FINDING OF NO SIGNIFICANT IMPACT
FOR

TEST AREA B-70 RANGE ENVIRONMENTAL ASSESSMENT ON EGLIN AIR FORCE BASE, FLORIDA RCS 97-306 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 training activities on Test Area (TA) B-70 on Eglin Air Force Base (AFB), Florida. That June 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 TA B-70 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 TA B-70. 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.

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No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *1998 TA B-70 Programmatic Environmental Assessment (PEA)*, which authorized a 100-percent increase in **test missions** and associated expendables over the baseline level captured in the *Fiscal Year 1995 (FY1995) Range Utilization Report* and anticipated mission additions. The 100-percent increase applied to test missions only and did not include training missions because during a crisis event, the training units are usually deployed. The 100-percent surge in test missions was included to support a potential increase that might occur in the event of a war or other significant world event that requires U.S. military support. The *1998 TA B-70 PEA* also authorized a 100-percent increase in low-level supersonic sorties over TA B-70, resulting in approval of 14 sorties annually.

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

Alternative 1 would authorize the current level of activity plus foreseeable future activities. There are no new types of activities, new user groups, or new kinds of expendables in the foreseeable future. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1995 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Air-to-surface testing and training constitute the majority of missions on TA B-70, but electronic counter-missions testing, ground testing, and other testing and training missions also occur on TA B-70. This alternative would be implemented using management actions identified in Chapter 4. Under this alternative, supersonic activities would be authorized at the level approved in the previous *1998 TA B-70 PEA*, 14 sorties annually.

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

This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity, including management actions identified in Chapter 4. A 300-percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency. Alternative 2 would approve up to 56 low-level supersonic sorties annually.

Alternative 2 is the Preferred Alternative because it provides an authorized level of activity under a potential mission surge of 300 percent. 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 F, *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.

DAVID H. MAHARREY, Jr, COL, USAF
Commander, 96th Civil Engineer Group

13 Jul 09
Date

EGLIN AIR FORCE BASE
Florida

TEST AREA B-70

FINAL RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1

June 2009

TEST AREA B-70

FINAL RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1

Submitted to:

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

JUNE 2009

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LIST OF ACRONYMS, ABBREVIATIONS, AND SYMBOLS

µg/m³	Micrograms per Cubic Meter
40 FTS	40th Flight Test Squadron
46 RANSS	46th Range Support Squadron
46 TS	46th Test Squadron
46 TW	46th Test Wing
46 TW/XPX	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	Eglin AFB Environmental Restoration Branch
96 CEG/CEVSN	Eglin AFB Natural Resources Section
96 CEG/CEVSP	Eglin AFB Environmental Analysis Section
AAC	Air Armament Center
AAC/SE	Safety Office
AADS	Advanced Air Dropped Sensors
AFB	Air Force Base
AFDTC	Air Force Development Test Center
AFI	Air Force Instruction
AFMC	Air Force Materiel Command
AFPAM	Air Force Pamphlet
AGL	Above Ground Level
AGM	Air-to-Ground Missile
A/S	Air-to-Surface
Avg	Average
BHPO	Base Historic Preservation Office
BRAC	Base Realignment and Closure
CATEX	Categorical Exclusion
CDNL	C-weighted Day-Night Sound Level
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CHABA	National Academy of Sciences Committee on Hearing, Bioacoustics, and Biomechanics
CO	Carbon Monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	Decibels
dBA	A-weighted Decibels
dBC	C-weighted Decibels
dBP	P-weighted Decibels
DNL	Day-Night Average Sound Level
DNL_{mr}	Onset-Rate Adjusted Monthly Day-Night Average Sound Level
DoD	Department of Defense
DPI	Direct Physical Impact
EBD	Environmental Baseline Document
EIAP	Environmental Impact Analysis Process
DODIC	Department of Defense Identification Code
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

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

FDOT	Florida Department of Transportation
FICON	Federal Interagency Committee on Noise
FICUN	Federal Interagency Committee on Urban Noise
FNAI	Florida Natural Areas Inventory
FY	Fiscal Year
GBU	Guided Bomb Unit
GIS	Geographic Information System
HE	High Explosive
Hr	Hour
Hz	Hertz
INRMP	Integrated Natural Resource Management Plan
INS	Invasive Nonnative Species
IWR	Impaired Waters Rule
km	Kilometers
LDP	Legacy Debris Pit
L_{max}	Maximum Sound Level
LUC	Land Use Control
LZ	Landing Zone
mg/kg	Milligrams per kilogram
mm	Millimeter
MOA	Military Operating Area
MOAB	Massive Ordnance Air Blast
MMRP	Military Munitions Response Program
MSL	Mean Sea Level
MTR	Military Training Route
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
NRHP	National Register of Historic Places
ORM	Operational Risk Management
PBT	Persistent Bioaccumulative Toxic
PEA	Programmatic Environmental Assessment
PK_{15}(met)	Peak Noise Exceeded by 15 Percent of Firing Events
PM	Particulate Matter
PMA	Programmatic Environmental Assessment
POI	Point of Interest
ppm	Parts per Million
psf	Pounds per Square Foot
RBC	Risk-based Criteria
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
SESOIL	Seasonal Soil Compartment Model
SEL	Sound Exposure Level
SHPO	State Historic Preservation Officer
SO_x	Sulfur Oxides

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

SO_2	Sulfur Dioxide
SPCC	Spill Prevention, Control, and Countermeasures
SRI	Santa Rosa Island
SWMCM	Shallow Water Mine Countermeasures
TA	Test Area
TCP	Traditional Cultural Property
TRI	Toxic Release Inventory
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 Compounds

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1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The Eglin Military Complex, located in the northwest Florida panhandle (Figure 1-1), is one of 19 component installations categorized as a Department of Defense (DoD) Major Range Test Facility Base. Eglin Air Force Base (AFB) is situated among three counties: Santa Rosa, Okaloosa, and Walton. Eglin AFB's primary function is to support research, development, test, and evaluation (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, 1996a), which do not include the cantonment or main base areas:

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

The U.S. Air Force Air Armament Center (AAC) has responsibility for the Eglin Military Complex and for all its users, which include DoD, other government agencies, foreign countries, and private companies. For Range operations, 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 (46 TW) with support from the 96th Air Base Wing. The 46 TW Commander is responsible for day-to-day scheduling, executing, and maintaining of this national asset. Test Area (TA) B-70 makes up a portion of the Eglin Military Complex and supports a variety of test and training missions. The continued DoD utilization of the Eglin Military Complex requires flexible and unencumbered access to land ranges and airspace, which support all of Eglin AFB's operations.

1.2 PROPOSED ACTION

The **Proposed Action** is for the 46 TW Commander to establish a new authorized level of activity for TA B-70 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.

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

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

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

1. Purpose: to quickly and efficiently process new programs requesting access to TA B-70 during both routine and crisis situations.
    - Need: to provide military users a quick response to priority needs during war or other significant military involvement, as well as maintain the current approval process for routine uses.
2. Purpose: to update the NEPA analysis by re-evaluating the mission activities and by performing a cumulative environmental analysis of all mission activities.
    - Need: the need associated with this item is multifaceted and is described below.

Eglin AFB previously performed environmental analysis on mission activities on TA B-70 in the *1998 Test Area B-70 Final Programmatic Environmental Assessment* (PEA) (U.S. Air Force, 1998a). Some of Eglin AFB's mission activities have changed since the original environmental analysis was done, requiring new environmental analysis to be performed. Currently, when approval for a new mission is requested, it may be categorically excluded from additional environmental analysis if it is similar in action to a mission that has been previously assessed and the assessment resulted in a finding of no significant environmental impact. The categorical exclusion (CATEX) designation is in accordance with NEPA and Air Force regulations (Council on Environmental Quality [CEQ] 32 Code of Federal Regulations [CFR] 989.13 and Air Force Instruction [AFI] 32-7061).

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

- Additional species have been given federal and state protected status.
- Species that were not previously known to exist at Eglin AFB have been discovered.
- Additional cultural resources have been discovered and documented.
- The population of communities along Eglin AFB's borders has increased.
- Air Force regulations have changed.
- Military missions and weapons systems have evolved.

The analysis performed in this report allows for a cumulative look at the impact on TA B-70 receptors from all mission activities. By implementing an authorized level of activity, Range management will be streamlined and cumulative environmental impacts will be more fully considered.

1.3 SCOPE OF THE PROPOSED ACTION

The region of influence (ROI) for this analysis is TA B-70, which is located on the western side of the Eglin Range Complex in Okaloosa and Santa Rosa Counties, about 15 miles northwest of Eglin Main Base as shown in Figure 1-2. TA B-70 is approximately 13 miles long and averages 1.25 miles wide, making it the second largest test area on the Eglin Range Complex. The test area provides over 16 square miles of continuous land test area. TA B-70 is best known as the only overland supersonic range in the United States east of the Mississippi River (U.S. Air Force, 2005a).

The mission activities that are included are those events that originate and/or terminate on TA B-70. The air operations that occur in the airspace overlying TA B-70 are not included as part of the scope for this Range Environmental Assessment (REA); the air operations are analyzed cumulatively in the Overland Air Operations REA. However, supersonic flights and the expendables that are released during air operations, as they impact TA B-70 and the vicinity, are included in this REA.

TA B-70 supports a variety of testing and training activities that include:

- **Air-to-surface bombing and missiles.** This activity is conducted as both testing and training missions, although primarily training. The bombs and missiles are released from various aircraft at ground targets on the test area. Most of the weapon systems do not contain a live warhead and are used for targeting purposes. Also included in this category, however, is a live bomb test (referred to as Massive Ordnance Air Blast [MOAB]) involving a Guided Bomb Unit- (GBU-) 43B weighing approximately 21,000 pounds and containing 18,700 pounds of high explosives.
- **Surface-to-surface cruise missiles.** These are the long range weapon systems that are used during test missions only. TA B-70 is used for the target area, but the cruise missiles are inert and almost always equipped with a parachute for "soft" landings.
- **Ground training and paratroops.** Some groups conduct ground training exercises on TA B-70. It consists of either paratrooper drops onto the area or troop movement across the area (on foot). No weapons are expended in association with these operations.
- **Shallow water pond detonations.** The shallow water pond is used as a mine countermeasures and beach assault obstacle test area. The explosive devices that are used as part of these tests include Mk-82 general purpose bombs, shallow water assault breaching (SABRE) charges, and mine clearing systems.
- **Electronic countermeasures including release of chaff and flares.** The electronic countermeasures are used for both testing and training missions. Chaff and flares are released as countermeasures to electronic tracking devices.
- **Air-to-surface weapons testing during supersonic flight.** TA B-70 is the only test area that lies within the supersonic corridor and, thus, it is the only test area that can be used for weapons testing during overland supersonic flights. Generally, inert weapons are used for these tests.
- **Drone take-offs and landings.** Drones that are used as missile targets are launched from and land on TA B-70. Small-scale drones are used as targets for Stinger missile tests over TA B-70.

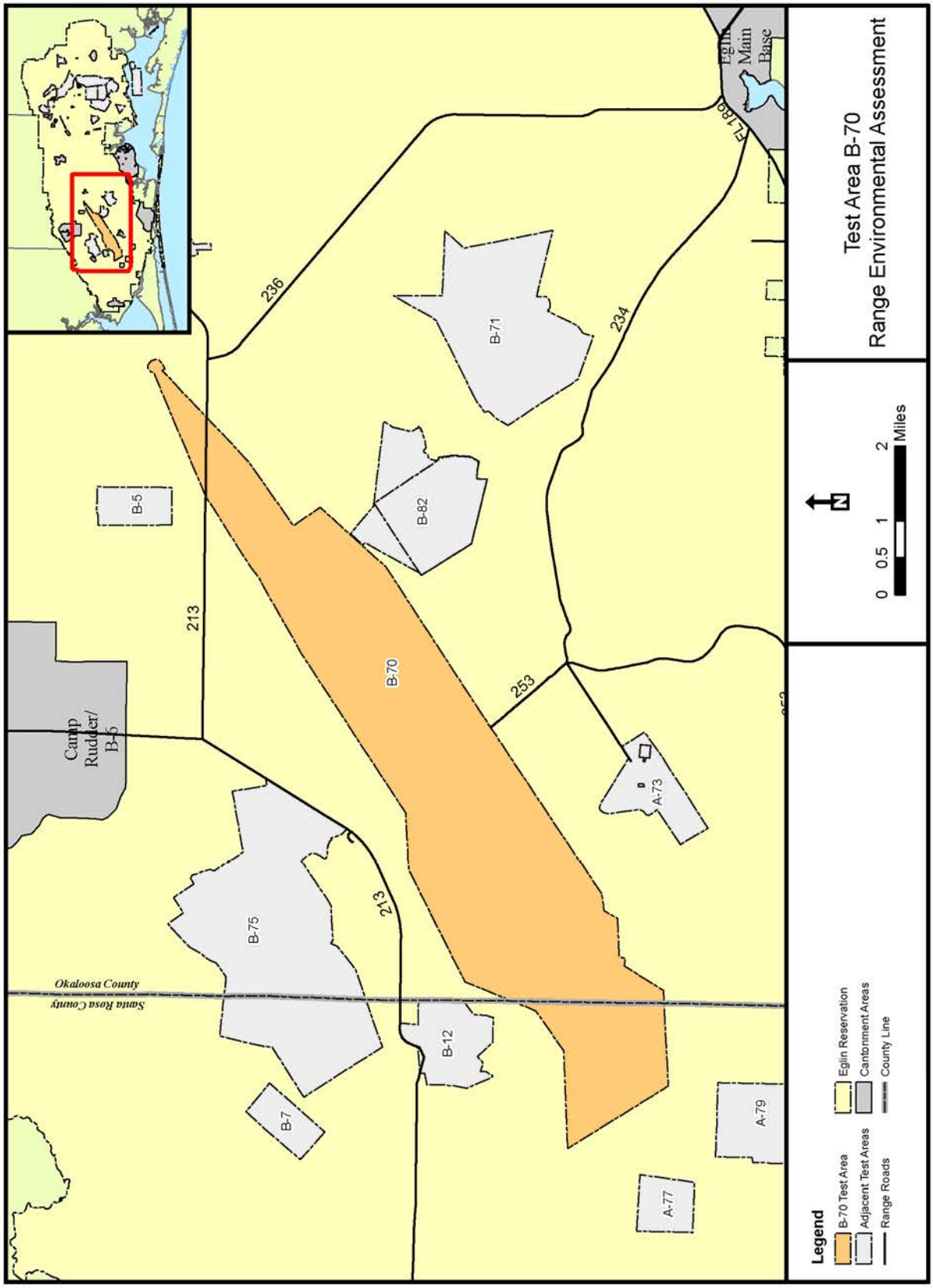

Figure 1-2. Test Area B-70 Region of Influence

Missions on TA B-70 are under the purview of the 46 TW. Primary user groups include the 40th Flight Test Squadron (40 FTS), 46th Test Squadron (46 TS), and the 780th Test Squadron (780 TS). The 46th Range Support Squadron (46 RANSS) supports many of the non-46 TW missions at TA B-70, including the 6th Ranger Training Battalion (6 RTB), which uses B-70 for paradrops. A complete description of all current testing and training activities and user groups are described in the *Test Area B-70 Final Environmental Baseline Document (EBD)*, Chapter 2, Mission Summary (U.S. Air Force, 2005a) (copies of referenced documents can be obtained through Eglin AFB's Public Affairs Office).

1.4 DECISION DESCRIPTION

The 46 TW desires to authorize a new level of activity for TA B-70, 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 TA B-70 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 B-70 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. TA B-70 is solely utilized for military training and testing activities. No change to current land use is expected; therefore, land use is not analyzed further.

Environmental Restoration Program Sites

No Environmental Restoration Program (ERP) sites or sites subject to Land Use Controls are located within TA B-70; therefore, there are no potential impacts to ERP sites.

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. The chemical materials that can accumulate in the environment through repeated use represent the highest potential for environmental impact; for TA B-70, this includes the aluminum from chaff fibers and the phosphorous from flares.

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 no major debris issues for TA B-70 because the debris is periodically removed from the test area in accordance with Eglin Standard Operating Procedures. The potential for the debris to strike an object or organism is covered under the appropriate resource area.

Soils

Soils within TA B-70 have the potential to be impacted from test 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 B-70 ROI. The water resources analysis addresses whether or not there is the potential for impacts to surface waters, wetlands, floodplains, and ground water from sedimentation and/or contamination by testing and training activities, including associated expendables.

Biological Resources

Biological resources may be affected by the Proposed Action. Issues to be examined include potential impacts on wildlife and sensitive species and habitats from direct physical impact, habitat alteration, and noise. Direct physical impact is the physical harm that can occur to an organism (plant or animal) if it comes into contact with an effector, such as a bomb or shrapnel. The main direct physical impact issue for TA B-70 is the potential for gopher tortoises or burrowing owls to be hit by a bomb or missile.

Habitat alterations are described as the physical damage or perturbations to terrestrial and aquatic habitats. Habitat alteration can occur as a result of fire started by flares or munitions, or from soil disturbance associated with munitions. The major issue on TA B-70 for this category is the potential loss of gopher tortoise burrows from bombs, missiles, or ground testing and training exercises. Gopher tortoise burrows are used by several sensitive species besides the gopher tortoise, including the gopher frog, indigo snake, and Florida pine snake.

Noise produced by air-to-surface missiles, supersonic flight, and shallow water pond detonations may stress some wildlife species or cause hearing loss or damage. Scientific data correlating the effects of noise on humans is well documented; however, information regarding the effects of noise events on wildlife species is limited. The noise generated during supersonic flight and its potential impacts to biological receptors, such as the RCW, is the major noise issue for TA B-70.

Analysis focuses on identifying sensitive species and habitats within the B-70 ROI, analyzing the potential for impacts, and establishing management actions for the avoidance and/or minimization of identified potential impacts.

Cultural Resources

Potential 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 mission activities. Analysis will focus on cultural site locations and the likelihood of site disturbance and/or destruction.

Air Quality

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

Noise

Noise is defined as the unwanted sound produced by mission activity and its associated expendables. Noise may directly inconvenience and/or stress humans and some wildlife species and may cause hearing loss or damage. Analyses of potential noise impacts include discussions of two noise components: the physical overpressure and the acoustic sound. Noise is produced by air-to-surface missiles, supersonic flight, and shallow water pond detonations. The noise generated during supersonic flight and its potential impacts to nearby communities and military personnel is the major noise issue for TA B-70. The Biological Resources section covers noise impacts to biological receptors, such as red-cockaded woodpeckers (RCWs).

Safety/Restricted Access

Safety involves hazards to military personnel and the public resulting from mission activities. Restricted access is typically the result of safety considerations. Restricted access applies to the restriction of public access, described in terms of the availability of Eglin resources (such as test areas, interstitial/recreational areas, or public roads) to the general public. Receptors potentially impacted include military personnel and the public desiring to use these areas. Guidance for restricted access is utilized to coordinate public and military use of airspace, water space (e.g., the Gulf of Mexico), and land areas within the Eglin ROI. Although the TA B-70 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, unexploded ordnance (UXO) poses a potential impact to safety. Test areas with known UXO require Explosive Ordnance Disposal (EOD) escort, and regulations regarding UXO should remain in place and continue to be followed. Potential UXO issues are identified and associated safety regulations are outlined.

Socioeconomics

Potential impacts include those that would expose low-income and minority populations to disproportionate negative impacts or pose special risks to children (under 18 years old) associated with noise, pollutant transport, and other conditions in the TA B-70 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

A Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) regarding impacts to federally-listed species will be necessary for future TA B-70 testing and training operations. Consultation with the USFWS will establish appropriate avoidance and minimization measures, as well as terms and conditions, to minimize impacts to threatened and endangered species.

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).

No federal permits, licenses, or entitlements are necessary for the activities on TA B-70, but an Air Force Supersonic Waiver is required to continue conducting supersonic flights over TA B-70. In addition to enhancing the accomplishment of NEPA for mission activities, the TA B-70 and Overland Air Operations REAs are anticipated to be used to support the process for renewal of Supersonic Waiver 75-1.

This is a waiver to AFI 13-201, Section 3.4.4.6, *U.S. Air Force Airspace Management*. Specifically, the waiver, which requires Air Force Materiel Command (AFMC) approval, authorizes air operations at supersonic speeds below Flight Level 300 (i.e., approximately 30,000 feet above mean sea level [MSL]) over specified portions of the Eglin land range including TA B-70.

Extension of the existing waiver is required to permit continued testing on ballistics, guidance of munitions, and airframe reaction before, during, and after separation of the munitions throughout the entire operation envelope. This activity must be conducted over an instrumented land range to permit time-speed-position information, data links, and photography, and to have a prepared surface to determine impact characteristics and allow recovery of expended test items.

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2. ALTERNATIVES

2.1 INTRODUCTION

This section introduces the alternatives that will be evaluated for potential environmental impacts in this REA for TA B-70. The proposed alternatives, which are analyzed in this document, are:

- No Action Alternative: Baseline, as defined by the Preferred Alternative in the *1998 Test Area B-70 PEA* (U.S. Air Force, 1998a).
- Alternative 1: Authorize current level of activity plus foreseeable future activities.
- Alternative 2 (Preferred Alternative): Alternative 1 with a 300-percent mission surge.

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

2.2 ALTERNATIVES CONSIDERED

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

2.2.1 No Action Alternative

This alternative is defined as authorizing the level of activity approved in the *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a), which authorized a 100 percent increase in **test missions** and associated expendables over the baseline level captured in the *Fiscal Year 1995* (*FY95) Range Utilization Report* (U.S. Air Force, 1996b) and anticipated mission additions. The 100 percent increase applied to test missions only and did not include training missions because during a crisis event the training units are usually deployed. The 100 percent surge in test missions was included to support a potential increase that might occur in the event of a war or other significant world event that requires U.S. military support. Table 2-1 and Table 2-2 show the level of activity under the No Action Alternative, which is the previously approved level of activity.

During the baseline year of 1995, there were seven low-level supersonic sorties over TA B-70, each with one "dry pass" (practice run, no release) then one pass with a weapon release (Table 2-2). The *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a) authorized a 100 percent increase in test missions and associated expendables over the baseline, resulting in approval of 14 sorties annually.

Table 2-1. Maximum Annual Expendables for Test Area B-70 Under the No Action Alternative

Expendable Category	Expendable	Quantity
BOMBS (INERT)	BDU-33	944
	BDU-50	96
	CBU-87	4
	CBU-97	12
	DWS-24	2
	GBU-10	4
	GBU-15	16
	GBU-24	4
	GBU-28	2
	JDAM 1000LB	2
	JDAM 2000 LB	14
	MK-106	12
	MK-20	102
	MK-82	98
	MK-84	52
	WCMD	4
	BOMBS (INERT) TOTAL	**1,368**
CHAFF	British Chaff	420
	RR-170	7,620
	CHAFF TOTAL	**1,182**
MINE (LIVE)	PDM-1	4
	PDM-2	4
	CZPT-MI-P Anti-tank Mine	2
	MINE (LIVE) TOTAL	**10**
MISSILE (LIVE)	AGM-65	48
	Stinger	10
	MISSILE (LIVE) TOTAL	**58**
MISSILE (INERT)	BGM-109	12
	MLRS	14
	MISSILE (INERT) TOTAL	**26**
ROCKET MOTOR	MK-22	24
	M-58	4
	ROCKET MOTOR TOTAL	**28**
SMALL ARMS (INERT)	5.56 millimeter (mm) Blanks	120,000
	7.62 mm Blanks	30,000
	SMALL ARMS (INERT) TOTAL	**150,000**
OTHER	M18 Smoke Grenade	120
	SABRE Charge	670
	Explosive net (live)	8
	Slap Flare (live)	100
	Ground Burst Simulator	1,200
	155 mm (inert)	40
	Laser	20
	Banner Tow	10
	Classified	16

Table 2-2. Test Area B-70 Supersonic Activity Under the No Action Alternative

Type of Aircraft	Min Altitude[1]	Max Altitude[2]	Max Speed	Time (Hours) Supersonic	Release Conditions[1]	Weapons Released	Date
F-111	315 ft	2,000 ft	1.2 Mach	0.4	340 ft Level 315 ft Level	2 - Mk-84 2 - Mk-84	17 Jan 95
F-111	350 ft	2,000 ft	1.1 Mach	0.4	350 ft Level	2 - Mk-84	14 Feb 95
F-111	250 ft	2,000 ft	1.1 Mach	0.3	350 ft Level	2 - Mk-84	27 Feb 95
F-16	500 ft	2,000 ft	1.1 Mach	0.3	500 ft Level	2 - Mk-84	18 Oct 94
F-16	500 ft	2,000 ft	1.1 Mach	0.3	500 ft Level	2 - Mk-84	18 Oct 94
F-15E	1,000 ft	4,000 ft	1.05 Mach	0.2	1,000 ft Level	2 - Mk-84	12 Jul 95
F-15E	1,000 ft	4,000 ft	1.05 Mach	0.2	1,000 ft Level	2 - Mk-84	7 Aug 95

Notes: Each sortie usually had one "dry pass" (a practice run, no release).
1) This height is height in feet (ft) above ground level (AGL).
2) This height is height in feet above mean sea level (MSL) and is at subsonic speeds.

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

Alternative 1 would authorize the current level of activity plus foreseeable future activities. There are no new types of activities, new user groups, or new kinds of expendables in the foreseeable future (Snyder, 2008). The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1995 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Air-to-surface testing and training constitute the majority of missions on TA B-70, but electronic counter-missions testing, ground testing, and other testing and training missions also occur on B-70 (Table 2-3). This alternative would be implemented using management actions identified in Chapter 4. Table 2-4 shows the estimated level of activity under Alternative 1. Under this alternative, supersonic activities would be authorized at the level approved in the previous *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a), 14 sorties annually.

