairy wild indigo	ST
<i>Panicum nudicaule</i>	Naked-stemmed panic grass	ST
<i>Rhexia salicifolia</i>	Panhandle meadowbeauty	ST
<i>Sarracenia rubra</i>	Sweet pitcher plant	ST
<i>Xyris scabrifolia</i>	Harper's yellow-eyed grass	ST
<i>Lachnocaulon digynum</i>	Bog button	ST
<i>Sarracenia leucophylla</i>	White-top pitcher plant	SE
<i>Quercus arkansana</i>	Arkansas oak	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

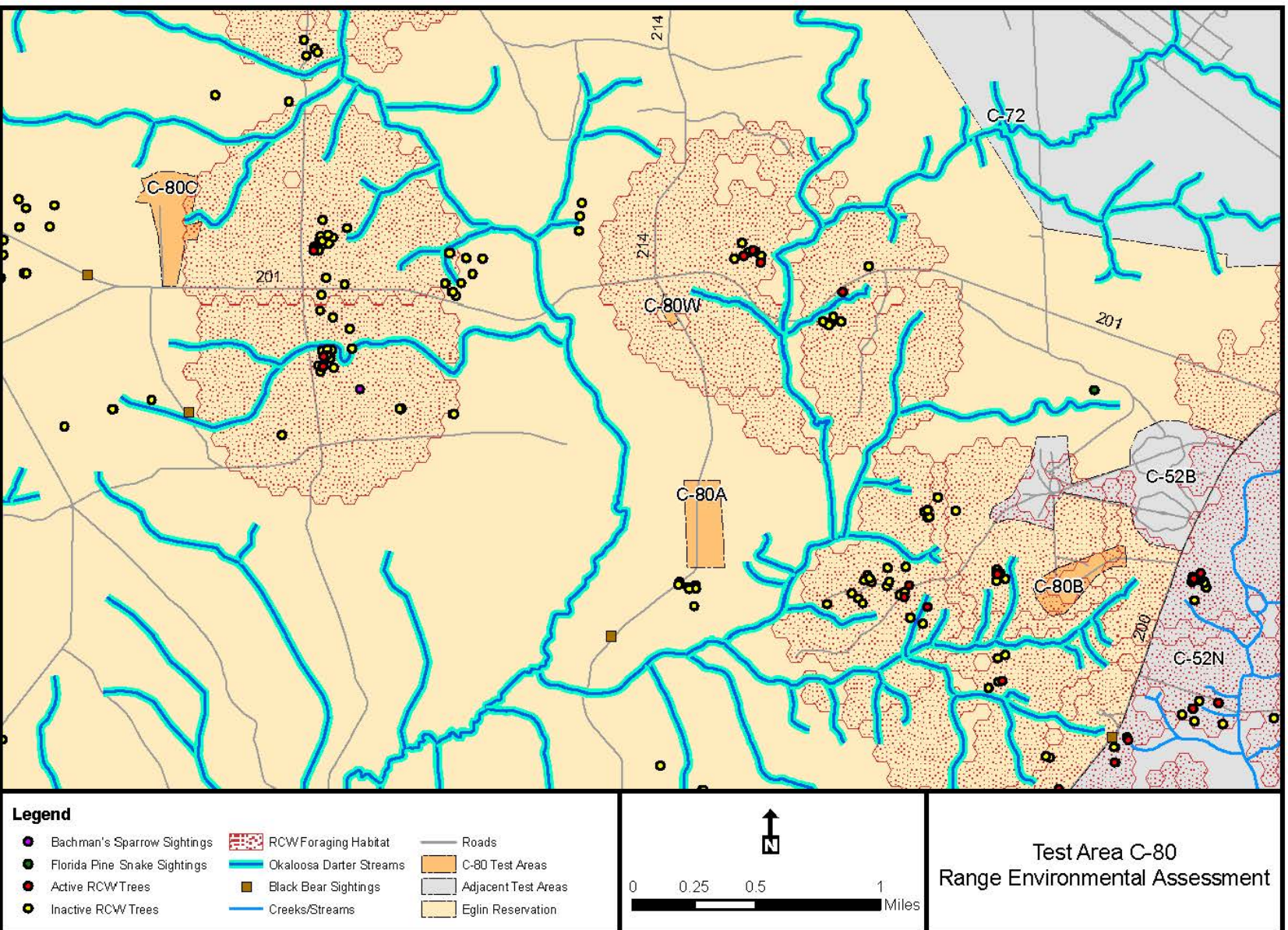


Figure 3-6. Sensitive Species Found on or Near the Test Area C-80 Complex

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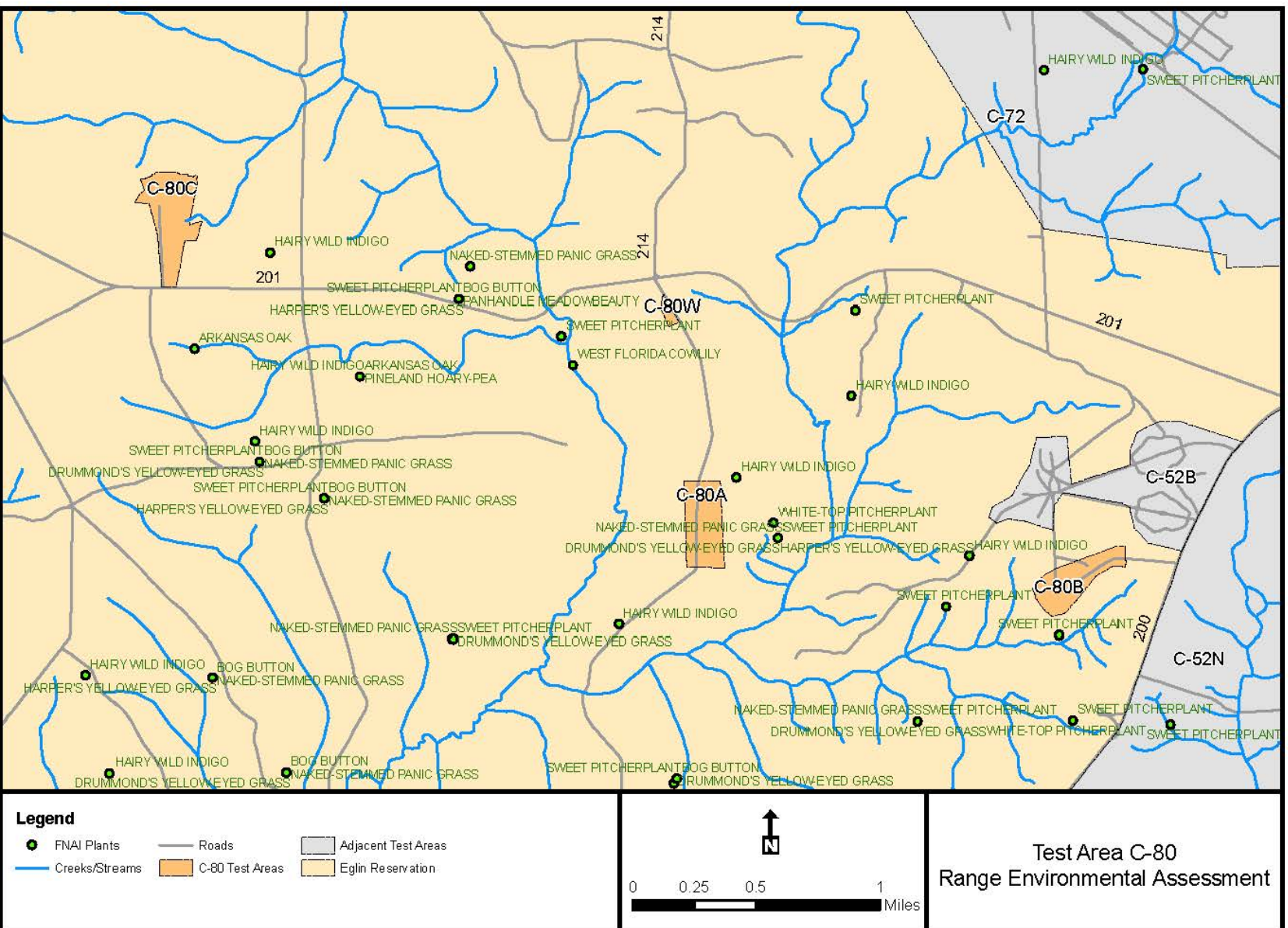


Figure 3-7. Sensitive Plants Found on or Near the Test Area C-80 Complex

3.5.4 Invasive Nonnative Species

Invasive nonnative species (INS) are species introduced from other countries or regions of the U.S. that threaten native plants and animals by altering the composition, structure, and function of native ecosystems. Invasive nonnative species impose large economic costs on natural resource managers, requiring intensive and extensive management to prevent undesirable ecosystem changes. Recognizing the ecological and economic impacts of invasive species, the President of the United States issued EO 13112, which states that each federal agency whose actions may affect the status of invasive species shall:

- Prevent the introduction of invasive species.
- Detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner.
- Monitor invasive species populations accurately and reliably.
- Provide for restoration of native species and habitat conditions in ecosystems that have been invaded.
- Conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control.
- Promote public education on invasive species.

EO 13112 states that no federal agency shall authorize, fund, or carry out actions that it believes are likely to cause or promote the introduction or spread of INS in the United States or elsewhere.

Appendix A, Biological Resources, discusses the various plant and animal INS that are found on Eglin AFB and have the potential to be present on the TA C-80 Complex.

3.6 CULTURAL RESOURCES

Numerous laws and regulations address the management of cultural resources. These federal laws are in place to consider the effects of an agency's proposed activities when a site could be negatively impacted. Foremost among these is the National Historic Preservation Act (NHPA) of 1966. Section 106 of the NHPA requires that federal agencies analyze the impacts of federal activities on historic properties. Section 110 of the NHPA requires that federal agencies inventory any cultural resources that are located within their boundaries and nominate those found to be significant for inclusion into the National Register of Historic Places. Additionally, areas potentially impacted by mission activities are surveyed through the Air Force Environmental Impact Analysis Process (U.S. Air Force, 2004b).

Several areas requiring survey are still present within the TA C-80 Complex (U.S. Air Force, 2000a). Acres of prehistoric and homestead high-probability areas (HPA) for each of the test areas are presented in Table 3-5. Remaining survey acreage on the test complex would require

examination to identify any potential NRHP-eligible resources. As portions of the test complex remain as unsurveyed high-probability areas, caution must be exercised with changes in existing missions. In the event that unknown cultural resources are discovered during a mission activity, operations should cease. Furthermore, the Base Historic Preservation Office (BHPO) as well as the Cultural Resources Office (96 CEG/CEVH) should be notified immediately.

Table 3-5. Acres of Prehistoric and Homestead High-Probability Areas on Test Area C-80 Complex

Test Area	Prehistoric HPA (acres)	Homestead HPA (acres)
C-80A	32.76	33.35
C-80B	0	23
C-80C	20.5	10.5
C-80W	2.6	0

Source: U.S. Air Force, 2000a

HPA = high-probability area

No prehistoric sites or sites on the TA C-80 Complex have been identified as eligible for the National Register. No historic districts, traditional cultural properties (TCPs), or cemeteries are present within the test areas (US Air Force, 2008a). With the exception of TA C-80B, records do not indicate that former homesteads or historic structures were ever located in the vicinity of any of the TA C-80 Complex test areas. TA C-80B is situated within 0.5 mile of the Crossbow National Historic Site, a World War II-era replica of a German V-1 launch facility, which is listed on the National Register of Historic Places.

3.7 AIR QUALITY

3.7.1 Definition

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. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare (Table 3-6). Further discussion of the NAAQS and state air quality standards are included in Appendix C, Air Quality Supplemental Information. Based on measured ambient air pollutant concentrations, 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 are not 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 _x	PM	SO _x
<i>Annual (primary)</i>		100		80
<i>24-hr Avg (primary)</i>			150	365
<i>8-hr Avg (primary)</i>	10,000			
<i>3-hr Avg (secondary)</i>				1,300
<i>1-hr Avg (primary)</i>	40,000			

Source: USEPA, 2008

$\mu\text{g}/\text{m}^3$ = micrograms per cubic meter; Avg = average; CO = carbon monoxide; hr = hour; NAAQS = national ambient air quality standards; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxides

3.7.2 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 sources, 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 establish relative contributions to air pollution concerns by classifying sources and determining the adequacy, as well as the necessity, of air regulations. Accurate inventories are imperative for the development of appropriate air quality regulatory policy.

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 and processes such as boilers, electric generators, surface coating, and fuels-handling operations. Mobile sources include motor vehicles, aerospace ground support equipment, and aircraft operations.

For comparison purposes, Table 3-7 presents the USEPA's 2002 National Emissions Inventory (NEI) data for Walton County (USEPA, 2002). The county data include 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 comprise 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 nonroad. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Nonroad 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 Walton County

Source Type	Emissions (tons/year)				
	CO	NO _x	PM	SO _x	VOCs
Area Sources	1,060	77	7,381	21	1,515
Nonroad Mobile	8,892	741	208	67	1,675
On-Road Mobile	23,915	3,849	190	153	1,671
Point Sources	25	14	6	4	28
Total	33,892	4681	7,785	245	4,889

Source: USEPA, 2002

CO = Carbon Monoxide; NO_x = Nitrogen Oxides; PM = Particulate Matter; SO_x = Sulfur Oxides; VOC = Volatile Organic Compound

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 if the Proposed Action occurs within an attainment area. Emissions from activities on Test Area C-80 would also be compared to the federal NAAQS. As represented in Table National Ambient Air Quality Standards, the mission activities did not exceed the criterion established. The ROI was defined as that county where the exercise area was located, and in this instance, the exercises occur in Walton County.

3.8 NOISE

3.8.1 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, the 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 [FICON], 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 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).

C-weighted day-night sound level (CDNL) is the 24-hour day-night averaged C-weighted sound level computed for areas subjected to blasts from high explosives. Use of the C-weighted scale accounts for the dominance of low-frequency components of these types of sounds. Unweighted noise, expressed as peak decibels (dBP), is used to evaluate potential noise impacts from single blasts.

3.8.2 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 noise on humans. 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 (FAA, 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 Figure 3-7. As discussed earlier in this section, CDNL is used to assess noise in which vibration and low-frequency components are a major concern (e.g., high-explosive munitions noise).

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

Criteria	Percent of Population Highly Annoyed		
	< 15%	15%–39%	>39%
	Noise Level		
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

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

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

Note: The primary noise metric used by the U.S. Army to describe small-arms noise is “peak noise exceeded by 15 percent of firing events (PK₁₅[met])”

The USEPA has recommended that noise levels in sleeping areas be less than 45 dB day-night average sound level (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).

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). The Federal Interagency Committee on Urban Noise (FICUN) considered these recommendations when developing its recommendations on compatibility of land uses with noise (FICUN, 1980). These recommendations have been adopted, with minor modifications, by DoD (DoDI 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. Nonauditory 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 have been collected and analyzed. For example, it has been established that eight 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). Eglin AFB has previously used 115 dBP as a measure of annoyance for noise impacts to the community (U.S. Air Force, 2004b).

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 from 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 feet. Both glass and plaster failure probabilities are highly dependent on the condition of the structure at the time of the overpressure event.

3.8.3 Existing Noise Environment

The existing sound or acoustic environment on the TA C-80 Complex consists of natural and man-made sounds, some of which may be relatively constant and sustained and others that are brief but intense. Brief, intense noise, such as that produced by detonations, is a regular feature of the existing noise environment. With the addition of the OGT facility, TA C-80A provides vibration and weapon system engine-run capabilities, which produce longer duration noise. The ROI for potential noise impacts includes the test area and the adjacent lands extending outward into surrounding communities, since explosive noise can potentially travel great distances depending on the weather conditions.

3.9 SAFETY

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 for range test and training activities. Also discussed is the management and transportation of explosive ordnance.

3.9.1 Safety Regulations

Regulatory and Management Overview

This section discusses the regulations, policies, and management protocols in place at Eglin AFB for range safety for range safety that impacts the use of the TA C-80 Complex. The primary regulations that establish range 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 Safety Office (AAC/SE) and supporting organizations. The Test Safety Review Process described in AAC Instruction 91-201 implements the Operational Risk Management (ORM) Process, as specified in Air Force Instruction (AFI) 90-901 for all AAC test programs and reflects the practical application of ORM as outlined in AFPAM 90-902, ORM Guidelines and Tools. The steps of 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 conduct of the test.

6. **Supervise and review.** Continue the ORM process throughout the accomplishment of every test program.

AFPAM 90-902 affects all test operations that are conducted under a 46th Test Wing test directive. It includes ground, waterborne, and airborne testing and training activities involving AAC personnel, aircraft, test ranges, 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.

In addition, the Range Safety Office applies standardized safety procedures associated with the operation of potentially hazardous hazards sources, such as explosive ordnance, as discussed below. Safety procedures associated with routine training operations are implemented through the individual organization, based on its specific training protocols/guidance.

Explosive ordnance requirements are covered under Air Force Manual 91-201, Explosive Safety Standards. These standards cover any test involving any explosive ordnance conducted under static, dynamic, or flight conditions. These requirements include propellant propulsion systems and those systems that may use toxic and/or corrosive materials. Environmental data that must be provided prior to testing include chemical exposure, materials of fabrication, and disposal procedures for hazardous materials. The requirements specify that the methods used for protecting military personnel and the public must be detailed prior to testing. The requirements also specify that EOD personnel must declare the impact locations to be safe prior to anyone entering the area.

Additionally, all tests that require the design and construction of facilities and/or hardware or use hazardous materials must be reviewed for potential hazards. Regulations applied include AFI 91-202, Mishap Prevention Program; AFI 91-205, Non-Nuclear Munitions Safety Board; and Air Force Policy Directive 91-2, Safety Programs. Munitions Testing Requirements present range requirements and safety restrictions specifically applicable to munitions testing. The requirements constitute basic guidance for all testing in terms of scheduling, flight and hazard summary, test area clearance, and weather, and define roles and responsibilities of pertinent personnel, groups, and organizations. Final authority and responsibility for all aspects of range safety at Eglin AFB rests with the AAC Commander. This function is administered by the Eglin AFB Safety Office, who is supported in this task by organizations with specific areas of responsibilities, including the Administrative Branch (AAC/SEA), Base Safety (AAC/SEO), the Range Safety Section (AAC/SEU), Range Safety Analysis (AAC/SEUA), Range Safety Operations (AAC/SEUO), Ground Safety (AAC/SEOG), Weapons Safety (AAC/SEOW), System Safety Section (AAC/SES), and Flight Safety (AAC/SEOF).

3.9.2 Standard Safety Procedures

A number of standard safety procedures exist to ensure limited public access to affected test areas during test implementation. These procedures require every practical effort to keep the

designated test areas clear of all nonparticipating persons and vehicles. Prior to each test, the designated test area supervisor clears the area by closing range gates and blocking all passable trails. Warnings are issued for aircraft (Notice to Airmen) and vehicles to clear the area or to provide notification of specific hazards in designated areas.

Large portions of Eglin AFB are closed to public use, including the entire TA C-80 Complex, which facilitates range clearance operations. Depending on the type of test being conducted, contingency personnel may stand by in case of emergencies.

3.9.3 Weapons Safety Footprints

Weapon safety footprints may be generated to define a personnel evacuation area during implementation of weapons test directives. The methodology for weapon safety footprint formulation combines munitions system science, computer modeling, and best management practices (BMPs). Weapon safety footprints are generally developed considering several factors: weapon maximum fly-out capability, blast fragmentation distances, blast overpressure levels, and flight termination system effects (if a weapon is so equipped). Weapon safety footprints for ballistic weapons (e.g., gravity bombs, rockets, bullets) are derived using statistical methods. These footprints include safety zones for initial impacts as well as ricochets and may be derived by using either empirical data or computer models to simulate a large sample of impact points, thereby allowing statistical methods to define the weapon safety footprint. Footprints act as overlays to restrict activities that could normally occur within and adjacent to test areas. The restriction placed on adjacent activities varies with the intensity of the test activity.

3.9.4 Unexploded Ordnance

Unexploded ordnance (UXO) is 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 both operational (current) and legacy (historical) contamination from mission activities. However, some areas have been classified as clean and do not have access restrictions. These areas have never been used for munitions and/or the near surface has been checked for the presence of UXO. Eglin maintains active target areas by executing a surface clearance within a 300-meter and 1,000-meter radius annually and every five years, respectively. The residue removal process is further detailed in the Eglin Environmental Baseline Study-Resource Appendices Volume 1 (U.S. Air Force, 2003). Information on the regulatory requirements for handling UXO can also be found in the Eglin Gulf Test and Training Range Environmental Baseline Study Resource Appendices (EBSRA), Volume II (U.S. Air Force, 2003a).

Due to consistent, high-intensity use over the years, the entire TA C-80 Complex (other than roads, buildings, and parking lots) is considered “dirty,” or potentially contaminated with UXO. The UXO resulted from activities from as much as 50 years ago to the present. Access is restricted through designated roads, and EOD escort is required to go off the roads and for any type of excavation (U.S. Air Force, 2003).

3.9.5 Restricted Access

Restricted access applies to the restriction of public access, described in terms of the availability of Eglin resources to the general public. Guidance for restricted access is utilized to coordinate public and military usage of airspace, water space (i.e., the Gulf of Mexico), and land areas with the Eglin region of influence (ROI). Restricted access issues may result due to permanent zoning laws or via temporary safety buffer zones established for designated areas. The entire TA C-80 Complex and immediate surrounding area is permanently closed to public access (Figure 3-8).

3.10 SOCIOECONOMIC RESOURCES

This section discusses the socioeconomic resources that have the potential to be impacted by activities occurring on and surrounding the TA C-80 Complex at Eglin AFB. The primary issues of concern include the disproportionate impact of noise from activities occurring on the complex to environmental justice concern areas as well as to areas containing a high concentration of children.

3.11 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 the National Environmental Policy Act 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.

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

Minority Populations: All persons identified by the 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.

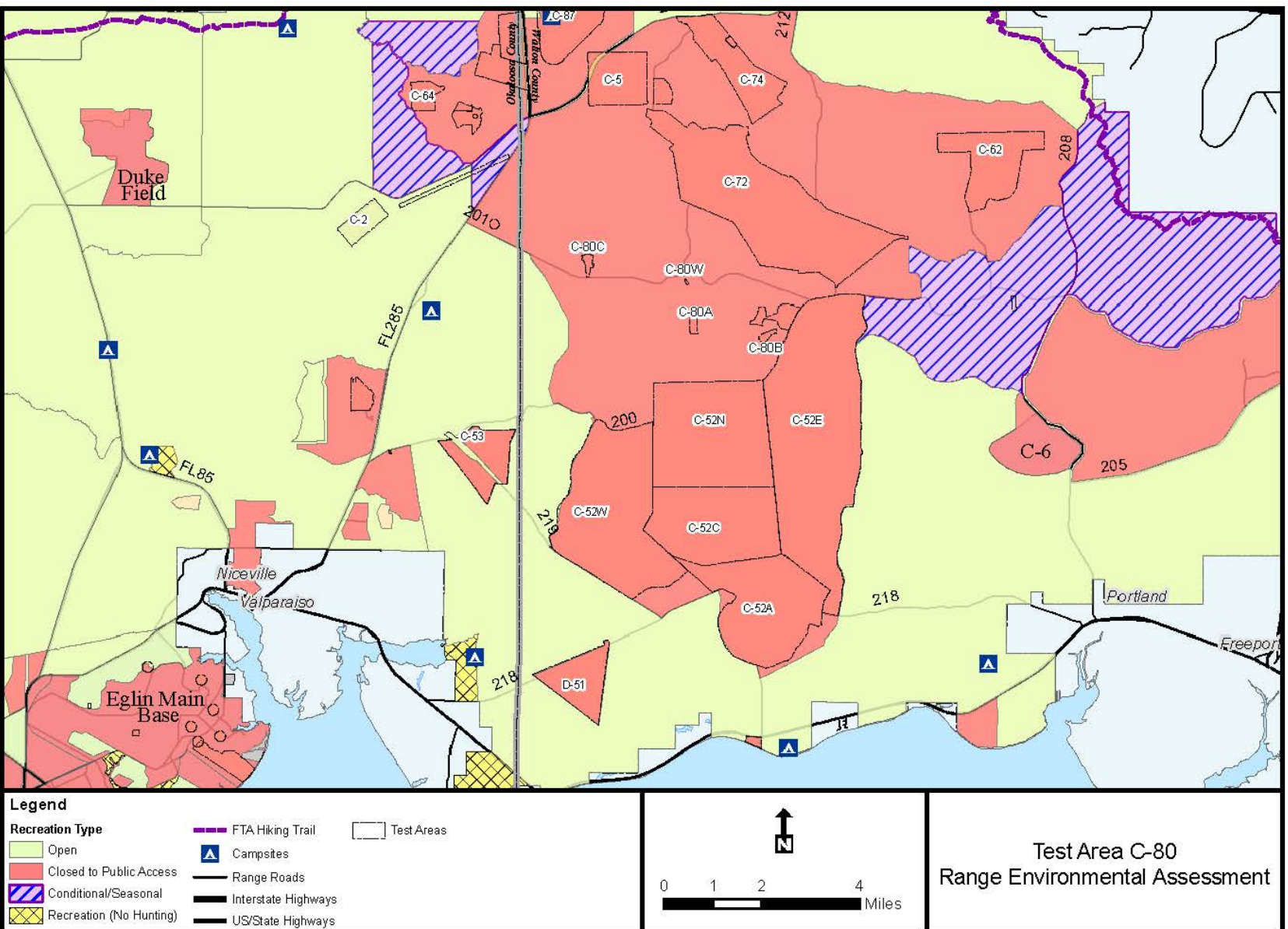


Figure 3-8. Recreational Land Use and Closed Areas Surrounding the Test Area C-80 Complex

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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.

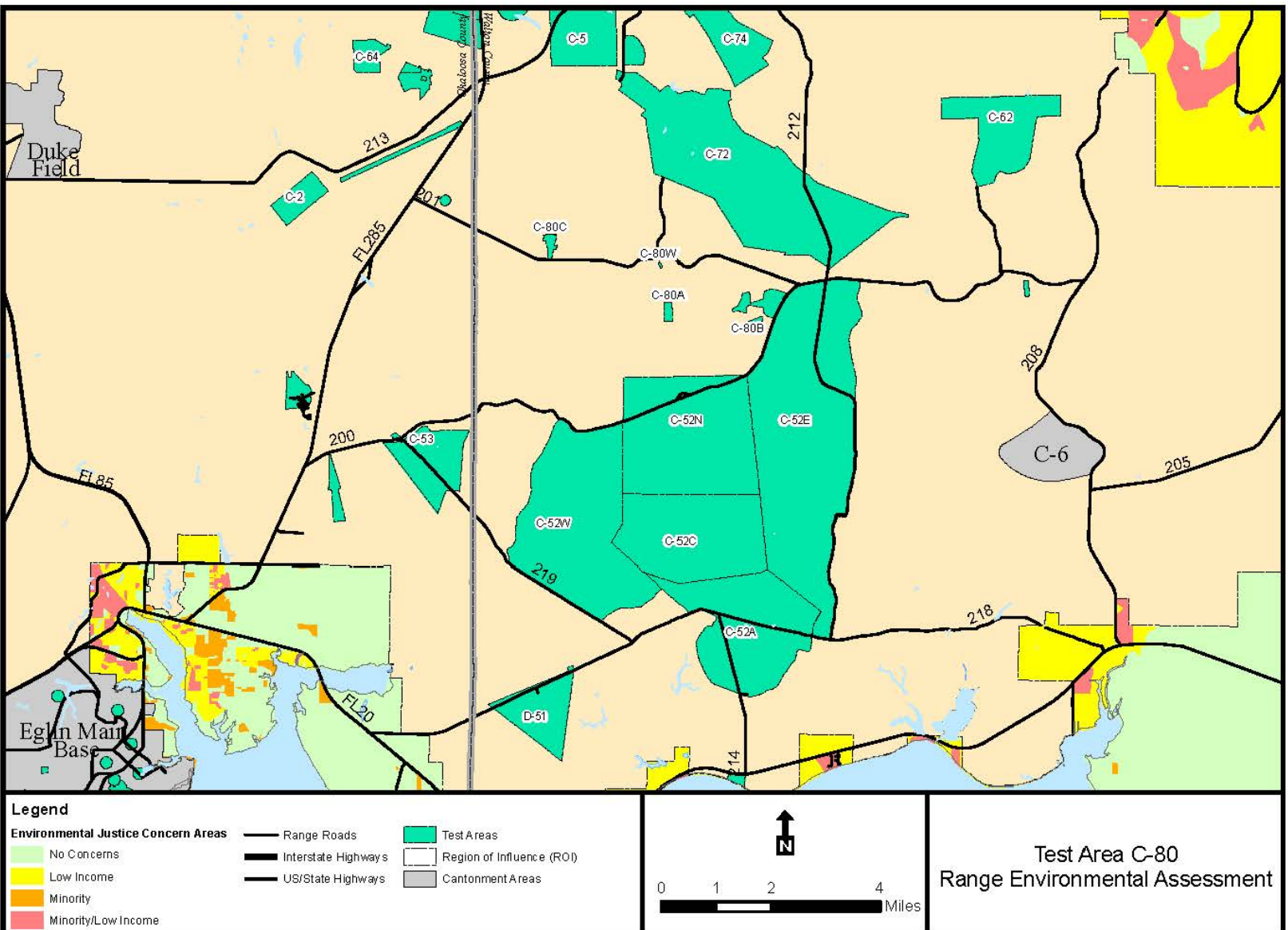
Areas of concern for environmental justice are given in Figure 3-9.

3.11.1 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 childcare 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.

3.11.2 Noise Complaints

People and physical structures that are potentially susceptible to noise effects from the activities conducted at the TA C-80 Complex are in communities surrounding the Eglin Reservation. In the past, the majority of noise complaints have generally come from Navarre. In recent years a larger proportion of noise complaints have come from the city of Niceville. Figure 3-8 provides examples of noise complaints received during 2006 on Eglin. However, as can be seen from Table 3-9, those cities with a high number of complaints were often the result of a single resident submitting multiple complaints. In 2006, 35 complaints were made from the Niceville area, but 26 of those complaints were made from a single resident in Niceville. In 2005, the same Niceville resident was responsible for making 100 percent of all the low flying noise complaints. Table 3-10 shows the total number of complaints per city in 2006 and the actual number of complainants. The total number of complainants in all the cities during 2006 represents less than 0.01 percent of the total population for the three counties that the cities encompass.



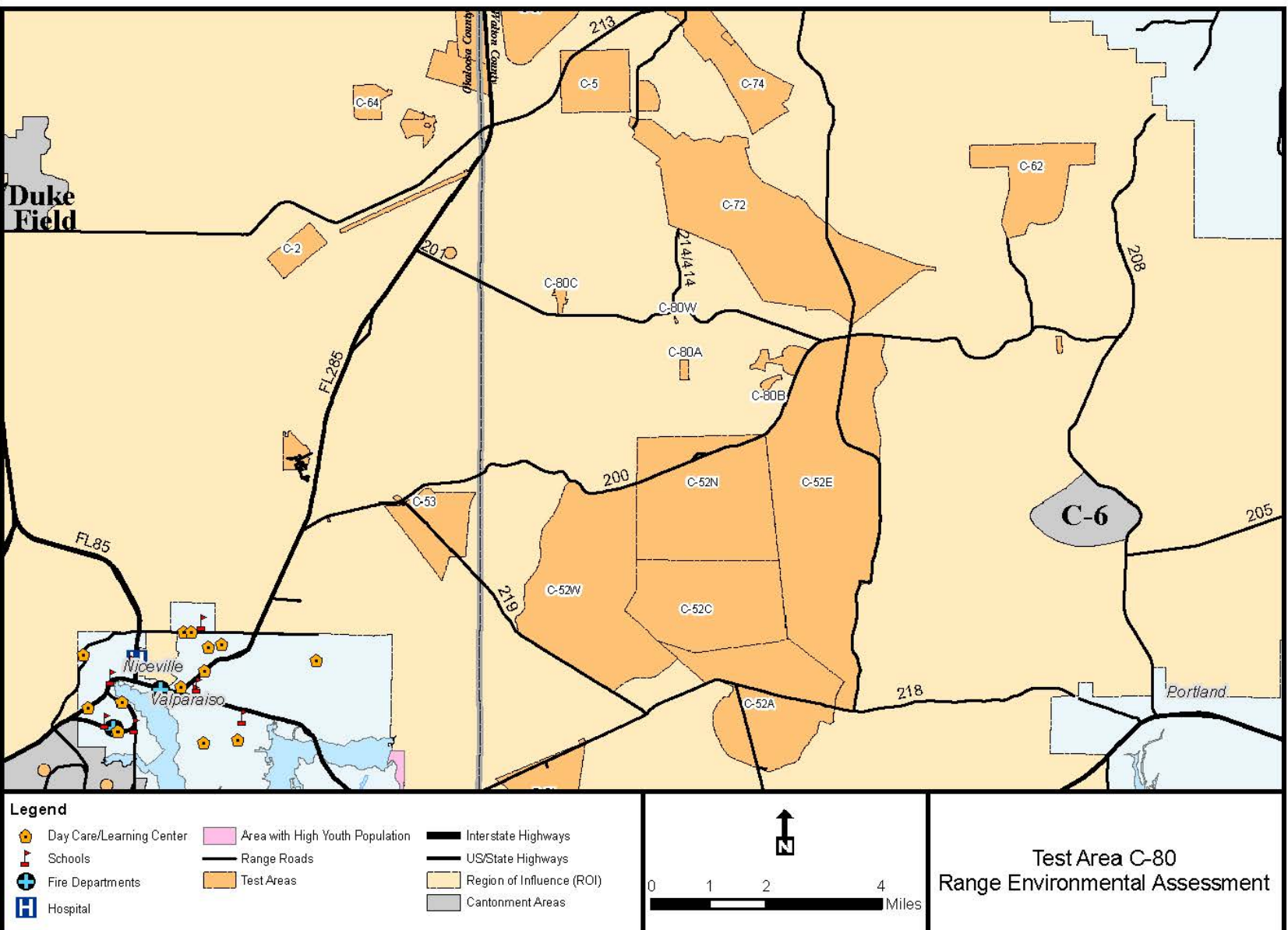


Figure 3-10. Communities With a High Percentage of Children Under 18 as Compared to County

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Table 3-9. 2006 Noise Complaint Data

Location	Complaint	Number of Complaints
Choctaw Beach	Noise	2
Choctaw Beach	Sonic Boom	1
Crystal River	Low Flying/Noise	1
DeFuniak Springs	Noise	1
Destin	Noise	2
Destin	Explosion	1
Destin	Sonic Boom	4
Eglin	Sonic Boom	1
Freeport	Sonic Boom	4
Freeport	Explosion	1
Fort Walton Beach	Sonic Boom	1
Holt	Low Flying/Noise	1
Merrin Beach	Low Flying/Noise	1
Milton	Low Flying/Noise	1
Miramar Beach	Sonic Boom	1
Navarre	Sonic Boom	1
Niceville	Noise	8
Niceville	Low Flying/Noise	24
Niceville	Explosion	1
Niceville	Sonic Boom	2
Poquito Bayou	Noise	1
Santa Rosa Beach	Noise	3
Santa Rosa Beach	Low Flying/Noise	1
Santa Rosa Beach	Sonic Boom	8
Shalimar	Noise	3
Shalimar	Low Flying/Noise	1
Shalimar	Sonic Boom	1

Source: Walsh, 2007

Table 3-10. 2006 Noise Complainant Data

City	Total Number of Complaints	Total Number of Complainants
Choctaw Beach	3	1
Crystal River	1	1
DeFuniak Springs	1	1
Destin	7	6
Eglin	1	1
Freeport	5	4
Fort Walton Beach	1	1
Holt	1	1
Merrin Beach	1	1
Milton	1	1
Miramar Beach	1	1
Navarre	1	1
Niceville	35	6
Poquito Bayou	1	1
Santa Rosa Beach	12	6
Shalimar	1	1

Source: Walsh, 2007

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4. ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter analyzes and presents the potential environmental impacts associated with TA C-80 Complex 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
- Cultural Resources
- Air Quality
- Noise
- Safety
- Socioeconomic Resources

4.2 CHEMICAL MATERIALS

Chemical materials may degrade the quality of soil or water, or may be toxic to plants, wildlife, or people. The potential environmental impact of hazardous materials and waste were assessed as they pertain to debris from chemical materials from ordnance, and to ERP sites and LDPs for testing and training activities within the TA C-80 Complex. Analysis of constituents associated with mission activities and ERP sites are assessed based on available data, chemical fate, and transport information; and modeling, toxicity, and applicable regulatory criteria. Mission activities should be coordinated with Eglin Environmental Management Restoration if taking place near ERP sites. Additionally, the transport, storage, use, and disposal of hazardous materials and waste associated with activities within the TA C-80 Complex should be coordinated with Eglin Environmental Compliance 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/instructions. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent and 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 hazardous material spills 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, 2005b).

4.2.1 No Action Alternative

Debris

Debris includes the physical materials that are deposited on the surface of terrestrial or aquatic environments during mission activities, such as cartridges, canisters from smokes, chaff, and flares, as well as shrapnel and debris from munitions detonations or other test and training activities. If these items are left in place and not properly disposed of or packed out, 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 waste, as they pertain to the analysis in this section, are the explosives and metals associated with the detonation of ordnance on the TA C-80 Complex. 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 the TA C-80 Complex, metals and explosives from bombs, missiles, guns, mines, small arms, smokes, chaff, and flares are the primary chemical materials of concern.

Toxic Release Inventory-Data Delivery System

Quantification of chemical constituents in ordnance was determined using the Toxic Release Inventory–Data Delivery System (TRI-DDS) (DoD, 2008). 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 Department of Defense 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, inert munitions, and dudded 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 for the TA C-80 Complex included the chemical constituents in bombs, missiles, guns, mines, small-arms, smokes, chaff, and flares used for testing and training within the TA C-80 Complex. Numerous types of munitions are used within the TA C-80 Complex;

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 in Table 4-1 were provided by user groups, and maximum annual expendables for the TA C-80 Complex under the No Action Alternative are detailed in Chapter 2 (Table 2-1, Summary of TA C-80 Complex Expendables Under the No Action Alternative). (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 the TA C-80 Complex. 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 one pound annually are listed here, in Table 4-2. This includes the six insoluble chemicals, which would be the most persistent in the environment.

Table 4-1. Expendables by Alternative by General Munitions Category

ALTERNATIVE	ARENA TESTING						SENSOR-FUZED WEAPON TESTING ⁵	OPERATIONAL GROUND TESTING ⁶	MISCELLANEOUS FUEL CONSUMPTION	
	Large NEW Ordnance ¹	Medium NEW Ordnance ²	Small NEW Ordnance ³	Misc. Explosive Components ⁴	Gunnery & Projectiles	Smokes/Flares	Skeets & Explosive Bolts	Rocket Motors & Boosters	JP-8 (in gallons)	Other Propellants (in lbs)
No Action	50	56	7,866	40,234	60	2,290	250	NA	NA	NA
Alternative 1	61	51	280	547	21	117	271	67	4,900	32,000
Alternative 2	244	204	1,120	2,188	84	468	1,084	268	19,600	128,000

1. NEW of 500 lb or higher (max of 3,000 lb). Most common was Mk-84 with 945 lb of H-6 or tritonal, Minol II, or H-6 explosive.

2. NEW of 100 to 500 lb. Most common was Mk-82 with 192 lb of tritonal.

3. NEW of less than 100 lb. Most common was small diameter bomb (SDB) with 50 lb of explosive.

4. Detonation cord, squibs, fuzes.

5. Explosive bolt.

6. Rocket motors.

lbs = pounds; NA = not applicable; NEW = net explosive weight

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

Table 4-2. Munitions-Related Residue Released on Test Area C-80 Complex Under No Action Alternative

Chemical	Quantity (pounds)	Chemical	Quantity (pounds)
Acetaldehyde	1	Hydrogen cyanide	1
Benzene	1	Lead	1
Ethylene	3	Nitric acid	8
Formaldehyde	1	Ozone	1
Hydrazine	1	Propylene	1
Hydrochloric acid	15		

Source: DoD, 2008.

4.2.2 Alternative 1

Debris

Under Alternative 1, testing and training activities occurring at the TA C-80 Complex would increase over the currently approved levels under the No Action Alternative. Management practices are in place that assure training areas will be scanned for debris and duded munitions and that they would be removed. Any duded 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 shown in Table 4-1 were provided by user groups, and maximum annual expendables for the TA C-80 Complex under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-2). (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 testing and training on the TA C-80 Complex. Table 4-3 shows that the chemical output under Alternative 1 would be higher than under the No Action Alternative, especially for lead. It was calculated that the chemical load from all munitions would be distributed over 1,058 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 4-3. Munitions-Related Residue Released on Test Area C-80 Complex Under Alternative 1

Chemical	Quantity (pounds)	Chemical	Quantity (pounds)
Acetaldehyde	1	Hydrazine	1
Benzene	17	Hydrochloric acid	743
Chlorine	31	Nitric acid	1
Cyanide	2	Ozone	1
Cyclohexane	6	Propylene	1
Ethylbenzene	12	Toluene	26
Ethylene	3	n-Hexane	4
Formaldehyde	1		

Source: DoD, 2008

4.2.3 Alternative 2

Debris

Under Alternative 2, testing and training activities occurring at the TA C-80 Complex 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 dud munitions, and that they would be removed. Any dud 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 shown Table 4-1 were provided by user groups, and maximum annual expendables for the TA C-80 Complex under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-3). (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 the TA C-80 Complex. Chemical emissions under Alternative 2 are shown in Table 4-4. 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 4-4. Munitions-Related Residue Released on Test Area C-80 Complex
Under Alternative 2**

Chemical	Quantity (pounds)	Chemical	Quantity (pounds)
1,3-Butadiene	1	Formaldehyde	2
Acetaldehyde	2	Hydrazine	5
Ammonia	2	Hydrochloric acid	2,973
Benzene	69	Hydrogen cyanide	2
Chlorine	123	Nitric acid	4
Cyanide	7	Ozone	2
Cyclohexane	23	Propylene	2
Ethylbenzene	47	Toluene	103
Ethylene	13	n-Hexane	14

Source: DoD, 2008

4.3 SOILS

4.3.1 No Action Alternative

No adverse effects to soils would be expected under the No Action Alternative. Potential impacts to the environment are similar to those described under Alternative 1 and Alternative 2 (Preferred Alternative). The main issue of concern for soils is the transport of chemical materials through soils into nearby waterways or to ground water sources. As discussed in Section 4.4 and Section 1.1, the potential for chemical impacts to the environment are considered minor.

4.3.2 Alternative 1

Soils would not be adversely affected under Alternative 1. The potential for erosion is slight and the risk from chemical materials is minor.

The dominant soil types within the TA C-80 Complex fall within the Lakeland ecological association. In terms of soil coverage under this alternative, these soils are rapid draining with slopes typically 8 percent or less steep. Under normal conditions, typically these soils are relatively stable and not prone to erosion if covered with vegetation. The present suite of proposed activities is not expected to create a significant risk for erosion. Any future land clearing and construction activities have potential to modify the terrain such that BMPs would be required to minimize potential adverse impacts from loss of soil. No adverse impacts are anticipated to the underlying geology of the area.

The main issue of concern for soils is the transport of chemical materials through soils into nearby waterways or to ground water sources. The potential exists for chemical materials to migrate into surface waters from erosion of soil or into ground water via downward migration through permeable Lakeland sands. Chemical materials leached into ground water may eventually reach surface waters. It is not expected that the chemical constituents released into the environment would exceed threshold amounts. An analysis of the potential risk to waterways and ground water sources are presented in Section 4.4 and Section 1.1 and are not repeated here. Soil-stabilizing vegetation around proposed testing areas may limit the transport of munitions components via erosion into surrounding surface waters.

The potential for metals and explosives to leach contaminants through the soil column depends on many physical and chemical properties of the metals, the soil, and climate. However, potential impacts to water quality could be reduced by implementation of test area sustainability practices and procedures. Use of the following practices and procedures would serve to reduce the potential for runoff from munitions to impact water quality:

- Proactive monitoring for potential migration of metals.
- Runoff control through the use of vegetative ground cover, mulches and compost, surface covers, and engineered runoff controls.
- Provision for testing areas to be scanned for debris and have dudded munitions removed.

4.3.3 Alternative 2

No adverse effects to soils would be expected under the Preferred Alternative. Potential impacts to the environment are similar to those described under Alternative 1. The main issue of concern for soils is the transport of chemical materials through soils into nearby waterway or to ground water sources. As discussed in Section 4.4 and Section 1.1, the potential for chemical impacts to the environment are considered minor.

4.4 WATER RESOURCES

4.4.1 No Action Alternative

The No Action Alternative would not have significant water resource impacts. This alternative is defined as authorizing the level of activity approved in the *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a).

Ground Water

Impacts to ground water would not be significant under the No Action Alternative. According to the *2000 Test Area C-80 Complex PEA*, the chemicals deposited from baseline activities at the TA C-80 Complex are not expected to contaminate the soil from explosives residue such that ground water would be impacted. Evidence of this can be found in the site investigations conducted in conjunction with the areas of concern (AOCs) on two of the TA C-80 test areas. Two AOCs, used as Celotex burial sites for arena test debris, occur near test arenas. Analysis of ground water from these areas indicates that no significant impacts have occurred as a result of the materials deposited there. In addition, the vicinity of these AOCs to the arenas would indicate that any addition of explosive by-products from arena testing and Navy EOD training would not be enough to impact water quality according to USEPA standards.

Surface Water

Minimal impacts are anticipated to surface water under this alternative. No ponds or lakes are adjacent to any of the TA C-80 test areas. Five streams are near the TA C-80 Complex. The headwaters of a tributary of one of the streams, Dogwood Head Branch, exist on TA C-80C. Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek are all located within 0.25 mile of one of the TA C-80 test areas. The close proximity of these streams to the test areas suggests that there is potential for impacts to surface water from activities described under the No Action Alternative. However, areas of grassland and sandhill separate the clay pad arenas from the streams and should serve as a buffer to trap loose sediments being transported from the test areas, thus minimizing runoff. Therefore, there is minimal risk of any ground water based transport of contaminants into those surface waters.