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

This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity; including management actions identified in Chapter 4. A 300-percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency. Table 2-4 shows the estimated level of activity under Alternative 2. Alternative 2 would approve up to 56 low-level supersonic sorties annually.

Table 2-3. Current Types and Numbers of Test Area B-70 Missions

Type of Mission	Maximum Annual (Year)[1]
Live Air-to-Surface Testing	28 (2001)
Inert Air-to-Surface Testing	74 (1996)
Electronic Counter-missions Testing	45 (1995)
Air Operations Testing*	17 (2005)
Surface-to-Surface Testing	29 (2005)
Surface-to-Air Testing	12 (2003)
Air-to-Air Testing	4 (2003)
Ground Testing	63 (1998)
Live Air-to-Surface Training	7 (2002)
Inert Air-to-Surface Training**	246 (2006)
Paradrop/paratroops	19 (1998)
Lasers	47 (2005)
Supersonic Flights	7 (1995)

Source: U.S. Air Force, 2008a

1) Maximum annual missions from 1995 to 2007

*Includes air overland missions that were classified as Mission Activity "Other." (May include a variety of things such as flares, substances, chaff, decoys, guided bomb units [GBUs], bombs, etc.)

**Includes air overland/water missions that were classified as Mission Activity "Other" that were tied to various expenditures considered "inert." (These expenditures include but are not limited to practice bombs, flares, cartridge impulses, etc.)

Table 2-4. Maximum Annual Expendables for Test Area B-70 Under Alternatives 1 and 2

Expendable Category	Expendable	Alternative 1	Alternative 2
Bombs (Inert)	BDU-33	472	1,888
	BDU-38	1	4
	BDU-45	8	32
	BDU-50	108	432
	BDU-56	86	344
	BLU-109	3	12
	BLU-97 SUBMUNITION	128	512
	BMB GP MK82-0, 1 INRT W/O LUG	32	128
	BOMB PRAC MK82/BDU-50, MK4 MOD3 SIGNAL CTG	12	48
	BOMB PRAC MK84, BODY ONLY	2	8
	CBU-103 (WCMD)	7	28
	CBU-104 (WCMD)	1	4
	CBU-105 (WCMD)	5	20
	CBU-107 (WCMD)	6	24
	CBU-58	8	32

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Bombs (Inert), Cont'd	CBU-87	84	336
	CBU-89	5	20
	CBU-97	11	44
	CBU-97 B/B	1	4
	CCG GUIDED BMB, MAU-169H/B	2	8
	DWS-24	1	4
	EGBU-15	6	24
	ENHANCED PAVEWAY II	9	36
	ENHANCED PAVEWAY III	8	32
	GBU-10	10	40
	GBU-12	34	136
	GBU-15	10	40
	GBU-16	7	28
	GBU-22	2	8
	GBU-24	30	120
	GBU-27	2	8
	GBU-28	1	4
	GBU-31	16	64
	GBU-38	15	60
	GBU-39B	11	44
	HAMMERHEAD (MOD GBU-15)	1	4
	Inert Warhead	30	120
	JDAM	13	52
	JDAM 500 LB	12	48
	JDAM-1000 LB (GBU-32)	8	32
	JDAM-2000 LB (GBU-31)	35	140
	JDAM-2000 LB MK-84 (GBU-31)	2	8
	LASER GUIDED TRAINING RD	13	52
	LONGSHOT (MOD CBU-87)	1	4
	LORISK	1	4
	M-129 LEAFLET/CHAFF BOMB	18	72
	Mine Obstacle Defeat System Continuous Rod Warhead	2	8
	MK-106	6	24
	MK-20	51	204
	MK-20 LEAFLET BOMB	8	32
	MK-22 (BRITISH 1000 LB)	12	48
	MK-82	12	48
	MK-82 HD	40	160
	MK-82 HD DSU-33	4	16
	MK-82 LD	44	176
	MK-83 LD	4	16
	MK-84	10	40

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Bombs (Inert), Cont'd	MK-84 HD	4	16
	MK-84 HD DSU-33	20	80
	MK-84 JDAM	1	4
	MK-84 LD	4	16
	MK-84 LD DSU-33	4	16
	OWL (On-target Weapon Long range)	1	4
	SURFACE TGT ORD PACKAGE (STOP)	1	4
	SUU-30 DISPENSER	2	8
	WCMD (CBU-103-105)	2	8
	BOMBS (INERT) TOTAL	**1,510**	**6,040**
Bombs (Live)	BOMB GP 2000LB MK84 MOD2	6	24
	BOMB GP 2000LB MK84 MOD4	15	60
	BOMB GP MK82-1 TRITONAL W/LUGS	1	4
	CBU-97	1	4
	GBU-24A/B	1	4
	GBU-31 (MK-84)	1	4
	GBU-31(JDAM-2000 LB)	5	20
	GBU-43B (MOAB)	2	8
	MK-65	1	4
	MK-82	7	28
	MK-84	5	20
	BOMBS (LIVE) TOTAL	**45**	**180**
Bomb	FIN ASSEMBLY, BOMB	64	256
	FIN ASSEMBLY, BOMB BSU-84/B	10	40
	FIN ASSEMBLY, BOMB MXU-650/B	6	24
	FIN ASSEMBLY, BOMB MXU-650C/B	45	180
	FIN ASSEMBLY, BOMB MXU-651B/B	52	208
Chaff	BRITISH CHAFF	210	840
	Chaff, RR-170	13	52
	FIBERGLASS OBSCURRENT	1,400	5,600
	GRAPHITE OBSCURRENT	1,140	4,560
	RR-170	3,810	15,240
	RR-188	276	1,104
	CHAFF (TOTAL)	**6,849**	**27,396**
Decoy	ADSID III E7	5	20
	Decoy	6	24
Explosive Net	EXPLOSIVE NET 20X20 30 LB HE	1	4
	EXPLOSIVE NET 190 LB HE	1	4
	EXPLOSIVE NET 20X40 60 LB HE	1	4
	EXPLOSIVE NET 20X45 65 LB HE	1	4
	EXPLOSIVE NET 50X45 140 LB HE	1	4
	EXPLOSIVE NET, 2000 LBS HE	11	44

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Explosive Net, Cont'd	EXPLOSIVE NET, 230 LB HE	1	4
	EXPLOSIVE NET, 35 LB HE	2	8
Flare (Live)	FLARE, IR CM, M206	177	708
	LUU-1 TARGET MARKER	8	32
	LUU-2 FLARE	8	32
	M-206 IR FLARE	290	1,160
	MJU-10/B Flares	46	184
	MJU-50	128	512
	MJU-7B IR FLARE	42	168
	MK-50 DECOY FLARE	10	40
	SLAP FLARES	100	400
	FLARE (LIVE) TOTAL	**809**	**3,236**
GBS	GND BURST SIM	1,200	4,800
Gun (Inert)	30 MM TP	853	3,412
	30 MM TP, PGU-15/B	299	1,196
	GUN (INERT) TOTAL	**1,152**	**4,608**
Gun (Live)	105mm HE	8	32
	155 MM HE M107	29	116
	25MM	23	92
	30 MM APFSDS	22	88
	30 MM APFSDS-T	120	480
	30 MM MPLD-T	90	360
	GUN (LIVE) TOTAL	**292**	**1,168**
Laser Operations	LASER	33	132
	Laser JDAM	1	4
	LASER OPS, 2.5 HR	1	4
	LASER OPS 4 HR	6	24
	LASER OPS, .4 HR	1	4
	LASER OPS, .5 HR	15	60
	LASER OPS, .6 HR	1	4
	LASER OPS, 1 HR	36	144
	LASER OPS, 2 HR	119	476
	LASER OPS (TOTAL)	**213**	**852**
Mines	CZ PT-MI-P ANTI TANK	1	4
	PDM-1 MINE	2	8
	PDM-1B MINE	7	28
	PDM-2 MINE	2	8
	PDM-2B MINE	18	72
	TM-46 MINE	62	248
	TM-62P2 MINE	28	112
	TM-62P3 MINE	54	216
	MINES TOTAL	**174**	**696**

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Mines (Inert)	PDM-1 INERT MINE	96	384
	PDM-2 INERT MINE	18	72
	TM-62M MINE INERT	62	248
	VS-1.6 MINE INERT	89	356
	MINES (INERT) TOTAL	**265**	**1,060**
Missile (Inert)	AGM-130	3	12
	AGM-154 JSOW	3	12
	AGM-158, JASSM	4	16
	AGM-65G	3	12
	AIM-120	1	4
	AIM-7	1	4
	AIM-9	2	8
	BGM-109	6	24
	BGM-109 (RGM-109)	2	8
	BGM-109 (UGM-109)	3	12
	BGM-109 CONVENT SUBMUN	80	320
	JASSM, TOTALLY INERT	1	4
	JSOW (AGM-154)	3	12
	LOCAAS	3	12
	LOCAAS, INERT	1	4
	Missiles (Stinger)	11	44
	Missiles (Stinger/SA-7)	22	88
	MLRS	12	48
	MLRS LOW COST PRACT RCKT	12	48
	STINGER MSL (FIM-92A)	11	44
	TGM-65B	2	8
	MISSILE (INERT) TOTAL	**186**	**744**
Missile (Live)	AGM-130	3	12
	AGM-65B	5	20
	AGM-65D	13	52
	AGM-65G	18	72
	AGM-65G2	13	52
	AGM-65H	10	40
	AGM-65K	7	28
	AIM-120	1	4
	AIM-9M air-to-air missiles	7	28
	CKEM MISSILE	2	8
	MLRS	6	24
	PREDATOR MSL	12	48
	STINGER MSL (FIM-92A)	20	80
	Surface-to-air missile	2	8
	MISSILE (LIVE) TOTAL	**109**	**436**

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Paradrops	CARGO DROP	11	44
Paratroops	PARATROOPS	2,406	9,624
SABRE Charge (Live)	SABRE CHARGE	420	1,680
	SABRE LINE CHARGE SYSTEM	3	12
	SABRE CHARGE TOTAL	**423**	**1,692**
Small Arms (Inert)	.50 CAL BALL	1,061	4,244
	30 MM TP-T	1,309	5,236
	40 MM TP GRENADE	1,344	5,376
	5.56 MM BLANKS	723,085	2,892,340
	7.62 MM BLANKS	342,144	1,368,576
	7.62 MM M80 4-1 TRACER	3,432	13,728
	M8 SMOKE GRENADE (wht)	4	16
	SMALL ARMS (INERT) TOTAL	**1,072,379**	**4,289,516**
Small Arms (Live)	5.56 MM BALL	200	800
	7.62 MM BALL	1,200	4,800
	AK-47 AP	58	232
	AK-47 BALL	91	364
	AK-47 BALL W/TRACER	58	232
	SMALL ARMS (LIVE) TOTAL	**1,607**	**6,428**
Smokes	GRENADE HAND SMK TA	16	64
	GRND GREEN	16	64
	GRND RED	16	64
	GRND WHITE	16	64
	Hand Grenade SMK TA	198	792
	HAND SMK	48	192
	HAND SMK RED	8	32
	40MM SMOKE GRN-BRASS FLAKE-1LB	60	240
	40MM SMOKE GRN-C RODS 5-7U-1LB	30	120
	40MM SMOKE GRN-TITANIUM DI-1LB	60	240
	ALUMINUM FIBER OBSCURRENT	100	400
	MK-6 SIGNAL SMOKE	1	4
	RED SMOKE, M18	59	236
	SMOKE GEN,M56(12U AL)-100 LB	2	8
	SMOKE GEN,M56(18U AL)-300 LB	1	4
	SMOKE GEN,M56(5U CARBON)-450LB	1	4
	SMOKE GEN,M56(8U CARBON)-300LB	1	4
	SMOKE GRENADES, M18	230	920
	VIOLET SMOKE, M18	1	4
	XM-81 SMOKE GRENADE	52	208
	YELLOW SMOKE, M18	598	2,392
	SMOKES (TOTAL)	**1,514**	**6,056**

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Other	2.75" ILLUMINATION ROCKETS	14	56
	ADU-452	1	4
	Advance Air Dropped Sensors (AADS) prototypes - SENSOR PODS	5	20
	AFD	2	8
	AFX-221	49	196
	AIR DROPPED SENSOR	46	184
	ARGUS SENSOR	3	12
	AUR	2	8
	B 61-3 JTA 1	1	4
	B-61 10 JTA 6	1	4
	BANNER TOW	5	20
	BAT Drop	1	4
	BAT SUBMUNITION	7	28
	BATTRY	1	4
	BOOSTER, A-5	8	32
	BSU-50	2	8
	C-4, CASE (32 LB HE)	5	20
	C-4, Less than 1 LB HE	526	2,104
	CAP BLASTING NON ELECT M7	8	32
	Cartridge, 40MM	4	17
	CCG,MAU-169J/B	2	8
	CHEM-SONDE	1	4
	CHG DEMO M112	12	48
	CHG DEMO M112 W/TAGGANT	13	52
	CLASSIFIED	8	32
	CTG 5.56MM BLK M200	33,333	133,332
	CTG 5.56MM BLK M200 LNKD	22,400	89,600
	CTG 7.62MM BLK M82	1,870	7,480
	CTG 7.62MM BLK M82 LNKD M13	25,203	100,812
	CTG IMPULSE BBU-35/B	21,050	84,199
	CTG IMPULSE BBU-36/B	3,357	13,428
	CTG SIGAL MK4 MOD 3	54.4	217.6
	CTG SIGNAL PRAC BOMB MK4 MOD3	12	48
	CUP, NOSE SUPPORT MK81, 82, 83, 84	15	61
	CUTTER	2	8
	Det Cord	4	16
	DET CORD	9	36
	DET CORD	914	3,656
	DET CORD, FT	17,297	69,188
	DETONATOR, RP-80	1	4
	DETONATOR, RP-83	13	52

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Other, Cont'd	DSU-27	1	4
	DSU-33	24	96
	DUMMY	55	220
	ELECTRIC BLASTING CAP	103	412
	EN-ATD ROCKET MOTOR	10	40
	ENHANSED PAVEWAY II TAIL KITS	12	48
	EX-127 ROCKETS MOTOR	5	20
	FAST	3	12
	FMU-139	7	28
	FMU-152	10	40
	Foreign MANPADS missiles	29	116
	GRENADE XM-56 OBSCURRENT	50	200
	Grey Rock	2	8
	GUIDANCE SECTION, GU	2	8
	IGNITER	1	4
	Igniter Time Blasting Fuze	1,430	5,720
	INERT VPDM-1 FUZE	110	440
	JDAM tail kit	1	4
	JSOW	2	8
	JSOW HNS IV EFI BOOSTER	4	16
	JTV-39	10	40
	KMU-556 A/B	1	4
	KMU-556 SAASM/ACP2	2	8
	KMU-556B/B JDAM SAASM ONLY	13	52
	KMU-557	1	4
	KMU-572	8	32
	KMU-572 ACCP2 70P860020-1101	1	4
	KMU-572B/B JDAM SAASM ONLY	20	80
	LONGSHOT KIT	8	32
	M-211	192	766
	M-212	61	245
	M-58, 495 LB	1	4
	M-58, 600 LB	1	4
	M-77 GRENADE (LIVE FUZE), INERT	644	2,576
	MALD JTV (2263659-3)	4	16
	Mark 82	1	4
	MAU-169L/B, PAVEWAY II, GCU	100	400
	MAU-209	31	124
	MISSILE (CLASSIFIED)	2	8
	MISSILE (CLASSIFIED)	2	8
	MK-22 MOD 4 RKT MTR	30	120
	MK-84 FIN ASSY	9	36

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Other, Cont'd	MLRS IGNITER	1	4
	MLRS MOTOR	6	24
	MMTD WHD	2	8
	MVCH-62 FUZE	52	208
	MVP-62 FUZE	111	444
	MVSH-46 FUZE	57	228
	MXU-650	2	8
	MXU650/B	2	8
	MXU-651	25	100
	MXU-787	1	4
	Nose Plug	48	192
	NV-M INERT FUZE	7	28
	NV-S FUZE	19	76
	Object	1	4
	ORLON FIBER RKT MOTOR	4	16
	ORLON FOOT, FOREIGN WEAPON	2	8
	PG-7	4	16
	PLOCAAS (Inert)	1	4
	QJTV-2 Decoy	1	4
	RCKT POD 298MM PRAC M28 MLRS	82	328
	RECEIVER	1	4
	RETARDER FIN, BSU-49/B F/MK82	9	36
	rocket motor	6	24
	RP-87	1	4
	RPG-7	6	24
	SA-16 W/H	1	4
	SDB AUR	4	16
	SDB FTV-01	1	4
	SDB-DT-06	1	4
	SDB-DT4	1	4
	SDB-FTV-02	1	4
	SENSOR, AIR DROPPED	8	32
	SIGNAL ILLUM GRND RED	132	528
	SIGNAL ILLUM GRND WHT	11	44
	SMOKEY SAM RKT MOT	12	48
	SWIVEL / LINK SINGLE MAU-166/A	108	432
	SWIVEL CLIP ASSEMBLY	24	96
	Symptom Heart	2	8
	SYMPTOM ODIN	1	4
	Symptom Pandora	2	8
	TMD FUZE	3	12
	TOWED DECOY	13	52

Table 2-4. Expendables for Test Area B-70 Under Alternatives 1 and 2, Cont'd

Expendable Category	Expendable	Alternative 1	Alternative 2
Other, Cont'd	UNK	44	176
	VPDM-2 FUZE	51	204
	WCMD-ER	1	4
	WCU-8	1	4
	ZUNI POD	1	4
	ARTY BURST	153	612
	BRITISH FUZE	17	68
Other (Live)	C-4, 1.25 LB HE	20	80
	CAP, BLASTING NON-EL	134	536
	CHARGE, DEMO M 112 1.25 LB HE	443	1,772
	DET CORD, .00857/FT	1,004	4,016
	DETONATOR, RP-80	7	28
	DETONATOR, RP-83	16	64
	DISP & BOMB ACFT CBU 58A/B	1	4
	EXPLOSIVE BOLTS	3	12
	FLASH ARTY	20	80
	FMU-139A/B FUZE	4	16
	FMU-143 B/A FUZE	3	12
	FMU-152	2	8
	FUZE SET, BOMB FMU-139A/B	7	28
	FUZE, BLASTING TIME	325	1,300
	G & C WGU-39/B, GBU-24/27	10	40
	HIGH EXPLOSIVE CHARGE	2	8
	IGNITER, TIME M2	40	160
	JSOW FLSC	2	8
	JSOW PVT-A	1	4
	M26 MLRS Rockets	6	24
	M28 A1 MLRS Rockets	6	24
	M-77 GRENADE	3,484	13,936
	MK-22 MOD 4 RKT MTR	3	12
	PLOCAAS	2	8
	PROPELLENT, 1 LB	5,600	22,400
	SABRE DET CORD, 1 FT	1,056	4,224

The need for additional management actions is driven by legislation, regulations, and policies that protect sensitive habitats, cultural resources, and threatened and endangered species (Appendix A). Legislation pertaining to sensitive habitats, sensitive species, and exotic species includes the Endangered Species Act; AFI 32-7064, *Integrated Natural Resources Management Plan*; Executive Order (EO) 11990, *Protection of Wetlands*; and EO 13112, *Invasive Species*. Regulations on treatment of threatened and endangered species, many of which are supported in sensitive habitats, will be further described in the Biological Resources section. Several laws and regulations are pertinent to the treatment of cultural resources, such as the National Historic Preservation Act of 1966 (NHPA), as amended; the Archaeological Resources Protection Act of

1979; and AFI 32-7065, *Cultural Resources Management*, which specifies proper procedures for cultural resource management at Eglin AFB.

This alternative includes authorization of the proposed level of activity and performance of a comprehensive environmental analysis to ensure that TA B-70 can support this level of activity without suffering significant environmental impact. This is the Preferred Alternative because it includes all mission activities that are expected to occur and provides capacity for a test surge. This alternative authorizes an expected maximum level of activity, which allows better responsiveness to the customer while ensuring that cumulative environmental effects do not cause significant impact.

2.3 COMPARISION OF ALTERNATIVES

Potential impacts under each alternative are summarized in Table 2-5.

Table 2-5. Summary of Potential Impacts Under All Alternatives

Resource	No Action Alternative	Alternative 1	Alternative 2
Chemical Materials	There are no Environmental Restoration Program (ERP) sites located in or around Test Area (TA) B-70. Three legacy debris pit (LDP) sites are located on the eastern border of TA B-70, but those are located away from target sites and other ground-disturbing activities. Therefore, no impacts are anticipated based on activities associated with testing and training on TA B-70 under any of the alternatives.		
	Munitions fragments and residues would be generated as a result of testing and training missions. Releases to the environment from munitions utilized in proficiency and qualification training require reporting to the 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	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 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.

Table 2-5. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Chemical Materials, Cont'd	Action Alternative, no new TRI thresholds would be exceeded and adverse effects are not anticipated.		
Soils	Impacts to soils are not expected as a result of implementation of any of the alternatives.		
Water Resources	There would be no significant impacts to surface water or ground water, wetlands or floodplains under the No Action Alternative. There are limited surface water resources, and none near target areas. Soil/ground water monitoring indicated the potential to affect ground water was low.	The increase in munitions use would not have significant impacts on surface water or ground waters, wetlands or floodplains. Targets are at least 0.25 mile away from surface waters, a distance which the U.S. Fish and Wildlife Service (USFWS) states should minimize the potential for contaminant transport through ground water. Actions are not conducted in wetlands, and floodplains are not modified.	There would be no significant impacts to surface waters, ground water, wetlands, or floodplains. A comparison of new proposed amounts with existing modeling results for previous expenditures indicates USEPA thresholds for ground water would not be exceeded.
Biological Resources	Direct physical impacts to Florida burrowing owls, gopher tortoises, and red-cockaded woodpeckers (RCWs) are possible from munitions and vehicles; however, the likelihood of one of these animals to be struck is extremely low. Noise associated with live munitions detonations, supersonic flights, and ground operations may affect the RCW and Florida burrowing owl. These species continue to nest successfully on and near TA B-70 in spite of the noise from TA B-70 missions; the presence of suitable habitat appears to outweigh any negative influences associated with mission-related noise.	The number of sensitive species potentially struck by munitions or shrapnel increases, but these animals are likely to be either in their burrows, inside the cavity tree, or foraging outside of the impact area at the time of impact, making the likelihood of a strike low. Vehicle strikes may also increase; however, management actions directing vehicle operators to avoid sensitive species would minimize impacts. Although some new locations and munitions would be used and there would be an increase in the frequency of noise-causing events, noise effects would not be significant. Most of the burrowing owls on	A 300-percent mission surge would increase the frequency, and in some cases the severity, of impacts to biological resources on and near TA B-70. Management actions would serve to avoid or minimize most of the potential direct impacts, chemical impacts, and habitat impacts. Noise events would increase in frequency, and could potentially reach a frequency that could affect the Florida burrowing owl or RCW. Monitoring of these populations would detect changes in numbers and locations, possibly indicating negative effects from the increased mission activity, which could then be evaluated in greater detail.

Table 2-5. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Biological Resources, Cont'd	Chemical components of chaff, flares, and munitions may impact sensitive species on TA B-70, especially aquatic organisms. Analyses showed that the Air Force would have to expend several thousand times more chaff and flare units, and 30 to over 100 times more in net explosives to approach impact thresholds. Also, no active targets are located within 0.25 mile of a surface water body. Wildfires and soil disturbance are possible from munitions, pyrotechnics, and ground operations. TA B-70 targets are located on relatively flat terrain and are not near any water bodies, thus erosion is not an issue. Because vehicles avoid wetlands and are primarily kept on established roads, the possibility of impacts is minimal. Check-in procedures prior to hot missions minimize the probability of a damaging hot wildfire. Overall, impacts to biological resources from the No Action Alternative would not be significant and are not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.	TA B-70 and multiple active RCW clusters fall within the 140 dB footprint of the MK-84 and supersonic boom. The presence of quality habitat appears to counteract any negative effects from noise. Ground operations would abide by the 2006 Army guidelines for RCWs, thus minimizing noise impacts to RCWs. Chemical levels would still remain under threshold levels. Due to restrictions on where pyrotechnics and munitions can be used, along with required ordnance cleanup, impacts to biological resources from chemicals would not be significant. Soil disturbance and wildfires potentials would increase, but management actions, such as those restricting vehicles from steep slopes and restricting pyrotechnics use on high fire hazard days, would minimize potential impacts. Overall, impacts to biological resources from Alternative 1 would not be significant, and would be further reduced by implementation of the management actions in this section. Alternative 1 activities are not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.	Overall, impacts to biological resources from Alternative 2 would not be significant, and would be further reduced by implementation of the management actions described in Alternative 1. Alternative 2 activities are not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.
Cultural Resources	No adverse effects to cultural resources are expected under any of the alternatives.		