Wetlands

Previous analysis did not consider impacts to wetlands. No wetland resources occur within the boundaries of the TA C-80 Complex. However, sizable wetland ecosystems occur in association with Rocky Creek and East Rocky Creek and are present within 1 km of the TA C-80 Complex. Activities that may affect wetlands (protected by the CWA) go through a permit process with the state as well as with the USACE. Activities minimizing impacts to wetlands are preferred, and the planning process should reduce or minimize ground-disturbing projects or actions occurring in a wetland (U.S. Air Force, 2003). Thus, there would be no impacts to wetlands under the No Action Alternative.

Floodplains

Impacts to floodplains would not be significant under the No Action Alternative. No floodplain resources occur within the boundaries of the TA C-80 Complex. Floodplains are present within 1 km of the TA C-80 Complex; however, none of the actions on the TA C-80 Complex involve changes to the nearby floodplains. Further, no habitable structures are at risk from any changes to the floodplain.

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).

4.4.2 Alternative 1

Ground Water

Impacts to ground water would be similar to the No Action Alternative. According to the *2000 Test Area C-80 Complex PEA*, the chemicals deposited from baseline activities at the TA C-80 Complex are not expected to contaminate the soil from explosives residue such that ground water would be impacted. Evidence of this can be found in the site investigations conducted in conjunction with the AOCs on two of the TA C-80 test areas. Two AOCs, used as Celotex burial sites for arena test debris, occur near test arenas. Analysis of ground water from these AOCs indicates that no significant impacts have occurred as a result of the materials deposited there. In addition, the vicinity of these AOCs to the arenas would indicate that any addition of explosive by-products from arena testing and Navy EOD training would not be enough to impact water quality according to USEPA standards.

Surface Water

Minimal impacts are anticipated to surface water under this alternative. No ponds or lakes are adjacent to any of the TA C-80 test areas. Five surface water streams are on the TA C-80 Complex. The headwaters of a tributary of one of the streams, Dogwood Head Branch, exist on

TA C-80C. Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek are all located within 0.25 mile of one of the TA C-80 test areas. The close proximity of the surface water to the test area suggests that there is potential for impacts to surface water from actions described under Alternative 1. However, 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 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. In addition, areas of grassland and sandhill separate the clay pad arenas from the streams and should serve as a buffer to trap loose sediments being transported from the test areas, thus minimizing runoff. Therefore, there is minimal risk of any ground water based transport of contaminants into those surface waters.

During construction activities of the OGT facility, there is potential for construction-based stormwater erosion, which could impact surface water. However, construction will be limited to one facility and construction activities will be managed using BMPs. Therefore, only minor impacts from stormwater erosion are anticipated.

Wetlands

No wetland resources occur within the boundaries of the TA C-80 Complex. However, sizable wetland ecosystems occur in association with Rocky Creek and East Rocky Creek and are present within 1 km of the TA C-80 Complex. Activities that may affect wetlands (protected by the CWA) go through a permit process with the state as well as with the USACE. Activities minimizing impacts to wetlands are preferred, and the planning process should reduce or minimize ground-disturbing projects or actions occurring in a wetland (U.S. Air Force, 2003). Thus, there would be no impacts to wetlands under Alternative 1.

Floodplains

Impacts to floodplains would not be significant under Alternative 1. No floodplain resources occur within the boundaries of the TA C-80 Complex. There are floodplains present within 1 km of the TA C-80 Complex; however, none of the actions on the TA C-80 Complex involve changes to the nearby floodplains. Further, no habitable structures are at risk from any changes to the floodplain.

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).

4.4.3 Alternative 2

Ground Water

A 300-percent increase in baseline expenditures has the potential to affect ground water since the water quality of the Sand and Gravel aquifer is generally good, but it is vulnerable to contamination from surface pollutants due to its proximity to the ground surface (U.S. Air Force, 2003). Further analysis is required to determine the extent of contamination that a 300-percent increase in baseline expenditures would have on ground water. However, Eglin AFB has outlined an Emergency Plan Response in the *Eglin AFB Oil and Hazardous Substance Facility Response Plan* (2000) to minimize impacts from an accidental spill from hazardous material and substances. In addition, the Hazardous Waste Management Plan (U.S. Air Force, 2006a) and the *Eglin AFB Spill Prevention, Control, and Countermeasures* (SPCC) Plan (U.S. Air Force, 2005b) also outline prevention and management processes to reduce or minimize the impacts of pollutants into the environment.

Surface Water

Minimal impacts are anticipated to surface water under this alternative. No ponds or lakes are adjacent to any of the TA C-80 test areas. Five surface water streams are on the TA C-80 Complex. The headwaters of a tributary of one of the streams, Dogwood Head Branch, exist on TA C-80C. Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek are all located within 0.25 mile of one of the TA C-80 test areas. The close proximity of the surface water to the test area suggests that there is potential for impacts to surface water from activities described under Alternative 2. However, 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 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. In addition, areas of grassland and sandhill separate the clay pad arenas from the streams and should serve as a buffer to trap loose sediments being transported from the test areas, thus minimizing runoff. Therefore, there is minimal risk of any ground water based transport of contaminants into those surface waters.

During construction activities of the OGT facility there is potential for construction-based stormwater erosion which could impact surface water. However, construction will be limited to one facility and construction activities will be managed using BMPs. Therefore, only minor impacts from stormwater erosion are anticipated.

Wetlands

No wetland resources occur within the boundaries of the TA C-80 Complex. However, sizable wetland ecosystems occur in association with Rocky Creek and East Rocky Creek and are present within 1 km of the TA C-80 Complex. Activities that may affect wetlands (protected by the CWA) go through a permit process with the state as well as with the USACE. Activities minimizing impacts to wetlands are preferred, and the planning process should reduce or

minimize ground-disturbing projects or actions occurring in a wetland (U.S. Air Force, 2003). Thus, there would be no impacts to wetlands under Alternative 2.

Floodplains

Impacts to floodplains would not be significant under Alternative 2. No floodplain resources occur within the boundaries of the TA C-80 Complex. There are floodplains present within 1 km of the TA C-80 Complex. However, none of the actions on TA C-80 involve changes to the nearby floodplains. Further, there are no habitable structures at risk from any changes to the floodplain.

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).

4.5 BIOLOGICAL RESOURCES

The analysis provided within this section addresses the potential for impacts to biological resources from activities conducted at the TA C-80 Complex on Eglin AFB. Previous environmental analysis of the TA C-80 Complex missions identified the following issues with regard to biological resources (U.S. Air Force, 2000a; U.S. Air Force, 2005a):

- Potential for munitions components to directly affect sensitive species and habitats
- Potential for noise impacts to sensitive species from flights, munitions, and ground operations
- Potential for chemical impacts to sensitive species from munitions, chaff, and flares
- Potential for soil disturbance and wildfire ignition from munitions and pyrotechnics use and ground operations

All of the above issues were found to not have significant adverse impacts and no effect to threatened or endangered species at the level of activity that was analyzed in the *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a) and the *2005 Test Area C-80 Complex EBD Update* (U.S. Air Force, 2005a). Since the writing of those documents no new types of biological resource issues from missions have been identified, though the level of mission activity has increased, or is presumed to increase in the future, and certain sensitive species locations have changed over time. Additional data pertaining to wildfire risks associated with mission activities on the TA C-80 Complex has become available and will be incorporated into this analysis, as applicable.

4.5.1 No Action Alternative

The activity level approved under the No Action Alternative (Section 2.2.1) is identical to that analyzed and approved for the Preferred Alternative (Alternative 5) in the *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a). New location information for sensitive biological resources was examined in relation to analysis methods from the 2000 PEA, which still apply. Although the numbers of sensitive species and acres of sensitive habitats have changed, the No Action Alternative would still have no significant impacts on biological resources. It was determined that mission activities conducted under the No Action Alternative would have no effect to threatened or endangered species, and an ESA Section 7 consultation was not conducted. This section provides a summary of the previous issues and analyses addressed in the *2000 Test Area C-80 Complex PEA*.

Direct Physical Impacts

Direct physical impacts would be possible from inert munitions and shrapnel from live munitions. Analysis within the *2000 Test Area C-80 Complex PEA* determined the potential for direct physical impacts to sensitive species by analyzing the safety footprint for each detonation. For purposes of analysis, the maximum safety footprint for each test area was selected as a conservative scenario (Table 4-5).

Table 4-5. Maximum Safety Footprints for Test Areas C-80A, C-80B, and C-80C

Test Area	Maximum Allowable Detonation	Radius* (feet)
C-80A	Partial Recovery Arena Test: 200 lbs. NEW	4,000
C-80B	Navy EOD: 500 lbs. NEW	7,500
C-80C	Partial Recovery Arena Test: 3,000 lbs. NEW	10,000

Source: U.S. Air Force, 2000a

EOD = explosive ordnance disposal; lbs = pounds; NEW = net explosive weight

*Assigned by Eglin Safety Office for largest potential detonation for each test area based on trinitrotoluene (TNT) equivalent NEW

Under the No Action Alternative, the density of RCW trees within the collective safety footprint of the TA C-80 Complex for the highest NEW detonations is 23 trees in 11,131 acres, or roughly two active cavity trees per 1,000 acres. RCW cavity trees that exist within the safety footprints of arena test missions are at low risk of being impacted; the potential for impacts to a resident RCW is even lower. By the time fragments are dispersed to areas where sensitive species occur, individual pieces will be several hundred feet apart. In addition, RCW cavity trees are not isolated, but are surrounded by other trees and vegetation. In a sense, other trees, in particular those along the fringe of the test area, should provide a buffer against fragments, blast, and noise from detonations. Any RCW tree on the fringe of the test area would be subject to the maximum effects of any given detonation, but most active RCW trees near the TA C-80 Complex are situated well within the interstitial area.

Any vehicles used during testing activities would primarily remain on established roads, thereby minimizing the potential for direct physical impacts to biological resources.

Overall, direct physical impacts from the No Action Alternative would not be significant. The No Action Alternative would have no effect on the RCW, Okaloosa darter, or eastern indigo snake.

Noise Impacts

Single-event impulsive noise, resulting from munitions or weapons testing, artillery, and ground impact of high explosive warheads, is a significant fraction of the noise environment at Eglin AFB. The recommended single event metric for munitions, artillery and high explosives is dBP, unweighted peak sound pressure level (U.S. Air Force, 2000a).

Due to a lack of criteria available for birds, human noise thresholds were used to determine the potential for impacts to the RCW under the No Action Alternative (Table 4-6). The southeastern American kestrel shares habitat similar to the RCW and frequently nests in inactive RCW cavity trees. Bachman's sparrow is common near the TA C-80 Complex, preferring longleaf pine stands and wiregrass. Therefore, impacts to RCW habitat from noise may be representative of potential impacts to Bachman's sparrow and the southeastern American kestrel, based on the similarity of preferred habitat of the three species. The noise analysis in this section uses the maximum individual intrusive noise event (i.e., 140 dBP). The maximum noise event may be repeated at other times during the year, but each event would be of a very short duration and would not occur continuously.

Table 4-6. Noise Thresholds for Humans

	Zone of Lethality	Zone of Serious Injury	Zone of Slight Injury	Maximum Safety Distance
Noise Thresholds*	>201 dB	201 to >185 dB	185 to >140 dB	< 140 dB

> = greater than; < = less than; dB = decibels

*Human data extrapolated for sensitive species.

The primary noise sources identified in the *2000 Test Area C-80 Complex PEA* were from static detonations associated with the largest NEW authorized for use on each of the C-80 test areas. The maximum NEW identified in the No Action Alternative for each of the test areas was:

- TA C-80A = 200 lbs NEW
- TA C-80B = 500 lbs NEW
- TA C-80C = 3,000 lbs NEW

At the time the *2000 Test Area C-80 Complex PEA* was completed, no 3,000 lb detonations had occurred on the TA C-80 Complex. Therefore, to represent the most realistic scenario of mission activity occurring on the TA C-80 Complex, noise modeling was conducted using the highest NEW for the largest detonations occurring most frequently at each of the three test areas. Impact metrics based on the largest detonation occurring at each of the three C-80 Complex test areas are presented in Tables 4-7, 4-8, and 4-9. The Mk-84 was identified as the largest munition detonated on the TA C-80 Complex. It contains 945 pounds of tritonal explosive, which is

equivalent to 1,162 pounds of trinitrotoluene (TNT). The noise analysis conducted under the No Action Alternative was modeled under a scenario absent of winds and temperature inversions.

Table 4-7. Noise Impact Zones of AUP Warhead Detonated on TA C-80A

POTENTIAL NOISE IMPACT ZONE OF AUP WARHEAD (NET EXPLOSIVE WEIGHT = 126 POUNDS*)	
	140 dBP Noise
Impact Radius (feet)	3,008
Impact Area (acres)	653
Number of Active RCW Trees	1
Acres of RCW Forage Area	261

dBP = peak decibels; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight not available.

Table 4-8. Noise Impact Zones of Mk-82* Detonated on TA C-80B

POTENTIAL NOISE IMPACT ZONE	
	140 dBP Noise
Impact Radius (feet)	3,700
Impact Area (acres)	990
Number of Active RCW Trees	6
Acres of RCW Forage Area	800

dBP = peak decibels; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight = 236 pounds.

Table 4-9. Noise Impact Zones of Mk-84* Detonated on TA C-80C

POTENTIAL NOISE IMPACT ZONE	
	140 dBP Noise
Impact Radius	6,308
Impact Area	2,870
Number of Active RCW Trees	6
Acres of RCW Forage Area	980

dBP = peak decibels; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight = 1,162 lbs.

Although RCWs may be exposed to high noise levels associated with TA C-80 Complex missions, RCWs continue to nest successfully on and near the TA C-80 Complex in spite of the noise from munitions; the presence of suitable habitat appears to outweigh any negative influences associated with mission-related noise. Noise impacts under the No Action Alternative would not be significant and would have no effect to the RCW. Furthermore, mission activities that affect the RCW are likely to have the same effect on the Bachman's sparrow and southeastern American kestrel populations located within or near the TA C-80 Complex. Therefore, it is assumed that noise impact under the No Action Alternative would not be significant to these species.

Chemical Impacts

The *2000 Test Area C-80 Complex PEA* examined the potential for effects to biological resources from such chemical materials as gaseous chemical materials from ordnance, smokes, and flares, and from depleted uranium on TA C-80B from historical arena testing. The main explosive evaluated under the No Action Alternative was Tritonal, which accounted for the greatest percentage of explosive type by weight for munitions detonated. Tritonal is composed of 80 percent TNT and 20 percent aluminum powder. Two Installation Restoration Program AOCs, used as Celotex burial sites for arena test debris, occur within the TA C-80 Complex near test arenas. Site investigations were conducted in conjunction with these two AOCs; the investigations determined that chemical material inputs did not exceed any USEPA standards or Eglin AFB background levels, and that contamination from chemical materials during the baseline period was insignificant. The analysis of soil and ground water from these areas indicated that no significant impacts occurred as a result of the materials deposited there. Also, the vicinity of these areas to the arenas indicated that any addition of explosive by-products from arena testing and Navy EOD training was not enough to impact soil or water quality according to USEPA standards.

The headwaters of a tributary to Dogwood Head Branch, an Okaloosa darter stream, exist on TA C-80C. Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek are all located within 0.25 mile of one of the TA C-80 test areas. The close proximity of these streams to the test areas suggests that there is potential for impacts to surface water from activities described under the No Action Alternative. However, areas of grassland and sandhill separate the clay pad arenas from the streams and should serve as a buffer to trap loose sediments being transported from the test areas, thus minimizing runoff. Therefore, there is minimal risk of any ground water based transport of contaminants into these surface waters.

Chemical residue also has the potential to impact avian and other terrestrial biological resources, as they could be exposed to smoke and obscurants. According to the *2000 Test Area C-80 Complex PEA*, biological resources potentially exposed to chemical materials were identified as the RCW, the southeastern American kestrel, and Bachman's sparrow. It is unlikely that these bird species and other terrestrial species, such as the black bear, gopher tortoise, and the eastern indigo snake, would be affected by chemical materials since human presence and activity accompanying missions would likely cause animals to avoid the area. Therefore, under the No Action Alternative, chemical materials from mission activities would not have a significant effect to biological resources and would have no effect to the RCW, Okaloosa darter and indigo snake.

Habitat Alteration

Habitat alteration is possible from munitions, pyrotechnics, and ground operations. Wildfires ignited by TA C-80 Complex mission activities could have both positive and negative impacts. To minimize the likelihood of damaging wildfires, user groups would be required to check with Eglin Natural Resources personnel to determine if the fire hazard index is acceptable prior to

mission activities. Overall, wildfires would primarily be beneficial to RCWs, southeastern American kestrels, and Bachman's sparrow, although wildfires do have the potential to impact RCW cavity trees.

Vehicles, especially tracked vehicles such as tanks, have the potential to collapse gopher tortoise burrows and cause soil disturbance and erosion issues for surface waters, which could impact the Okaloosa darter. No wetlands are located within the study area. Vehicles are primarily kept on established roads and would not traverse streams; therefore, the possibility of impacts is greatly reduced and determined to be minimal. Soil disturbance from munitions impacts is concentrated around established target areas, which are located on relatively flat terrain with little possibility of erosion. Potential impacts to Okaloosa darter streams were not evaluated further in the *2000 Test Area C-80 Complex PEA*, as areas of grassland and sandhill separated the clay pad arenas from streams and were assumed to serve as buffers to trap loose sediments transported from test areas. Potential impacts to gopher tortoises were not evaluated because no burrows were present on the TA C-80 Complex at the time the *2000 Test Area C-80 Complex PEA* was completed.

Habitat alteration impacts under the No Action Alternative would not be significant and would have no effect on the RCW, Okaloosa darter or indigo snake.

Summary

The current No Action Alternative would not have significant biological resource impacts and would have no effect on the RCW, Okaloosa darter, or indigo snake.

4.5.2 Alternative 1

Direct Physical Impacts

To determine the potential for a direct physical impact to sensitive species under Alternative 1 from inert munitions and shrapnel from live munitions, the same methodology was utilized as under the No Action Alternative. The maximum safety footprint for each test area was selected as a conservative scenario (Table 4-10) to determine the probability of a direct physical impact from mission activities.

Table 4-10. Maximum Safety Footprints for Test Areas C-80A, C-80B, and C-80C

Test Area	Maximum Allowable Detonation	Radius* (feet)
C-80A	Partial Recovery Arena Test: 200 lbs. NEW	4,000
C-80B	Navy EOD: 500 lbs. NEW	7,500
C-80C	Partial Recovery Arena Test: 3,000 lbs. NEW	10,000

Source: U.S. Air Force, 2008

lbs = pounds; NEW = net explosive weight

*Eglin Safety Office assigned for largest potential detonation for each test area based on TNT equivalent NEW.

Under Alternative 1, the density of active RCW cavity trees within the collective safety footprint of the TA C-80 Complex for the highest NEW detonations is 37 trees in 11,269 acres, or roughly

three active cavity trees per 1,000 acres. As with the No Action Alternative, RCW cavity trees that exist within the safety footprints of arena test missions are at low risk of being impacted by direct physical impact, as the majority of the active trees are located within the interstitial area and protected by other trees. Thus, due to similar habitat preference, direct physical impacts to southeastern American kestrel and Bachman's sparrow are also unlikely.

Any vehicles used during testing activities would primarily remain on established roads, thereby minimizing the potential for direct physical impacts to biological resources.

Overall, direct physical impacts from Alternative 1 would not be significant. Alternative 1 would have no effect on the RCW, Okaloosa darter, or eastern indigo snake.

Noise Impacts

Noise associated with static detonations from live munitions has the potential to affect the behavior and reproduction of sensitive species on and near the TA C-80 Complex. For the noise analysis under Alternative 1, the largest NEW used at each test area was modeled to determine the potential for noise impacts to the RCW (Figure 4-1). On TA C-80A, the upper NEW of 200 lbs was used, which is a higher NEW than what was modeled under the No Action Alternative (i.e., 126 lbs NEW). Table 4-11, Table 4-12, and Table 4-13 summarize the number of active RCW trees and acreage of RCW foraging habitat exposed to 140 dBP under Alternative 1 at TA C-80A, C-80B, and C-80C, respectively.

Table 4-11. Noise Impact Zones of 200-lb NEW on TA C-80A

POTENTIAL NOISE IMPACT ZONES	
	140 dBP Noise
Impact Radius (feet)	3,509
Impact Area (acres)	888
Number of Active RCW Trees	0
Acres of RCW Forage Area	135

dBP = peak decibels; lb = pound; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight not available.

Table 4-12. Noise Impact Zones of Mk-82* Detonated on TA C-80B

POTENTIAL NOISE IMPACT ZONES	
	140 dBP Noise
Impact Radius (feet)	3,700
Impact Area (acres)	987
Number of Active RCW Trees	12
Acres of RCW Forage Area	914

dBP = peak decibels; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight = 236 lbs.

Table 4-13. Noise Impact Zones of Mk-84* Detonated on TA C-80C

POTENTIAL NOISE IMPACT ZONES	
	140 dBP Noise
Impact Radius (feet)	6,708
Impact Area (acres)	3,245
Number of Active RCW Trees	6
Acres of RCW Forage Area	1,118

dBP = peak decibels; RCW = red-cockaded woodpecker; TA = test area

*TNT equivalent weight = 1,162 pounds.

Table 4-14 provides a comparison between the No Action Alternative and Alternative 1 noise impact zones.