Table 2-5. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Air Quality	Emissions compared to regional air quality and the federal National Ambient Air Quality Standards (NAAQS) would be negligible. No adverse impacts are expected.	Emissions for carbon monoxide (CO), nitrogen oxides (NO_x), and sulfur dioxide (SO_2) would be negligible as compared to the NAAQS. Fugitive dust (particulate matter) is expected to temporarily increase in the local area but would still be well below the federal standards. All criteria pollutant emissions are expected to be less than the 10 percent threshold. No adverse impacts are expected.	Emissions would be negligible for all criteria pollutants except particulate matter as compared to the federal NAAQS. These emission concentrations are still within federal standards and would not cause adverse affects to the regional air quality. Also, emissions would make up less than 1 percent of Okaloosa and Santa Rosa County's emissions. The increase in fugitive dust would be short-term and temporary. No adverse impacts to regional air quality are expected.
Noise	Supersonic noise and explosive noise were analyzed and found to have no significant impacts to the community. The Eglin Range Safety restriction of noise of 140 P-weighted decibels (dBP) staying within reservation boundaries would be maintained.	The number of supersonic noise missions is the same for this alternative as for the No Action Alternative. Explosive noise under this alternative involved the detonation of large munitions, which under calm weather conditions would not have a significant noise impact on the community. Noise modeling is required for other weather conditions prior to detonation to understand potential effects to the community.	An increase in supersonic flights from 14 to 56 would likely generate an increase in the number of noise complaints from the public. Likewise, more complaints would be expected from an increase in large detonations. While there is no complaint-based significance threshold to exceed, the Air Force would have to consider public reaction. Flight scenarios and management procedures for limiting supersonic noise outside of the Eglin boundary may need to be implemented.
Safety	Since the types of munitions to be used are the same or similar to the types currently used at TA B-70, 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 B-70 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 B-70, have the potential for unexploded ordnance (UXO) contamination. Consultation and coordination with 96 CES/CED		

Table 2-5. Summary of Potential Impacts Under All Alternatives, Cont'd

Resource	No Action Alternative	Alternative 1	Alternative 2
Safety, Cont'd	would mitigate any potential adverse impacts to Eglin AFB personnel from UXO. Although increases in the frequency of ordnance use would likely lead to increased instances of UXO, the current safety policies and procedures would continue to insure that there would be no adverse impacts from UXO.		
Socioeconomics	No disproportionately high and adverse human health or environmental impacts to minority and/or low-income populations have been identified under any of the alternatives. In addition, there are no known environmental health or safety risks under any of the alternatives that may disproportionately affect children.		

2.4 PREFERRED ALTERNATIVE

The Preferred Alternative is Alternative 2, which allows a 300-percent increase in TA B-70 operations over the current level of activity plus foreseeable future activities. Implementation of management actions will allow a surge in test activities while minimizing impacts to environmental and natural resources. The No Action Alternative and Alternative 1 are not expected to be sufficient to account for the expected growth of testing and training activities at Eglin AFB over the next 10 years. Therefore, Alternative 2 was selected as the Preferred Alternative to adequately cover the environmental analysis needed to support potential increased testing and training requirements as they occur.

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.

2.5 MANAGEMENT REQUIREMENTS

The REA was prepared with consideration that the following management requirements will be employed for all TA B-70 missions. The proponents are responsible for ensuring these management activities are adhered to.

Biological Resources

The following management actions for TA B-70 would minimize the potential for impacts to biological resources.

Sensitive Habitats

- Mark wetlands on field maps as areas to avoid; inform trainees of importance of avoiding these areas.

- 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, Outstanding Natural Areas, and Significant Botanical Sites.
- To reduce potential seed sources, treat areas that have known invasive nonnative species problems.

Sensitive Species

- Continue monitoring of RCWs by the Eglin Natural Resources Section.
- Do not use smokes, simulators, or flares within 100 feet of natural water bodies (i.e., Bull Pond, Live Oak 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. These restrictions also apply within the 1,500-foot buffer for potential flatwoods salamander habitat.
- For permitted off-road vehicle use, vehicles shall avoid driving in wetlands, floodplains, and on steep slopes. Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams.
- Avoid large troop movements on steep slopes and in wetlands.
- For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential.
- During ground operations, keep digging to a minimum; no holes deeper than 3 feet will be dug, especially within 100 feet of any stream.
- No new cleared areas (bivouac, fighting position, etc.) shall be established within 100 feet of any water body, wetland, or floodplain, or on steep slopes.
- Do not dig within 25 feet of any gopher tortoise burrow.
- For missions involving off-road vehicle use near gopher tortoise or burrowing owl burrows, install markers for avoidance near burrows.
- Conduct gopher tortoise and burrowing owl surveys prior to any new construction.
- Digging, vegetation cutting, off-road vehicle use, and other ground-disturbing activities should not occur within 1,500 feet of flatwoods salamander ponds or within 100 feet of gopher frog ponds.
- Avoid ground-disturbing fire suppression activities (bulldozers) in wetlands, particularly in flatwoods salamander habitat and gopher frog ponds.
- Locate munitions impact areas away from wetlands, especially flatwoods salamander habitat and gopher frog ponds.

- Manage lead-based projectiles near natural water bodies, particularly flatwoods salamander habitat and gopher frog ponds.
- Follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004a).
- Follow the Army Guidelines for RCWs (U.S. Army, 2006).
- Within 200 feet of marked RCW cavity trees, allow only military activities of a transient nature (less than 2 hours occupation).
- Within the 200-foot RCW buffer, prohibit bivouacking, excavating, digging, and establishing command posts.
- 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.
- Immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control must notify Natural Resources Section biologists immediately.
- Within 3 working days of notification, the Eglin Natural Resources Section would reprovision a cavity tree if one was destroyed due to training activity.
- If a unit caused damage to training land within a cluster, the responsible unit would coordinate with the Natural Resources Section to repair damage as soon as practicable (normally within 3 working days of notification).
- All digging for military training activities in RCW habitat management units must be filled and inspected by the proponent upon completion of training.
- Inform vehicle operators to avoid Florida burrowing owl burrows.
- Inform vehicle operators to avoid gopher tortoises, gopher tortoise burrows, indigo snakes, and black bears. The Natural Resources Section should be notified if one is sighted.
- Continue prescribed burning as much as possible in fire dependent habitats, particularly RCW foraging habitat and flatwoods salamander habitat.
- In accordance with Section 12.5.13.2 of AFI 32-7064, *Integrated Natural Resources Management*, cooperate with and support the Eglin Natural Resources Section 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 1,000 feet above ground level (AGL). 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 on the Environmental Management website in the Fire Management Section.

○ 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.

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3. AFFECTED ENVIRONMENT

The affected environment section of this report describes the receptors within Test Area B-70 that are potentially impacted by testing and training operations. This chapter is organized by the following resource sections: Chemical Materials, Soils, Water Resources, Biological Resources, Cultural Resources, Air Quality, Noise, Safety, and Socioeconomics Resources.

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 materials 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 TA B-70.

3.1.1 Hazardous Materials

According to the Resource Conservation and Recovery Act (RCRA), Section 6903(5), hazardous materials and waste are defined as substances that, because of "quantity, concentration, or physical, chemical, or infectious characteristics may cause or significantly contribute to increases in mortality or serious illnesses, or pose a substantial threat to human health or the environment." Hazardous materials as referenced here pertain to mission-related hazardous chemicals or substances meeting the requirements found in 40 CFR 261.21.24, are regulated under RCRA, and are guided by AFI 32-7042. The hazardous materials to be transported, stored, and used on site for the Proposed Action consist of fuels, munitions, and pyrotechnics.

Eglin AFB has implemented a *Hazardous Waste Management Plan*, AAC Instruction 32-7003, that identifies hazardous waste generation areas and addresses the proper packaging, labeling, storage, and handling of hazardous wastes. The plan also addresses record-keeping; spill contingency and response requirements; and education and training of appropriate personnel in the hazards, safe handling, and transportation of these materials (U.S. Air Force, 2006a). Procedures and responsibilities for responding to a hazardous waste spill or other incident are also described in the Eglin AFB *Spill Prevention, Control, and Countermeasures (SPCC) Plan* (U.S. Air Force, 2005).

Releases to the environment from munitions utilized in proficiency and qualification training require reporting to the U.S. Environmental Protection Agency (USEPA) under the Emergency Planning and Community Right-to-Know Act (EPCRA) Toxic Release Inventory (TRI) program. Training is subject to a TRI reporting threshold of 10,000 pounds per year for most common chemicals, with lower reporting thresholds for chemicals classified as persistent bioaccumulative toxic (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, the Hazardous Waste section of the FDEP and the Florida Department of Transportation (FDOT) Motor Carrier Compliance Department that implements 49 CFR 178 under Florida Statute annotated Title 29, Section 403.721.

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 in TA B-70 that may potentially result in environmental impacts include the following:

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

3.1.3 Legacy Debris 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. LDP sites located within Test Area B-70 are listed in Table 3-1 and shown in Figure 3-1. Detailed information on all LDP sites can be found in the *Archives Search Report for Legacy Debris Pits at Eglin AFB* (U.S. Army Corps of Engineers [USACE], 2002). All LDPs not located within the fenced TA B-70 boundary are being further investigated under the Air Force Military Munitions Response Program (MMRP).

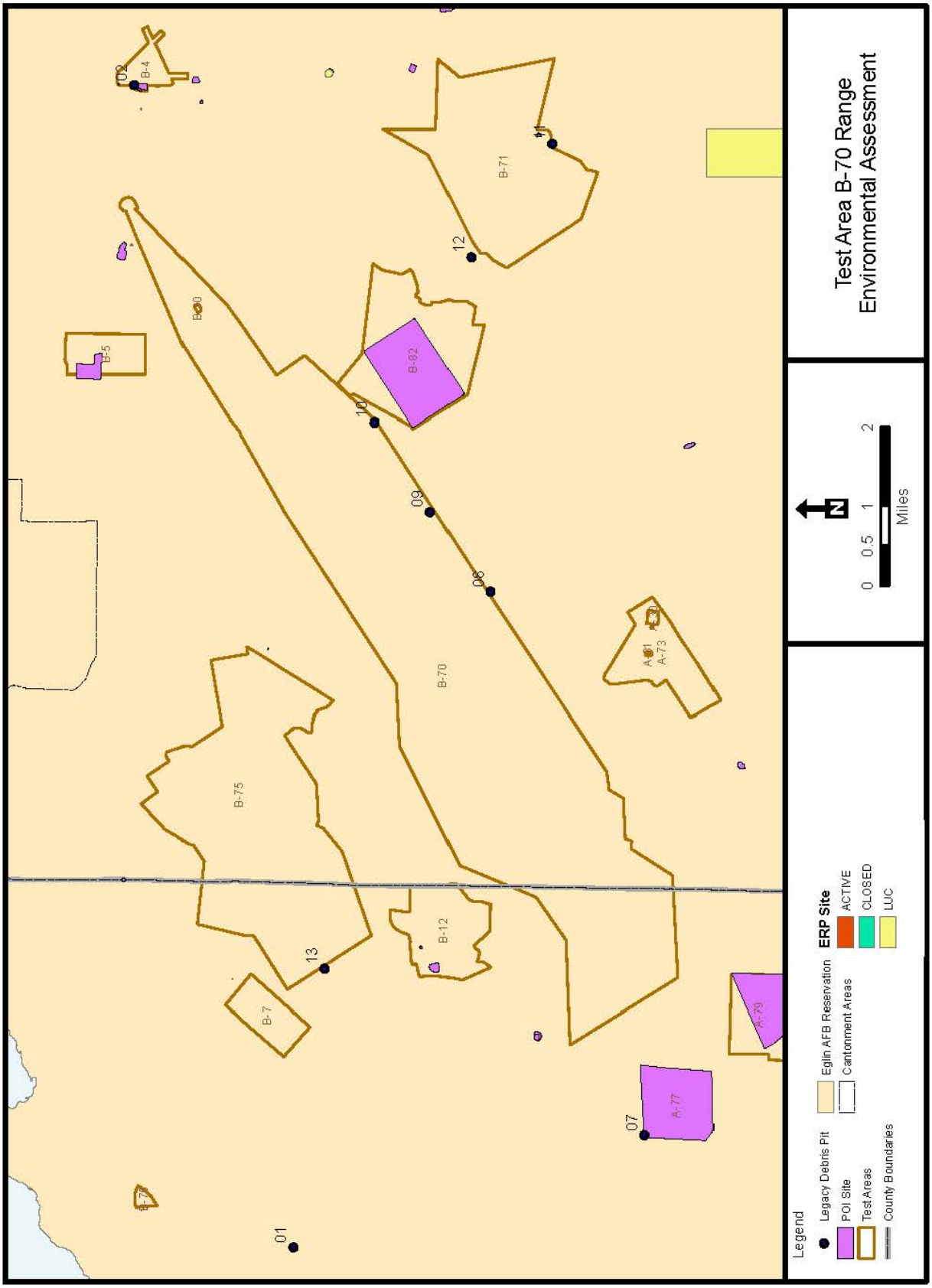

Figure 3-1. Legacy Debris Pit Sites Located at Test Area B-70

Table 3-1. Legacy Debris Pit (LDP) Sites Located Within Test Area B-70

Map ID	Location	Description	POI #
08	Test Area B-70 Location A	The area of concern is known to have munitions on the surface, and is suspected to be an LDP. Munitions found in the area included bomblets.	POI 607
09	Test Area B-70 Location B	The area of concern is a known LDP. The area is marked with a sign. There are metal drums and munitions on the surface. There are bomblets on the surface. The area is approximately 50 by 100 feet in size, off the road approximately 150 feet.	POI 608
10	Test Area B-70 Location D	There are munitions on the surface and partially buried. The area is approximately 50 by 200 feet in size.	POI 609

Source: USACE, 2002
POI = Point of Interest

3.2 SOILS

Soil Types

Figure 3-2 shows and Table 3-2 lists the major soils of interest on the study area. The Lakeland Sand soil series is the primary soil type for TA B-70. 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. TA B-70 consists of five other soil types found in small pockets throughout the study area. These five additional soils make up less than one percent of the soil found on TA B-70. Physical properties of the soil types found at TA B-70 are given in Table 3-2.

Table 3-2. Test Area B-70 Soil Types and Characteristics

Soil Name	Drainage	Attributes	Soil Type
Lakeland Sand	Excessively	Yellowish brown to grayish brown	Sand
Chipley and Hurricane	Moderately Well	Sand and/or fine sand; 0-8% slopes	Sand
Dorovan Muck	Very Poorly	Frequently flooded; 0-1% slopes	Muck
Leon Sand	Somewhat Poorly	Found on upland flats and depressions	Sand
Pactolus Loamy Sand	Moderately Well	Rapid permeability; 0-6% slopes	Loamy Sand
Udorthents	Well	Usually formed by removal, i.e., pits	Silt Loam

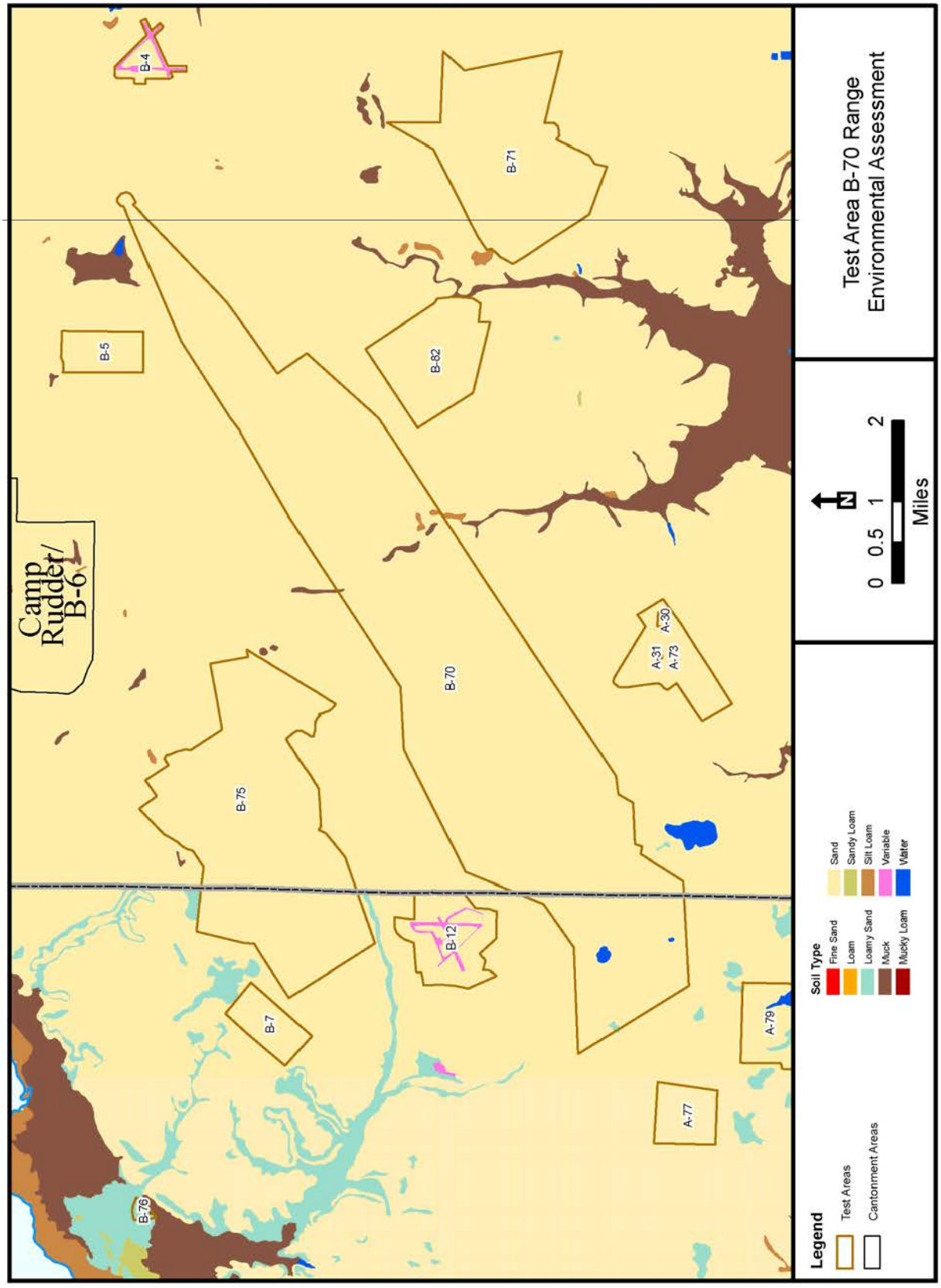

Figure 3-2. Soil Types Within Test Area B-70

Soil samples collected at Eglin have average background concentrations of aluminum of 1,352 milligrams per kilogram (mg/kg). The background concentration of magnesium in Eglin AFB surface soils ranges from 17 mg/kg to 660 mg/kg with an average concentration of 124 mg/kg (U.S. Air Force, 1997).

The main concern for soils is the potential for erosion. Erosion caused by human activities occurs at rates much greater than erosion caused by natural conditions and has been shown to have detrimental effects on soils and ecosystems. The susceptibility of the soil to erosion is primarily dependent on factors such as soil texture, moisture content, pH, and ionic strength of the eroding water. The probability of erosion generally declines with increases in the amount of clay and organic matter content. In contrast, uniform silts and sands tend to have a higher probability of soil erosion. Slope angle and length are the primary topographic variables influencing rainfall erosion. Vegetation plays a pivotal role in the interception and diffusion of water energy from rain splash and overland water flows.

3.3 WATER RESOURCES

This section provides descriptions of the qualitative and quantitative characteristics of water resources on TA B-70 at Eglin AFB. Water resources include wetlands, floodplains, surface waters, and ground water. Site-specific information on the water resources associated with TA B-70 is contained in the following paragraphs. Appendix C, *Relevant Laws, Regulations, and Policies,* provides pertinent regulations.

3.3.1 Ground Water

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, 2003a).

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, 2003a). Water drawn from the upper limestone of the Floridan aquifer is of suitable quality for most uses, and is the primary source of water used at Eglin AFB. The top of the aquifer is about 50 feet below mean sea level (MSL) in the northeast corner of the base and increases to about 700 feet below MSL in the southwestern area of the base (McKinnon and Pratt, 1998).

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. Live Oak Creek, which flows in a north/south direction across the center potion of TA B-70 (Figure 3-3), is the only stream on TA B-70. Bull Pond is the only natural temporary and semi-permanent pond on TA B-70, and ranges from 15 acres during extremely wet seasons to nonexistent during some dry seasons. Other surface waters located within 1 kilometer (km) of TA B-70 include Indigo Creek, Prairie Pond, Pocosin Pond and the man-made test feature, the Shallow Water Mine Countermeasures (SWMCM) Test Area. The majority of surface waters at or near TA B-70 flow south and are included within the Pensacola Bay drainage basin, which includes the East Bay River and Santa Rosa Sound. The remaining surface waters at or near TA B-70 flow north and are included in the Yellow River drainage basin (U.S. Air Force, 2003a).

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) (Florida Administrative Code [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) satisfy the listing and reporting requirements of Sections 303(d) and 305(b) of the CWA.

Surface waters on Eglin AFB are Class III waters, meaning that they are designated for "recreation, propagation, and maintenance of a healthy, well-balanced population of fish and wildlife" (FDEP, 2006a). Impaired waters on or adjacent to Eglin AFB include: Boggy Bayou, Poquito Bayou, Rocky Bayou State Park, Choctawhatchee Bay, East Bay, and Yellow River (FDEP, 2006b and FDEP, 2007). The land areas of TA B-70 that drain into basins constitute a small fraction of the total land area that drains into the receiving waters. Industry, agriculture and waste processing in these areas are major contributors of water runoff and effluent components to the receiving water bodies. There is no clear association between the status of the basins and TA B-70 activities.

The SWMCM Test Area is used to evaluate new explosive systems and their components in a representative surf zone environment (Figure 3-4). Up to 20 feet of earth covers a buried polyethylene liner. The facility consists of a fill pond reservoir capable of holding 11 million gallons of fresh water. Four 12-inch diameter pumps are used to transfer nonpotable water to and from the demolition pond.

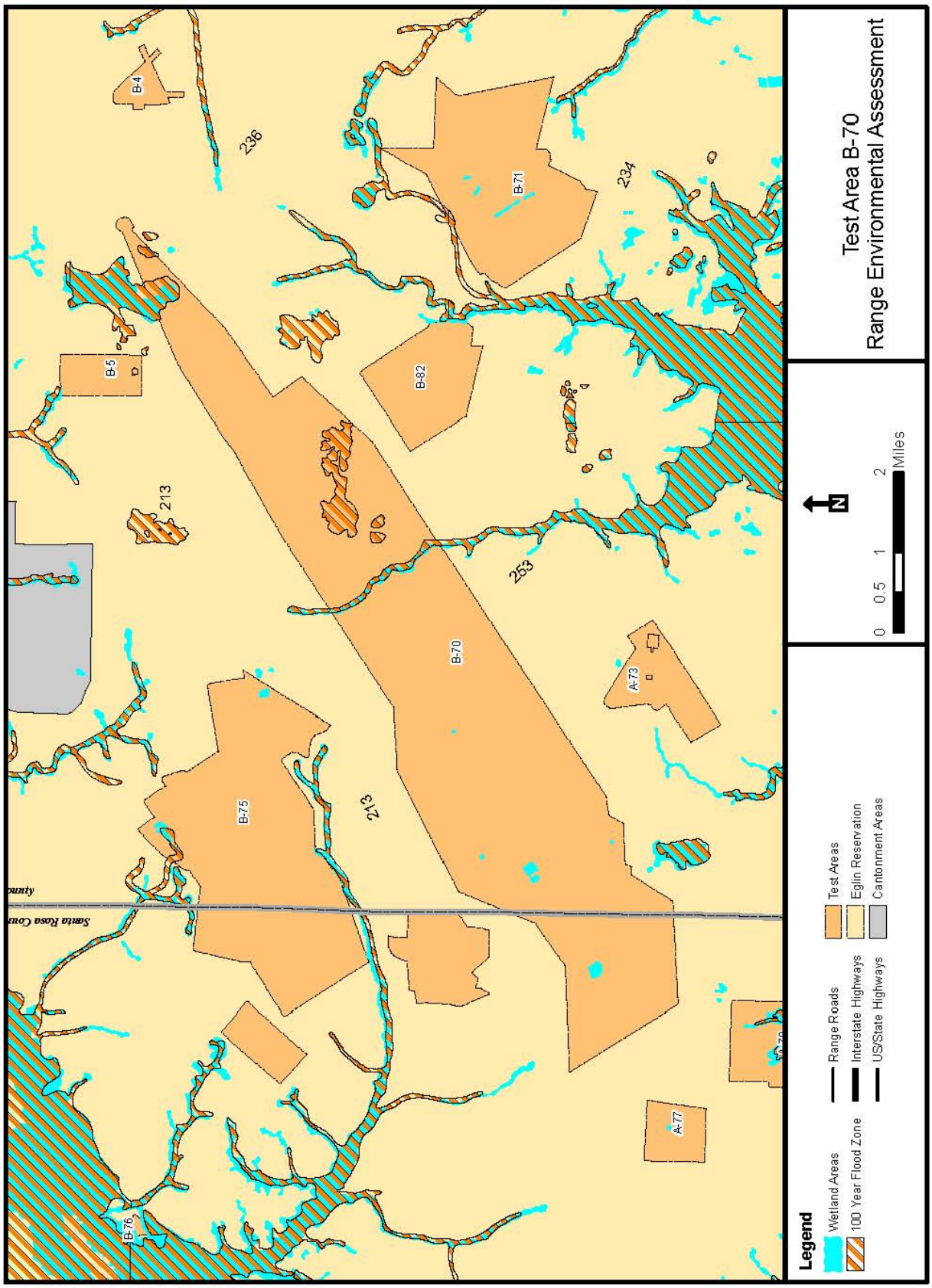

Figure 3-3. Water Resources Located on Test Area B-70

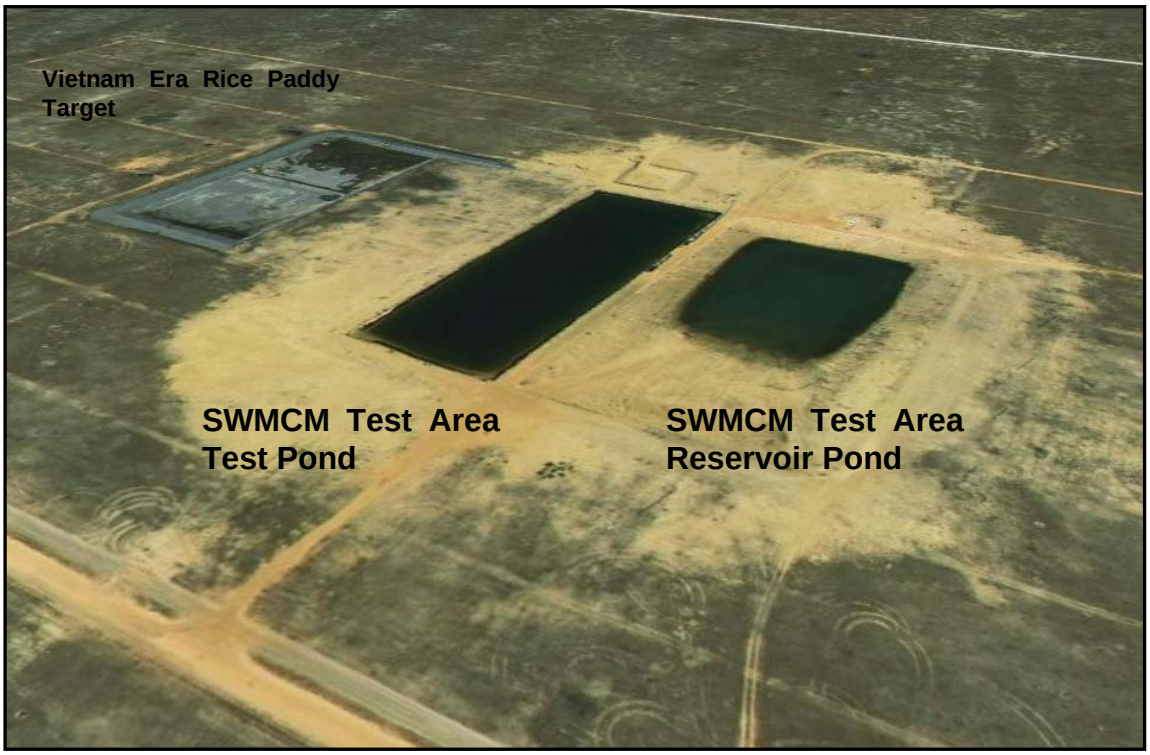

Figure 3-4. Aerial View of Shallow Water Mine Countermeasures Test Area (center rectangle)

3.3.3 Wetlands

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

"Jurisdictional wetlands" are those over which the U.S. Army Corps of Engineers (USACE) has regulatory control under Section 404 of the CWA. Wetlands are defined in the USACE Wetland Delineation Manual (USACE, 1987) 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 CFR 328.3) under Section 404 of the CWA (30 CFR 330) and Section 10 of the Rivers and Harbors Act (30 CFR 329). The USEPA assists USACE (in an administrative capacity) in the protection of wetlands (40 CFR 225.1 to 233.71). The State of Florida regulates wetlands under the Wetlands/Environmental Resource Permit program under Part IV, Florida Statutes Section 373.

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

Depression wetlands are shallow, closed basins primarily fed through precipitation and ground water (Tiner, 1999). These ecosystems are typically circular in shape and exhibit woody or herbaceous wetland vegetation supported by peat or sand substrate. An example of a depression wetland ecosystem can be found at the southernmost end of TA B-70. Bull Pond is an ephemeral (seasonal) pond ranging from 15 acres during extremely wet seasons to nonexistent during some dry seasons (U.S. Air Force, 2003a). Typical plant species include St. John's Wort (*Hypericum brachyphyllum)* around the margins with spikerush (*Eleocharis spp*.), yellow-eyed grass (*Xyridaceae*), and bladderwort (*Utricularia. spp.*) in the interior (Florida Natural Areas Inventory [FNAI], 1995). This pond supports no predatory fish, which is a characteristic that makes it a prime breeding area for the gopher frog (*Rana capito sevosa*) (FNAI, 1995).

Surface flow of TA B-70 is via the Live Oak Creek Watershed, which flows south into the Pensacola Bay Drainage Basin. Floodplain wetlands occur adjacent to this watershed and are highly susceptible to flooding and seasonal hydrological patterns (U.S. Geological Survey [USGS], 2004). It is also of ecological importance to retain the natural composition of these systems to promote biodiversity. Typical plant species include pond cypress (*Taxodium ascendens)*, blackgum (*Nyssa sylvatica var. biflora)*, sweet bay (*Magnolia virginiana)*, and water oak (*Quercus nigra)*, with an understory of St. John's Wort (*Hypericum brachyphyllum)*, and southern beakrush (*Rhynchospora* microcarpa) (FNAI, 1995).

In total, TA B-70 supports an average of 84.3 acres of wetlands (influenced by seasonal fluctuations). These systems help to promote regional biodiversity, improve water quality, and provide floodwater storage. Table 3-3 lists quantitative data on the acres of wetlands at TA B-70.

Table 3-3. Land and Wetland Area (Acres) Associated With Test Area B-70

Total Land Area	Associated Wetlands	Percent Area Covered by Wetlands
12,308	84.3*	0.68%

Note: Area is shown in total acres.
* = Subject to hydroperiods

3.3.4 Floodplains

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

Any actions being considered by federal agencies must be evaluated to determine whether they would occur within a floodplain. Floodplains that must be considered include those areas with a 1 percent chance of being inundated by floodwater in a given year (also known as a 100-year floodplain). EO 11988, *Floodplain Management* (1977, 42 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. Additionally, EO 11988 requires federal agencies to make every effort to reduce the risk of flood loss, minimize the impact of floods on human health, safety, and welfare, and preserve the natural beneficial value of floodplains. The order stipulates that federal agencies proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals. If adverse effects are unavoidable, the proponent must include mitigation measures in the action to minimize impacts.

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

In total, TA B-70 supports 424.3 acres of floodplains. Table 3-4 lists quantitative data on the acres of wetlands and floodplains at TA B-70.

Table 3-4. Land and Floodplain Area Associated With Test Area B-70

Total Land Area	Associated Floodplains	Percent B-70 Area Covered by Floodplains
12,308	424.3*	3.4%

Note: Area is shown in total acres.
* = Subject to hydroperiods

3.3.5 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 four of the five 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).

3.4 BIOLOGICAL RESOURCES

3.4.1 Definition

Biological resources include the terrestrial and aquatic plants and animals that live on and near TA B-70, along with the habitats where they reside. Eglin applies a classification system of ecological associations to all its lands, based on floral, faunal, and geophysical characteristics (U.S. Air Force, 2007). Four broad matrix ecosystems exist on Eglin AFB: Sandhills, Flatwoods, Wetlands/Riparian, and Barrier Island; Sandhills and Wetland/Riparian areas occur on TA B-70 (Figure 3-5). Artificially maintained open grasslands/shrublands (formerly Sandhills) cover the majority of TA B-70, with some small urban/landscaped areas. Appendix A, *Biological Resources*, provides descriptions of the ecological associations at Eglin AFB and includes typical flora (plants) and fauna (animals) found within each of these associations.

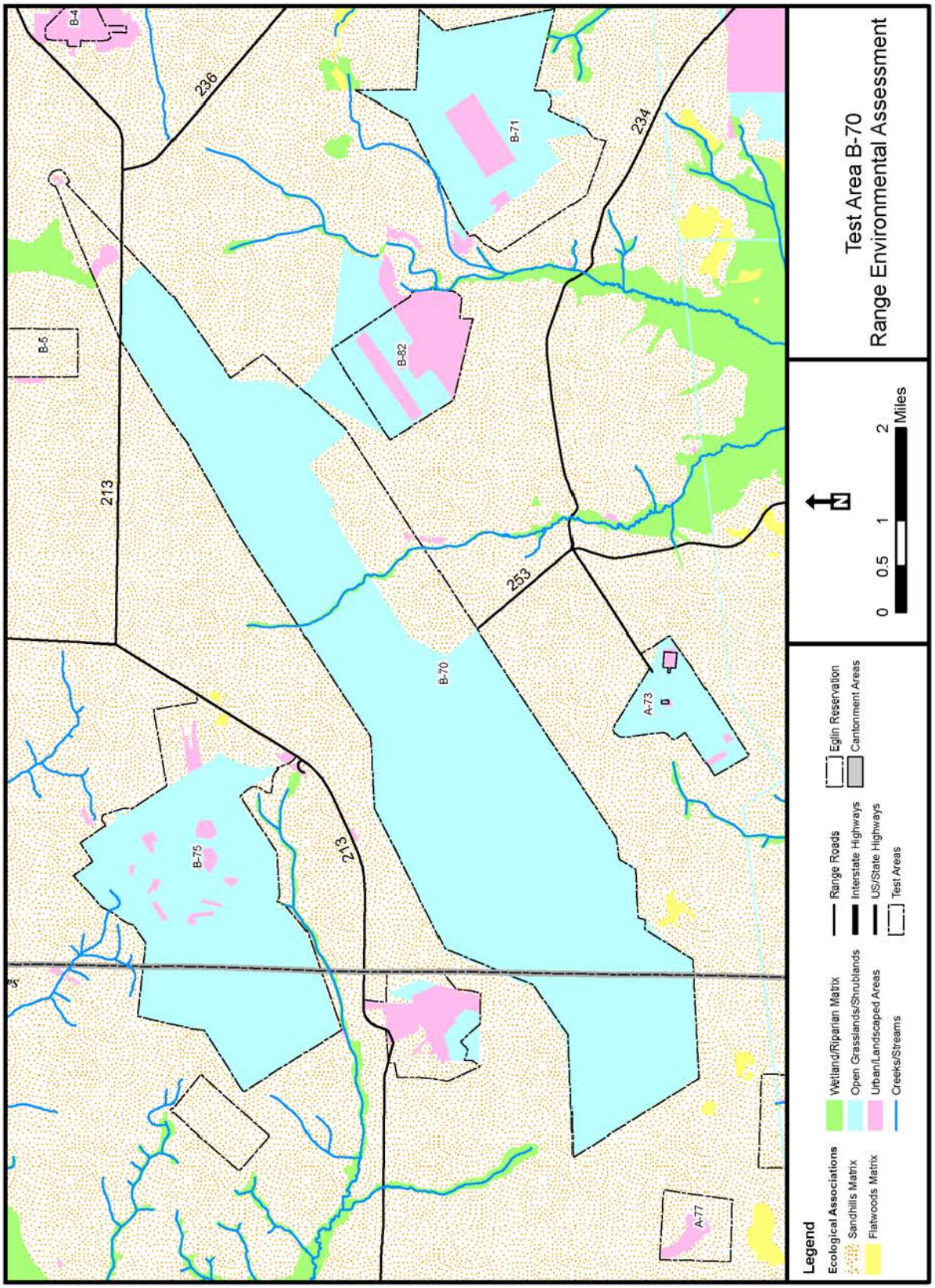

Figure 3-5. Ecological Associations at Test Area B-70

Sensitive habitats include areas that the federal government, state government, or the DoD have designated as worthy of special protection due to certain characteristics such as high species diversity, rare plant species, or other unique features. Sensitive habitats within or near TA B-70 include Significant Botanical Sites, Outstanding Natural Areas, High Quality Natural Communities, wetlands, and floodplains (U.S. Air Force, 2007) (Figure 3-6 and Figure 3-7). Wetlands and floodplains are discussed in the Physical Resources section. Appendix A, *Biological Resources,* provides details on each of the sensitive habitat types found at TA B-70.

Sensitive species are those species protected under federal or state law (described in Appendix C, *Relevant Laws, Regulations, and Policies*), to include migratory birds and threatened and endangered species. An *endangered* species is one that is in danger of extinction throughout all or a significant portion of its range. A *threatened* species is any species that is *likely* to become endangered within the foreseeable future throughout all or a significant portion of its range. Multiple state and federally listed species are present on and near TA B-70 (Figure 3-8 and Figure 3-9). Appendix A, *Biological Resources*, provides additional detail on the natural history of these sensitive species.

3.4.2 Region of Influence and Existing Conditions

The ROI for TA B-70 activities with regard to biological resources includes the test area itself, with a buffer of 1 mile around the boundary. Most of TA B-70 consists of artificially maintained open grasslands/shrublands (Figure 3-5). Natural sandhills surround TA B-70, with areas of sandhills on the test area along a portion of the southern boundary and in the northern part of the test area. Live Oak Creek flows through the middle of TA B-70 from north to south. Wetland areas exist in the southwestern portion of TA B-70, to the east of Live Oak Creek, and in the northeastern portion of the test area (Figure 3-3 and Figure 3-5).

Portions of the TA B-70 western boundary are adjacent to the A-77 Outstanding Natural Area, which encompasses a large area of high quality Sandhills (Figure 3-7). High Quality Natural Communities also border TA B-70 in many locations, with one area of High Quality Natural Community overlapping the eastern boundary of TA B-70 (Figure 3-8). Multiple state and federally listed species exist at and near TA B-70, or may potentially be found at TA B-70 due to the presence of appropriate habitat (Table 3-5). Active RCW trees and foraging habitat surround TA B-70, with 523 acres of RCW foraging habitat actually on TA B-70 (Figure 3-8). One inactive tree is on the test area along the boundary.

Florida burrowing owl and gopher tortoise surveys are in progress and available data have been included; Eglin's Natural Resources Section will coordinate with the USFWS as needed upon completion of the surveys. Historically Florida burrowing owls were found only in the portion of TA B-70 southwest of Live Oak Creek, but recent surveys have also found Florida burrowing owls northeast of Live Oak Creek (Figure 3-9). Gopher tortoise burrows are scattered across the test area (Figure 3-9). The indigo snake, Florida pine snake, and black bear have been sighted at TA B-70. Most of TA B-70 lacks the forested habitat preferred by the indigo snake, pine snake,

and black bear, thus these three species may traverse TA B-70, but are not likely to use the area as primary habitat.

One confirmed gopher frog pond is found on the western portion of TA B-70, and one along the northeastern boundary (Figure 3-9). Salamander buffer habitat fall within TA B-70 comprises 37 acres of potential flatwoods, but the pond itself is not on the test area. Although the likelihood of flatwoods salamanders existing in this pond is low and no flatwoods salamanders have been found here, Eglin protects all potential habitat due to the difficulty of trapping the flatwoods salamander. Florida bog frogs live south of TA B-70 along Live Oak Creek, but none have been documented on the test area (Figure 3-9). Multiple state-listed plants are found in the habitats adjacent to TA B-70 (Appendix A), but only two fall within the boundaries of the test area (Curtiss' sandgrass and pineland wild indigo).

Table 3-5. Sensitive Species Potentially Found at and Near Test Area B-70

Common Name	Scientific Name	State Status	Federal Status
Sensitive Animals*			
Gopher Frog	*Rana capito*	SSC	--
Eastern Indigo Snake	*Drymarchon corais couperi*	ST	FT
Reticulated Flatwoods Salamander	*Ambystoma bishopi*	SSC	FE (Proposed)
Florida Black Bear	*Ursus americanus floridanus*	ST	--
Florida Bog Frog	*Rana okaloosae*	SSC	--
Florida Burrowing Owl	*Athene cunicularia floridana*	SSC	--
Florida Pine Snake	*Pituophis melanoleucus mugitus*	SSC	--
Gopher Tortoise	*Gopherus polyphemus*	ST	--
Red-cockaded Woodpecker	*Picoides borealis*	SSC	FE
Southeastern American Kestrel	*Falco sparverius paulus*	ST	--
Sensitive Plants*			
Curtiss' Sandgrass	*Calamovilfa curtissi*	ST	--
Karst Pond Yellow-eyed Grass	*Xyris longisepala*	SE	--
Pineland Hoary Pea	*Tephrosia mohrii*	ST	--
Pineland Wild Indigo	*Baptista calycosa var villosa*	ST	--

FE = federally endangered; FT = federally threatened; SE = state endangered; SSC = state species of special concern; ST = state threatened

*See text for species actually confirmed on TA B-70

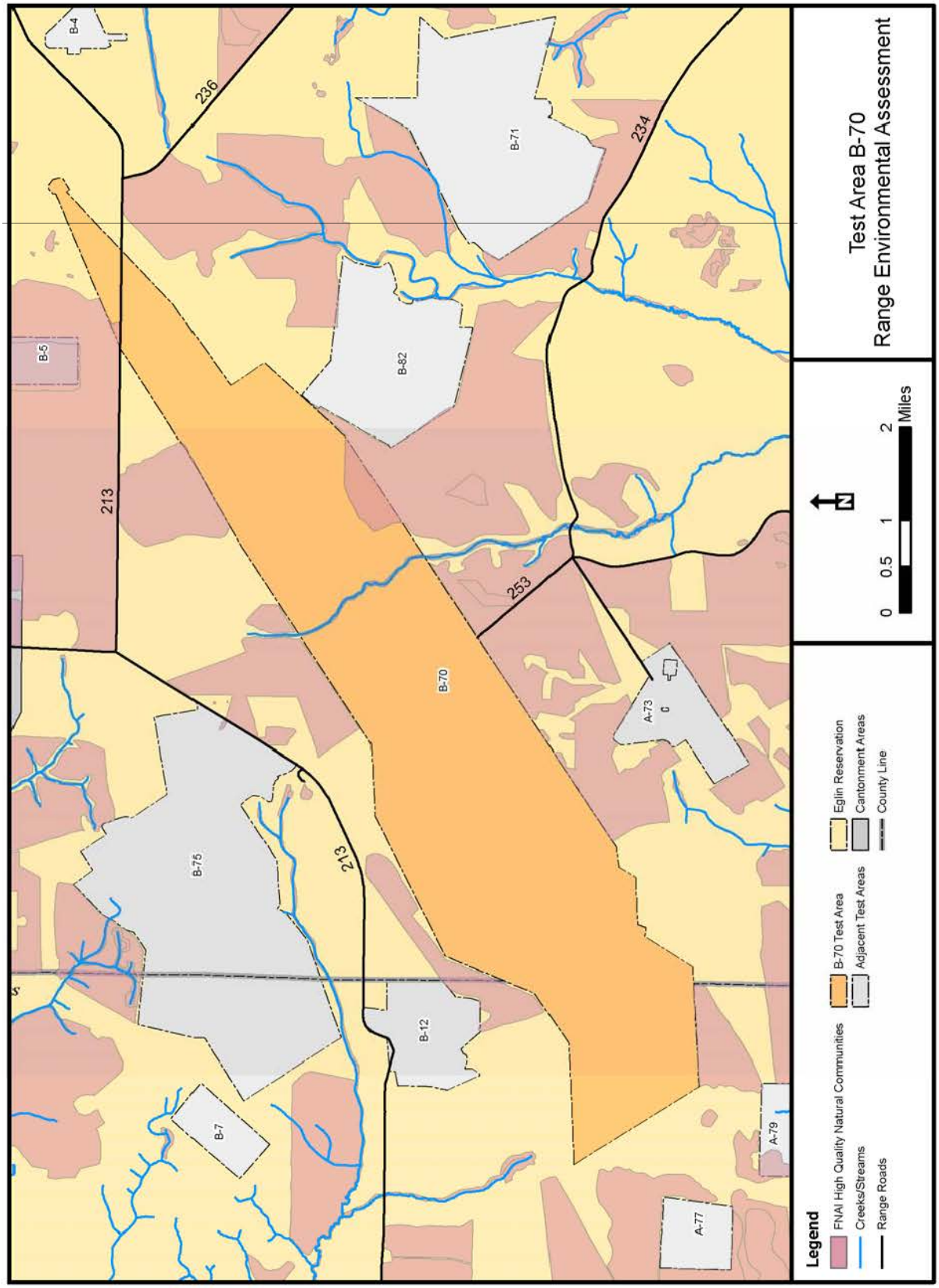

Figure 3-6. High Quality Natural Communities at Test Area B-70

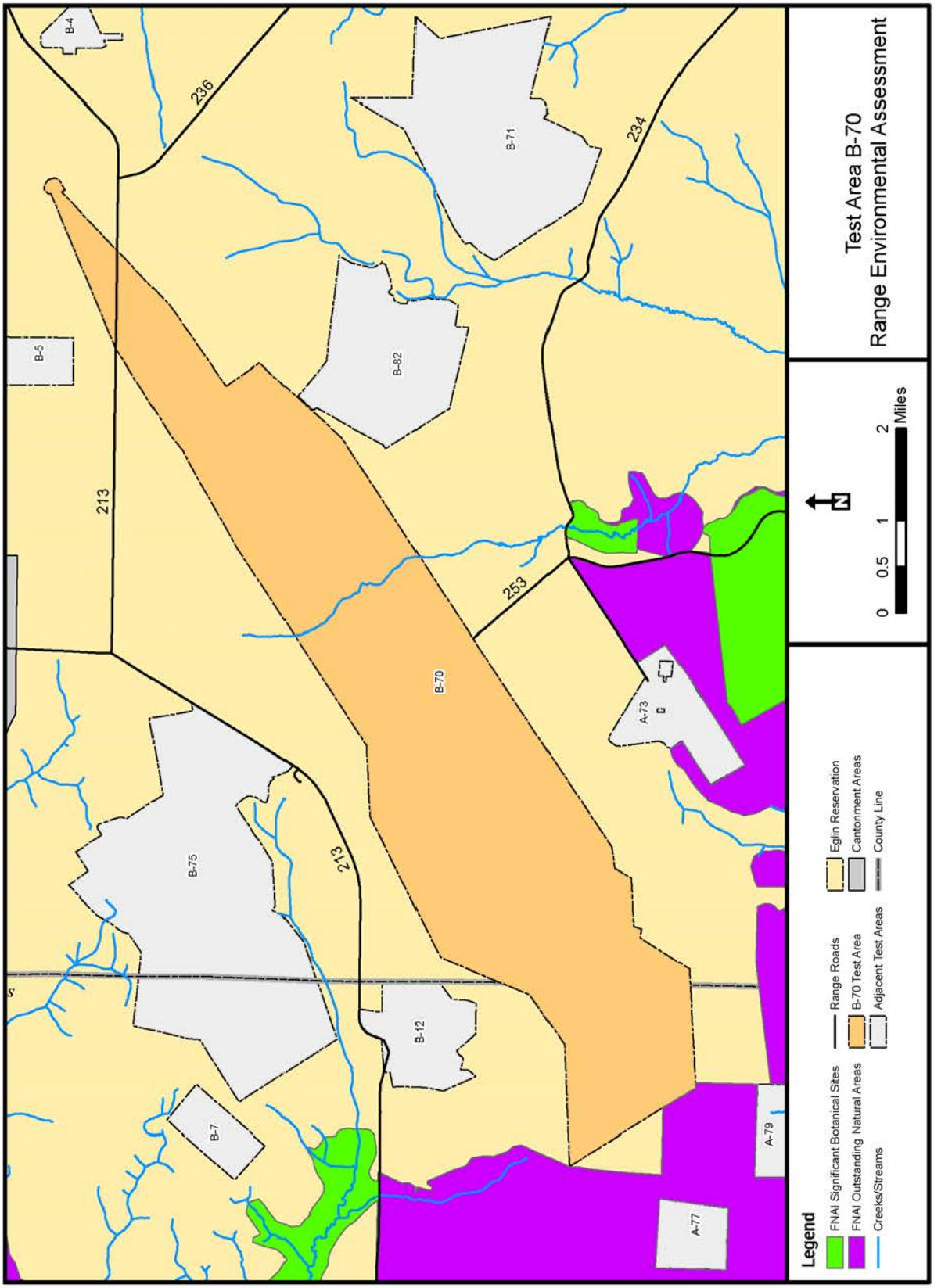

Figure 3-7. Outstanding Natural Areas/Significant Botanical Areas Near Test Area B-70

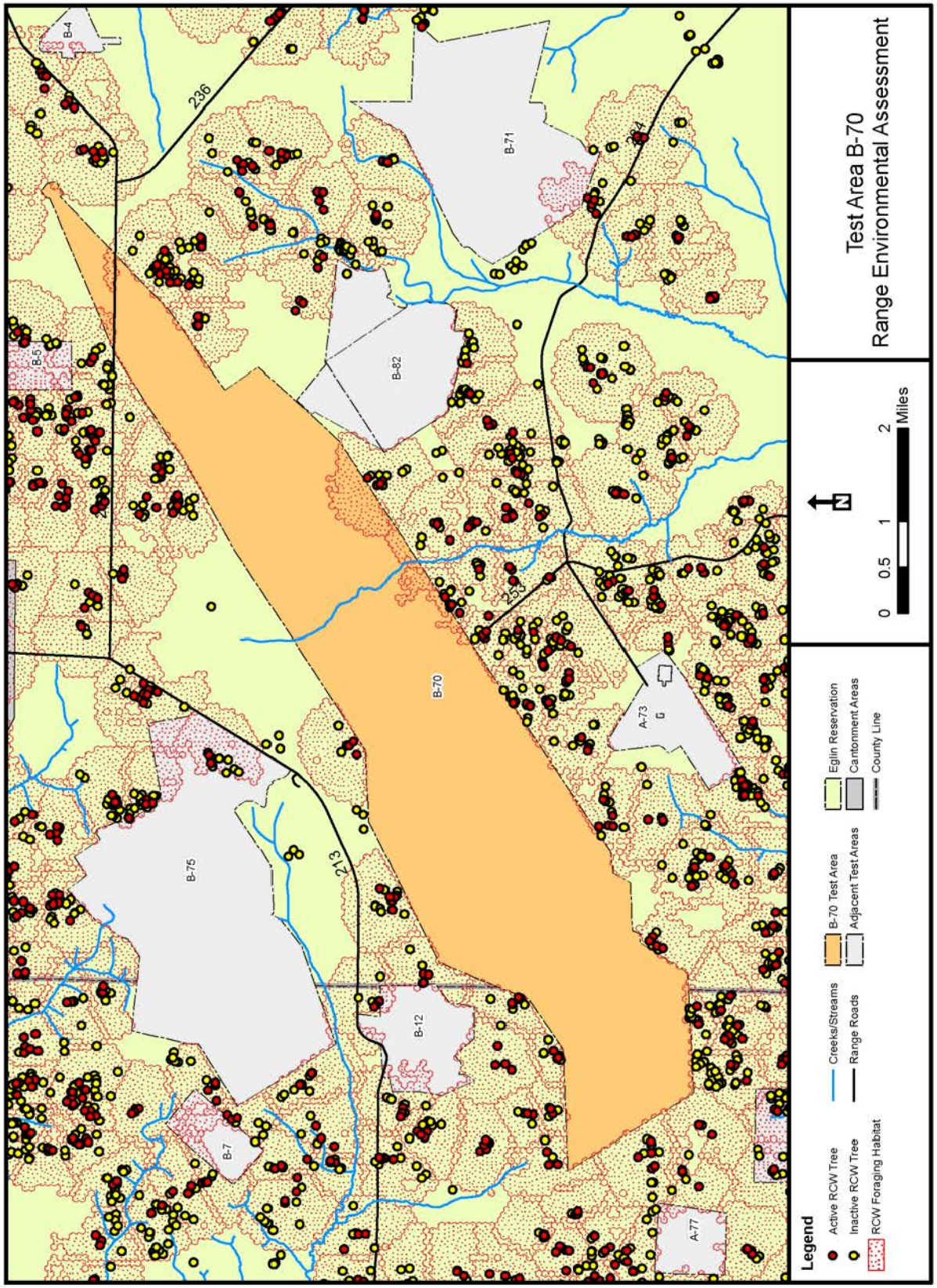

Figure 3-8. Red-cockaded Woodpecker Cavity Trees and Foraging Habitat at Test Area B-70