Table 4-14. Comparison of Noise Impact Zones for No Action Alternative and Alternative 1

TEST AREA	Impact Radius (feet)	Impact Area (acres)	Number of Active RCW Trees	Acres of RCW Forage Area
No Action Alternative – POTENTIAL NOISE IMPACT ZONE 140 dBP				
TA C-80A - 126 lb NEW	3,008	653	1	261
TA C-80B - Mk 82¹	3,700	990	6	800
TA C-80C - Mk 84²	6,308	2,870	6	980
Total No Action Alternative	13,016	4,513	13	2,041
Alternative 1 – POTENTIAL NOISE IMPACT ZONE 140 dBP				
TA C-80A – 200 lb NEW	3,509	888	0	135
TA C-80B – Mk 82¹	3,700	987	12	914
TA C-80C – Mk 84²	6,708	3,245	6	1,118
Total Alternative 1	13,917	5,120	18	2,167

dBP = peak decibels; Lb = pounds; RCW = red-cockaded woodpecker; TA = test area

1. TNT equivalent weight = 236 lbs

2. TNT equivalent weight = 1,162 lbs.

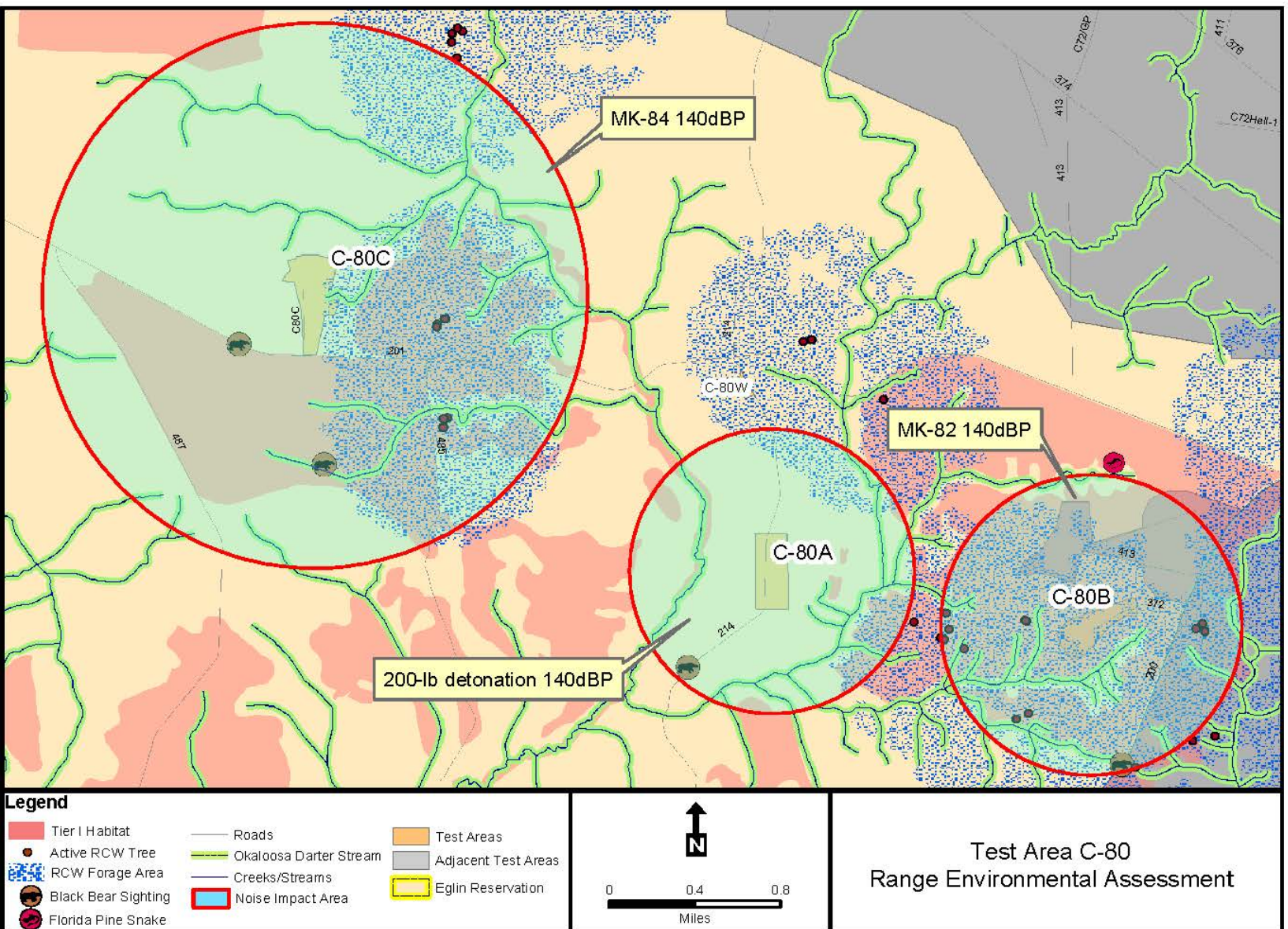


Figure 4-1. Noise Impact Zones for the Test Area C-80 Complex under Alternative 1

Noise analysis shows that under Alternative 1, an additional five active RCW trees and 126 acres of RCW foraging habitat would be exposed to the 140 dBP noise impact zone. However, since RCW populations at the TA C-80 Complex are increasing, it is assumed that the presence of suitable habitat appears to outweigh any negative influences associated with mission-related noise. Therefore, noise impacts to RCWs, Bachman's sparrow and the southeastern American kestrel would not be significant under Alternative 1.

Vehicle movement and foot traffic associated with ground operations also have the potential to create noise and disturbance that could affect RCWs along the periphery of the TA C-80 Complex. Depending on the type of vehicle, noise levels could be quite loud and accompanied by heavy vibration. Delaney et al. (2002) monitored nesting RCWs while a convoy of vehicles passed (Table 4-15). Birds flew away as a result of the passing of the convoy, but returned shortly thereafter. The vehicle use associated with Alternative 1 along existing roadways does not represent a new noise or disturbance source such that birds would abandon the area. Birds near these areas are likely acclimated to the presence of vehicles.

Table 4-15. Red-Cockaded Woodpecker Response to Vehicle Noise and Disturbance

Noise Source	Noise Level (SEL)	Distance (meters)	Notes
Vehicles (convoy of Bradley fighting vehicles and civilian vehicle)	< 75	> 50	Bird returned 10 minutes after convoy had passed. Birds returned after 3 minutes when civilian vehicle had passed.

< = less than; > = greater than; SEL = sound exposure level

Eglin follows the *Management Guidelines for the Red-Cockaded Woodpecker on Army Installations* (U.S. Army, 2006), which details allowed and restricted activities near active RCW trees (Table 4-16). Military vehicles are prohibited from occupying a position or traversing within 50 feet of a marked cavity tree, unless on an existing road, maintained trail, or firebreak. U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs. Although no troop movements or ground training activities would occur under Alternative 1, the Army management guidelines have been included in this REA as they contain some management requirements relevant to the Proposed Action (i.e. pyrotechnics/smoke).

Summary

Noise from Alternative 1 level of activity on the TA C-80 Complex would not have any significant impacts on biological resources, and would have no effect to the RCW, Okaloosa darter, and indigo snake.

Table 4-16. Selected Army Training Activities Allowed/Not Allowed Within 200 Feet of Marked RCW Cavity Tree

Mission Activity	Allowed
Maneuver and Bivouac:	
Hasty defense, light infantry, hands and hand tool digging only, no deeper than 2 feet, 2 hours MAX	Yes
Hasty defense, mechanized infantry/armor	No
Deliberate defense, light infantry	No
Deliberate Defense, mechanized infantry/armor	No
Establish command post, light infantry	No
Establish command post, mechanized infantry/armor	No
Assembly area operations, light infantry/mech infantry/armor	No
Establish CS/CSS sites	No
Establish signal sites	No
Foot Transit through the Cluster	Yes
Wheeled Vehicle Transit through the Cluster ¹	Yes
Armored Vehicle Transit through the Cluster ¹	Yes
Cutting Natural Camouflage, Hard Wood Only	Yes
Establish Camouflage Netting	No
Vehicle Maintenance for No More than 2 Hours	Yes
Weapons Firing:	
7.62 mm and Below Blank Firing	Yes
.50 cal Blank Firing	Yes
All others	No
Noise:	
Generators	No
Artillery/Hand Grenade Simulators	Yes
Hoffman type devices	Yes
Pyrotechnics/Smoke:	
CS/Riot Agents	No
Smoke, Haze Operations Only, Generators or Pots, Fog Oil and/or Graphic Flakes ²	Yes
Smoke Grenades	Yes
Incendiary Devices to Include Trip Flares	Yes
Star Clusters/Parachute Flares	Yes
HC Smoke of any Type	No
Digging:	
Tank Ditches	No
Deliberate Individual Fighting Positions	No
Crew-served Weapons Fighting Positions	No
Vehicle Fighting Positions	No
Other Survivability/Force Protection Positions	No
Vehicle Survivability Positions	No

Source: U.S. Army, 2006

cal = caliber; CS/CSS = Combat Support/Combat Service Support; mm = millimeter; RCW = red-cockaded woodpecker

1. Vehicles will not get any closer than 50 feet of a marked cavity tree unless on existing roads, trails, or firebreaks.

2. Smoke generators and smoke pots will not be set up within 200 feet of a marked cavity tree, but the smoke may drift through the 200-foot circle around a cavity tree.

Chemical Impacts

Chemical residue from bombs, missiles, small arms, flares, chaff, and other expendables has the potential to impact sensitive species' health if ingested or if accumulated in soils and water. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. Aquatic species are particularly susceptible to chemical impacts. There are five streams located near the TA C-80 Complex; one, Dogwood Head Branch, is an Okaloosa darter stream located on TA C-80C. As summarized in Section 4.4, minimal impacts to surface water are anticipated under Alternative 1 because areas of grassland and sandhill separate the clay pad arenas from the streams and should serve as a buffer to trap loose sediments being transported from the test areas, thus minimizing runoff. As stated for the No Action Alternative, Eglin restricts the use of chaff and flares within 100 feet of water bodies and directs that they are never to be thrown directly into a water body. Although there are five streams located within 0.25 mile of the test areas, specific BMPs would be utilized to minimize the potential for impacts to surface waters as a result of mission activities under Alternative 1 (refer to Section 2.5).

Potential impacts to other biological resources from chemical materials under Alternative 1 are anticipated to be the same as under the No Action Alternative. It is unlikely that biological resources would be affected by chemical materials as human presence and activity accompanying missions would likely cause animals to avoid the area. Therefore, under Alternative 1, chemical materials from mission activities would not have a significant effect to biological resources, and would have no effect to the Okaloosa darter, RCW, and the indigo snake.

Habitat Alteration

Habitat alteration is possible due to wildfires ignited by live munitions or pyrotechnics and from soil disturbance associated with munitions. Fires are generally beneficial to longleaf and open grassland communities, but it is unknown whether the wildfires potentially associated with Alternative 1 would have a net positive or negative effect on sensitive habitats and species. Wildfires can cause damage to sensitive habitats if they burn too hot or smolder, or if fire suppression activities are necessary.

Multiple federally listed species, including the RCW, require frequent fire to keep scrubby vegetation to a minimum. Wildfires may achieve this purpose. However, with every wildfire, there is the potential for damage or mortality of active RCW cavity trees if the trees ignite. Prescribed fire is the preferred option for maintaining these habitats.

Wildfires

Wildfire data from 1997 through 2007 was analyzed to determine the potential risks to sensitive species from mission activities on the TA C-80 Complex (Table 4-17).

Table 4-17. Wildfires at the Test Area C-80 Complex from 1997 to 2007

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
<i>Number of Fires</i>	1	2	1	0	2	3	1	2	2	1	5
<i>Acres Burned</i>	71.90	3.07	3.03	0	75.56	66.35	3.29	235.28	0.02	12.76	0.82
<i>Average size (acres)</i>	71.90	1.54	3.03	0	37.78	22.12	3.29	117.64	0.01	0.82	0.16

Source: Eglin DSS, 2008.

Approximately 80 percent of all the wildfires that occurred on the TA C-80 Complex from 1997 to 2007 were from mission-related activities. The average size of a wildfire ignited by TA C-80 Complex mission activities was 23 acres. No active RCW trees were impacted.

Munitions and pyrotechnics use would follow Eglin's Wildfire Specific Action Guide Restrictions, which rate fire danger from low to extreme (U.S. Air Force, 2006b). During days with low fire danger, there are no restrictions on missions, but on days with extreme fire danger, no pyrotechnics are allowed without prior approval from the Wildland Fire Program Manager at Eglin's NRS. Within 3 working days of notification, the Eglin NRS would reprovision a cavity tree if one was destroyed due to training activity (i.e., due to wildfire).

Soil Erosion

The potential exists for impacts to Okaloosa darters from sediment runoff due to exposed soils. However, the only construction planned under Alternative 1 is expansion of the OGT facility, which is located on TA C-80A. Since no Okaloosa darter streams are present on this test area, the potential for impacts to the Okaloosa darter from construction activities is extremely low. Furthermore, implementation of erosion-control management requirements, such as maintaining a minimum vegetated buffer between streams and bare soil testing areas, would reduce the potential for sedimentation in surface waters and nearby Okaloosa darter streams.

It is not anticipated that vehicles used during missions would have an impact to gopher tortoise burrows or indigo snakes. Any known gopher tortoise burrows would be avoided and vehicles would use established roads. Habitat alteration impacts under Alternative 1 would not be significant and would have no effect to the RCW, Okaloosa darter and indigo snake.

Summary

Alternative 1, with the inclusion of specific management actions, would not have significant biological resource impacts and would have no effect on the RCW, Okaloosa darter, or indigo snake. An ESA Section 7 consultation would not be conducted.

Management Actions

Alternative 1 includes management actions for the TA C-80 Complex that would minimize the potential for impacts to biological resources.

Sensitive Habitats

- Each user group that utilizes pyrotechnics or conducts other activities that have the potential to ignite wildfires must follow Eglin's Wildfire Specific Action Guide Restrictions, which rate fire danger from low to extreme.
- Continue prescribed burning as much as possible in High Quality Natural Communities.
- To reduce potential seed sources, treat areas with known invasive nonnative species problems.

Sensitive Species

- Continue monitoring of RCWs by the Eglin NRS.
- Do not use smokes, simulators, or flares within 100 feet of natural water bodies (Dogwood Head Branch, Bear Branch, East Rocky Creek, Bully Horselot Branch, and Rocky Creek), and never throw them directly into a water body.
- Do not release chemicals or metals into streams. Do not release toxic aerosols within 300 feet of streams. If any ordnance lands in stream bank areas or interior objectives, they should be removed immediately in accordance with Air Force regulations.
- Pyrotechnics use will be restricted near Okaloosa darter streams.
- Vehicles should remain on established roads.
- Appropriate erosion control measures must be utilized during construction to reduce potential sediment runoff issues into Okaloosa darter streams.
- Follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004a).
- Follow the relevant Army guidelines for RCWs (U.S. Army, 2006).
- Prohibit military vehicles from occupying a position or traversing within 50 feet of a marked RCW cavity tree, unless on an existing road or maintained trail or firebreak.
- Continue prescribed burning as much as possible in fire dependent habitats, particularly RCW foraging habitat.
- In accordance with Section 12.5.13.2 of AFI 32-7064, Integrated Natural Resources Management, cooperate with and support the Eglin NRS to ensure that sufficient resources (i.e., fire management personnel and equipment) are available to respond to fire emergencies.

- Eglin AFB Wildfire Specific Action Guide Restrictions regarding forest fire danger ratings for munitions and pyrotechnics use will be adhered to.
 - Per the Specific Action Guide for wildfire readiness, if fire danger is:
 - Moderate - No restrictions on pyrotechnics. A fire watch is required to be posted for a minimum of 20 minutes after use of pyrotechnics has been completed.
 - High - Use caution with pyrotechnics and post a fire watch for a minimum of 30 minutes after use of pyrotechnics has been completed.
 - Very high - Restrict pyrotechnics to hand-thrown simulators or smoke grenades. No flares below 1000 feet above ground level. Limit BDU 33s and other munitions that may start fires to "Safe" areas. Use simulators or grenades only on roads or in pits. Cleared areas for pyrotechnics should be a minimum of 1.5 times the blast radius.
 - Extreme - No pyrotechnics allowed without prior approval from the Wildland Fire Program Manager or their designee at Eglin AFB Natural Resources (Jackson Guard) (96 CEG/CEVSNP, 882-6233 or FAX 882-5321).
 - Fire danger can be determined by calling the dispatch office or referring to the Fire Management Section on the Environmental Management website.
 - Immediately notify Eglin AFB Fire Department Dispatch of any wildfire.
- Provide conditions and restrictions regarding biological resources to all participants in verbal or written form. Provide maps when necessary.

4.5.3 Alternative 2

Under Alternative 2, there would be a 300-percent mission surge over the activities conducted under Alternative 1. This level would increase the frequency, and in some cases the severity, of impacts to biological resources on and near the TA C-80 Complex. The possibility of direct physical impacts from munitions impact and shrapnel would increase by 300 percent and the mission surge would increase the frequency, but not the intensity of noise from TA C-80 Complex missions. However, because of their ability to acclimate to noise, biological resources are not anticipated to be impacted by the increase in noise frequency.

The amount of chemical residue would increase by 300 percent, particularly with increased levels of lead (Section 1.1). However, since chemical load from all munitions would be distributed over a large area, the potential for an overall concentration of any chemical at any given location would be minute. Furthermore, specific management practices would remain in place assuring areas would be scanned for debris and dud munitions would be removed.

A 300-percent mission surge would also increase the likelihood of wildfires and soil disturbance. Assuming a 300-percent increase in mission activity on the TA C-80 Complex resulted in a 300-percent increase in wildfires, there could be up to 70 acres affected by TA C-80-ignited

wildfires annually. A 300-percent increase in munitions use would not likely increase the size of the areas affected by soil disturbance, since the same target areas would be utilized.

Any vehicles used during testing activities would primarily remain on established roads, thereby minimizing the potential for direct physical impacts to biological resources.

Overall, a 300-percent mission surge under Alternative 2 would not have any significant impacts on biological resources on the TA C-80 Complex given the implementation of applicable management requirements. Therefore, it is anticipated that Alternative 2 would have no effect on the RCW, Okaloosa darter, or indigo snake, and an ESA Section 7 consultation would not be conducted.

4.6 CULTURAL RESOURCES

4.6.1 No Action Alternative

No adverse effects to cultural resources are expected under the No Action Alternative. Effects to cultural resources would be identical to those presented under Alternative 1 and Alternative 2.

4.6.2 Alternative 1

Cultural resources were not considered an issue of concern in the previous 2005 EBD for TA C-80. Continuing mission activity and foreseeable future activities are not likely to adversely affect cultural resources under this alternative. Cultural resource high probability survey areas and historic homestead survey areas exist on the test complex (within TA C-80A, TA C-80B, TA C-80C, and TA C-80W). This acreage on the test complex requires survey to remove the potential for disturbance to resources eligible for the National Register of Historic Places. As such, additional analysis to determine the potential for adverse effects to cultural resources and to identify pertinent management actions would be required prior to any future ground disturbing activity in the area. Surveys must be completed prior to new project initiation within the outstanding survey areas; these surveys would be captured as part of the permitting process for ground disturbing activity. Due to the presence of hazardous materials, and the historic and continued use of ordinance in the test area, safety of survey crews is a primary concern and would be considered prior to authorizing any survey for TA C-80.

4.6.3 Alternative 2

Mission activities are not likely to adversely affect cultural resources under the Preferred Alternative. As with Alternative 1, the test complex requires survey to remove the potential for disturbance to resources eligible for the National Register of Historic Places. As such, additional analysis to determine the potential for adverse effects to cultural resources and to identify pertinent management actions would be required prior to any future ground disturbing activity in the area. Archaeological surveys must be completed prior to new ground disturbing project initiation within the outstanding survey areas.

4.7 AIR QUALITY

The air quality analysis focused on the emissions from the detonation of munitions and vehicle travel based on miles of road and vehicle miles traveled data associated with testing activities on the TA C-80 Complex. Munitions emissions are based on the number of missions, number of each munition type and its associated net explosive weights. Vehicle and unpaved road emissions were calculated using average vehicle miles traveled information for Eglin AFB and the total miles of road on the TA C-80 Complex.

4.7.1 No Action Alternative

The No Action Alternative authorizes the level of activity as approved in the *2000 Test Area C-80 Complex PEA*, which included the baseline activity level, maximum allowable NEW, and an increase of 1,000 percent of baseline levels of mission activities. Emissions expected for this level of activity are shown in Table 4-18. Emissions are minute for all criteria pollutants as compared to the federal NAAQS. The emissions as compared to Walton County would be greatest for particulate matter, at 0.27 percent of the county emissions (Table 4-19). This is below the 10-percent criteria from general conformity guidelines. No adverse impacts are expected to regional air quality for the No Action Alternative.

**Table 4-18. No Action Alternative Air Emissions
Compared to the Federal NAAQS**

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	2.375E-06
	8-Hour	9	1.663E-06
NO _x	Annual	0.053	4.571E-09
SO ₂	3-Hour	0.5	1.167E-08
	24-Hour	0.14	5.189E-09
	Annual	0.03	1.038E-09
PM ₁₀	24-Hour	150 µg/m ³	0.603 µg/m ³

CO = carbon monoxide; NAAQS = national ambient air quality standards; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; ppm = parts per million; SO₂ = sulfur dioxide; µg/m³ = micrograms per cubic meter

**Table 4-19. No Action Alternative Air Emissions
Compared to the 2002 NEI Data for Walton County**

	Emissions (tons/yr)				
	CO	NO _x	PM	SO _x	VOC
Total Walton County	33892.75	4681.323	7784.82	245.7311	4889.746
Test Area Emissions	0.646201	0.198826	20.95836	0.016332	0.016658
% Walton County Emissions	0.002%	0.00%	0.27%	0.01%	0.00%

CO = carbon monoxide; NEI = National Emissions Inventory; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxide; VOC = volatile organic compound; yr = year

4.7.2 Alternative 1

This alternative allows for the current level of activity and foreseeable future activities. Using the munitions data and assuming the number of missions would be similar to those for the No Action Alternative, emissions levels were calculated and compared to the federal NAAQS and Walton County emissions levels in Table 4-20 and Table 4-21. Emissions are below federal standards for criteria pollutants and make up less than 1 percent of the county emissions for all criteria pollutants. No adverse impacts are expected to regional air quality for Alternative 1.

Table 4-20. Alternative 1 Air Emissions Compared to the Federal NAAQS

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	2.373E-06
	8-Hour	9	1.661E-06
NO _x	Annual	0.053	4.563E-09
SO ₂	3-Hour	0.5	1.165E-08
	24-Hour	0.14	5.176E-09
	Annual	0.03	1.035E-09
PM ₁₀	24-Hour	150 ug/m ³	0.557

CO = carbon monoxide; NAAQS = national ambient air quality standards; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; ppm = parts per million; SO₂ = sulfur dioxide; ug/m³ = micrograms per cubic meter

Table 4-21. Alternative 1 Air Emissions Compared to the 2002 NEI Data for Walton County

	Emissions (tons/yr)				
	CO	NO _x	PM	SO _x	VOC
Total Walton County	33892.75	4681.323	7784.82	245.7311	4889.746
Test Area Emissions	0.557846	0.166786	17.26151	0.013584	0.016658
% Walton County Emissions	0.002%	0.004%	0.222%	0.006%	0.000%

CO = carbon monoxide; NEI = National Emissions Inventory; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxide; VOC = volatile organic compound; yr = year

4.7.3 Alternative 2

This alternative analyzes the current level of activity plus a 300-percent increase in mission activities. Air quality analysis was completed using the munitions data supplied in Chapter 2 and assumed a 300-percent increase in number of missions listed in the No Action Alternative as mission data was not provided for this alternative. Emissions are summarized in Table 4-22 and Table 4-23. Emissions would not exceed the federal NAAQS. Particulate matter would have the

greatest increase in regional emissions, at 0.887 percent of Walton County emissions. The emissions would be less than the 10-percent criteria, thus would not have significant impact. No adverse impacts) to regional air quality are expected from activities proposed in Alternative 2 (Preferred Alternative).