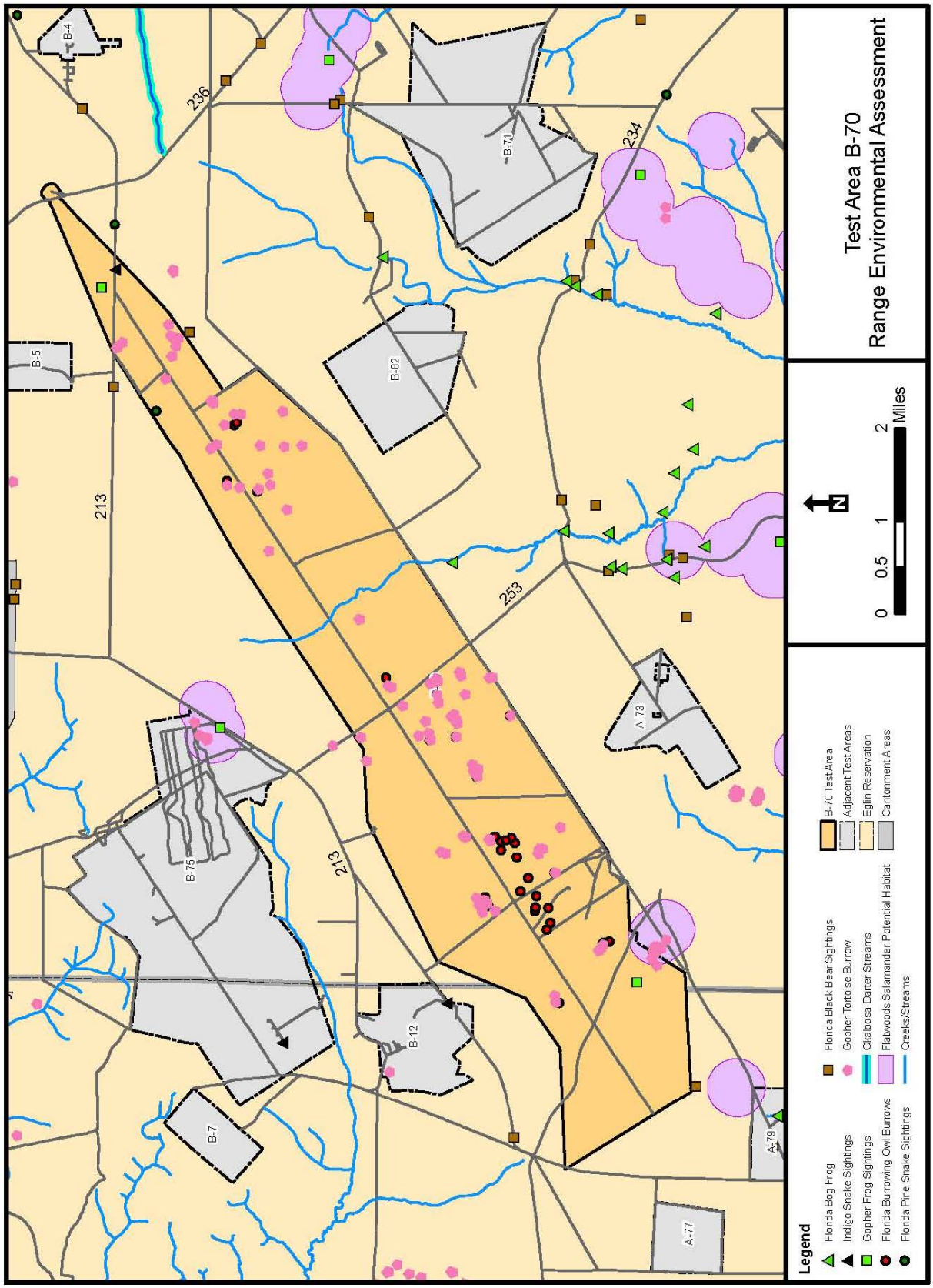

Figure 3-9. Sensitive Species (Other than the Red-cockaded Woodpecker) at Test Area B-70

3.5 CULTURAL RESOURCES

3.5.1 Definition

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 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 (NRHP). Additionally, areas potentially impacted by mission activities are surveyed through the Air Force Environmental Impact Analysis Process.

3.5.2 Region of Influence and Existing Conditions

All areas eligible for survey within TA B-70 have been surveyed (U.S. Air Force, 2008). These surveyed areas are located primarily around the banks of Live Oak Creek and Bull Pond. A total of 15 archaeological sites are located within TA B-70, all of which have been determined as ineligible to the NRHP. Thirteen structures are listed as historic structures and buildings within TA B-70. One structure is considered eligible for the NRHP (building #8970). The remaining 12 structures are considered ineligible to the NRHP. No historic districts, traditional cultural properties (TCPs) or cemeteries are present within the TA (U.S. Air Force, 2008).

The building identified as eligible for inclusion in the NRHP (building #8970) requires protection and maintenance. Maintenance standards and guidelines are described in the Eglin AFB Integrated Cultural Resources Management Plan (U.S. Air Force, 2004b) and the Programmatic Agreement between the AAC, the Florida State Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation (U.S. Air Force, 2003b).

3.6 AIR QUALITY

3.6.1 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 ($\mu g/m^3$).

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards (NAAQS) and state air quality standards (Table 3-6). These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare. Further discussion of the NAAQS and state air quality standards are included in Appendix B, *Air Quality*. Based on measured ambient air pollutant concentrations, the USEPA designates whether areas of the United States meet the NAAQS. Those areas demonstrating compliance with the NAAQS are considered "attainment" areas, while those that do not

demonstrate compliance are known as "nonattainment" areas. Those areas that cannot be classified on the basis of available information for a particular pollutant are "unclassifiable" and are treated as attainment areas until proven otherwise.

Table 3-6. National Ambient Air Quality Standards (NAAQS)

Time Period	NAAQS Standards (µg/m³)			
	CO	NO_x	PM	SO_x
Annual (Primary)		100	50	80
24-hr Avg (Primary)			150	365
8-hr Avg (Primary)	10,000			
3-hr (Secondary)				1,300
1-hr Avg (Primary)	40,000			

µg/m³ = micrograms per cubic meter; Avg = average; CO = carbon monoxide; hr = hour; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxides

3.6.2 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 establishes 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/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 Okaloosa and Santa Rosa Counties (USEPA, 2002). The county data includes emissions data from point sources, area sources, and mobile sources. Point sources are stationary sources that can be identified by name and location. Area sources are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. Mobile sources are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and non-road. On-road mobile sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2005).

Table 3-7. Baseline Emissions Inventory for Okaloosa and Santa Rosa Counties

Source Type	Emissions (tons/year)				
	CO	NO_x	PM	SO_x	VOCs
Okaloosa County					
Area Sources	1,867	281	8,397	462	4,527
Non-Road Mobile	16,150	1,099	162	109	1,897
On-Road Mobile	45,228	5,703	153	256	3,829
Point Sources	28	49	24	12	79
Total	**63,273**	**7,132**	**8,736**	**839**	**10,332**
Santa Rosa County					
Area Sources	2,142	233	13,265	323	3,291
Non-Road Mobile	9,806	950	120	89	1,524
On-Road Mobile	40,237	5,341	147	238	3,286
Point Sources	867	4,570	776	2,362	418
Total	**53,052**	**11,094**	**14,308**	**3,012**	**8,519**
Region of Influence					
Area Sources	4,009	514	21,662	785	7,818
Non-Road Mobile	25,956	2,049	282	198	3,421
On-Road Mobile	85,465	11,044	300	494	7,115
Point Sources	895	4,619	800	2,374	497
Total	**116,325**	**18,226**	**23,044**	**3,851**	**18,851**

Source: USEPA, 2002
CO = carbon monoxide; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxides; VOCs = volatile organic compounds

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 B-70 would also be compared to the federal NAAQS.

3.7 NOISE

3.7.1 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 sonic booms, blast noise, and other impulsive "booming" noises, sound is felt as well as heard. With these types of noise, overpressure may be considered more annoying than the sound itself. For this reason, impulsive sounds are measured using "C-weighting," which does not attenuate the lower frequencies to the extent that A-weighting does. Sound level measurements weighted in this way are termed *C-weighted decibels* (dBC). Unless otherwise noted, all sound levels referenced in this REA can be assumed to be A-weighted.

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

Because munitions noise levels are so strongly influenced by meteorological conditions (e.g., winds), the peak noise level reaching a particular location after a particular noise event may vary significantly. The metric "Peak Noise Exceeded by 15 Percent of Firing Events," or "PK_{15}(met)," accounts for weather-influenced statistical variation in received single-event peak noise levels. PK_{15}(met) is the peak noise level, without frequency weighting, expected to be exceeded by 15 percent of all firing events. Because this value is based on probability and actual noise levels would vary higher and lower, it cannot be directly measured in the field. If multiple weapon types are fired from one location, or from multiple firing locations, the reported PK_{15}(met) level

would be based on the loudest weapon type at the closest location. The U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM) recommends this metric as a supplement to time-averaged noise levels when discussing impulsive noise (USACHPPM, 2005).

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

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

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

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

Onset-Rate Adjusted Monthly Day-Night Average Sound Level (DNL_{mr}) is the measure used for subsonic aircraft noise in military airspace (ranges, military training routes (MTRs), military operating areas (MOAs), or warning areas). This metric accounts for the fact that when military aircraft fly low and fast, the sound can rise from the ambient level to its maximum very quickly. Known as an onset-rate, this effect can make noise seem louder due to added "startle" effects. Penalties of up to 11 dB are added to account for this onset-rate.

3.7.2 Effects of Noise

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

Annoyance is the most common effect of aircraft noise on humans. Aircraft noise often interferes with activities such as conversation, watching television, using a telephone, listening to the radio,

and sleeping. This interference often contributes to individuals becoming annoyed. Whether or not an individual becomes annoyed by a particular noise is highly dependent on emotional and situational variables of the listener as well as the physical properties of the noise (Federal Aviation Administration [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 Table 3-8. As discussed earlier in this section, DNL (A-weighted) is used to assess noise for which audible sound is the major concern (e.g., subsonic aircraft noise, small arms fire). CDNL (C-weighted) is used to assess noise in which vibration and low-frequency components are a major concern (e.g., sonic booms, high-explosive munitions noise).

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

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

Source: USACHPPM, 2005; U.S. Army, 1997
< = less than; > = greater than; dB = decibels; dBC = C-weighted decibels; dBP = P-weighted decibels
Note: The primary noise metric used by the U.S. Army to describe small arms noise is PK_{15}(met)

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

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

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

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

Sonic booms and other impulsive noises have the potential to damage structures in addition to causing annoyance. The probability of damage has been linked to the peak overpressure of the boom. At a peak, unweighted noise level of 128 dB, the probability of a window in good condition breaking ranges from 1 in 100,000 to 1 in 100 million, depending on the type of glass and other situation-specific factors (Haber and Nakaki, 1989). The probability of breakage increases dramatically if the window is cracked before the impulsive noise occurs. The probability of damage to plaster at this same overpressure ranges between 1 in 1,000 to 1 in 10 million depending on the strength of the wall, as quantified by static failure pressure in pounds per square foot (psf). Plaster failure may also occur as a result of sonic booms. Both glass and plaster failure probabilities are highly dependent on the condition of the structure at the time of the overpressure event.

3.7.3 Existing Noise Environment

The existing sound or acoustic environment on Test Area B-70 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 bomb detonations and sonic booms are regular features of the existing noise environment. Test Area B-70 is an active weapons test area supporting a wide diversity of military activities, many of which produce explosive noise. Small arms fire produces impulse noise events in rapid succession. The ROI for potential noise impacts includes the test area and test targets, and the adjacent lands extending outward into surrounding communities, since explosive noise can potentially travel great distances depending on the weather conditions.

3.8 SAFETY

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

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

3.8.1 Regulatory and Management Overview

This section discusses the regulations, policies, and management protocols in place at Eglin AFB for range safety that impact TA B-70 use. The primary regulations that establish relevant safety policy and define requirements and procedures for conducting tests on Eglin AFB and areas under its jurisdiction are found in AAC Instruction 91-201, *Test Safety Review Process*. This guidance is implemented by the AAC Range Safety Office (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 AFI 90-901 for all AAC test programs, and reflects the practical application of ORM as outlined in Air Force Pamphlet (AFPAM) 90-902, *ORM Guidelines and Tools*. The steps in the ORM process, as they relate to the Test Safety Review Process are:

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

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

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

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

3.8.2 Unexploded Ordnance

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

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

Some areas of Eglin AFB have been classified as clean and do not have access restrictions. These areas either have never been used for munitions and/or the near surface has been checked for the presence of UXO. However, much of the range is considered potentially contaminated with UXO that may have resulted from historical activities (U.S. Air Force, 1998b). TA B-70 is known to have been used for munitions testing and therefore is considered likely to be contaminated with UXO. Therefore, TA B-70 is permanently closed to public access (Figure 3-10).

3.8.3 Restricted Access

Restricted access pertains to the temporary closure of areas on Eglin AFB because of mission activities. The purpose of restricting access to the public during these times is to ensure their safety while maintaining mission integrity. Receptors potentially impacted would include the military and the public desiring to use recreational areas. Guidance for restricted access is utilized to coordinate public and military use of land within the Eglin AFB Range. Range areas in use are closed to all forms of public recreation. Areas permanently closed to the public are shown in Figure 3-10. Some military missions may require certain areas to be closed to the public for various periods of time. Recreational access information is available on a daily basis by calling the Base Information Line, (850) 882-1110 (U.S. Air Force, 2003a).

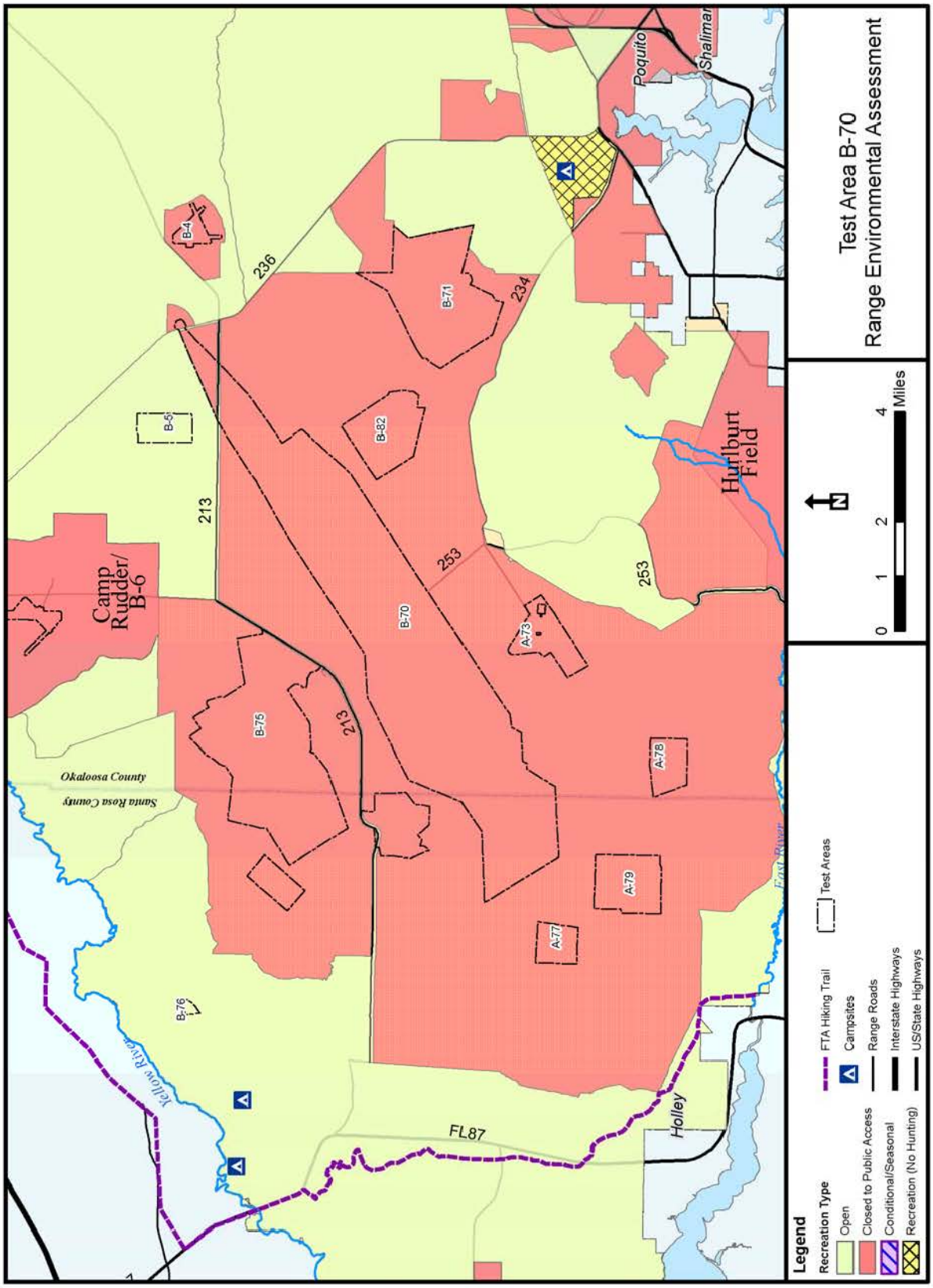

Figure 3-10. Areas Restricted to Public Access on Eglin AFB

3.9 SOCIOECONOMIC RESOURCES

This section discusses the socioeconomic resources that have the potential to be impacted by activities occurring on and surrounding TA B-70 at Eglin AFB. The primary issues of concern include the disproportionate impact of noise from activities occurring on TA B-70, which is the site for supersonic flight on the Eglin Range, to environmental justice concern areas as well as to areas containing a high concentration of children.

3.9.1 Environmental Justice

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

The DoD Strategy on Environmental Justice was adopted on 24 March 1995. It includes a summary report, strategy on environmental justice, and implementation plan and states that DoD will use NEPA as the primary mechanism to implement the provisions of EO 12898. AFI 32-7061, 1995, *The Environmental Impact Analysis Process,* addresses the need for consideration of environmental justice issues in the impact analysis process. Areas of concern for Environmental Justice in relation to TA B-70 are given in Figure 3-11.

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

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

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.

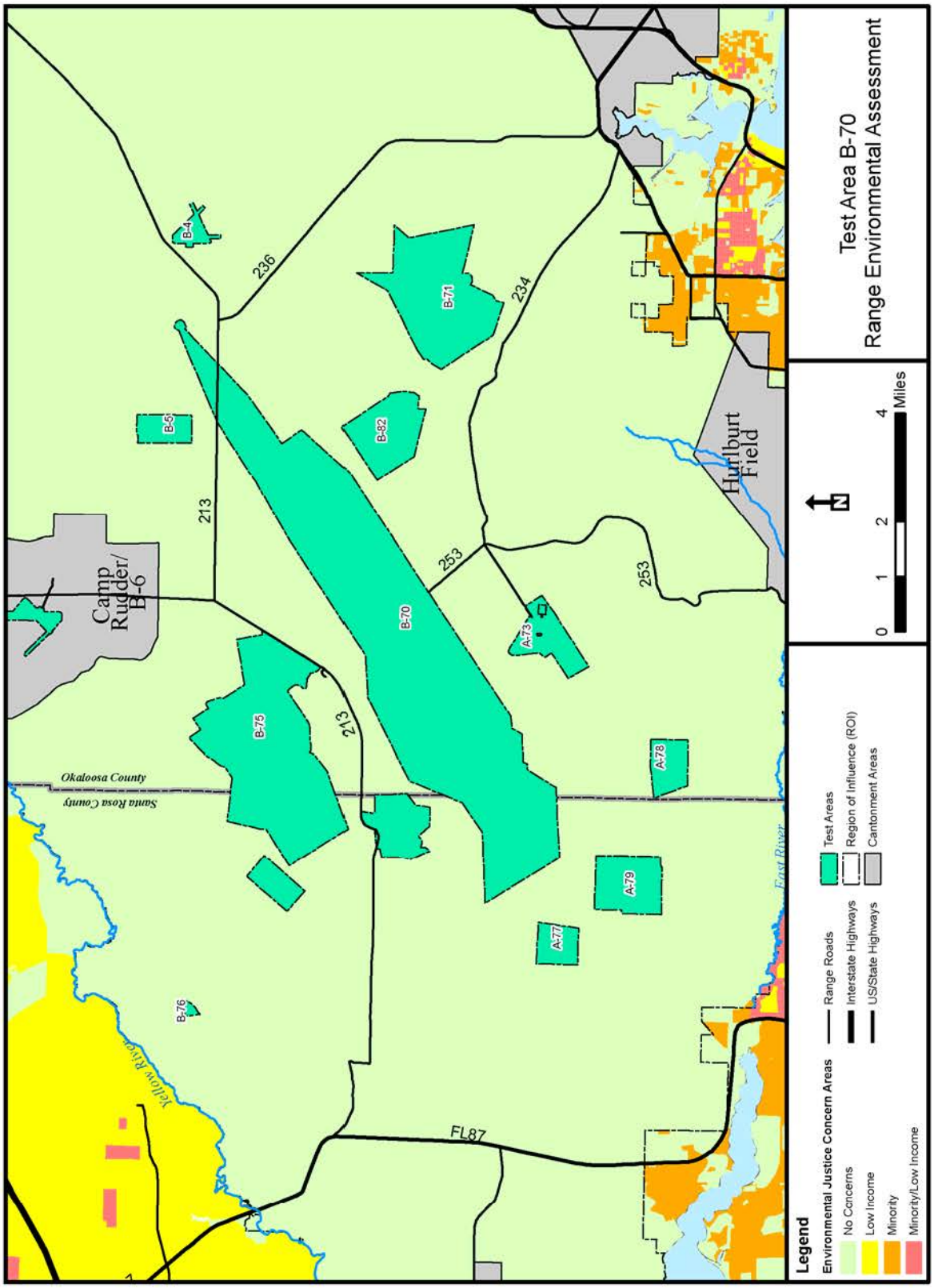

Figure 3-11. Communities With High Minority and Low Income Populations as Compared to the County

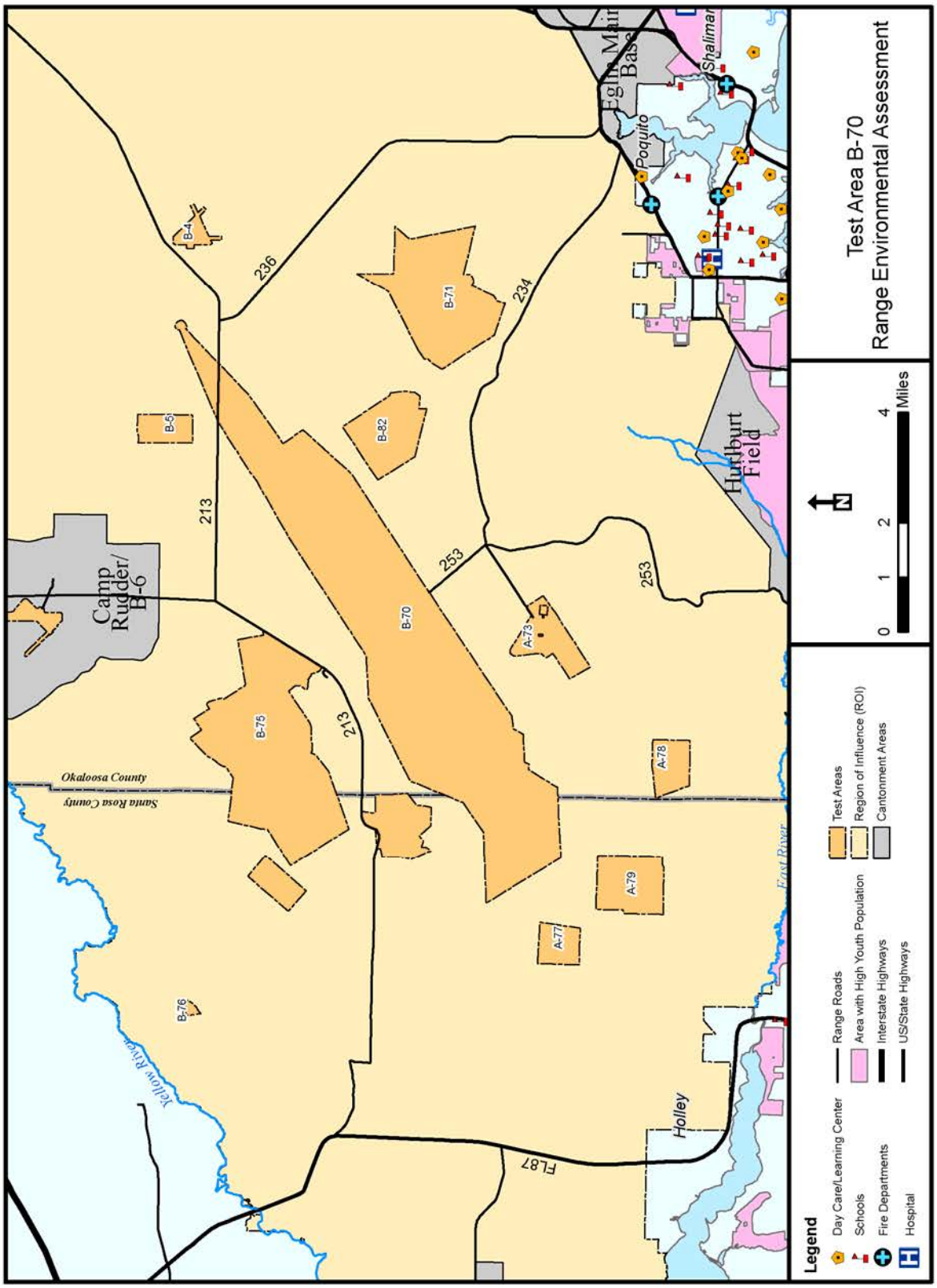

Figure 3-12. Communities With a High Percentage of Children Under 18 as Compared to County Averages

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

3.9.2 Risks to Children

In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (*Protection of Children*), was issued to identify and address issues that affect the protection of children. The EO states that "environmental health risks and safety risks mean risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to)." Higher concentrations of children occur in schools, community 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 3-12.

3.9.3 Noise Complaints

People and physical structures that are potentially susceptible to noise effects from the activities conducted at TA B-70 are in communities surrounding the Eglin Reservation. In the past, the majority of noise complaints from military activities at Eglin AFB have generally come from Navarre. In recent years a larger proportion of noise complaints have come from the city of Niceville. Table 3-9 shows the total number of complaints per city in 2006 and the actual number of complainants, and Table 3-10 provides examples of noise complaints received during 2006 on Eglin. 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.

Table 3-9. 2006 Noise Complainant Data per City

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

Table 3-10. Eglin AFB 2006 Noise Complaint Data by City and Type of Complaint

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

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

4. ENVIRONMENTAL CONSEQUENCES

This chapter analyzes the potential impacts associated with TA B-70 test and training activities (described in Chapter 2) on the affected environment (described in Chapter 3). The analysis examines the potential impacts of each of the proposed alternatives on the following resource areas:

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

4.1 CHEMICAL MATERIALS

The potential environmental impact of hazardous materials and waste were assessed as they pertain to debris from ground troop movement, chemical materials from ordnance, and ERP and LDP sites for training activities within TA B-70. Additionally, the transport, storage, use, and disposal of hazardous materials and waste associated with activities within TA B-70 should be coordinated with Eglin's Environmental Compliance Branch, Pollution Prevention Section (96 CEG/CEVCP) and disposed of appropriately according to regulations and AAC Plan 32-5, *Hazardous Waste Management Plan*. AAC Plan 32-9, *Hazardous Materials Management*, describes how Eglin AFB complies with federal, state, Air Force, and DoD laws and instructions. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. All spills and accidental discharges of petroleum products, hazardous materials, or hazardous waste would be reported.

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

4.1.1 No Action Alternative

Debris

Debris, such as cartridges, canisters from smokes, chaff, and flares, as well as litter and refuse from ground troop movement, may be deposited from ground troop 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 expenditure of ordnance on TA B-70. These materials may degrade the quality of soil or water, or may be toxic to plants, wildlife, or people. For the mission activities occurring on TA B-70, metals and explosives from bombs, missiles, guns, mines, small arms, smokes, chaff, and flares are the primary chemical materials of concern. Munitions and pyrotechnics use on TA B-70 has increased since the previous baseline, and in some cases has exceeded the 100-percent increase threshold from the *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)*.

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, 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 included the chemical constituents in bombs, missiles, guns, mines, small-arms, smokes, chaff, and flares used for testing and training within TA B-70. Numerous types of munitions are used on TA B-70; 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 TA B-70 under the No Action Alternative are detailed in Chapter 2 (Table 2-1). (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

The DoD's TRI-DDS website was used to determine constituent chemical emissions from the discharge of these representative munitions on TA B-70. 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. Ordnance Expended During Maximum Under No Action Alternative

Effector Category	Type	Number to Be Expended
Small arms (inert)	5.56 MM	150,000
Small arms (live)	N/A	0
Guns (inert)	155 MM	40
Guns (live)	N/A	0
Bombs (inert)	BDU-33	1,368
Bombs (live)	N/A	0
Missiles (inert)	MLRS PRAC	26
Missiles (live)	MLRS TAC	58
Mines	PDM-1	10
Chaff	RR-170	1,182
Smokes	M-18	120
Ground burst simulator	GBS	1,200
Flares	Slap Flare	100

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

Table 4-2. Munitions-Related Residue Under No Action Alternative

Chemical	Quantity Released on Test Area B-70 (pounds)
Antimony	1
Barium	2
Hydrochloric acid	81
Lead	2

Source: DoD, 2008

LDP Sites

The three LDP sites associated with TA B-70 are located near the eastern perimeter of the test area. Therefore, it is unlikely that any LDP sites would be impacted. All target sites are located in the test area's interior, generally in the central and southwestern portions of the test area. All ground-disturbing activities, such as the deployment of live or inert bombs at targets, should occur only in areas known to be devoid of LDP sites. If training personnel should encounter soil that is discolored or has a chemical odor during any ground training operations, the training squadron should immediately notify the Environmental Restoration Branch. Additionally, the Environmental Restoration Branch would be consulted regarding potential ground-maneuvering

activities taking place in or near LDP sites; therefore, no adverse impacts to LDP sites would occur.

4.1.2 Alternative 1

Debris

Under Alternative 1, training activities occurring at TA B-70 would increase significantly over the currently approved levels under the No Action Alternative. However, there would be no new types of training or expenditures and no new user groups. Management practices are in place that assure training areas will be scanned for debris and dudded munitions and that they would be removed. Any dudded 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 below in Table 4-3 were provided by user groups, and maximum annual expendables for TA B-70 under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-4). (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

Table 4-3. Ordnance Expended During Maximum Under Alternative 1

Effector Category	Type	Number to Be Expended
Small arms (inert)	5.56 MM	1,072,379
Small arms (live)	7.62 MM	1,607
Guns (inert)	30 MM	1,152
Guns (live)	30 MM	292
Bombs (inert)	BDU-33	1,510
Bombs (live)	MK-84	47
Missile (inert)	BGM-109	186
Missile (live)	STINGER MSL	109
Mines	TM-46	174
Chaff	RR-170	6,849
Smokes	M-18	1,514
Ground burst simulator	GBS	1,200
Flares	M-206	809

The same methodology used for Table 4-3 was used to determine the chemical emissions associated with ordnance expenditure as a result of testing and training on TA B-70. Table 4-4 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 2,578 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 4-4. Munitions-Related Residue Under Alternative 1

Chemical	Quantity Released on TA B-70 (pounds)
Antimony	6
Barium	12
Benzene	1
Ethylene	2
Hydrochloric acid	132
Hydrogen cyanide	1
Hydrogen fluoride	1
Lead	12
Nitric acid	5

Source: DoD, 2008

LDP Sites

Although frequency of activity would increase under this alternative, the procedures and practices would not differ from the No Action Alternative. Therefore, impacts to LDP sites would be the same as discussed above, and no adverse impacts to LDP sites would be expected as result of implementation of Alternative 1.

4.1.3 Alternative 2

Debris

Under Alternative 2, testing and training activities occurring at TA B-70 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 dudded munitions and that they would be removed. Any dudded 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 below in Table 4-5 were provided by user groups, and maximum annual expendables for TA B-70 under Alternatives 1 and 2 are detailed in Chapter 2 (Table 2-4). (Note: Potential impacts from chemical releases to specific media [i.e., soil, water, air, biological resources] are discussed in each of those respective sections.)

Table 4-5. Ordnance Expended During Maximum Under Alternative 2

Effector Category	Type	Number to Be Expended
Small arms (inert)	5.56 MM	4,289,516
Small arms (live)	7.62 MM	6,428
Guns (inert)	.30 MM TP	4,608
Guns (live)	30 MM APFSDS	1,168
Bombs (inert)	BDU-33	6,040
Bombs (live)	MK-84	188
Missiles (inert)	BGM-109	744
Missiles (live)	STINGER MSL	436
Mines	TM-46	696
Chaff	RR-170	27,396
Smokes	M-18	6,056
Ground burst simulator	GBS	4,800
Flares	M-206	3,236

The same methodology was used to determine the chemical emissions associated with ordnance expenditure as a result of training and testing at TA B-70. Chemical emissions under Alternative 2 are shown in Table 4-6. Increases are approximately three-fold over Alternative 1. Again, since these emissions are shown on an annual basis and the affected area is so large, the concentration at any time at any given location would be insignificant. No new TRI thresholds would be exceeded under Alternative 2.

Table 4-6. Munitions-Related Residue Under Alternative 2

Chemical	Quantity Released on TA B-70 (pounds)
Acetaldehyde	1
Antimony	26
Barium	46
Benzene	3
Chlorine	4
Chromium	1
Ethylbenzene	1
Ethylene	10
Formaldehyde	1
Hydrazine	2
Hydrochloric acid	530
Hydrogen cyanide	2
Hydrogen fluoride	5
Lead	47
Nitric acid	19
Ozone	1
Propylene	1

Source: DoD, 2008

LDP Sites

Although frequency of activity would increase under this alternative, the procedures and practices would not differ from the either of the alternatives above. Therefore, impacts to LDP sites would be the same as discussed above, and no adverse impacts to LDP sites would be expected as result of implementation of Alternative 2.

4.2 SOILS

4.2.1 No Action Alternative

The No Action Alternative represents the previously approved level of activity at TA B-70 and would not adversely affect soils. Further analysis of materials transported through soils to water sources is discussed in Section 4.3, *Water Resources*.

4.2.2 Alternative 1

No adverse impacts are anticipated to the underlying geology of the area from the proposed activities at TA B-70. Despite this, the interaction between stormwater runoff and the soil surface, in association with land disturbances, can periodically create conditions prone to erosion that may result in adverse impacts to land and potentially to water resources. Soil erosion can significantly affect ecosystem health and function. Erosion can reduce land productivity, pollute waters, and degrade habitats. Human-induced soil disturbances, whether minor, transitory, or drastic, generally determine the nature of environmental effects. Under normal conditions, these Lakeland soils are relatively stable and typically not prone to erosion if covered with vegetation. Land clearing and heavy munitions use could modify the terrain such that best management practices would be required to minimize potential adverse impacts from loss of soil.

Chemical residue from munitions can leach into local soils and sediments. As the residue from flares falls to the ground, it will land on the soils and surface water. Aluminum from chaff can be deposited in either surface water or surface soil. Aluminum resulting from the deployment of chaff is not in a physical form that makes it easy for environmental transport or exposure (U.S. Air Force, 1998). However, aluminum is able to leach out under strongly acidic conditions (pH of 4 or less), and the rate of dissolution of aluminum from chaff during decomposition is likely not rapid enough to increase aluminum concentrations above normal background levels. Eglin has an average background aluminum concentration of 1,352 mg/kg in soil and 12 mg/L in surface water. Small bodies of water, such as enclosed ponds, could be adversely affected by repeated, concentrated exposure to chaff deposition. For example, at TA B-70, Bull Pond, south of the Grass Grid, is a breeding area for gopher frogs, a state species of special concern. Affected soils in ponds such Bull Pond need to be considered. Table 4-7 is included to show the amount of chaff needed to reach a toxic concentration in Bull Pond.

Table 4-7. Threshold Analysis for Aluminum (Number of Bundles) from Chaff

Baseline Total for Test Area (TA) B-70			Needed to Double Aluminum Concentration in Soil		Needed to Reach 1,000 Milligrams per Liter in Bull Pond
All of TA B-70	Per Acre	In Bull Pond	On 1 Acre	All of TA B-70	
4,020	0.37	7	4,520	4.96×10^7	147,535

The magnesium remaining in the flare ash residue has been shown to undergo minimal leaching at neutral pH (7.0) levels, with an approximate five-fold increase in leachability at pH 4.0 (U.S. Air Force, 1998). Magnesium will most likely be soluble in the soil, shallow ground water, and surface water, and be available for transport as dissolved magnesium within the water. Thus, deposition of aluminum and magnesium from "fall out" is possible, with potential to contaminate soils that house ponds and fragile biota.

Further analysis of materials transported through soils to water sources is discussed in Section 4.3, *Water Resources*.

4.2.3 Alternative 2

Any potential adverse effects to soils under Alternative 2 are expected to be similar to those described under Alternative 1. Further analysis of materials transported through soils to water sources is discussed in Section 4.3, *Water Resources*.

4.3 WATER RESOURCES

Previous environmental analysis of TA B-70 missions identified the following issues with regard to water resources:

- Potential for munitions components to affect surface water and ground water quality (*1998 Test Area B-70 Programmatic Environmental Assessment*, U.S. Air Force, 1998a; *2005 Test Area B-70 Final Environmental Baseline Document,* U.S. Air Force, 2005a)
- Potential for vehicle operations and troop movements to directly impact wetlands or floodplains (*2005 Test Area B-70 Final Environmental Baseline Document,* U.S. Air Force, 2005a)
- Potential for runoff from impervious surfaces to carry sediment into surface waters (*2005 Test Area B-70 Final Environmental Baseline Document,* U.S. Air Force, 2005a)

All of the above issues were found to not have adverse impacts at the level of activity that was analyzed in the 1998 Test Area Programmatic Environmental Assessment and the 2005 Environmental Baseline Update. Although the level of mission activity has increased, no new types of water resource issues from missions have been identified since the writing of those documents, or are presumed to increase in the future. There are other issues related to ongoing maintenance activities, such as herbicide spraying and roller-drum chopping, that are not within the scope of this REA. Test area maintenance issues are addressed in separate NEPA documentation.

4.3.1 No Action Alternative

The No Action Alternative would not have significant water resource impacts. As the level of activity under the No Action Alternative (Section 2.2.1) is identical to that analyzed and approved as the Preferred Alternative of the *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a) water resource issues for the No Action Alternative have been adequately addressed in those documents. Table 4-8 presents some of the analysis

conclusions that are directly applicable to the analysis of the No Action Alternative for this REA. A summary of the previous issues and analysis findings are provided in this section.

Table 4-8. Water Resource Impacts from Chaff, Flares, and Explosives Residues for the No Action Alternative

Issue	Criteria & Threshold	No Action Alternative for Present REA (Preferred Alternative for 1998 PEA)	Activity Level Required to Reach Threshold
Chaff			
Impacts to ground water from aluminum	*To reach twice background aluminum concentration in soil*: **4.96 x 10^7 chaff bundles**	8,040 bundles	**6,169** times the No Action Alternative level needed to reach threshold
Impacts to surface waters from aluminum	*To reach toxic aluminum concentration (1,000 mg/L) in Bull Pond*: **147,535 bundles**	14 bundles	**10,538** times the No Action Alternative level needed to reach threshold
Explosives			
Impacts to ground water from TNT residue	*To exceed soil RBC for TNT:* **75,160 lb. NEW**	2,494 lb. NEW	**30** times the No Action Alternative level needed to reach threshold
Impacts to ground water from RDX residue	*To exceed soil RBC for RDX:* **274,626 lb. NEW**	2,494 lb. NEW	**110** times the No Action Alternative level needed to reach threshold
Flares			
Impacts to ground water from magnesium	To reach twice background magnesium concentration in soil: **3,500,000 flares**	2,000 flares	**1,750** times the No Action Alternative level needed to reach threshold
Impacts to surface water from magnesium	To reach toxic magnesium concentration in Bull Pond : **28,000 flares**	4 flares	**7,000** times the No Action Alternative level needed to reach threshold

NEW = Net Explosive Weight; RBC = Environmental Protection Agency Risk-based Criteria; RDX, TNT = Explosives; REA = Range Environmental Assessment; PEA = Programmatic Environmental Assessment

Ground Water

Impacts to ground water would not be significant under the No Action Alternative. Previous analysis of missions on TA B-70 examined the primary metal and explosive constituents from items expended on the test area, and their potential effect on ground water. The analysis was accomplished through the use of a model, the Seasonal Soil Compartment Model or SESOIL, which models water transport, sediment transport, and long-term pollutant fate and migration. SESOIL considers the environmental conditions necessary for dissolution and transport of materials into ground water, such as rainfall amount, soil permeability and the acidity or pH of surface water and ground water. Modeling was used because there is no actual ground water monitoring data available for chaff and flare components, and explosive compounds at TA B-70. Thus, the conclusions of no impact are largely based on the model predictions.

Surface Water

Impacts to surface waters would not be significant under the No Action Alternative. There are few surface areas to impact on TA B-70, and one of those is a man-made test feature. Bull Pond

and Live Oak Creek are the only surface waters of note. Analysis looked at the potential for flare ash, chaff materials, and explosive residue to affect water quality, but found the number of units expended compared to the surface area over which they were delivered was relatively small. To summarize, the Air Force would have to expend several thousand times more chaff and flare units, and 30 to over 100 times more in net explosives to approach surface water impact thresholds (Table 4-8).

Wetlands

Impacts to wetlands would not be significant under the No Action Alternative. The surface water analysis of Bull Pond discussed in this section is also applicable to wetlands associated with this area. However, other potential concerns for wetlands, not related to munitions components, are raised in the 2005 EBD Update. That document examined the potential for vehicle traffic to directly impact wetlands, but concluded that user groups preferentially avoid such areas for practical reasons, such as not getting stuck. Since avoidance is the means by which wetland impacts are prevented, then the resulting lack of vehicle activity would have an effect. Thus, there would be no wetland impacts with vehicle use under any alternative, including the No Action Alternative.

Floodplains

Impacts to floodplains would not be significant under the No Action Alternative. None of the actions on TA B-70 involve changes to the floodplain. Further, there are no habitable structures at risk from any changes to the floodplain. Ground training occurs within the floodplain but the activity would not alter flow regimes of 100-year floods.

Coastal Zone

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

4.3.2 Alternative 1

A few most frequently used live ordnance targets are the focus of the analysis as these areas are the most likely locations that munitions components would enter the ground or surface water environment. These targets are shown in Figure 4-1. The targets and their uses are:

- TT-7: Variety of bombs and missiles
- TT-10: Air-to-Ground Missile (AGM)-65s (Mavericks)
- TT-12: GBU 17B Bunker, used for guided penetrator bombs
- TT-19: A/G WSEP Area Target; sea containers, primary target for live weapons fire

Chaff and flares can be expended anywhere in overlying airspace.

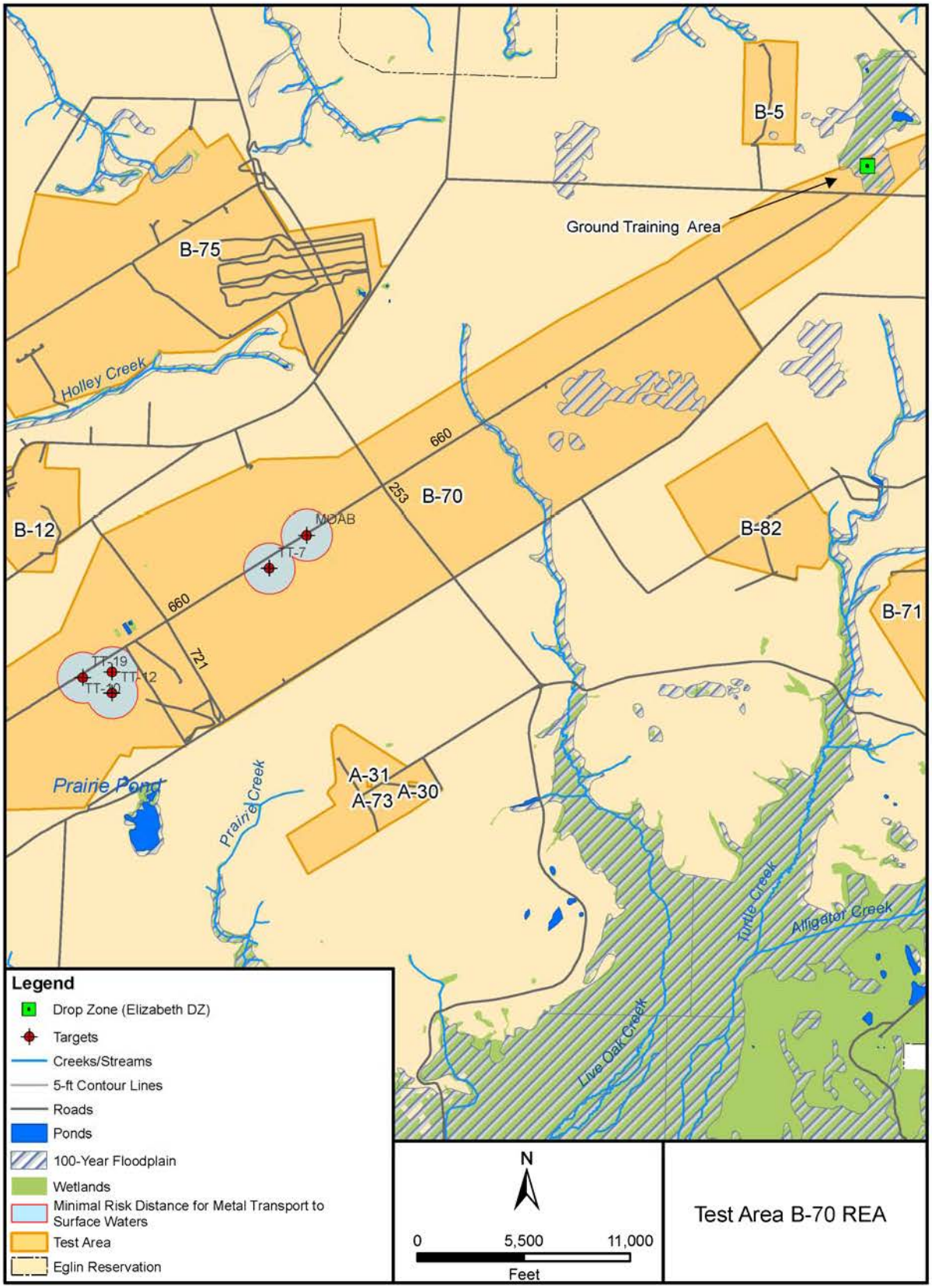

Figure 4-1. Proximity of Most Heavily Used Targets to Water Resources

Ground Water

Impacts to ground water would not be significant under Alternative 1. Analysis examined the potential for contaminants from expended items to migrate from the surface into ground water, and exceed USEPA standards for ground water quality. The No Action Alternative analysis found that an extremely high number of flares, chaff, and explosives would have to be expended to affect ground water, and a quick comparison with Table 4-9 likewise indicates that Alternative 1 would not approach levels necessary to exceed EPA thresholds.

Further supporting this conclusion is a corrosion study performed by the U.S. Army Environmental Center (USAEC) which determined that to exceed USEPA ground water standards for TNT, the density of unexploded ordnance (UXO) items would have to approach 400 items per square kilometer (Praxis, 2004). The density would need to exceed 4,000 items per square kilometer to exceed EPA standards for RDX. Table 4-9 lists the total Alternative 1 live expendables for comparison with the number required to exceed EPA standards.

Table 4-9. Amount of Live Ordnance Needed to Exceed Ground Water Quality Criteria

Effector Category	Alternative 1 Level of Activity	Ordnance Items Needed to Exceed RDX Ground Water Criteria (40,000 items per 10 square kilometers)	Ordnance Items Needed to Exceed TNT Ground Water Criteria (4,000 items per 10 square kilometers)
Bombs/ Mines	219	39,996	3,996
Missiles	109	39,902	3,902
Guns	292	39,739	3,739

RDX, TNT = Explosives

The study did not look at metal components of munitions and the potential effects on ground water, though the following discussion on surface water addresses this. TA B-70 surface waters would be the end receptor of ground water contamination.

Surface Water

There would be no significant impacts to surface waters under Alternative 1. Mission activities have no mechanism for direct impacts to surface waters since there are no active targets near surface waters (Figure 4-1). However there is a potential for indirect impacts. An example of indirect impacts would be an action such as construction, land clearing or vehicle use that disturbs the terrain, exposing bare soil to water and wind forces. Wind and stormwater can readily transport exposed soil, with potentially adverse impacts to land and surface water resources. Soil erosion can significantly affect ecosystem health and function. It can reduce land productivity, pollute waters, and degrade habitats. Construction and land clearing are not part of this alternative, though soil disturbance does occur through other means, such as wheeled and tracked vehicle use and ground training. Erosion is associated with sloped areas along Centerline Road (U.S. Air Force, 2006b), but this is primarily a maintenance issue rather than a test or training issue. Maintenance issues are addressed in separate environmental analysis documents, such as the Test Area B-70 Final Maintenance Plan (U.S. Air Force, 2006b).

There are other locations of isolated eroded areas, but no evidence that these areas are impacting surface waters. Flat terrain around these areas limits waterborne transport of eroded soil. North of Live Oak Creek between Range Roads 659 and 240 is a drop zone, an area of bare soil that appears to be subjected to repeated rotorwash from helicopters or repeated use by vehicles. The soil is not moving off-site or eroding into any drainage (U.S. Air Force, 2006b).