Table 4-22. Alternative 2 Air Emissions Compared to the Federal NAAQS

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	2.379E-06
	8-Hour	9	1.665E-06
NO _x	Annual	0.053	4.582E-09
SO ₂	3-Hour	0.5	1.172E-08
	24-Hour	0.14	5.207E-09
	Annual	0.03	1.041E-09
PM ₁₀	24-Hour	150 ug/m ³	0.667

CO = carbon monoxide; NAAQS = national ambient air quality standards; NO_x = nitrogen oxides; PM₁₀ = particulate matter with a diameter of less than or equal to 10 microns; ppm = parts per million; SO₂ = sulfur dioxide; ug/m³ = micrograms per cubic meter

Table 4-23. Alternative 2 Air Emissions Compared to the 2002 NEI Data for Walton County

	Emissions (tons/yr)				
	CO	NO _x	PM	SO _x	VOC
Total Walton County	33892.75	4681.323	7784.82	245.7311	4889.746
Test Area Emissions	1.794895	0.615367	69.02088	0.052058	0.016658
% Walton County Emissions	0.005%	0.013%	0.887%	0.021%	0.000%

CO = carbon monoxide; NEI = National Emissions Inventory; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxide; VOC = volatile organic compound; yr = year

4.8 NOISE

Noise impacts to the community are addressed in this section. Noise impacts to wildlife are addressed in Section 4.5, Biological Resources.

4.8.1 No Action Alternative

The *Test Area C-80 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 2000a), which is the source for the original noise analysis for activities at the TA C-80 Complex, found that the maximum allowable NEW detonated on TA C-80A, TA C-80B and TA C-80C would not have significant noise impacts to the community if the detonations occurred under ideal weather conditions. The maximum NEWs for were 200 pounds, 500 pounds and 3,000 pounds for TA C-80A, TA C-80B and TA C-80C, though no missions were conducted during the baseline years for the PEA that equaled these amounts. Thus, while the test areas are rated for these amounts, for several years there was no requirement to meet or exceed them as the typical amounts of NEW tested were usually much less than the rated maximum. The largest amount

actually detonated on TA C-80C was 945 pounds of tritonal from an Mk-84 bomb. Up to 10 Mk-84 detonations were approved under the No Action Alternative.

Analysis of a 3,000-pound detonation offers a look at the maximum-case NEW scenario, while analysis of an Mk-84 detonation represents the typical large munition scenario. In the *2000 Test Area C-80 PEA*, noise contours associated with a detonation of 3,000 pounds NEW indicated that part of the Niceville community, including two schools, would be exposed to greater than 115 dBP, as well as some communities north of the reservation. The level of 115 dBP is identified by the U.S. Army as a level that might moderately annoy people exposed (U.S. Army, 2001). Interstate 10, Highway 90, and Highway 285 would also be exposed to noise greater than 115 dBP.

Because Eglin experiences calm conditions only 14 percent of the time, or about 50 days out of the year, it is assumed that some detonations could take place under weather conditions that are less than ideal. However, the majority of wind speeds throughout the year are still less than 10 knots (Figure 4-2). Large detonations are not advisable under certain weather conditions, such as strong north winds (20 to 40 knots) aloft with temperature inversions. These types of conditions occur during the fall and winter (U.S. Air Force, 1996). The *2000 Test Area C-80 PEA* modeled a 3,000-pound detonation and found that under these conditions, noise of 130 dBP would extend into several communities. Lesser NEWs could likewise have farther reaching noise effects under these conditions.

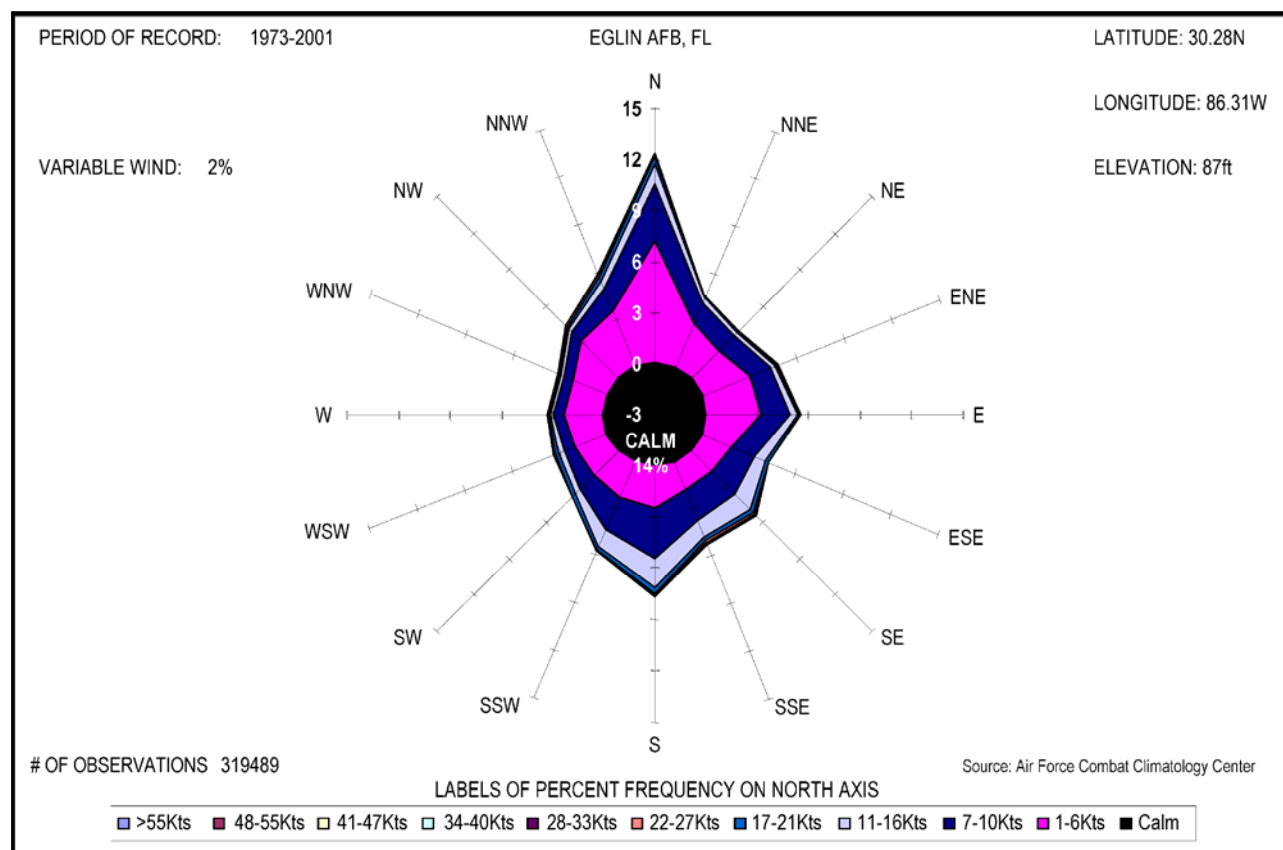


Figure 4-2. Representative 12-Month Wind Rose for Eglin AFB

4.8.2 Alternative 1

A new activity proposed under Alternative 1 is the expansion and operation of a new OGT facility to test items such as rocket motors. Noise from the OGT facility rocket motor testing should not pose an issue to the community. Patriot missiles and other rockets are approved for launch from Air Force test sites on Santa Rosa Island and Cape San Blas. These sites are in closer proximity to populated areas than the TA C-80 test areas without significant noise effects. Thus, no adverse noise impacts to the community from rocket motor tests at the OGT facility are expected.

A total of 38 Mk-84s would be approved under Alternative 1. This level of activity closely approximates the number of Mk-84s detonated at TA C-80C during any single year from 1998 to 2006. Under ideal weather conditions, no adverse impacts to the community would occur. Certain weather conditions, such as cool northerly winds and temperature inversions, could propagate noise from TA C-80 missions much further into the communities south of the TA C-80 Complex. Other wind speeds, wind directions, and inversion scenarios could propagate noise in other directions. Because a number of different weather scenarios occur throughout the year, it is not possible to predict which communities would most likely be affected from noise without “day of” modeling or near real-time modeling.

Noise complaint data presented in Chapter 3 does not infer a causal relationship from tests conducted at the TA C-80 Complex. Explosive tests at TA C-80 could be responsible for some noise complaints, though under ideal weather conditions single-event noise likely to elicit annoyance (115 dBP) from people from the largest typical munition, the Mk-84, is not expected to reach the surrounding community. For the average noise threshold of 62 dBC (Table 4-24) to reach the community, test engineers would have to conduct multiple detonation tests over a 24-hour period. The setup and planning of tests at TA C-80 can take days or weeks, thus scenarios in which multiple detonations occur over a very brief time frame at the TA C-80 Complex are unrealistic. In the Navy Comptuex environmental assessment, analysis examined a training exercise just south of the TA C-80 Complex which involved dropping 250 live Mk-82s within a 24-hour period (U.S. Air Force, 2000b). Given no significant noise impacts to the community arose out of that exercise, testing at the TA C-80 Complex would likewise not have significant noise impacts to the community.

Table 4-24. Relationship Between Noise Level and Percent of Population Highly Annoyed

Criteria	Percent of Population Highly Annoyed		
	< 15%	15%–39%	>39%
	Noise Level		
C-weighted average noise levels (impulsive noise)	< 62 dBC	62–70 dBC	>70 dBC

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

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

Note: The primary noise metric used by the U.S. Army to describe small-arms noise is “peak noise exceeded by 15 percent of firing events (PK₁₅[met])”

4.8.3 Alternative 2

The increase in mission activity does not involve an increase in the size or intensity of munitions tested, but would include an increase in the frequency of detonations by 400 percent. This increases the likelihood that some tests would be conducted under weather conditions conducive for allowing the spread of noise into the community. The number of noise complaints filed with Eglin AFB may increase. Harmful levels of noise (140 dBP) are not expected to leave the Reservation. By modeling the NEW and factoring in test-day weather conditions, Eglin observes a policy of not allowing noise levels of 138 dBP or greater to leave Reservation boundaries.

4.9 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, 2003a). With time, testing missions on Eglin are generally using longer-range weapons and are requiring larger safety footprints extending over more interstitial area.

Safety regulations and requirements are currently in place and would continue to be followed for all test and training missions that occur on the TA C-80 Complex under all alternatives. Safety footprints are required for all live munitions use and are adjusted accordingly to minimize potential safety risks to personnel on the test site and to the public that may be in areas located outside of the test site. TA C-80 is a closed test area; therefore, public access is prohibited.

Test areas with known UXO require EOD escort, and regulations regarding UXO should remain in place and continue to be followed. Since the TA C-80 Complex is closed to all forms of public access, no impacts to public safety from UXO are anticipated.

4.9.1 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 or aircraft speed increases, so does the size of the footprint (U.S. Air Force, 2003).

The methodology for footprint formulation combines munitions system science, computer modeling, and BMPs. 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, 2003).

Only detonations occurring on TA C-80C would require a safety footprint large enough to overlap a public use area. Detonations on TA C-80B are sufficient to extend the safety footprint into portions of the TA C-52 Complex, restricting access to that test area. Range roads are frequently closed for TA C-80A, TA C-80B, and TA C-80C activities; however, public roads are not. Management Unit 13, which is open for outdoor recreation including limited hunting, is over 5,000 feet from the center of the clay pad arena on TA C-80C. The maximum NEW of TNT that was authorized under the *Test Area C-80 Final Programmatic Environmental Assessment* (U.S. Air Force, 2000a) along with the maximum safety footprint is shown in Table 4-25.

Table 4-25. Maximum NEW and Safety Footprints at the TA C-80 Complex

Test Area	NEW	Safety Footprint
C-80A	200	4,000
C-80B	500	7,500
C-80C	3,000	10,000

Source: U.S. Air Force, 2000a

NEW = net explosive weight; TA = test area

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, 2003).

Weapon safety footprints would be employed for testing and 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.

Unexploded Ordnance

For the 60 years the Eglin Range has been in use, the location of impact areas and 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, 2001).

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 watch a UXO awareness video before receiving 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). 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 safety controls are in place for personnel involved in range management and/or engaged in missions on the range.

96 CES/CESD 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/CESD 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/CESD 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 the TA C-80 Complex 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/CESD personnel would be required to address UXO on the TA C-80 Complex. Therefore, there are no adverse effects to safety under the No Action Alternative.

4.9.2 Alternative 1

Ordnance Use

Under Alternative 1, the current level of activity at the TA C-80 Complex would be authorized. The addition of the OGT facility and non-destructive munitions engine runups at TA C-80A would not lead to larger SDZs or increased restricted areas. There would be no new user groups, and the maximum NEW at each facility would remain at 200 lbs, 500 lbs, and 3,000 lbs for TA C-80A, TA C-80B, and TA C-80C respectively. 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 the TA C-80 Complex. Users would continue to coordinate with 96 CES/CESD with regard to UXO encounters on TA C-80. This would mitigate any potential adverse impacts to safety from UXO on the TA C-80 Complex.

4.9.3 Alternative 2

Under Alternative 2, the frequency and total quantity of munitions used will increase by 300 percent. Therefore, the number of management area and range road closures would increase, but the total area impacted would not be expected to increase, and is considered minimal in comparison to the total area available for recreational use on the Eglin Reservation. Despite this increase, the policies and procedures already in place would insure that safety of Eglin AFB personnel and the general public are 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/CEG, no new impacts to safety are anticipated.

4.10 SOCIOECONOMIC RESOURCES

This section assesses potential impacts to socioeconomic resources, including environmental justice and special risks to children. The socioeconomic receptors include nearby communities and property that are impacted by the noise from activities performed at the TA C-80 Complex. The potential impacts that would expose low-income and minority populations to disproportionate negative impacts or pose special risks to children (under 18-years-old) associated with noise on the TA C-80 Complex are discussed.

4.10.1 No Action Alternative

The No Action Alternative would not have significant socioeconomic and environmental justice impacts. This alternative is defined as authorizing the level of activity approved in the *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a).

Environmental Justice

The *2000 Test Area C-80 Complex PEA* (U.S. Air Force, 2000a) did not include an analysis of impacts to environmental justice. The main potential issue of concern with activities on the TA C-80 Complex is disproportionate impacts from noise on minority and low-income populations. Noise impacts would primarily affect communities located near the test area. Since the TA C-80 Complex is located on Eglin Main Base, the amount of noise coming off of the reservation and into the adjacent communities is limited. The closest community to the TA C-80 Complex is Niceville. Niceville's population includes a small percentage of minority and low income residents. The portions of Niceville that contain no environmental justice concerns are located closest to TA C-80. These communities are composed of mid- to upper-level income individuals. Therefore, disproportionate impacts are not anticipated.

Special Risks to Children

The main potential issue of concern related to special risks to children from activities on the TA C-80 Complex is noise because children are more sensitive to noise than adults. Noise associated with the test area would dissipate with distance from the Eglin Main Base. The closest school is located in Niceville. Noise analysis, conducted in Section 4.8, finds that the sounds from these activities would not be significant to the public. As a result, special risks to children are not anticipated.

Noise Complaints

The total number of complainants in all the cities during 2006 represents less than 0.01 percent of the total population for the three counties that the cities encompass. Communities closest to the TA C-80 Complex would be the most impacted by noise from associated activities. However, communities closest to the test area are areas of no environmental justice concerns. Therefore, it is anticipated that the number of noise complaints resulting from activities performed under the No Action Alternative would not increase from current levels, or have a disproportionate impact on minority/low income communities, or pose special risks to children.

4.10.2 Alternative 1

Alternative 1 is not expected to create significantly adverse socioeconomic or environmental justice impacts. No disproportionately high and adverse human health or environmental impacts to minority or low-income populations have been identified. In addition, there are no known environmental health or safety risks under this alternative that may disproportionately affect children.

Environmental Justice

The main potential issue of concern related to environmental justice from activities on the TA C-80 Complex is disproportionate impacts from noise on minority and low-income populations. Noise impacts would primarily affect communities located near the test area. Since the TA C-80 Complex is located on Eglin Main Base, the amount of noise coming off of the reservation and into the adjacent communities is limited. The closest community to the TA C-80 Complex is Niceville. Niceville's population includes a small percentage of minority and low-income residents. The portions of Niceville that contain no environmental justice concerns are located closest to the TA C-80 Complex. These communities are composed of mid- to upper-level income individuals. Therefore, disproportionate impacts are not anticipated.

Special Risks to Children

The main potential issue of concern for special risks to children from activities on the TA C-80 Complex is noise because children are more sensitive to noise than adults. Noise associated with the test area would dissipate with distance from the Eglin Main Base. The closest school is located in Niceville. Noise analysis, conducted in Section 4.8, finds that the sounds from these activities would not be significant to the public. As a result, special risks to children are not anticipated.

Noise Complaints

The total number of complainants in all the cities during 2006 represents less than 0.01 percent of the total population for the three counties that the cities encompass. Communities closest to the TA C-80 Complex would be the most impacted by noise from associated activities. However, communities closest to the test area are areas of no environmental justice concerns. It is anticipated that the number of noise complaints under Alternative 1 might increase, but would not have a disproportionate impact on minority or low income communities, or pose special risks to children.

4.10.3 Alternative 2

Alternative 2 is not expected to create significantly adverse socioeconomic or environmental justice impacts. No disproportionately high and adverse human health or environmental impacts to minority or low-income populations have been identified. In addition, there are no known environmental health or safety risks under this alternative that may disproportionately affect children.

Environmental Justice

The main potential issue of concern related to environmental justice from activities on the TA C-80 Complex is disproportionate impacts from noise on minority or low income populations. Noise impacts would primarily affect communities located near the test area. Since the TA C-80 Complex is located on Eglin Main Base, the amount of noise coming off of the

reservation and into the adjacent communities is limited. The closest community to the TA C-80 Complex is Niceville. Niceville's population includes a small percentage of minority and low income residents. The portions of Niceville that contain no environmental justice concerns are located closest to TA C-80. These communities are composed of mid- to upper-level income individuals. Therefore, disproportionate impacts are not anticipated.

Special Risks to Children

The main potential issue of concern related to special risks to children from activities on the TA C-80 Complex is noise because children are more sensitive to noise than adults. Noise associated with the test area would dissipate with distance from the Eglin Main Base. The closest school is located in Niceville. Noise analysis, conducted in Section 4.8, finds that the sounds from these activities would not be significant to the public. As a result, special risks to children are not anticipated.

Noise Complaints

The total number of complainants in all the cities during 2006 represents less than 0.01 percent of the total population for the three counties that the cities encompass. Communities closest to the TA C-80 Complex would be the most impacted by noise from associated activities. However, communities closest to the test area are areas of no environmental justice concerns. It is anticipated that the number of noise complaints under Alternative 2 would increase, but would not have a disproportionate impact on minority or low income communities, or pose special risks to children.

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APPENDIX A
BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES

Ecological Associations

Sandhills Matrix

This system is the most extensive natural community type on the Eglin Range, accounting for approximately 78 percent or 362,000 acres of the base. The TA C-80 Complex and adjacent areas contain 7,115 acres of the Sandhills Matrix, which equates to approximately 70 percent of the total Ecological Associations found within the study area.

Longleaf Pine Sandhills 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 comprised mainly of grasses, forbs, and low-stature shrubs. Its structure and composition are maintained by frequent fires (every 3-5 years), which control hardwood, sand pine, and titi encroachment. Longleaf Pine Sandhills consist of a high diversity of species adapted to fire and the heterogeneous conditions that fires create. The dominant native grass species in Eglin sandhills is either wiregrass or bluestem, depending on location. Sandhills are often associated with and grade into scrub, upland pine forest, xeric hammock, or slope forests. This matrix is also known as 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 Sandhills Matrix is to provide maintenance of regional biodiversity. As little as 5,000 acres of old growth longleaf pine forest remains globally and Eglin's Sandhills contain more than any other forest in the world. The Eglin Range represents the largest and least fragmented longleaf pine ownership in the world, and has the best remaining stand of old-growth longleaf pine (U.S. Air Force, 2007).

Flatwoods Matrix

Pine flatwoods occur on flat, moderately well drained sandy soils with varying levels of organic matter, often underlain by a hard pan. While the canopy consists of slash pine and longleaf pine, the understory varies greatly from shrubby to an open diverse understory of grasses and herbs. The primary environmental factors controlling vegetation type are soil moisture (soil type and depth to ground water) and fire history. The average fire frequency in flatwoods is one to eight years, with nearly all of the plants and animals inhabiting this community adapted to recurrent fires. Home to numerous rare and endangered plants and animals, the Flatwoods Matrix plays a significant role in maintaining regional biodiversity. Eglin's more than 300 acres of old growth flatwoods are among the last remaining of such high quality (U.S. Air Force, 2007). The TA C-80 Complex and adjacent areas have approximately 103 acres of Flatwoods Matrix, which equates to approximately 1 percent of the total Ecological Associations found within the study area.

Wetlands/Riparian Matrix

Wetlands are extraordinarily important contributors to the health and diversity of the Eglin landscape. Riparian areas are generally found along a water feature such as a river, stream, or creek. Great diversity of invertebrate and fish species is found within the streams associated with these watersheds. At least 11 different plant community types are found within riparian areas of the Eglin Range. Streams are perennial, originating in the sandy uplands of the installation and fed by ground water recharge. Flood events only occur during extreme rain events (e.g., hurricanes); otherwise, flows are relatively consistent. Temperatures fluctuate during the year and each day, being more constant near the headwaters. These seepage streams are moderately acidic. The specific types of wetlands/riparian matrices found on or adjacent to the Eglin Range are depression wetlands, seepage slopes, and floodplain wetlands (U.S. Air Force, 2007). The TA C-80 Complex and adjacent areas contain approximately 2,205 acres of Wetland/Riparian Matrix, which equates to approximately 22 percent of the total Ecological Associations found within the study area.

Other Land Uses

Open Grasslands/Shrublands - Open Grasslands/Shrublands occur in areas of heavily disturbed Sandhills, Flatwoods, and Wetlands/Riparian ecological sites. This habitat predominantly occurs within the test areas on Eglin AFB. Grasses and low shrubs characterize open Grassland/Shrubland areas. Eglin maintains this habitat with machinery or fire that removes or prevents future growth. The TA C-80 Complex and adjacent areas contain approximately 643 acres of Open Grasslands/Shrublands, which equates to approximately 6 percent of the total Ecological Associations found within the study area.

Urban/Landscaped Areas - Eglin AFB currently has approximately 46,000 acres of semi-improved areas and 14,000 acres of improved areas. The TA C-80 Complex and adjacent areas contain 7 acres of urban/landscaped 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 Species

***Okaloosa Darter* (*Etheostoma okaloosae*)**

The Okaloosa darter is considered a federal- and state endangered species. The darter's diet consists primarily of immature aquatic insect larvae. Spawning occurs from March to October, with the greatest amount of activity taking place during April. The spawning occurs in beds of clean, current swept macrophytes (large aquatic plants). Each spawning act results in the release of a single egg. Darters do not provide parental care. Little is known of the development of the darter afterwards. Okaloosa darter habitat is sensitive to a variety of disturbances, particularly; erosion can increase siltation and imperil the darter's habitat.

The entire global population of this species is endemic to the northwest Florida panhandle in Okaloosa and Walton counties. This darter is only found in six small Choctawhatchee Bay basin tributaries (249 linear miles) mainly located in the Sandhills ecological association of the Eglin Mainland Reservation. The TA C-80 Complex has approximately 44 linear miles of darter streams, which equates to approximately 18 percent of the total found on Eglin AFB. Eglin AFB has management responsibility for 90 percent of the species' habitat.

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 Sandhill 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-ft 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, of which 3,468 acres are found within the TA C-80 Complex. This equates to approximately 3 percent of the total RCW foraging habitat on Eglin AFB.

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 dbh 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. As a result of active management, RCW populations on Eglin have continued to increase. Since 1994 the entire population size has been estimated once each year. In 2008, the population consisted of 390 active clusters and 347 potential breeding groups.