Indirect impacts to surface waters may also result from the transport through ground water of metal and explosive constituents in soils around targets. Unexploded ordnance and spent munitions all have the ability to leach explosive residue into soils, or metals such as lead, aluminum, and copper from weathered casings and projectiles if the expended ammunition is not retrieved. Existing factors limit the likelihood of such contamination from occurring: 1) Range personnel routinely remove spent ordnance from target areas and stockpile the debris in piles at TA B-70 for pick-up and recycling (Figure 4-2); and 2) the risk to surface waters is assumed to be minimal if the lead source is more than 0.25 mile away (USFWS, 2008).

Figure 4-2. Test Area B-70 Range Residue Stockpile

Figure 4-1 shows a 0.25-mile buffer around the primary targets where ordnance is expended. The figure illustrates that no surface waters fall within the buffer, and are at minimal risk from ground water based transport of contaminants.

Wetlands

There would be no significant impacts to wetlands under Alternative 1. Vehicles avoid wetlands entirely. There is a drop zone at the northern end of TA B-70 that the Eglin GIS shows as being located within a wetland area. The activity within this area consists primarily of foot traffic, as special operations units, such as U.S. Army Rangers, rappel or paradrop into the drop zone before proceeding beyond the test area toward a training objective in the interstitial area. Foot traffic through the wetland would not have major adverse effects.

Floodplains

There would be no significant impacts to floodplains under Alternative 1. Floodplains would not be affected by the types of missions, nor the increased number of expendables under Alternative 1. There would be no land clearing or terrain modifications under Alternative 1 and therefore no alterations to the 100-year 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).

4.3.3 Alternative 2

Ground Water

Impacts to ground water would not be significant under Alternative 2. Analysis examined the potential for contaminants from expended items to migrate from the surface into ground water and exceed USEPA standards for ground water quality. Table 4-10 indicates that Alternative 2 would not approach levels necessary to exceed USEPA thresholds. This comparative analysis approach serves the purpose of screening potential issues.

Table 4-10. Amount of Live Ordnance Needed to Exceed Ground Water Quality Criteria

Effector Category	Alternative 2 Level of Activity	Ordnance Items Needed to Exceed RDX Ground Water Criteria (40,000 items per 10 square kilometers)	Ordnance Items Needed to Exceed TNT Ground Water Criteria (40,000 items per 10 square kilometers)
Bombs/ Mines	876	39,996	3,996
Missiles	436	39,902	3,902
Guns	1,168	39,739	3,739

RDX, TNT = Explosives

Surface Water

There would be no significant impacts to surface waters under Alternative 2. As with Alternative 1, mission activities have no mechanism for direct impacts to surface waters since there are no active targets near surface waters (Figure 4-1). However, there is a potential for indirect impacts. An example of indirect impacts would be an action such as construction, land clearing or vehicle use that disturbs the terrain, exposing bare soil to water and wind forces. Wind and stormwater can readily transport exposed soil, with potentially adverse impacts to land and surface water resources. Soil erosion can significantly affect ecosystem health and function. It can reduce land productivity, pollute waters, and degrade habitats. Construction and land clearing are not part of this alternative, though soil disturbance does occur through other means,

such as wheeled and tracked vehicle use and ground training. Erosion is associated with sloped areas along Centerline Road (U.S. Air Force, 2006b), but this is primarily a maintenance issue rather than a test or training issue. Maintenance issues are addressed in separate environmental analysis documents, such as the Test Area B-70 Final Maintenance Plan (U.S. Air Force, 2006b).

There are other locations of isolated eroded areas, but no evidence that these areas are impacting surface waters. Flat terrain around these areas limits waterborne transport of eroded soil. North of Live Oak Creek between Range Roads 659 and 240 is a drop zone, an area of bare soil that appears to be subjected to repeated rotorwash from helicopters or repeated use by vehicles. The soil is not moving off-site or eroding into any drainage (U.S. Air Force, 2006b).

Indirect impacts to surface waters may also result from the transport through ground water of metal and explosive constituents in soils around targets. Unexploded ordnance and spent munitions all have the ability to leach explosive residue into soils, or metals such as lead, aluminum and copper from weathered casings and projectiles if the expended ammunition is not retrieved. There are existing factors that limit the likelihood of such contamination from occurring: 1) Range personnel routinely remove spent ordnance from target areas and stockpile the debris in piles at B-70 for pick up and recycling (Figure 4-2); and 2) the risk to surface waters is assumed to be minimal if the lead source is more than 0.25 mile away (USFWS, 2008).

Figure 4-1 shows a 0.25-mile buffer around the primary targets where ordnance is expended. The figure illustrates that no surface waters fall within the buffer, and are at minimal risk from ground water based transport of contaminants.

Wetland

There would be no significant impacts to wetlands under Alternative 2. Vehicles avoid wetlands entirely, and foot traffic previously mentioned in Alternative 1 would not have significant adverse effects on wetlands.

Floodplains

There would be no significant impacts to floodplains under Alternative 2. Floodplains would not be affected by the types of missions, nor the increased number of expendables under Alternative 2. These actions have no mechanism for altering a floodplain. There would be no land clearing or terrain modifications under Alternative 1 and, therefore, no alterations to the 100-year 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 BIOLOGICAL RESOURCES

This section discusses potential impacts to biological resources from activities conducted at TA B-70 on Eglin AFB. To determine potential impacts, the locations of sensitive habitats and species in relation to the Proposed Action were identified. Maps were examined to locate sensitive species and habitats, and site visits and additional surveys were conducted where necessary to confirm locations. Scientific literature was reviewed for studies that examined similar types of impacts to biological resources. The literature review included a review of basic characteristics and habitat requirements of each sensitive species. Where available, information was also gathered relative to management considerations, incompatible resource management activities, and threats to each sensitive species. Impact analyses were then conducted based on the information gathered from the literature review and discussions with experts in these areas.

Analysis focuses on assessing the potential for direct and indirect impacts to biological resources from air operations, pyrotechnics and munitions use, and ground operations at TA B-70, and on identifying methods to reduce the potential for negative impacts to biological resources from these activities. Where appropriate, projected conditions were compared to the baseline, and a determination was made as to whether the impact would be beneficial or adverse. Conclusions were drawn regarding the extent of impacts in which the level of anticipated impact is or is not likely to result in jeopardizing the continued existence of the species (USFWS, 2008). The USFWS considers any impact to be significant if potential impacts are anticipated and the action is likely to jeopardize the continued existence of the species; therefore, significance was determined by the likelihood of an action to jeopardize the continued existence of a species.

Previous environmental analysis of TA B-70 missions identified the following issues with regard to biological resources (U.S. Air Force, 1998a; U.S. Air Force, 2005a):

- Potential for munitions components and vehicles to directly affect sensitive species and habitats
- Potential for noise impacts to sensitive species from supersonic flight, 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 at the level of activity that was analyzed in the 1998 *Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a) and the 2005 *Test Area B-70 Environmental Baseline Document (EBD)* (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 shifted over time. Eglin Natural Resources is currently conducting surveys for the Florida burrowing owl and gopher tortoise on TA B-70. Available survey data have been included; the Natural Resources Section will coordinate with the USFWS as needed upon completion of the surveys. Issues related to ongoing maintenance activities, such as herbicide spraying and roller-

drum chopping, are addressed in the *Test Area B-70 Maintenance Plan* (U.S. Air Force, 2006b), thus are not discussed in this REA. Eglin AFB is conducting an Endangered Species Act (ESA) Section 7 consultation with the USFWS on federally listed species for the Preferred Alternative (Alternative 2).

4.4.1 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 in the *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a). New location information for sensitive biological resources was examined in relation to analysis methods from the 1998 PEA, which still apply. Analyses incorporated all gopher tortoise and Florida burrowing owl survey data available to-date. Although the numbers and locations of sensitive species and acres of sensitive habitats have changed, the No Action Alternative would still have no significant impacts on biological resources. This section provides a summary of the previous issues and analyses, with the updated location information for sensitive biological resources.

Direct Physical Impacts

Direct physical impacts would be possible from inert munitions, shrapnel from live munitions, and vehicles. Examination of sensitive species locations in relation to targets and ground training areas revealed that the likelihood of direct encounters was very low. One burrowing owl burrow and two gopher tortoise burrows are found within the potential landing radius of TT-13 (Table 4-11). The largest direct impact area for munitions at TT-13 is 2.3 square feet out of the 785,400-square-foot potential landing area. Therefore, the probability of a direct hit is extremely small. At TT-19, where live Maverick missiles would be used, six burrowing owl burrows, two active red-cockaded woodpecker (RCW) trees, and five gopher tortoise burrows are within the shrapnel dispersal radius of 3,525 feet. However, each of these locations is over 1,300 feet from the target. Since less than 30 missiles would be fired annually, the probability of a direct impact is very small.

Table 4-11. Sensitive Species Within Potential Munitions Landing Radius: No Action Alternative

Target	Potential Landing Radius* (feet)	Distance to Nearest Burrowing Owl Burrow (feet)	Distance to Nearest Gopher Tortoise Burrow (feet)	Distance to Nearest RCW Tree (feet)
TT-1	500	1,098	1,170	3,515
TT-2	500	2,131	2,125	5,300
TT-4	500	505	1,860	5,450
TT-7	500	1,573	1,500	6,220
TT-11	500	2,015	1,150	2,660
TT-12	25	1,340	1,110	3,870
TT-13	500	215	350	5,380
TT-16	25	4,910	1,435	6,290
TT-19	500	1,490	1,310	3,035

*Assumed 95 percent of non-guided inert munitions landed within 500 feet of target and 95 percent of guided munitions landed within 25 feet of target.
RCW = red-cockaded woodpecker

Vehicles are used primarily on established roads and they avoid wetlands, which limits the potential for impacts. However, data are not maintained on the number of vehicles that are used on the test area as a part of mission activity, and a quantified probability of impacts cannot be produced. The likelihood of widespread loss of burrows is extremely low.

Overall, direct physical impacts from the No Action Alternative would not be significant. The No Action Alternative is not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.

Noise Impacts

The primary noise sources analyzed in the *1998 TA B-70 Programmatic Environmental Assessment (PEA)* were sonic booms, Maverick missiles, and shallow water pond detonations. Due to a lack of criteria available for birds, human noise thresholds were used to determine the potential for impacts to the RCW and the Florida burrowing owl. The noise analysis in this section uses the maximum individual intrusive noise event (i.e., P-weighted decibels [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.

The primary concern from supersonic flights is the noise associated with the shock wave generated when the aircraft exceeds the speed of sound; the shock wave is heard on the ground as a sonic boom. The magnitude and duration of the boom depends on the size, shape, and weight of the aircraft and its altitude and flight parameters. The area over which the wave sweeps the ground during a supersonic mission is often referred to as the boom carpet.

The PCBoom model was developed to measure the noise levels generated by military aircraft flying at supersonic speeds. PCBoom4 was used to model the boom carpet generated by an F-15 or F-16 during supersonic flight under various flight and weather conditions. The PCBoom4 modeling results show that aircraft altitude has the greatest effect on the size and intensity of the boom carpet, and speed and aircraft type have limited influence on the boom footprint. An increase in altitude creates a larger boom carpet footprint, but has a lower dB level. A decrease in altitude creates a more intense but smaller boom carpet footprint. The F-15 and F-16 were each modeled for a variety of scenarios, based on typical supersonic mission flight parameters. The variables for the scenarios considered included:

- five weather conditions,
- two aircraft (F-15 and F-16),
- two speeds (Mach 1.05 to Mach 1.2), and
- range of altitude (500 to 2,000 feet AGL).

Potential effects of sonic booms on the federally endangered RCW are of concern at TA B-70. Up to 14 low-level supersonic flights may occur annually at TA B-70. Active RCW trees, RCW foraging habitat, and Florida burrowing owls burrows are present within the modeled

140-decibel (dB) contour, with one RCW tree and thirteen burrowing owls burrows exposed to noise levels up to 154.6 dB from low-level supersonic flights in the TA B-70 vicinity (Table 4-12 and Figure 4-3). Under conditions that would produce the most intense sonic boom, up to 345 active RCW trees may be exposed to noise levels over 140 dB (Table 4-12), which can cause hearing loss in humans. In contrast to humans, birds can regenerate hair cells even after considerable losses, indicating that birds may be more resilient from hearing damage than humans (Bowles, 1995).

Table 4-12. RCWs and Florida Burrowing Owls Exposed to Low-level Supersonic Flight Noise

Receptor	Noise Level (dB)			
	153.6 - 154.6 dB	**151.1 - 153.6 dB**	**147.6 - 151.1 dB**	**139.8 - 147.6 dB**
RCW active trees	1	12	14	318
RCW foraging habitat	453	822	2,235	23,328
Florida burrowing owl burrows	13	11	10	1

dB = Decibels; RCW = Red-cockaded Woodpecker

Noise meaning (implication of the noise to recipient) is a crucial determinant in whether wild animals react to a noise source. For example, waterfowl and other game bird species are typically more responsive to noise than non-game species due to the associated danger for hunted species (i.e., loud guns). Hunted species may become sensitized such that they will increase energy expenditures to avoid perceived danger from loud noises. Alternately, if a noise is deemed harmless by an animal, then the animal may habituate or adapt behaviorally and physiologically over time (Bowles, 1995). Animals may initially react with a startle effect from noises, but adapt over time, so that even this behavior is eradicated. The use of specified flight paths for supersonic flights facilitates the habituation of wildlife by making the noise source spatially predictable. Because RCWs and burrowing owls in the TA B-70 vicinity are regularly exposed to loud impulse noise (i.e., detonations, sonic booms) without any associated physical danger, these individuals have likely become habituated to the noises, such that they do not expend energy on harmless stimuli.

Based on a review of literature pertaining to noise exposure in wildlife, Bowles (1995) suggests that outcome measures, such as reproductive success, are better indicators of distress in wildlife than short-term responses (i.e., startle reaction). Negative reproductive effects have not been seen in the RCW clusters in the TA B-70 area, and the population in the TA B-70 vicinity is growing. Since the entire Eglin RCW population continues to grow, it appears that RCWs on Eglin have adapted to the noises associated with the military mission, including sonic booms. Although other suitable habitat is available on Eglin, RCWs and burrowing owls have continued to nest and forage at and near TA B-70. Quality habitat appears to outweigh any negative influences associated with sonic booms.

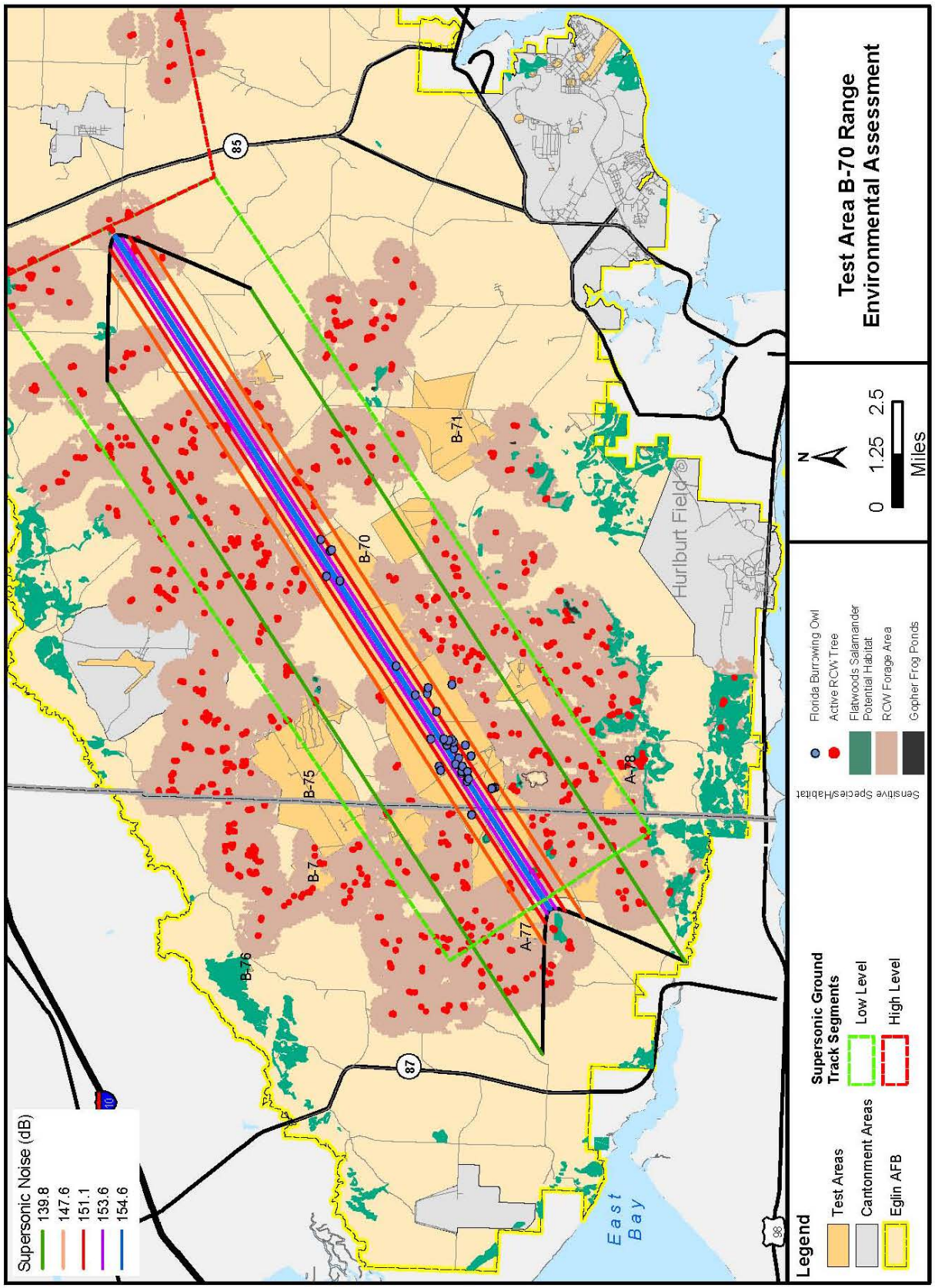

Figure 4-3. RCWs and Florida Burrowing Owls Within the Sonic Boom Carpet

The largest live munition dropped on TA B-70 would be the Maverick missile (86 lbs net explosive weight [NEW]) at TT-19 up to 29 times annually. Examination of current sensitive species locations showed that one burrowing owl burrow falls within the 140-dB contour for the Maverick missile (3,000 feet) at TT-19. As with sonic booms, quality habitat appears to be a more important determinant of owl locations than any negative effects from munitions noise.

For the shallow water pond (TT-5) on TA B-70, noise modeling was conducted for the M-58 (1,750 pounds of C-4 explosive). Under the No Action Alternative, this detonation would occur up to four times per year. The noise model was not able to determine the amount of noise reduction due to water attenuation, so the actual area affected by noise from the detonation would be smaller than that calculated in the model. The 140-dB noise contour does not reach any Florida burrowing owls, RCW trees, or RCW foraging habitat.

Although RCWs and burrowing owls may be exposed to high noise levels associated with TA B-70 missions, each noise event is very short and occurs only occasionally throughout the year. Burrowing owls and RCWs continue to nest successfully on and near TA B-70 in spite of the noise from sonic booms and munitions; the presence of suitable habitat appeared to outweigh any negative influences associated with mission-related noise. Noise impacts under the No Action Alternative would not be significant and are not likely to adversely affect the RCW.

Chemical Impacts

Aluminum from chaff, magnesium from flares, and explosives from live munitions are the primary chemicals of potential concern for sensitive species on TA B-70, especially aquatic organisms. Metal debris and inert munitions are periodically removed from TA B-70, thus are not a concern for chemical impacts to biological resources. However, repeated, concentrated exposure to chaff, flare, and explosive debris could negatively affect the inhabitants of small bodies of water (i.e., Bull Pond, a gopher frog breeding pond). As summarized in the Water Resources section, the number of units expended compared to the surface area over which they would be delivered was relatively small; the Air Force would have to expend several thousand times more chaff and flare units, and 30 to over 100 times more in net explosives to approach impact thresholds (Table 4-8). Under the No Action Alternative, chemical impacts to biological resources would not be significant, and are not likely to adversely affect the flatwoods salamander, RCW, or indigo snake.

Habitat Alteration

Habitat alteration is possible from munitions, pyrotechnics, and ground operations. Wildfires ignited by TA B-70 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 was acceptable prior to mission activities. Overall, wildfires would primarily be beneficial to burrowing owls, RCWs, gopher tortoises, gopher frog ponds, and potential flatwoods salamander habitat.

Vehicles, especially tracked vehicles such as tanks, have the potential to collapse Florida burrowing owl and gopher tortoise burrows and cause soil disturbance and erosion issues for wetland breeding areas. Because vehicles avoid wetlands and are primarily kept on established roads, 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. Additionally, no currently used target areas are located near wetlands or streams, further minimizing the potential for impacts.

Habitat alteration impacts under the No Action Alternative would not be significant and are not likely to adversely affect the RCW, indigo snake, or flatwoods salamander.

Summary

The current No Action Alternative would not have significant biological resource impacts and is not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.

4.4.2 Alternative 1

Direct Physical Impacts

Direct physical impacts to sensitive species are possible from inert munitions, shrapnel from live munitions, and vehicles (crushing). Target locations and types of munitions for some targets are different from the No Action Alternative, but the likelihood of direct encounters still would be very low. The only sensitive species within the potential munitions-landing radius for a target were two gopher tortoises and one burrowing owl at TT-13 (Table 4-13). The largest direct impact area at this target is 2.3 square feet out of the 785,400-square-foot potential landing area; therefore, the probability of a direct hit is extremely small.

Using the MK-84 as the largest live munition for TT-7, TT-12, and TT-19, a maximum fragment throw distance of 3,880 feet was overlaid with sensitive species locations. The other targets are used for inert munitions, so shrapnel fragments are not an issue. The following sensitive species are located within the 3,880-foot shrapnel dispersal radius: eight burrowing owls and 10 gopher tortoises (TT-7), nine burrowing owls, five gopher tortoises, and one active RCW tree (TT-12); and six burrowing owls, five gopher tortoises, and three active RCW trees (TT-19). Ten burrowing owls and five gopher tortoises are within the 3,525-foot maximum fragment throw distance for the Maverick missile at TT-10. No sensitive species are within the 2,580-foot maximum fragment throw distance for the 155-millimeter target. Although some sensitive species do fall within the fragment throw distance, all of them are more than 1,100 feet from the impact site, and are likely to be either in their burrows, inside the cavity tree, or foraging outside of the impact area at the time of impact. The likelihood of a direct impact from shrapnel is extremely low.

Table 4-13. Sensitive Species within Potential Munitions Landing Radius: Alternatives 1 and 2

Target	Potential Landing Radius* (feet)	Maximum Fragment Throw Distance (feet)	Distance to Nearest Burrowing Owl Burrow (feet)	Distance to Nearest Gopher Tortoise Burrow (feet)	Distance to Nearest RCW Tree (feet)
TT-1	500	NA	1,098	1,170	3,515
TT-2	500	NA	2,131	2,125	5,300
TT-3	500	NA	728	1,240	5,370
TT-4	500	NA	505	1,860	5,450
TT-7	25	3,880	1,573	1,500	6,220
TT-9	500	NA	1,114	875	2,750
TT-10	25	3,525	1,531	2,070	3,600
TT-11	500	NA	2,015	1,150	2,660
TT-12	25	3,880	1,340	1,110	3,870
TT-13	500	NA	215	350	5,380
TT-19	500	3,880	1,490	1,310	3,035
MOAB	TBD	TBD	2,100	2,385	4,680

MOAB = Massive Ordnance Air Blast; NA = not applicable; TBD = to be determined

*Assumed 95 percent of nonguided inert munitions landed within 500 feet of target and 95 percent of guided munitions landed within 25 feet of target.

Vehicles are used primarily on the established roads and they avoid wetlands, which limits the potential for impacts. However, data are not maintained on the number of vehicles that are used on the test area as a part of mission activity, and a quantified probability of impacts cannot be produced. The likelihood of widespread loss of burrows is extremely low. Prior to missions involving extensive off-road activities in the vicinity of owl burrows and gopher tortoise burrows, the Natural Resources Section would install markers for avoidance next to burrows. Troops would be instructed to avoid gopher tortoises, burrowing owls, gopher tortoise burrows, and owl burrows, and not to dig within 25 feet of any burrow. Any potential digging or ground disturbance would require a separate 813 document and survey prior to construction. The Natural Resources Section should be notified if a tortoise is sighted.

Overall, direct physical impacts from Alternative 1 would not be significant. Alternative 1 is not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.

Noise Impacts

Primary noise sources on TA B-70 include supersonic overflights, air-to-surface (A/S) bomb detonations, shallow-water pond detonations (i.e., line charge tests), artillery, small-arms ammunition fire, and ground operations. Certain species may be sensitive to noise created by these activities.

Supersonic Noise

Low-level supersonic flight activity for Alternative 1 would remain the same as that for the No Action Alternative (14 flights annually), with identical impacts.

Impulse Noise (Explosive)

Impulse noise from live munitions has the potential to affect the behavior and reproduction of sensitive species on and near TA B-70. Munitions noise is categorized as high explosive impulse noise, such as occurs from live bombs or artillery. This type of noise is accompanied by abrupt increases in pressure and powerful, low frequency sound that rapidly spreads from the point of detonation. The sound and pressure of a detonation can temporarily or permanently affect hearing, as well as injure or kill an animal depending on the proximity of the animal to the source. Inert and live bombs would be dropped on existing targets on TA B-70. Potentially harmful levels of noise could extend outward to sensitive species. Although brief, exposure to this noise carries a risk of acoustic discomfort. The primary impulse noise sources on TA B-70 are live MK-84s (945 lbs NEW), GBU-43Bs (MOAB; 18,700 lbs H6 explosive), Maverick missiles, 155 mm artillery, and shallow-water pond detonations. The 2005 *TA B-70 Environmental Baseline Document* analyzed noise impacts to sensitive species, finding that the presence of good habitat appeared to outweigh any negative impacts from noise; this section summarizes analyses from the 2005 *TA B-70 Environmental Baseline Document* using updated species location data (U.S. Air Force, 2005a).