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

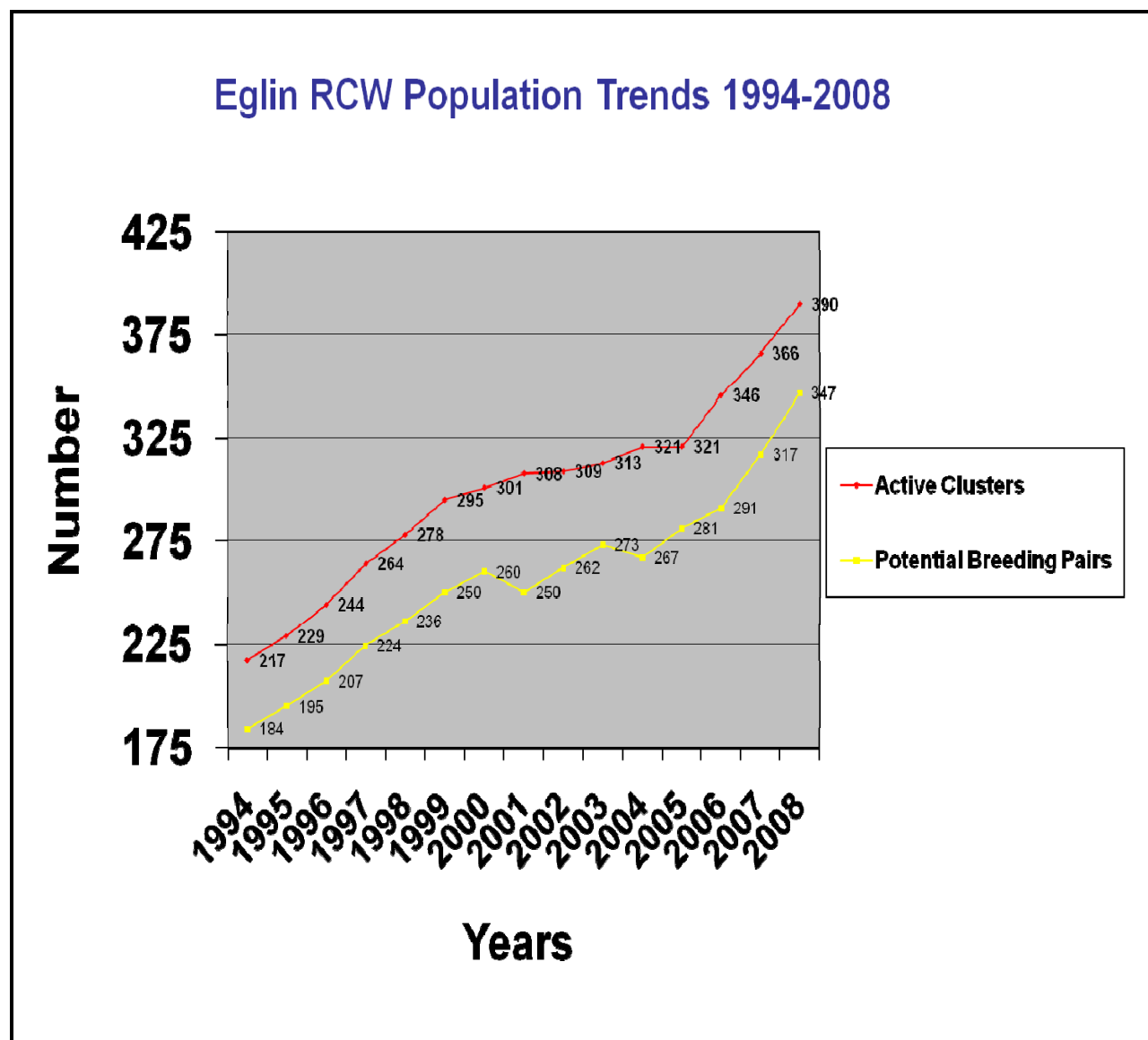


Figure A-1. Red-cockaded Woodpecker Population Trends from 1992-2008

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

The gopher tortoise is a state threatened species. The tortoise is found primarily within the sandhills 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 (U.S. Air Force, 2006). 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, 2006). Eglin's NRS frequently receives reports of bear sightings as well as 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 four months. Gestation lasts 7-7.5 months (average 220 days) (U.S. Air Force, 2002). Females give birth every two years at most. Young are born in January-February, and stay with their mother until fall of the second year. Litter size is typically 2 to 4 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, reddish back and tail and two black stripes on each side of white sides of head. Kestrels are relatively common on Eglin AFB. The clutch size is 3 to 7 (usually 4 to 5). 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 renest if the first clutch is lost.

Kestrels prefer open or partly open sandhill 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 Red-cockaded woodpeckers. These cavities are usually enlarged by fox squirrels, pileated woodpeckers, or fire, making them large enough for kestrel use. Kestrel 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, sometimes bats). They often utilize the tree line or utility poles adjacent to and within cleared test areas.

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. This species is generally between 4 and 7 feet long as adults,

with an indistinct pattern of light brown blotches with a rusty background (USFWS et al., 2003). The Florida pine snake prefers sandhills, 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.

***Bachman's Sparrow* (*Aimphila aestivalis*)**

Bachman's sparrow is currently protected under the MBTA and has a preferred habitat of longleaf pine stands and wiregrass, which are similar to the habitat preference of the RCW and southeastern American kestrel. Bachman's sparrow is common near the TA C-80 Complex, currently one of the largest concentrations of Bachman's sparrow on Eglin AFB exists east of Test Area C-80C (U.S. Air Force, 1999).

Invasive Nonnative Plant Species

Numerous nonnative plants have been identified on Eglin AFB; however, the following have been categorized as the most problematic species impacting Eglin's ecosystems. Many of Eglin's high quality natural areas are threatened by these invasive plant species.

***Chinese Tallow* (*Tridica sebifera*)**

Chinese tallow or popcorn tree is a small-to medium-sized tree that can take over large amounts of natural habitat by forming dense stands and out-competing native vegetation. Chinese tallow is fast growing, spreads rapidly and produces copious amounts of seeds. Seeds are transported by birds or water, which makes their dispersal very difficult to control.

***Cogon Grass* (*Imperata cylindrica*)**

Cogon grass is an upland weed, but it also occurs in places that become briefly flooded. Most documented locations of cogon grass on Eglin are linked to test sites or road maintenance activities. Because of its extreme invasiveness and its ability to rapidly cover large areas, it is considered one of the world's 10 worst weeds. Cogon grass has a fibrous root system composed of underground stems (rhizomes) that form dense mats that exclude most other vegetation. Cogon grass spreads by seeds, vegetative reproduction of rhizomes, and the movement of seeds/rhizomes by road maintenance/construction vehicles and activities.

***Torpedo Grass* (*Panicum repens*)**

Torpedo grass is a perennial grass that frequently forms dense colonies and has long, creeping underground rhizomes. It thrives in moist, often sandy soil along beaches and dunes, margins of lagoons, marshy shorelines of lakes and ponds, drainage ditches and canals, but it also does well in heavier upland soils. Its rhizomes or runners often extend several feet out into the water, and the plant frequently forms dense floating mats. Torpedo grass can form dense stands where it rapidly out-competes surrounding native vegetation.

***Japanese Climbing Fern* (*Lygodium japonicum*)**

Japanese climbing fern is an invasive vine that has the ability to grow over shrubs, tree seedlings, and groundcover and kill them. Leaflets are killed back during the winter, but the rhizomes survive to the spring. This fern prefers damp areas, such as floodplains. Its spores can be transported long distances by wind and vehicles and is very difficult to control.

***Chinese Privet* (*Ligustrum sinense*)**

Chinese privet is a semideciduous shrub that occurs primarily in open disturbed areas. While most often found in low, wet areas, it also may be found in upland areas. Privet often forms dense thickets that shade out native vegetation. Birds and moving water are the primary dispersal mechanism to new locations.

NONNATIVE ANIMAL SPECIES

Nonnative animal species have been found on Eglin AFB and their negative effects on rare species and sensitive habitats have been documented. Nonnative animals may prey on rare and sensitive species, disrupt the ecological function and health of ecosystems, compete with native species for resources, and mammals can carry rabies and other infectious diseases that may infect native wildlife.

The following are nonnative animal species known to inhabit Eglin AFB mainland. Species that are typically found only on Eglin AFB Santa Rosa Island (SRI), such as the cactus moth (*Cactoblastis cactorum*) and feral cat (*Felis cattus*) are not included.

Feral Hogs

The wild hog or feral pig (*Sus scrofa*) is a nonnative, invasive mammal descended from escaped domestic pigs and European wild boars, and is now common throughout Florida. Feral pigs were first brought to Florida by the Spanish explorer Hernando De Soto in 1539. Some of these pigs from early colonization attempts escaped or were introduced into the wild. By the 1950s, the original Eglin stock consisted of a mix of naturalized forest feral pigs and escaped free ranging feral pigs from early homesteads. Russian boars were introduced into the Eglin hog population in the early 1960s in an attempt to improve the hardiness of the Eglin stock. This introduction, along with hunting regulations designed to protect the wild hog population, allowed hog numbers to increase across the Eglin mainland reservation. Reports of hogs in areas where they had not been common were increasing by the 1990s. Feral hogs have not been documented on SRI.

Feral hogs are relatively large mammals that commonly reach weights in excess of 200 pounds. Plant material makes up the bulk of the hogs' diet, with mast (acorns and pine seeds) being most important in fall and winter and herbs and grasses more important in spring and summer. They can breed at an early age and have the highest reproductive rate of any large North American mammal. These hogs occur in a variety of habitats and may feed on roots and tubers during

periods of wet weather or in areas near streams and underground springs. Feral hogs have been documented damaging sensitive wetland areas such as steephead ravines, seepage slopes, seepage streams, and bay galls.

Fire Ant

The red imported fire ant (*Soleopsis invicta*) (RIFA) is a serious lawn and forest pest and is found in open, disturbed areas, especially those that are wet. The RIFA was introduced from South America into Mobile, Alabama, sometime around 1930, and since then it has spread across the south from the Atlantic seaboard west to California. The painful sting of the RIFA makes it a serious pest and a hazard for outdoor activities.

The main areas of concern for infestations of RIFAs on Eglin are SRI and areas on the mainland where there are sensitive species. These areas are of most concern because the RIFA is a threat to native wildlife populations, especially arthropods and reptiles, including their eggs. Fire ants can infest sea turtle nests, for instance, significantly reducing future sea turtle populations. Also, RIFA has been documented in one known Eglin flatwoods salamander breeding pond. Other native wildlife species suffer from direct predation or competition for food by the aggressive RIFA. The RIFA attacks and eats anything it finds, including but not limited to snakes, lizards, ground nesting birds, and turtles and their nests. They even kill some plants.

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APPENDIX B

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. 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 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 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.

Executive Order 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 EPCRA.

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

Air Force Instruction 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 CFR 989; 1-Jul-01; Environmental Impact Analysis Process (EIAP)--; This regulation provides a framework for how the Air Force is to comply with NEPA and the CEQ regulations.

Air Force Instruction 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, National Ambient Air Quality Standards (CAA, NAAQS); Emission sources must comply with air quality standards and regulations established by federal, state, and local regulatory agencies.

Air Force Policy Directive 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 Clean Air Act.

Air Force Instruction 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 RCRA as well as CAA.

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

FAC Chap. 62-204; Florida State Implementation Plan, with Ambient Air Quality Standards and 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 Prevention of Significant Deterioration (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; Federal Aviation Regulation (SFAR No. 53); Defines and prescribes requirements for special use airspace.

14 CFR Part 91; 1997; Federal Aviation Regulation (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 DOI and State, opens AF 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. AF 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 (CZMA); 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 (FLPMA); Provides that the Sec. of Interior shall develop land use plans for public lands within BLM 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 (CBRA); 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.

Air Force Instruction 32-7062; 1-Apr-94; Air Force Comprehensive Planning; Implements AFD 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.

Air Force Instruction 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.

Air Force Instruction 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 (NCA); 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 USEPA to control and abate aircraft noise and sonic boom.

Executive Order 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.

Air Force Instruction 32-7063; 1-Mar-94; Air Installation Compatible Use Zone Program (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 (dBs) 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 (RHA); Keeps navigable waterways open, authorizing the Army Corps of Engineers 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, FWPCA); In addition to regulating navigable water quality, the CWA establishes NPDES permit program for discharge into surface waters and storm water control; Army Corps of Engineers permit and state certification for wetlands disturbance; regulates ocean discharge; sewage wastes control; and oil pollution prevention.

33 USC 1344-Section 404; 1997; Federal Water Pollution Control Act/Clean Water Act (FWPCA/CWA), Dredged or Fill Permit Program; Regulates development in streams and wetlands by requiring a permit from the Army Corps of Engineers 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); EPA-Requires the promulgation of drinking water standards, or MCLs, 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; Resource Conservation and Recovery Act of 1976 (RCRA); Establishes standards for management of hazardous waste so that water resources are not contaminated: RCRA Corrective Action Program requires cleanup of ground water 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 ground water resources contaminated with hazardous substances.

Executive Order 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 EIS shall be prepared for major federal actions having significant environmental effects within the global commons (i.e., Antarctica, oceans).

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

Air Force Policy Directive 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 Clean Water Act, Safe Drinking Water Act, and Water Quality Act of 1987.

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

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

Air Force Instruction 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.

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

F.S. 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 (BGEPA); 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 (MBTA); Makes it illegal to take, kill or possess migratory birds unless done so in accordance with regulations. An exemption may be obtained from the Dept. of the Interior for taking a listed migratory bird.

16 USC 1361 et seq.; 1997; Marine Mammal Protection Act of 1972, as amended (MMPA); 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.

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

Executive Order 13112; 1999; Instructs federal agencies to monitor for, control, and prevent the introduction of nonnative, invasive species of plants and animals.

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

DoD and USFWS Memorandum of Understanding (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; Marine Mammal Protection Act of 1972, as amended (MMPA); 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 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; Endangered Species Act Interagency Cooperation; These rules prescribe how a Federal agency is to interact with either the FWS or the NMFS 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.

Air Force Policy Directive 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 Endangered Species Act.

Air Force Instruction 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, Chemical Hazard Communication Program (OSHA); Requires that chemical hazard identification, information and training be available to employees using hazardous materials and institutes material safety data sheets (MSDS) which provide this information.

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

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

Air Force Instructions 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.

Air Force Instruction 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).

Air Force Instruction 32-7063; 1-Mar-94; Air Installation Compatible Use Zone Program (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.

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

Habitat Resources

Executive Order 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.

Executive Order 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.

Air Force Policy Directive 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 Executive Order 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 (FIFRA); Establishes requirements for use of pesticides that may be relevant to activities at Eglin Air Force Base.

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

42 USC 6901 et seq.; 1980; Resource Conservation and Recovery Act of 1976 and Solid Waste Disposal Act of 1980 (RCRA); 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; Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA); 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; Emergency Planning and Community Right-to-Know Act (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 Plan 32-3; January 2004; Asbestos Management Plan; This plan establishes procedures for the Eglin Air Force Base (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.

Air Armament Center 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 paint.

Air Armament Center Plan 32-7; February 2003; Integrated Solid Waste Management Plan; The Eglin AFB Integrated Solid Waste Management Plan 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 (FY) 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 Integrated Solid Waste Management Program (ISWMP) and the Qualified Recycling Program (QRP).

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

Air Force Policy Directive 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 Resource Recovery and Conservation Act, Comprehensive Environment Response Compensation and Liability Act of 1980, Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act, Executive Order 12088, Executive Order 12777, and Executive Order 12586. Implements DoD Instruction 4120.14, DoD Directive 4210.15, and DoD Directive 5030.41.

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

Air Force Instruction 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.

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

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

Air Force Policy Directive 40-2; 8-Apr-93; Radioactive Materials; Establishes policy for control of radioactive materials, including those regulated by the US Nuclear Regulatory Commission (NRC), but excluding those used in nuclear weapons.

Cultural Resources

10 USC 2701 note, Public Law 103-139; 1997; Legacy Resource Management Program (LRMP); 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 (HAS); 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 (AHPA); Directs Federal agencies to give notice to the Sec. 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 Sec. 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 (NAGPRA); Federal agencies must obtain a permit under the Archeological Resources Protection Act 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 (AIRFA); 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; 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 (SHPO), 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 National Register, as well as avoid damage to Historic properties eligible for National Register.

Executive Order 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 (AHRM); Establishes policy requirements for archaeological and cultural resource protection and management for all military lands and reservations.

Air Force Policy Directive 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 National Historic Preservation Act, Executive Order 11593, and DoD Directive 470.1.

Air Force Instruction 32-7065; 13-Jun-94; Cultural Resource Management; Directs AF bases to prepare cultural resources management plans (CRMP) 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 C

AIR QUALITY

SUPPLEMENTAL INFORMATION

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 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 Clean Air Act (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 the 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 Code of Federal Regulations [CFR] 51), except Florida has established a more conservative standard for sulfur dioxide (SO₂). USEPA has set the annual and 24-hour standards for SO₂ 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 (1,300 $\mu\text{g}/\text{m}^3$). 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) the NAAQS, 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 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 ⁽⁸⁾	Federal Secondary NAAQS ⁽⁸⁾	Florida Standards
Carbon Monoxide (CO)	8-hour ⁽¹⁾	9 ppm (10 mg/m ³)	No standard	9 ppm (10 µg/m ³)
	1-hour ⁽¹⁾	35 ppm (40 mg/m ³)	No standard	35 ppm (40 µg/m ³)
Lead (Pb)	Quarterly	1.5 µg/m ³	1.5 µg/m ³	1.5 µg/m ³
Nitrogen Dioxide (NO ₂)	Annual	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)
Particulate Matter ≤10 Micrometers (PM ₁₀)	24-hour ⁽²⁾	150 µg/m ³	150 µg/m ³	150 µg/m ³
Particulate Matter ≤2.5 Micrometers (PM _{2.5})	Annual ⁽³⁾	15 µg/m ³	15 µg/m ³	15 µg/m ³
	24-hour ⁽⁴⁾	35 µg/m ³	35 µg/m ³	65 µg/m ³
Ozone (O ₃) Sulfur Dioxide (SO ₂)	1-hour ⁽⁷⁾	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)
	8-hour ⁽⁵⁾	0.075 ppm (2008 std)	0.08 ppm	
	8-hour ⁽⁶⁾	0.08 ppm (1997 std) (157 µg/m ³)	0.08 (157 µg/m ³)	
	Annual	0.03 ppm (80 µg/m ³)	No standard	0.02 ppm (60 µg/m ³)
	24-hour ⁽¹⁾	0.14 ppm (365 µg/m ³)	No standard	0.10 ppm (260 µg/m ³)
	3-hour ⁽¹⁾	No standard	0.50 ppm (1300 µg/m ³)	0.50 ppm (1300 µg/m ³)

Sources: USEPA, 2008 (Federal Standards); FDEP, 2006 (Florida Standards)

ppm = parts per million; mg/m³ = milligrams per cubic meter; µg/m³ = 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_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.

4. To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each community-oriented monitor within an area must not exceed 35 mg/m³ (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 May 27, 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 EPA undertakes rulemaking 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, the USEPA revoked the 1-hour ozone standard in all areas except the fourteen 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

8. Concentration expressed first in the units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°Celsius and a reference pressure of 760 millimeters of mercury; ppm refers to parts per million by volume.

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. The SIP 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 regions' air quality in comparison to the NAAQS. The air quality is monitored for carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide. 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 to be at levels 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 classified as in 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 TA C-80 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 Overland Air Operations Programmatic Environmental Assessment (REA) (U.S. Air Force, 1998). In order to conservatively estimate the potential impact of these operations with short-term ambient air quality, a "Closed Box Assessment" was performed. Additionally, the annual emissions were compared to the USEPA 2002 National Emissions Inventory (NEI) for the ROI (USEPA, 2008). Both techniques are described below as well as the emissions calculations and project assumptions.

The Closed Box Assessment

The “Closed Box Assessment” 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 (ASL) and the dimensional area within the TA C-80 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-80 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, which is 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 one hour, the maximum concentration is generally less than the calculated one-hour value. The comparison is limited to those criteria pollutants directly associated with range activities.

Vehicle Exhaust Calculations

Vehicle exhaust calculations were developed using emissions factors established by USEPA for various vehicle classes. The unit of measure for the vehicle emissions factors is represented in grams per vehicle mile traveled. These factors were correlated with the total vehicle mileage traveled in TA C-80.

Vehicles associated with mission activities were classified into two categories, gas and diesel powered. This method of combining the USEPA’s four vehicle classes into two has been previously used in the *2001 Eglin Mobile Source Emissions Inventory* (USEPA, 2001). Previously, it has been determined that over 90 percent of the Eglin Range vehicular traffic is gasoline-powered, while the other 9 percent is composed of diesel.

Total road miles and average total vehicle road mileage traveled on Eglin's ranges were ascertained from the Road Range EBD published in 2003. The total road miles within TA C-80 was compared to the total Eglin Range road miles and converted to a percentage. It was assumed that the percentage of road miles that compose TA C-80 was a direct correlation with the vehicle miles traveled within TA C-80. This provides a conservative estimate of vehicle miles traveled.

Using the assumptions described, the vehicle miles traveled for the individual classes of vehicles were extrapolated. Emissions were ascertained utilizing the emissions factors and mathematical expression provided below.

Table C-2 below contains the emission factors for each vehicle class.

$$\text{Emissions (tons/yr)} = (\text{RRM}/\text{TRRM}) \times \text{TAYVM} \times \text{EF} \times \text{CF}_1$$

$$\text{Emissions } (\mu\text{g}/\text{m}^3 \times \text{hr}) = (\text{RRM}/(\text{TRRM} \times \text{TV}) \times \text{TAYVM} \times \text{EF} \times \text{CF}_2$$

Where:

RRM = Range Road Miles (total miles for given range)

TRRM = Total Range Road Miles (Eglin's total Range road miles)

TAYVM = Total Average Yearly Vehicle Miles traveled on Eglin's ranges

TV = Closed Box Volume

EF = Emission Factor

CF₁ = Conversion Factor (1.1E-6)

CF₂ = Conversion Factor (3.6E5)

CF₁ converts from grams to pounds, and then to tons. *CF₂* converts into micro-grams and weights the value over an hour.

Table C-2. Vehicle Emission Factors

Emission Factors (g/mi)	CO	SO _x	NO _x	PM	VOC
Classes I, II	25	0.11	2.7	2.9	2.8
Classes III, IV	5	0.26	3.6	3.4	1.2

CO = carbon monoxide; g/mi = grams per mile; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxide; VOC = volatile organic compound

Vehicle Dust Emissions

When vehicles travel on unpaved roads, particulate matter (PM) is emitted into the air. In order to determine the amount of total suspended particulate matter (TSP) due to the activities on unpaved roads, several variables must be defined, such as percent surface silt content, mean vehicle weight (tons), mean vehicle speed (miles per hour [mph]), mean number of wheels per vehicle, and some constants.

Silt content was assumed to be a conservative value of 0.001 percent due to Florida's very low material surface silt content (USEPA, 2003). The mean weight of the vehicles traveling on the

unpaved roads were determined to be 3 tons since 91 percent of the vehicles traveling on the roads are considered classes I and II, which are mainly light trucks, cars and suburban-type vehicles with weights ranging from 1.0-5.0 tons. Mean vehicle speed was deemed 35 mph; this value was based on previous studies, road conditions, and safety precautions considered when driving on unpaved roads. The variables and assumptions stated above, along with the equation below, were derived assuming dry road conditions (USEPA, 2003).

The following empirical expression was used to estimate the amount in pounds of particulate matter emitted from the unpaved road due to vehicle traffic.

$$E = k \times 5.9 \times (s/12) \times (S/30) \times (W/3)^{0.7} \times (w/4)^{0.5}$$

Where:

VMT = Vehicle Miles Traveled

E = emissions in (lbs)

k = particle size multiplier

s = silt content on road surface (%)

S = mean vehicle speed (mph)

W = mean vehicle weight (tons)

w = mean number of wheels per vehicle

CUMULATIVE IMPACT COMPARISON

In order to evaluate the range emissions and their impact to the overall ROI, which is defined as Walton County for this document's purposes, the emissions associated with 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 CAA, USEPA promulgated the General Conformity Rule that is codified at 40 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. 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. 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 emissions levels in 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, and 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 emissions estimates for all 50 states, the District of Columbia, Puerto Rico, and the Virgin Islands. Emissions estimates for individual points or major sources (facilities), as well as county level estimates for area, mobile, and other sources, are currently available 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_x)
- Sulfur Dioxide (SO₂)
- Particulate Matter (PM) (PM with a diameter of less than or equal to 10 microns [PM₁₀] and PM with a diameter of less than or equal to 2.5 microns [PM_{2.5}])

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 nitrogen oxides 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; 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.

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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 determination addresses the Proposed Action for mission activities on Test Area (TA) C-80 Complex on Eglin Air Force Base (AFB), Florida (Figure 1).

Proposed Federal agency action:

The TA C-80 Complex is located on the eastern half of the Eglin Range Complex in Walton County, Florida, approximately 12 miles northeast of Eglin. The TA C-80 Complex is comprised of TAs C-80A, C-80B, C-80C, and Test Site (TS) C-80W (Figure 2). Each test area consists of an approximate 800- by 2,000-foot cleared area with a control building, underground instrumentation building, and a test arena. The TA C-80 Complex consists of three arenas designed to determine the lethality of statically (in-place) detonated munitions. The arenas on the C-80 Complex are circular packed clay pads upon which the detonations occur. A wide variety of test instrumentation is arrayed on the clay pads during the static detonations. These include, but are not limited to, fiberboard bundles to collect bomb fragments, velocity screens to measure fragment velocities and distribution, and blast pressure gauges to characterize blast pressures produced. TS C-80W is used as a storage facility, vehicle compound, buildup area, instrumentation calibration area, and for processing and weighing munitions fragments.

TA C-80 Complex has the infrastructure, real estate, communications, and specialized data collection and reduction instrumentation needed to safely conduct a wide variety of static arena tests of munitions with up to 3,000 pounds net explosive weight (NEW). Resources are available to conduct four simultaneous arena tests. Types of tests conducted include conventional munitions and submunitions, warheads, lethality and vulnerability, heating/cook-off testing, bullet impacts, fragment velocity and dispersion, air blast and pressure profile, sympathetic detonation, booster efficiency, fuel air explosives, and insensitive explosives. This resource provides the capability to perform munitions characterization tests, collect the data, automatically sort and catalog the data with computer systems for incorporation into effectiveness models and publish detailed technical reports. The complex is divided into four distinct facilities:

- TA C-80A
 - Water tanks facility for total recovery. NEW: up to 8 pounds (Figure 3)
 - Arena test facility. NEW: up to 200 pounds
- TA C-80B

- Arena test facility. NEW: 0 to 500 pounds
- Sensor-fused weapon submunitions test capabilities (Figure 4)
- TA C-80C arena test facility. NEW: 0 to 3,000 pounds
- TS C-80W support facility for fragment weighing, blast pressure transducer calibration, mobile instrumentation van support, and logistics center for the complex

The Proposed Action includes authorization of the current level of activity plus a 300-percent increase in mission activities. This includes new mission capabilities while retaining previous capacity, maximum net explosive weight ratings and anticipates any surge in mission requirements. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1998 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Current activities include:

- The completion of an operational ground testing (OGT) facility at C-80A in June 2004. The OGT facility provides vibration and weapon system engine-run capabilities for guided munitions nondestructive ground testing. The OGT facility can accommodate the firing of rocket engines and jet engine operation, fire squibs, and initiate fuses. The facility conducted several tests in 2005.
- The maximum NEW rating for Test Areas C-80A, C-80B, and C-80C would remain at 200, 500, and 3,000 pounds, respectively.

Future activities include expansion of the OGT facility to include larger vibration tables, test larger weapons, and add an acoustic vibration capability.

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.



Figure 1. Regional Location of Eglin Air Force Base

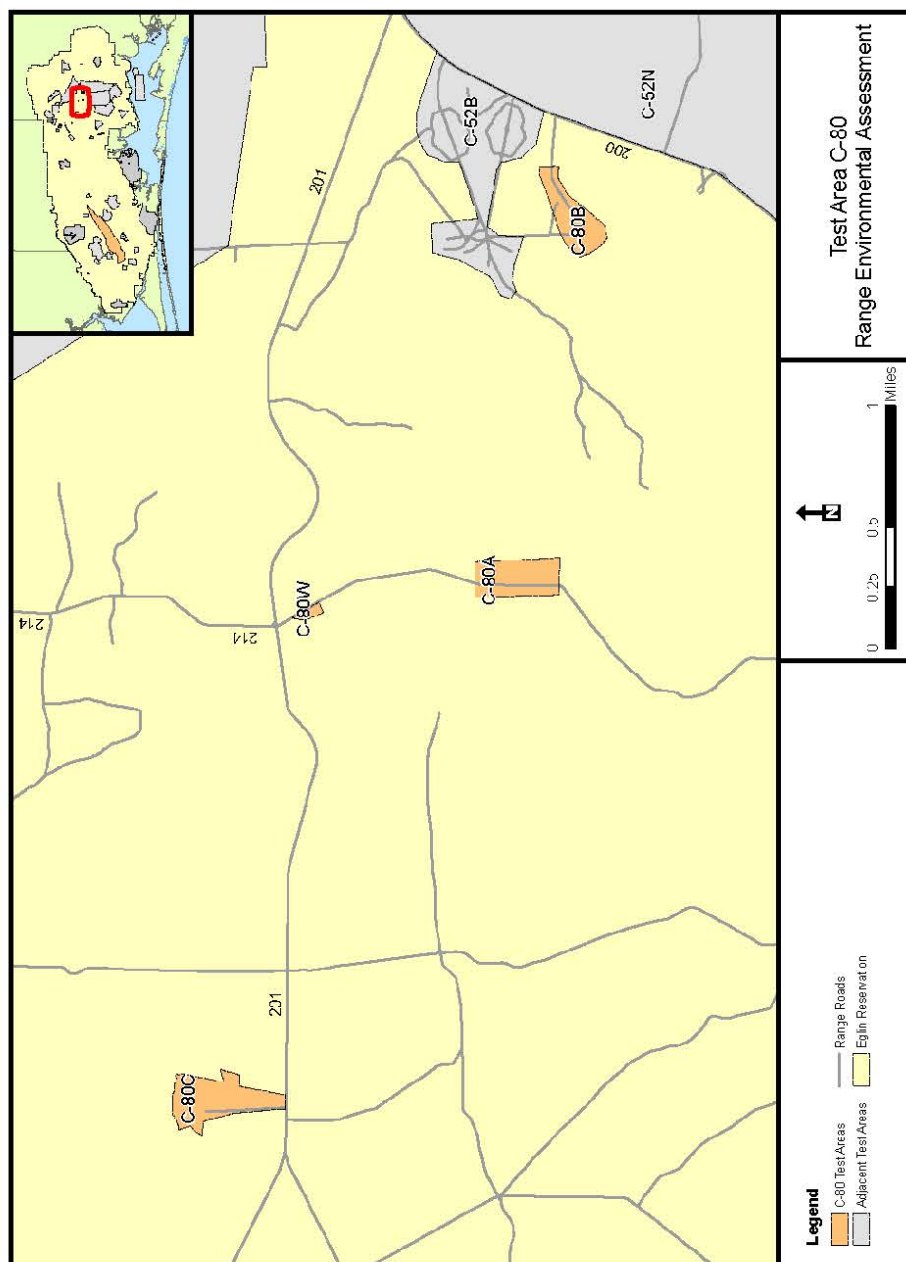


Figure 2. Test Area C-80 Region of Influence



Figure 3. Water Tank Facility on TA C-80A



Figure 4. Sensor-Fused Weapon Testing Apparatus on TA C-80B

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: • The Coastal Construction Permit Program. • The Coastal Construction Control Line (CCCL) Permit Program. • The Coastal Zone Protection Program. All land 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 or 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 258).
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 259).
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

		260).
Chapter 375 <i>Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation</i>	The Proposed Action would not affect opportunities for recreation on state lands.	Develops comprehensive multipurpose outdoor recreation plan to document recreational supply and demand, describe current recreational opportunities, estimate need for additional recreational opportunities, and propose means to meet the identified needs (Chapter 375).
Chapter 267 <i>Historical Resources</i>	Cultural resource high probability survey areas and historic homestead survey areas exist on the test complex (within TA C-80A, TA C-80B, TA C-80C, and TA C-80W). This acreage on the test complex requires survey to remove the potential for disturbance to resources eligible for the National Register of Historic Places. As such, additional analysis to determine the potential for adverse effects to cultural resources and to identify pertinent management actions would be required prior to any future ground disturbing activity in the area. Archaeological surveys must be completed prior to new ground disturbing project initiation within the outstanding survey areas. Continued coordination should occur with Eglin Cultural Resources, 96 CEG/CEVH, prior to future proposed activities. In the event that unknown cultural resources are discovered during a mission activity, operations should cease immediately and the Base Historic Preservation Office (BHPO) should be notified immediately. Therefore, the Proposed Action would be consistent with the State's policies concerning historical resource management.	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 334).
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 339).

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>	Under the Proposed Action, there would be a 300-percent mission surge. However, biological resources are not anticipated to be impacted by the increase in noise frequency because of their ability to acclimate to noise. The amount of chemical residue would increase by 300 percent, particularly with increased levels of lead (Section Error! Reference source not found. of the Test Area C-80 Range Environmental Assessment). However, since chemical load from all munitions would be distributed over a large area, the potential for an overall concentration of any chemical at any given location would be minute. Furthermore, specific management practices would remain in place assuring areas would be scanned for debris and dud munitons would be removed. Overall, a 300-percent mission surge would not have any significant impacts on biological resources on the TA C-80 Complex with appropriate management actions in place (Section 4.5.2 of the Test Area C-80 Range Environmental Assessment). Therefore, the Proposed Action would be consistent with the State's policies concerning wildlife resource management.	Addresses the management of the wildlife resources of the state.
Chapter 373 <i>Water Resources</i>	Activities performed on Test Area C-80 have the potential to impact ground water and surface water resources. However, Eglin AFB has outlined prevention and management processes to reduce or minimize the impacts of pollutants into the environment (Section 4.4 of the Test Area C-80 Range Environmental Assessment). Therefore, no significant impacts are anticipated to ground water or surface water. Therefore, the Proposed Action would be consistent with the State's policies concerning water resource management.	Addresses the state's policy concerning water resources.

	Eglin AFB has outlined prevention and management processes to reduce or minimize the impacts of pollutants into the environment (Section 4.4 of the Test Area C-80 Range Environmental Assessment). Therefore, no significant impacts are anticipated to ground water or surface water. The Proposed Action would be consistent with the State's policies regarding water quality, air quality, pollution control, solid waste management, or other environmental control efforts.	
Chapter 582 <i>Soil and Water Conservation</i>	The dominant soil types within the Test Area C-80 Complex fall within the Lakeland ecological association. In terms of soil coverage, these soils are rapid draining with slopes typically 8 percent or less steep. Under normal conditions, typically these soils are relatively stable and not prone to erosion if covered with vegetation. The present suite of proposed activities is not expected to create a significant risk for erosion. Any future land clearing and construction activities have potential to modify the terrain such that Best Management Practices (BMPs) would be required to minimize potential adverse impacts from loss of soil. No adverse impacts are anticipated to the underlying geology of the area. Soil-stabilizing vegetation around proposed testing areas may limit the transport of munitions components via erosion into surrounding surface waters. Therefore, the Proposed Action would be consistent with the State's policies concerning soil and water conservation efforts.	Provides for the control and prevention of soil erosion.

Chapter 376 <i>Pollutant Discharge Prevention and Removal</i>	Under the Proposed Action, Ordnance expenditures would increase approximately three-fold, and therefore the release of hazardous chemicals would increase. Despite this, no new Toxic Release Inventory (TRI) thresholds would be exceeded and adverse impacts to the environment are not anticipated. Management practices would remain in place that assure training areas will be scanned for debris and dudged munitions. Any dudged munitions or UXO would be flagged and removed according to standard procedures. The Proposed Action would be consistent with the State's policies concerning the transfer, storage, or transportation of pollutants.	Regulates transfer, storage, and transportation of pollutants, and cleanup of pollutant discharges.
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 public health.	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>	Air quality would have minimal increases in levels of criteria pollutants with the increase of activity by 300 percent. Emissions would not exceed the federal NAAQS. Particulate matter would have the greatest increase in regional emissions, at 0.887 percent of Walton County emissions. The emissions would be less than the 10-percent criteria, thus no adverse impacts are expected. Activities performed on Test Area C-80 have the potential to impact ground water and surface water resources. However,	Establishes public policy concerning environmental control in the state.

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 January 29, 2009. No public comments were received.

Public Notification

In compliance with the National Environmental Policy Act, Eglin Air Force Base announces the availability of the following Draft Range Environmental Assessments (REAs) and Draft Findings of No Significant Impact (FONSIs) for public review: RCS 97-306, Rev 1, 2009, "Test Area B-70 Range Environmental Assessment, Revision 1 at Eglin Air Force Base, FL" and RCS 98-640 Rev 1, 2009, "Test Area C-80 Complex Range Environmental Assessment, Revision 1 at Eglin Air Force Base, FL."

The Proposed Action of RCS 97-306, Rev 1, 2009, "Test Area B-70 Range Environmental Assessment, Revision 1" and RCS 98-640 Rev 1, 2009, "Test Area C-80 Complex Range Environmental Assessment, Revision 1," is for the 46th Test Wing Commander to establish a new authorized level of activity for each respective established Test Area that is based on an anticipated maximum usage at Eglin Air Force Base, Florida.

The Preferred Alternative for each Test Area is defined as authorizing a 300-percent increase in mission activity over the current and foreseeable future level of activity with additional management actions. A 300-percent increase at Test Area B-70 would occur for all types of mission activities, including live and inert air-to-surface testing and training, electronic counter-missions testing, air operations testing, surface-to-surface testing, surface-to-air testing, air-to-air testing, ground testing, paratroop/paratroops, lasers, and supersonic flight operations. A 300-percent increase at the Test Area C-80 Complex would occur for all types of mission activities, including arena testing, sensor-fuzed weapon testing, and operation ground testing. A 300-percent increase was chosen as a likely maximum surge increase in military training during a national defense contingency.

Copies of the Draft REAs and Draft FONSIs will be available for review from January 29 through February 12, 2009, at the following libraries:

- Fort Walton Beach Public Library, 105 SE Miracle Strip Pkwy, Ft. Walton Beach, FL
- Destin Library, 150 Sibert Avenue, Destin, FL
- Freeport Branch Library, 76 Highway 20 West, Freeport, FL
- Milton Library, 5541 Alabama Street, Milton, FL
- Niceville Public Library, 206 North Partin Drive, Niceville, FL
- Navarre Library, 8484 James M. Harvell Road, Navarre, FL
- Walton-Defuniak Library, 3 Circle Drive, Defuniak Springs, FL

For more information on these actions, please contact Mr. Mike Spaits, 96th Civil Engineer Group Environmental Public Affairs, at (850) 882-2878, or email at mike.spaits@eglin.af.mil.

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Agency Comments

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Florida Department of Environmental Protection

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

Charlie Crist
Governor

Jeff Kottkamp
Lt. Governor

Michael W. Sole
Secretary

March 17, 2009

Ms. Amy L. Sands
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-80 Complex on Eglin Air Force Base – Walton County, Florida.
SAI # FL200901304570C

Dear Ms. Sands:

The Florida State Clearinghouse has coordinated a review of the referenced Draft Range Environmental Assessment (REA) 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, 4331-4335, 4341-4347, as amended. The following state agency comments are provided for consideration in finalizing the REA.

The Northwest Florida Water Management District's (NFWFMD) primary concern is the potential for chemical materials to impact water resources and associated natural systems, especially cumulatively over many years of munitions testing. The assessment should describe the long-term fate of all the chemical constituents of munitions used. A discussion of the long-term, cumulative impacts of lead, hydrochloric acid, benzene and nitrogen release on soils, sediments, water resources and biological resources is recommended. In general, the U.S. Air Force should assure that the high Floridan Aquifer recharge area, seepage streams, steepheads and wetlands in the project area will be protected through impact avoidance and minimization, periodic monitoring and corrective action. Please see the enclosed NFWFMD memo for additional information.

The Florida Department of Environmental Protection's (DEP) Northwest District Office in Pensacola acknowledges the best management practices (BMPs) to be utilized on Eglin Air Force Base in conjunction with project activities. DEP staff recommends, in addition to these BMPs, implementing a monitoring and sampling plan at use areas that is frequent enough, based on specific activity levels, to ensure the BMPs' effective prevention of environmental degradation.

"More Protection, Less Process"
www.dep.state.fl.us

Ms. Amy L. Sands
March 17, 2009
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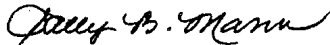
The West Florida Regional Planning Council (WFRPC) recommends that the U.S. Air Force establish best management practices to control stormwater runoff. Actions should be taken to ensure that direct, secondary, and cumulative impacts to area surface waters and groundwater are minimized to the greatest extent possible. An analysis of potential contamination resulting from the proposed 300% increase in military testing and training activities should be conducted – the migration of metals, chemicals and other hazardous materials into groundwater and surface waters is prohibited. Buffers should also be maintained around areas currently occupied by listed species to avoid adverse impacts to those species and their habitats. Please see the enclosed WFRPC memo for further details.

The Florida Department of States (DOS) concurs that a cultural resource survey should be conducted prior to the initiation of new projects within areas not previously surveyed. The resultant report should conform to the specifications set forth in Chapter 1A-46, *Florida Administrative Code*, and be forwarded to the DOS for review and comments.

Based on the information contained in the Draft REA and the comments provided by our reviewing agencies, the state has determined that, at this stage, the proposed project is consistent with the Florida Coastal Management Program (FCMP). The issues identified by the state must, however, be addressed prior to project implementation. The state's continued concurrence with the project will be based, in part, on the adequate resolution of issues identified during this and any subsequent reviews.

Thank you for the opportunity to review the proposed project. Should you have any questions regarding this letter, please contact Ms. Lori Cox at (850) 245-2168.

Yours sincerely,



Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lec
Enclosures

cc: Darryl Boudreau, DEP, Northwest District
Duncan Cairns, NFWFMD
John Gallagher, WFRPC
Laura Kammerer, DOS



Florida

Department of Environmental Protection

'More Protection, Less Process'

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Project Information	
Project:	FL200901304570C
Comments Due:	03/06/2009
Letter Due:	03/16/2009
Description:	DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1 FOR TEST AREA C-80 COMPLEX ON EGLIN AIR FORCE BASE - WALTON COUNTY, FLORIDA.
Keywords:	USAF - DREA, TEST AREA C-80 COMPLEX ON EGLIN AFB - WALTON CO.
CFDA #:	12.200
Agency Comments:	
WALTON -	
WEST FLORIDA RPC - WEST FLORIDA REGIONAL PLANNING COUNCIL	
The WFRPC recommends that the U.S. Air Force establish a best management practices procedures manual to control stormwater runoff. Actions should be taken to ensure that direct, secondary and cumulative impacts to area surface waters and groundwater are minimized to the greatest extent possible. An analysis of potential contamination resulting from the proposed 300% increase in military testing and training activities should be conducted - the migration of metals, chemicals and other hazardous materials into groundwater and surface waters is prohibited. Buffers should also be maintained around areas currently occupied by listed species to avoid adverse impacts to those species and their habitats.	
FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION	
NO COMMENT BY PAUL SCHARINE ON 2/18/09.	
STATE - FLORIDA DEPARTMENT OF STATE	
The DOS concurs that a cultural resource survey should be conducted prior to the initiation of new projects within areas not previously surveyed. The resultant report should conform to the specifications set forth in Chapter 1A-46, F.A.C., and be forwarded to the DOS for review and comments.	
ENVIRONMENTAL PROTECTION - FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION	
The DEP Northwest District Office in Pensacola acknowledges the best management practices (BMPs) to be utilized on Eglin Air Force Base in conjunction with project activities. DEP staff recommends, in addition to these BMPs, implementing a monitoring and sampling plan at use areas that is frequent enough, based on specific activity levels, to ensure the BMPs' effective prevention of environmental degradation.	
NORTHWEST FLORIDA WMD - NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT	
The NWFWM's primary concern is the potential for chemical materials to impact water resources and associated natural systems, especially cumulatively over many years of munitions testing. The assessment should describe the long-term fate of all the chemical constituents of munitions used. A discussion of the long-term, cumulative impacts of lead, hydrochloric acid, benzene and nitrogen release on soils, sediments, water resources and biological resources is recommended. In general, the U.S. Air Force should assure that the high Floridan Aquifer recharge area, seepage streams, steepheads and wetlands in the project area will be protected through impact avoidance and minimization, periodic monitoring and corrective action.	

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.

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Project Review Form

TO: State Clearinghouse
Department of Environmental Protection
3900 Commonwealth Boulevard, MS 47
Tallahassee, FL 32399-3000

DATE: March 4, 2009

SUBJECT: Project Review: Intergovernmental Coordination
Title: Department of the Air Force – Draft Range Environmental
Assessment, Revision 1 for Test Area C-80 Complex on Eglin Air
Force Base – Walton County, FL
SAI #: FL200901304570C

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MAR 05 2009

DEP Office of
Intergov't Programs

The District has reviewed the subject application and attachments in accordance with its responsibilities and authority under the provisions of Chapter 373, Florida Statutes. As a result review, the District has the following responses:

ACTION

- ☐ No Comment.
- ☐ Supports the project.
- ☐ Objects to the project; explanation attached.
- ☐ Has no objection to the project; explanation optional.
- ☐ Cannot evaluate the project; explanation attached.
- ☐ Project requires a permit from the District under ____.

DEGREE OF REVIEW

- ☒ Documentation was reviewed.
- ☐ Field investigation was performed.
- ☐ Discussed and/or contacted appropriate office about project.
- ☐ Additional documentation/research is required.
- ☒ Comments attached.

SIGNED Maria Culbertson
Duncan Jay Cairns
Chief, Bur. Env. & Res. Plng.

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

MEMORANDUM

TO: Duncan Cairns, Chief, Bureau of Environmental and Resource Planning

FROM: Leigh Brooks, Water Resource Planner

THRU: Paul Thorpe, Director, Resource Planning Section

DATE: March 4, 2009

SUBJECT: NEPA Draft Range Environmental Assessment (REA), Test Area C-80 Complex
Revision 1, Eglin Air Force Base, Walton County
SAI#: FL200901304570C

Test Area C-80 Complex (TA C-80) consists of four separate sites on the eastern side of the base in Walton County. One site serves a support function, and three are test areas. The REA purpose is to update the NEPA analysis and evaluate environmental consequences from a desired 300 percent increase in operations over the level approved in 2000, plus foreseeable future activities (Alternative 2 or Preferred Alternative). A No Action Alternative and Alternative 1 are also evaluated. Concerns identified by District staff are described below. The primary concern identified is cumulative impacts from chemical materials.

Chemical Materials – The assessment should describe the long-term fate of chemical constituents of munitions used. Amounts of chemical residue are not given except for chemicals anticipated to exceed annual Toxic Release Inventory (TRI) thresholds. Chemicals not reported could have cumulative, long-term impacts that over time adversely affect water and related resources. There are also inconsistencies between the three alternatives in the chemical releases that would need to be reported and whether new TRI thresholds are exceeded.

Lead is of significant concern, particularly potential impacts from accumulation over successive years, however data on lead is omitted and it is not included in TRI reporting. In looking at a site map it is apparent that streams and wetlands lie within the region of influence. Accumulation of lead could affect natural and water resources in these habitats.

There is also a question of safety for those chemical releases to be reported to EPA. As examples, it is unclear if 2,973 pounds of hydrochloric acid or 69 pounds of benzene, a known carcinogen, would result in adverse ecological or other effects.

Effects of wind on chemical dispersal are not discussed and wind restrictions for testing activities are not proposed. In order to minimize off-site impacts from chemical drift, it is recommended that protocol take into account restrictions under windy conditions.

Soils - Management requirements for soils include engineered runoff controls and non-structural options to reduce the potential for runoff to impact water quality, and engineered controls appear

MEMORANDUM

Eglin AFB Draft REA, TA C-80

March 4, 2009

Page 2

to be in place. Another management requirement is proactive monitoring for potential migration of metals. While this sounds reassuring, procedures are not specified. To ensure that there are indeed no adverse effects, a monitoring program and responsible party should be identified.

Water Resources – The REA indicates there would be no significant impacts to groundwater or surface water due to prevention measures, or to floodplains or wetlands since neither resource occurs within the TA C-80 Complex. Considering the nature of the activities and potential for off-site impacts, however, a broader view is warranted. Nearby streams clearly have a groundwater seepage component. From FNAI data, it appears that most of the wetlands are seepage slopes and baygalls. Steepheads are also documented. Seepage streams, seepage slopes and steepheads are all sensitive water resources with vulnerable natural resource components.

The potential for surface water impacts under Alternative 2 is acknowledged. Responsibility for determining surface water impacts, however, appears to be diverted to the state of Florida. This seems to rely on the state to monitor waters downstream or downslope of the test sites. It would be appropriate for Eglin to monitor these surface waters to determine the nature and extent of impacts with regard to applicable state water quality standards. The potential for such impacts should be fully described and considered within the REA.

Nitrogen release from munitions testing is a potential water quality concern. Ammonia, Cyanide, Hydrazine, Hydrogen cyanide, and Nitric acid - all containing nitrogen - are among the toxins reaching threshold for TRI reporting. State listed pitcher plants, adapted to nutrient poor environments, occur in nearby wetlands. Florida presently has no discrete surface water quality standards for nutrients, though quantitative standards are under development. It is recommended that Eglin take baseline water quality measurements in the nearby streams for the nitrogen suite as well as undertake routine long-term monitoring in order to evaluate trends.

The discussion of groundwater under Alternative 2 recognizes that further analysis is required to determine the potential for contamination. TA C-80 test sites are all in the Florida Aquifer Vulnerability Assessment category “vulnerable” for contamination to the Floridan Aquifer System and “more vulnerable” for the Surficial Aquifer System (Florida Department of Environmental Protection, Florida Geological Survey). Protecting groundwater quality calls for a conservative approach that bases future increases in testing activities on a more complete analysis. Monitoring wells and surface water monitoring would be useful in assessing actual effects.

Biological Resources – The REA states it is unlikely that chemical materials would impact biological resources, with the exception of lead. Deposition of chemicals through water is addressed, but not air. While animals may move out of the testing areas when humans are present so that there might be no direct impacts, the possibility of indirect impacts on wildlife is not discussed. Soils and nearby streams or their sediments could accumulate pollutants that settle out from the air. As these streams support the federally listed Okaloosa darter and state listed pitcher plants, as well as other at-risk species such as aquatic invertebrates, a more comprehensive assessment of chemical impacts on biological and natural resources is recommended, as well as a full assessment of cumulative (long-term) impacts.

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WL 191-2-3-09

Bill Dozier, Chairman
Cindy Frakes, Vice-Chairman

Terry A. Joseph, Executive Director

FAX TRANSMITTAL (S) Total # of Pages (including cover)-2

TO: STATE CLEARINGHOUSE • FAX: (850) 245-2190/(850) 245-2189
Phone: 850-245-2161

DATE: Wed March 4, 2009

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

SUBJECT: State Clearinghouse Review(s) Fax Transmittals:

SAI #	Project Description	RPC #
FL200901304570C	USAF Draft Range Environmental Assessment, Revision 1 for Test Area C-80 Complex on Eglin AFB, Walton County	WL 191 -2-3-09

	No Comments – Generally consistent with the WFSRPP
X	Comments 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 14th Street, Suite E • Panama City, FL 32401 • P: 850.769.4864 • F: 850.784.0456
www.wfrpc.org

JUN 07 2009 17:37



#0136 P.002 /003

WL 191 002-3-09

Bill Dozier, Chairman
Cindy Frakes, Vice-Chairman

Terry A. Joseph, Executive Director

MEMORANDUM

To: Ms. Laura Milligan, Florida Clearinghouse, 3900 Commonwealth Blvd, MS 47,
Tallahassee, FL 32399-3000

Ms. Amy Sands, SAIC, 1140 Eglin Parkway, Shalimar, Florida 32579

From: Mary F. Gutierrez, Environmental Planner, West Florida Regional Planning Council

Date: Friday, February 27, 2009

Subject: Test Area C-80 Complex Range Environmental Assessment on Eglin Air Force Base,
FL-Walton County: RPC# WL 191-2-03-09, SAI# FL200901304570C

Project: The proposal is for the 46th Test Wing Commander to establish a new authorized level of activity for the TA C-80 Complex that is based on an anticipated maximum usage. The TA C-80 Complex is located on the eastern half of the Eglin Range Complex in Walton County, Florida approximately 12 miles northeast of Eglin Main.

Alternative 2: Alternative 1 with a 300-Percent Mission Surge (Preferred Alternative)

Alternative 2 includes authorization of the current level of activity plus a 300-percent increase in mission activities. This is the Preferred Alternative because it includes all mission activities that are expected to occur and provides capacity for a surge in testing. This alternative authorizes an expected maximum level of activity, which allows better responsiveness to the user group while ensuring that cumulative environmental effects do not cause significant impacts.

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

Goal 1: Protect the surface water resources within the Region.

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

Recommendation 1: Establish a best management practice procedure manual that addresses the items as listed in the project narrative: Proactive monitoring for potential migration of metals; Runoff control through the use of vegetative ground cover, mulches and compost, surface covers, and engineered runoff controls.

Recommendation 2: Actions should be taken to ensure that impacts, cumulative and secondary, to all surface waters including the five streams on the TA C-80 Complex, the headwaters of Dogwood Head Branch and those within 0.25 mile of one of the TA C-80 test areas be protected from any impacts, short-term and long-term, associated with this proposal.

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

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

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2

Goal 1: Manage the Regional water supply to provide for all recognized needs on a sustainable basis and protect water recharge areas and existing and future well-sites.

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

Policy 1.9: Prevent all development activities that would structurally impair the function of high volume recharge areas, or reduce the availability and flow of good quality water to those recharges areas.

Recommendation 1: Prior to any actions, conduct the necessary analysis to determine the extent of contamination that a 300-percent increase in baseline expenditures would have on ground water. No chemical of any type or amount should be allowed enter the Sand and Gravel aquifer.

Priority 4 - Protection of Natural Systems:

Goal 1: Continue to protect the Region's functioning natural systems.

Recommendation 1: Establish and maintain buffers around all wetland, flood plains, bayous/surface water, estuarine systems, unique uplands, and other important wildlife habitats. Make sure all efforts to protect adjacent ecosystems are adhered to.

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

Goal 1: Protect native species in the Region that are on the FWS and FWCC list of endangered, threatened, and rare species of Florida.

Recommendation 1: Maintain buffers around areas currently occupied by threatened, endangered or rare species.

Recommendation 2: Avoid impacts, direct or secondary, to areas inhabited by rare and endangered species and species of special concern.

Priority 6 - Land Management and Use:

Goal 1: Public and private land shall be managed and land resources used according to comprehensive, economic and environmental principles, especially critical areas including, but not limited to coastal lands, wetlands, flood plains, margins of estuarine nursery areas, and locally important agricultural lands.

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

Recommendation 1: All conservation easements area should be adjacent to existing conservation lands. All conservation easements should be granted in perpetuity.

Priority 7 - Parks and Recreation:

Goal 1: Protect environmentally, historically, and culturally significant land.

Recommendation 1: Avoid impacts of all areas identified as environmentally, historically, archaeologically, and culturally significant.

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FLORIDA DEPARTMENT OF STATE
Kurt S. Browning
Secretary of State
DIVISION OF HISTORICAL RESOURCES

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DEP Office of
Intergovt Programs

Ms. Lauren Milligan
Director, Florida State Clearinghouse
3900 Commonwealth Boulevard, Mail Station 47
Tallahassee, Florida 32399-3000

March 5, 2009

RE: DHR Project File No: 2009-517
SAI #: FL200901304570C
Department of the Air Force – Draft Range Environmental Assessment
Revision 1 for Test Area C-80 on Eglin Air Force Base
Walton County

Dear Ms. Milligan:

Our office received and reviewed the above referenced project in accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and 36 C.F.R., Part 800: Protection of Historic Properties, Chapter 267, *Florida Statutes*, Florida's Coastal Zone Management Program, and implementing state regulations, for possible impact to historic properties listed, or eligible for listing, in the National Register of Historic Places. The State Historic Preservation Officer is to advise and assist state and federal agencies when identifying historic properties, assessing effects upon them, and considering alternatives to avoid or minimize adverse effects.

Based on the information provided, our office concurs that a cultural resource survey will need to be conducted prior to any new project initiation within those portions of the project area that have not previously been surveyed. The purpose of this survey will be to locate and assess the significance of cultural resources present. The resultant report should conform to the specifications set forth in Chapter 1A-46, *Florida Administrative Code*. The results of the survey are to be forwarded to this office for review and comment on the findings.

If you have any questions concerning our comments, please contact Samantha Earnest, Historic Preservationist, by electronic mail searnest@dos.state.fl.us, or at 850-245-6333 or 800-847-7278.

Sincerely,

Frederick P. Gaske, Director, and
State Historic Preservation Officer

500 S. Bronough Street • Tallahassee, FL 32399-0250 • <http://www.flheritage.com>

☐ Director's Office
(850) 245-6300 • FAX: 245-6436

☐ Archaeological Research
(850) 245-6444 • FAX: 245-6452

☒ Historic Preservation
(850) 245-6333 • FAX: 245-6437

Air Force Responses to Comments on the Draft REA

Comment	Response
The Florida Department of Environmental Protection's (DEP) Northwest District Office in Pensacola acknowledges the best management practices (BMPs) to be utilized on Eglin Air Force Base in conjunction with project activities. DEP staff recommends, in addition to these BMPs, implementing a monitoring and sampling plan at use areas that is frequent enough, based on specific activity levels, to ensure the BMPs' effective prevention of environmental degradation.	The Air Force thanks FDEP for their comments. Eglin AFB shares the expressed concerns about protecting the environment and will fully comply with all rules and permits issued for that purpose. Eglin AFB will conduct any monitoring/sampling required by Federal, or State law. If any specific rules requiring monitoring/sampling, which are applicable to this action, are identified and provided, Eglin AFB will be pleased to address them.
The assessment should describe the long-term fate of chemical constituents of munitions used. Amounts of chemical residue are not given except for chemicals anticipated to exceed annual Toxic Release Inventory (TRI) thresholds. Chemicals not reported could have cumulative, long-term impacts that over time adversely affect water and related resources. There are also inconsistencies between the three alternatives in the chemical releases that would need to be reported and whether new TRI thresholds are exceeded. Lead is of significant concern, particularly potential impacts from accumulation over successive years, however data on lead is omitted and is not included in TRI reporting. In looking at a site map it is apparent that streams and wetlands lie within the region of influence. Accumulation of lead could affect natural and water resources in these habitats.	Amounts of all chemical residue totaling greater than or equal to one pound annually (as stated prior to Table 4-1, which applies to all alternatives) are listed in Tables 4-2 through 4-4, regardless of TRI reporting status or thresholds. Lead is listed only if the amount of residue is greater than or equal to one pound, otherwise it is not included. For instance, annual lead residue released under Alternative 1 is 0.05 lbs and is 0.22 lbs under Alternative 2; therefore, they are not listed in Tables 4-3 and 4-4. Eglin AFB currently reports lead under TRI, as stated prior to Table 4-3. No new TRI reporting thresholds would be exceeded under any of the alternatives, as indicated by supporting text prior to the tables. Lead is not of significant concern at TA C-80 due to the minimal projected amount of residue released annually from current and foreseeable future mission activities. The Air Force understands the concern regarding cumulative impacts of chemicals not reported under TRI; however, there would still be no requirement to report and therefore no requirement for a monitoring plan.
There is also a question of safety for those chemical releases to be reported to EPA. As examples, it is unclear if 2,973 pounds of hydrochloric acid or 69 pounds of benzene, a known carcinogen, would result in adverse ecological or other effects.	HCl is a monoprotic acid that is extremely water soluble. In water, the molecules dissociate almost completely and react with the water to form a hydronium ion and a chloride ion. Because the chloride ions are nonreactive and non-toxic, HCl is one of the least hazardous strong acids despite its strong acidity. Therefore, it is assumed that HCl will not accumulate in any significant concentration in the environment. The American Industrial Hygiene Association's (AIHA ERPG) emergency response planning guidelines (ERPG 1) suggest that 4.5 mg/m³ is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor (EPA 2007 http://www.epa.gov/ttn/atw/hlthef/hydrochl.html). The ideal gas law states that the state of an amount of gas is determined by its pressure, volume, and temperature

Air Force Responses to Comments on the Draft REA, Cont'd

	according to the equation $pV=nRT$, where p is the absolute pressure of the gas, V is the volume of the gas, n is the number of moles of gas, R is the universal gas constant ($8.314 \text{ J}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$), T is the absolute temperature. As such, and under ambient pressure (p) and the generally high temperatures (T) in this region, the relatively small amount of gas (n) released in an individual munition expenditure will rapidly disperse to fill the space around it (V). By combining those two principles, one would have to be enclosed in a 100m by 100m, by 100m box and subject to an average day's worth of HCl emissions to experience levels above the ERPG standard. HCl was chosen as an example here because it is the largest emissions contributor by mass, however similar arguments can be made for all chemicals emitted at TA C-80. Furthermore, relative humidity would contribute to the added dissociation of water soluble molecules in the air. Sunlight would also cause photodegradation of chemicals released into the atmosphere. Wind dispersion would only serve to enhance and accelerate the dilution of the chemical concentration over distance from the munition expenditure site. Lastly, munition expenditures at the TA C-80 Complex are not constant, especially for the major contributors of HCl and benzene (rocket propellant and JP-8, respectively). Rather, these tests are typically conducted periodically to allow for a recovery period in which these chemicals are diluted and degraded further through natural processes to allow environmental conditions to return to homeostatic levels (Mr. Chesser, Eglin Range Safety Office).
Effects of wind on chemical dispersal are not discussed and wind restrictions for testing activities are not proposed. In order to minimize off-site impacts from chemical drift, it is recommended that protocol take into account restrictions under windy conditions.	Comment noted.
Management requirements for soils include engineered runoff controls and non-structural options to reduce the potential for runoff to impact water quality, and engineered controls appear to be in place. Another management requirement is proactive monitoring for potential migration of metals. While this sounds reassuring, procedures are not specified. To ensure that there are indeed no adverse effects, a monitoring program and responsible party should be identified.	The Air Force thanks NFWMD for their comments. Eglin AFB shares the expressed concerns about protecting the environment and will fully comply with all rules and permits issued for that purpose. Furthermore, Eglin AFB will conduct any monitoring/sampling required by Federal, or State law. If any specific rules requiring monitoring/sampling which are applicable to this action are identified and provided, Eglin AFB will be pleased to address them.
The REA indicates there would be no significant impacts to groundwater or surface water due to prevention measures, or to floodplains or wetlands since neither resource occurs within the TA C-80 Complex. Considering the nature of the activities and potential for off-site impacts, however, a	Tests are carried out on clay pads and with the exception of emissions, or potential for some unforeseen accidental spill, there are no releases of consequence leaving the test area, nor are levels produced sufficient to result in a 'significant impact.' Test materials and debris are collected, analyzed and disposed of properly. Emissions are subject to dispersal

Air Force Responses to Comments on the Draft REA, Cont'd

broader view is warranted. Nearby streams clearly have a groundwater seepage component. From FNAI data, it appears that most of the wetlands are seepage slopes and baygalls. Steepheads are also documented. Seepage streams, seepage slopes and steepheads are all sensitive water resources with vulnerable natural resource components.	and degradation & spill plans & procedures are in place in case of an accident. Additionally, the nearly 500,000 acres of Eglin AFB has been used as an active test and training facility for over 70 years. A study conducted in 2004 on munitions constituent migration tested 109 soil and water samples near Eglin's boundaries. No chemical constituents above action levels were identified. In addition, no migration was found in surface waters. The study concluded that "migration of munitions constituents does not appear to be occurring."
The potential for surface water impacts under Alternative 2 is acknowledged. Responsibility for determining surface water impacts, however, appears to be diverted to the state of Florida. This seems to rely on the state to monitor waters downstream or downslope of the test sites. It would be appropriate for Eglin to monitor these surface waters to determine the nature and extent of impacts with regard to applicable state water quality standards. The potential for such impacts should be fully described and considered within the REA.	The Air Force thanks NFWMD for their comments. Eglin AFB shares the expressed concerns about protecting the environment and will fully comply with all rules and permits issued for that purpose. Furthermore, Eglin AFB will conduct any monitoring/sampling required by Federal, or State law. If any specific rules requiring monitoring/sampling which are applicable to this action are identified and provided, Eglin AFB will be pleased to address them. Additionally, the nearly 500,000 acres of Eglin AFB has been used as an active test and training facility for over 70 years. A study conducted in 2004 on munitions constituent migration tested 109 soil and water samples near Eglin's boundaries. No chemical constituents above action levels were identified. In addition, no migration was found in surface waters. The study concluded that "migration of munitions constituents does not appear to be occurring."
Nitrogen release from munitions testing is a potential water quality concern. Ammonia, Cyanide, Hydrazine, Hydrogen cyanide, and Nitric acid – all containing nitrogen – are among the toxins reaching threshold for TRI reporting. State listed pitcher plants, adapted to nutrient poor environments, occur in nearby wetlands. Florida presently has no discrete surface water quality standards for nutrients, though quantitative standards are under development. It is recommended that Eglin take baseline water quality measurements in the nearby streams for the nitrogen suite as well as undertake routine long-term monitoring in order to evaluate trends.	Amounts of all chemical residue totaling greater than or equal to one pound annually (as stated prior to Table 4-1, and applies to all alternatives) are listed in Tables 4-2 through 4-4, regardless of TRI reporting thresholds. The chemicals referred to in the comment are not reaching the threshold for TRI reporting of 10,000 pounds. Supporting text for these tables indicate that no new TRI thresholds would be exceeded as a result of these quantities. Eglin AFB will address any sampling required by Federal, or State law once surface water quality standards for nutrients are established.
The discussion of groundwater under Alternative 2 recognized that further analysis is required to determine the potential for contamination. TA C-80 test sites are all in the Florida Aquifer Vulnerability Assessment category "vulnerable" for contamination to the Floridan Aquifer System and "more vulnerable" for the Surficial Aquifer System (Florida Department of Environmental Protection, Florida Geological Survey). Protecting groundwater quality calls for a conservative	Comment noted.

Air Force Responses to Comments on the Draft REA, Cont'd

approach that bases future increases in testing activities on a more complete analysis. Monitoring wells and surface water monitoring would be useful in assessing actual effects.	
The REA states it is unlikely that chemical materials would impact biological resources, with the exception of lead. Deposition of chemicals through water is addressed, but not air. While animals may move out of the testing areas when humans are present so that there might be no direct impacts, the possibility of indirect impacts on wildlife is not discussed. Soils and nearby streams or their sediments could accumulate pollutants that settle out from the air. As these streams support the federally listed Okaloosa darter and state listed pitcher plants, as well as other at-risk species such as aquatic invertebrates, a more comprehensive assessment of chemical impacts on biological and natural resources is recommended, as well as a full assessment of cumulative (long-term) impacts.	Eglin AFB Natural Resources Section has reviewed the proposed action and alternatives and made a determination of <i>No Effect</i> under Section 7 of the Endangered Species Act. Specific Best Management Practices outlined within the REA and pertaining to the use of chemical materials at the Test Area C-80 Complex are deemed sufficient to reduce the potential for direct and/or indirect impacts to sensitive species and habitats.
Establish a best management practice procedure manual that addresses the items as listed in the project narrative: Proactive monitoring for potential migration of metals; Runoff control through the use of vegetative ground cover, mulches and compost, surface covers, and engineered runoff controls.	Comment noted.
Actions should be taken to endure that impacts, cumulative and secondary, to all surface waters including the five streams on the TA C-80 Complex, the headwaters of Dogwood Head Branch and those within 0.25 mile of one of the TA C-80 test areas be protected from any impacts, short-term and long-term, associated with this proposal.	Comment noted.
Prior to any action, conduct the necessary analysis to determine the extent of contamination that a 300-percent increase in baseline expenditures would have on ground water. No chemical of any type or amount should be allowed enter the Sand and Gravel aquifer.	Comment noted.
Establish and maintain buffers around all wetland, flood plains, bayous/surface water, estuarine systems, unique uplands, and other important wildlife habitats. Make sure all efforts to protect adjacent ecosystems are adhered to.	Comment noted.
Maintain buffers around areas currently occupied by threatened, endangered or rare species.	Comment noted.
Avoid impacts, direct or secondary, to areas inhabited by rare and endangered species and species of special concern.	Comment noted.
All conservation easements area should be adjacent to existing conservation lands. All conservation easements should be granted in perpetuity.	Comment noted.
Avoid impacts of all areas identified as	Comment noted.

Air Force Responses to Comments on the Draft REA, Cont'd

environmentally, historically, archaeologically, and culturally significant.	
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