MOAB Detonations. MOAB detonations create noise levels of 140 dBP that extend out 7,460 ft from the point of origin (Figure 4-4). For lack of wildlife-specific thresholds for impulse noise, the human measure was used for analysis. Another threshold, 154 dBP, is based on apparent tolerance of RCWs on Eglin to noise. New species locations were overlaid with the MOAB noise contours, showing that noise levels of 140 dBP from the MOAB detonations did encompass seven active RCW cavity trees and 18 burrowing owl burrows, but noise levels of 154 dBP did not (Figure 4-4). As discussed previously for sonic booms, birds can regenerate hair cells even after considerable losses, indicating that birds may be more resilient from hearing damage than humans (Bowles, 1995). These RCWs and burrowing owls continue to thrive in the area surrounding the MOAB detonation location, thus there appear to have been no lasting impacts from the noise.

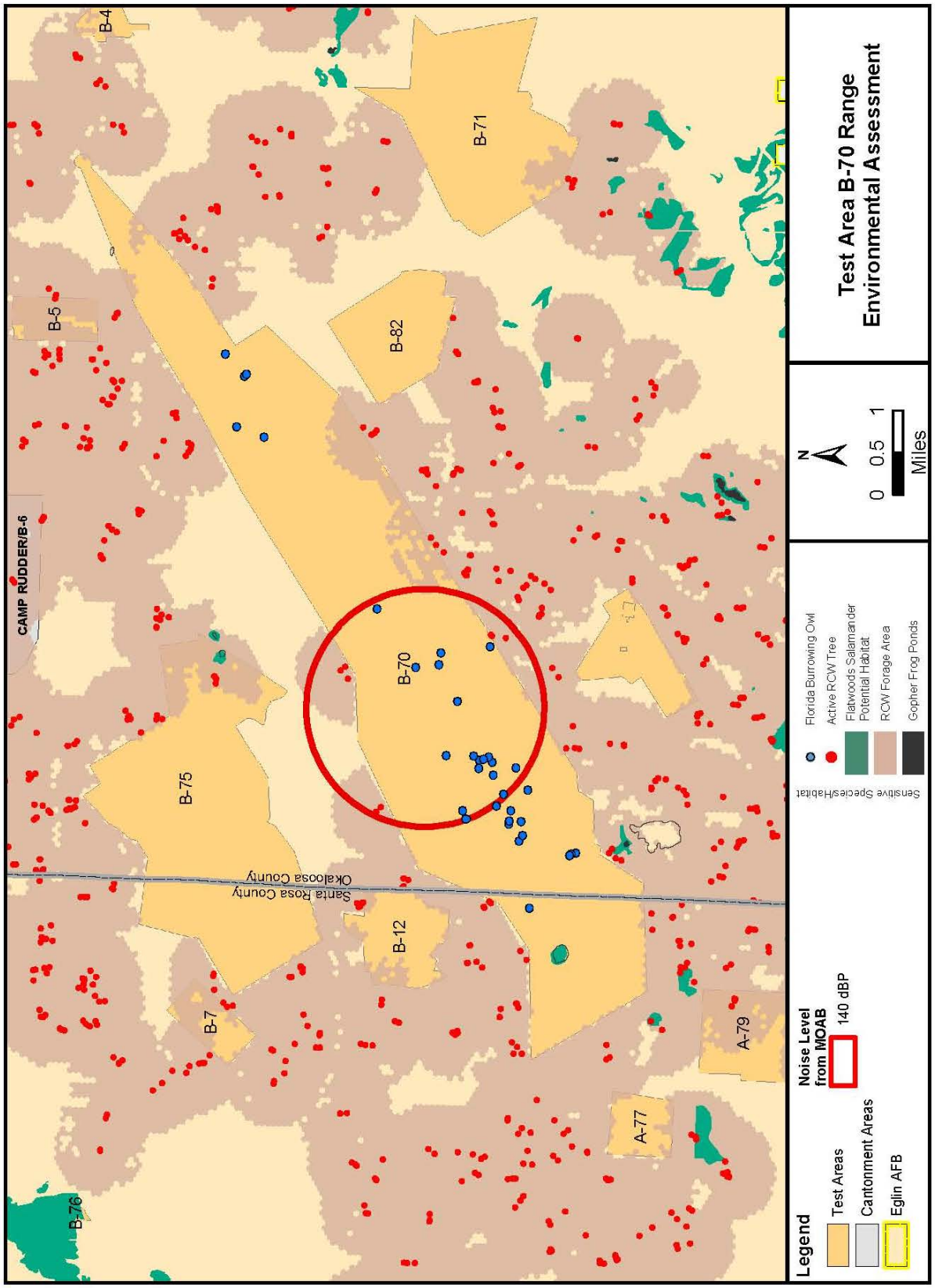

Figure 4-4. RCWs and Florida Burrowing Owls Exposed to Massive Ordnance Air Blast Impulse Noise

Artillery Noise. Protected species could be disturbed by artillery noise. Delaney et al. (2000) published results of an experiment that demonstrated that at certain distance and noise level from small-arms use and artillery, RCWs would not flush. RCWs did not flush when exposed to artillery noise when the source was located at a distance of 122 meters (Delaney et al., 2000). When nesting, RCWs did flush in response to noise; they returned to the nests within several minutes and nesting success was not affected, supporting the point that repetitive or reoccurring noise from some types of military training was not sufficient to affect nesting success (Delaney et al., 2000).

Small Arms Noise. The degree of disturbance to wildlife created by small-arms fire is difficult to separate from the additive effects, and probably more disturbing effect of human presence. A study noted that humans, eagles, and boats caused a greater percentage of black brants (a type of geese) to take flight than jets, propeller aircraft, and gunshots (Ward et al., 1986). In general, human presence and natural predators more often caused startle responses than noise (Manci et al., 1988).

The results of the Delaney et al. (2000) study discussed above also apply to small-arms noise. As previously mentioned, RCWs did not flush when the source (artillery and small arms) was located at a distance of 122 meters (Delaney et al., 2000). When nesting RCWs did flush in response to noise, they returned to the nests within several minutes and nesting success was not affected, supporting the point that repetitive or reoccurring noise from some types of military training was not sufficient to affect nesting success (Delaney et al., 2000).

Based on the 7.62 mm data in Table 4-14, potentially harmful noise from single-event small-arms fire would occur within 50 feet of the point of fire. Thus, firing within 50 feet of an active RCW cavity tree or other known sensitive species location is not recommended. U.S. Army guidelines allow firing of small arms, but not artillery, within 200 feet of a marked cavity tree (U.S. Army, 2006).

Table 4-14. Impulse Noise from 7.62 mm Fire

Noise Level (P-weighted Decibels)	Distance (feet)
155	At Gunner
140	50
92	1,640
82	3,280
73	6,560
67	9,840
63	13,120
60	16,400

Source: U.S. Army CHPPM, 2004
mm = millimeter

MK-84. A few most frequently used live ordnance targets are the focus of the analysis, as these areas are the most likely locations that munitions noise would affect sensitive species. The targets and their uses are:

- TT-7: Variety of bombs and missiles
- TT-10: AGM-65s (Mavericks)
- TT-12: GBU 17B Bunker; used for guided penetrator bombs
- TT-19: A/G WSEP Area Target; sea containers, primary target for live weapons fire

Eleven active RCW trees and 30 burrowing owl burrows fall within the 140-dB footprints for the MK-84 around TT-7, TT-10, TT-12, and TT-19 (Figure 4-5). Each MK-84 detonation is a single event, which is much less disruptive to birds than repetitive noise. As most of the TA B-70 population of burrowing owls is within the 140-dB footprint for these targets and RCWs continue to thrive in the forests around TA B-70, these species do not appear to suffer from any long-term noise impacts from TA B-70 activities.

Maverick Missile. Under Alternative 1, the Maverick missile would be used at TT-10 instead of TT-19. No RCWs are within the 140 dB footprint for Maverick missile noise at TT-10, but ten burrowing owl burrows are within the 140 dB footprint. The burrowing owl's continued use of habitat near the missile target seems to indicate that missile noise is not a deterrent to the burrowing owl.

Pond Detonations. Analysis of the 1,500-pound pond detonation for the No Action Alternative also applies to Alternative 1.

Ground Operations. Vehicle movement and foot traffic associated with ground operations would potentially create noise and disturbance that could affect RCWs foraging along the periphery of TA B-70. Depending on the type of vehicle, noise levels could be quite loud and accompanied by heavy vibration. Delaney et al. (2002) monitored nesting RCWs as a convoy of vehicles passed (Table 4-15). Birds flew away as a result of the passing of the convoy, but returned shortly thereafter. Vehicle use associated with Alternative 1 along existing roadways does not represent a novel 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

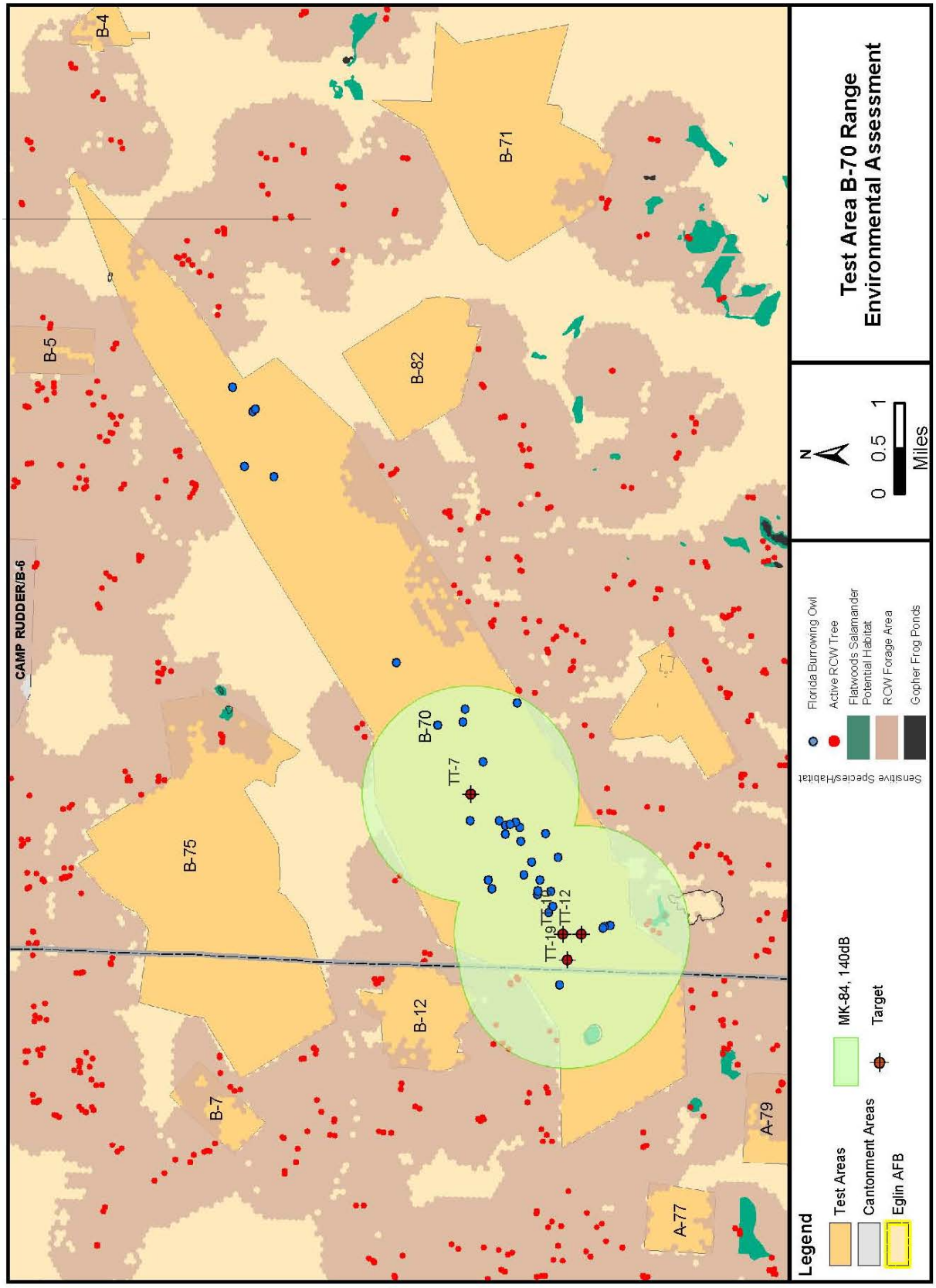

Figure 4-5. RCWs and Florida Burrowing Owls Exposed to MK-84 Impulse Noise

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 training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than 2 hours of occupation). 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. Activities that are not allowed within the 200-foot buffer include bivouacking and establishing command posts. U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs.

In accordance with the Army guidelines discussed above, transient foot and vehicle traffic will be limited to 2 hours or less, vehicles will use established trails and roads, and no bivouacking will occur within the 200-foot RCW buffer. Therefore, RCWs are not likely to be adversely affected by noise associated with ground movements.

Noise Summary. Noise from the Alternative 1 level of activity on TA B-70 would not have any significant impacts on biological resources, is not likely to adversely affect the RCW, and would have no effect on the flatwoods salamander or 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 maximum	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 Combat Support/Combat Service Support (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, hardwood only	Yes
Establish camouflage netting	No
Vehicle maintenance for no more than 2 hours	Yes
Weapons Firing:	
7.62 millimeter and below blank firing	Yes
.50 caliper blank firing	Yes
All others	No
Noise:	
Generators	No
Artillery/hand grenade simulators	Yes
Hoffman-type devices	Yes

Table 4-17. Selected Army Training Activities Allowed/Not Allowed Within 200 Feet of Marked RCW Cavity Tree, Cont'd

Mission Activity	Allowed
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
Hexachloroethane (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

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.

RCW = red-cockaded woodpecker

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 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.

UXO and spent munitions have the ability to leach explosive residue into soils, or metals such as lead, aluminum and copper from weathered casings and projectiles if the expended munitions are not retrieved. However, at TA B-70, range personnel routinely remove spent ordnance from target areas. Also, no surface waters fall within a 0.25 buffer around the primary targets where ordnance is expended (Figure 4-1), thus there is minimal risk of ground water transport of contaminants, minimizing the possibility of chemical impacts to aquatic species.

As stated for the No Action Alternative, the Air Force would have to expend several thousand times more chaff and flare units to approach surface water impact thresholds. 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. Eglin restricts the release of chemicals or metals into streams and within the 1,500-foot buffer for flatwoods salamander habitat.

Due to restrictions on where pyrotechnics and munitions can be used, along with required ordnance cleanup, overall impacts to biological resources from chemicals would not be significant. Chemicals are not likely to adversely affect the RCW, flatwoods salamander, or Eastern indigo snake.

Habitat Alteration

Habitat alteration is possible due to wildfires ignited by live munitions/pyrotechnics and from soil disturbance associated with munitions and vehicle use.

Wildfires

The use of munitions and pyrotechnics increases the risk of wildfires. Fires are usually 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, smolder, or if fire suppression activities are necessary.

Multiple federally listed species, including the flatwoods salamander and 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 hydrologic alteration of flatwoods salamander and gopher frog habitat from fire suppression activities, and for damage or mortality of active RCW cavity trees if the trees ignite. Prescribed fire is the preferred option for maintaining these habitats.

Air Force missions involving tracers, bombs, missiles, and rocket motors are responsible for almost all wildfires on TA B-70. Less than five percent of the wildfires on TA B-70 are ignited by Army and Marine ground operations. Although more than 90 percent of the fires on TA B-70 are contained to the test area, occasionally one will go into the interstitial area beyond the test area boundary. The average size of a wildfire ignited by TA B-70 activities is approximately 142 acres (Table 4-17).

Table 4-17. Wildfires at TA B-70 Missions from 1995 to 2007

	Year												
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Number of Fires	NA	5	4	1	1	16	8	8	11	10	11	11	15
Acres Burned	NA	3,688	722	0.5	1	235	80	3,511	443	789	519	1,257	622
Average Size (acres)	NA	738	181	0.5	1	15	10	439	40	79	47	114	41

NA = Not Available
Source: Eglin DSS, 2008

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, 2006c). 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 Natural Resources Section. Within 3 working days of notification, the Eglin Natural Resources Section would reprovision a cavity tree if one was destroyed due to training activity (i.e., due to wildfire).

Soil Disturbance

Soil disturbance associated with munitions, helicopter rotorwash, and vehicle use may affect gopher tortoise burrows, Florida burrowing owl burrows, flatwoods salamander potential habitat, and gopher frog ponds. There are isolated eroded areas at some targets and the helicopter drop zone, but there is no evidence that these areas are impacting surface waters. Flat terrain around these areas limits waterborne transport of eroded soil. The soil is not moving off-site or eroding into any drainage (U.S. Air Force, 2006b).

Vehicles, especially tracked vehicles such as tanks, have the potential to collapse Florida burrowing owl and gopher tortoise burrows and cause soil disturbance and erosion issues for wetland breeding areas. Because vehicles avoid wetlands and are primarily kept on established roads, the possibility of impacts is greatly reduced and determined to be minimal. The probability for impacts to wetlands is minimal, and the likelihood of widespread loss of burrows is extremely low. Prior to missions involving extensive off-road activities in the vicinity of owl burrows and gopher tortoise burrows, the Natural Resources Section would install markers for avoidance next to burrows. Troops would be instructed to avoid gopher tortoises, burrowing owls, gopher tortoise burrows, and owl burrows, and not to dig within 25 feet of any burrow. Any potential digging or ground disturbance would require a separate 813 document and survey prior to construction. The Natural Resources Section should be notified if a tortoise is sighted.

Summary

Under Alternative 1, habitat alteration from TA B-70 missions would not cause any significant impacts to biological resources, and is not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.

Management Actions

Alternative 1 includes management actions for TA B-70 that would minimize the potential for impacts to biological resources.

Sensitive Habitats

- Mark wetlands on field maps as areas to avoid; inform trainees of importance of avoiding these areas.
- 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, Outstanding Natural Areas, and Significant Botanical Sites.
- To reduce potential seed sources, treat areas that have known invasive nonnative species problems.

Sensitive Species

- Continue monitoring of RCWs by the Eglin Natural Resources Section.
- Do not use smokes, simulators, or flares within 100 feet of natural water bodies (i.e., Bull Pond, Live Oak 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. These restrictions also apply within the 1,500-foot buffer for potential flatwoods salamander habitat.
- For permitted off-road vehicle use, vehicles shall avoid driving in wetlands, floodplains, and on steep slopes. Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams.
- Avoid large troop movements on steep slopes and in wetlands.
- For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential.
- During ground operations, keep digging to a minimum; no holes deeper than 3 feet will be dug, especially within 100 feet of any stream.
- No new cleared areas (bivouac, fighting position, etc.) shall be established within 100 feet of any water body, wetland, or floodplain, or on steep slopes.
- Do not dig within 25 feet of any gopher tortoise burrow.
- For missions involving off-road vehicle use near gopher tortoise or burrowing owl burrows, install markers for avoidance near burrows.
- Conduct gopher tortoise and burrowing owl surveys prior to any new construction.
- Digging, vegetation cutting, off-road vehicle use, and other ground-disturbing activities should not occur within 1,500 feet of flatwoods salamander ponds or within 100 feet of gopher frog ponds.
- Avoid ground-disturbing fire suppression activities (bulldozers) in wetlands, particularly in flatwoods salamander habitat and gopher frog ponds.
- Locate munitions impact areas away from wetlands, especially flatwoods salamander habitat and gopher frog ponds.
- Manage lead-based projectiles near natural water bodies, particularly flatwoods salamander habitat and gopher frog ponds.
- Follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004a).
- Follow the Army Guidelines for RCWs (U.S. Army, 2006).
- Within 200 feet of marked RCW cavity trees, allow only military activities of a transient nature (less than 2 hours occupation).

- Within the 200-foot RCW buffer, prohibit bivouacking, excavating, digging, and establishing command posts.
- 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.
- Immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control must notify Natural Resources Section biologists immediately.
- Within 3 working days of notification, the Eglin Natural Resources Section would reprovision a cavity tree if one was destroyed due to training activity.
- If a unit caused damage to training land within a cluster, the responsible unit would coordinate with the Natural Resources Section to repair damage as soon as practicable (normally within 3 working days of notification).
- All digging for military training activities in RCW habitat management units must be filled and inspected by the proponent upon completion of training.
- Inform vehicle operators to avoid Florida burrowing owl burrows.
- Inform vehicle operators to avoid gopher tortoises, gopher tortoise burrows, indigo snakes, and black bears. The Natural Resources Section should be notified if one is sighted.
- Continue prescribed burning as much as possible in fire dependent habitats, particularly RCW foraging habitat and flatwoods salamander habitat.
- In accordance with Section 12.5.13.2 of AFI 32-7064, *Integrated Natural Resources Management*, cooperate with and support the Eglin Natural Resources Section 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 1,000 feet AGL. 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 on the Environmental Management website in the Fire Management Section.
- 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.

4.4.3 Alternative 2

A 300-percent mission surge over Alternative 1 activity levels would increase the frequency, and in some cases the severity, of impacts to biological resources on and near TA B-70. The possibility of direct physical impacts from munitions impact and shrapnel would increase by 300 percent. The probability cannot be quantified until updated sensitive species survey data are available.

The mission surge would increase the frequency but not the intensity of noise from TA B-70 missions. A gradual increase in frequency would not be expected to have any significant impact on biological receptors because of their ability to acclimate to noise.

A 300-percent mission surge would also increase the likelihood of wildfires and soil disturbance. Assuming a 300-percent increase in mission activity on TA B-70 resulted in a 300-percent increase in wildfires, there would be an average of 568 acres affected by TA B-70 activities igniting 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. An increase in off-road vehicle use could increase the potential for soil disturbance, erosion, and burrow collapse; however, most vehicle use would still occur on established roads and off-road vehicle use is avoided in wetlands and near areas with steep slopes, minimizing the potential for impacts.

Overall, a 300-percent mission surge would not have any significant impacts on biological resources at TA B-70, and is not likely to adversely affect the RCW, flatwoods salamander, or indigo snake.

4.4.4 Summary

TA B-70 air operations, munitions and pyrotechnics use, and ground operations may affect sensitive habitats and species through direct encounters, noise, chemical impacts, and habitat alteration. The management actions in Section 4.4.2 would serve to eliminate or minimize many of the potential impacts from TA B-70 activities. Overall impacts to biological resources would not be significant for any of the alternatives, and the activity levels for the three alternatives are not likely to adversely affect the RCW, flatwoods salamander, or indigo snake. Eglin is conducting an Endangered Species Act Section 7 consultation to address potential impacts to federally listed species.

4.5 CULTURAL RESOURCES

4.5.1 No Action Alternative

The No Action Alternative represents the previously approved level of activity at TA B-70 and would not adversely affect cultural resources.

4.5.2 Alternative 1

No adverse effects to cultural resources are expected under Alternative 1. No NRHP Eligible archaeological sites, historic cemeteries, traditional cultural properties or historic districts are present within TA B-70. As a result, no agency consultation is required prior to mission activity in these areas.

The structure (building #8970) in the far northeastern end of TA B-70 will require protection and maintenance. All actions must adhere to standards and guidelines outlines in the Eglin AFB Integrated Cultural Resources Management Plan (U.S. Air Force, 2004b) and the previously developed Programmatic Agreement between the AAC, the Florida SHPO, and the Advisory Council on Historic Preservation (U.S. Air Force, 2003b).

Continued coordination should occur with 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.

4.5.3 Alternative 2

As described under Alternative 1, no adverse effects to cultural resources would be expected under the increase in activities under Alternative 2.

4.6 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 and training activities on TA B-70.

4.6.1 No Action Alternative

This alternative includes the activity level approved in the *1998 Test Area B-70 Programmatic Environmental Assessment (PEA)*, which authorized a 100-percent increase in test missions and associated expendables over the baseline level analyzed in the *Fiscal Year 1995 Range Utilization Report* and the anticipated mission additions. Emissions expected for this level of activity are shown in Table 4-18. For discussion purposes the calculated concentrations would be minute for CO, NO_x, and SO_2. Particulate matter emissions would be well below the specified standards. Emissions as compared to the regional air quality are also negligible (Table

4-19) with only a 0.03-percent increase to regional PM emissions from TA B-70 activities. No adverse impacts are expected for the No Action Alternative to regional air quality.

Table 4-18. No Action Alternative Air Emissions Compared to the Federal National Ambient Air Quality Standards (NAAQS)

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	2.372E-06
	8-Hour	9	1.660E-06
NO_x	Annual	0.053	4.559E-09
SO_2	3-Hour	0.5	1.163E-08
	24-Hour	0.14	5.168E-09
	Annual	0.03	1.034E-09
PM_{10}	24-Hour	150 µg/m³	0.531 µg/m³
	Annual	50 µg/m³	0.106 µg/m³

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; ppm = parts per million; SO_2 = sulfur dioxide; µg/m³ = micrograms per cubic meter

Table 4-19. No Action Alternative Air Emissions Compared to the 2002 NEI Data for Okaloosa and Santa Rosa Counties

Area	Emissions (tons/year)				
	CO	NO_x	PM	SO_x	VOC
Total Okaloosa County	63,273.74	7,132.435	8,735.849	838.6539	10,332.94
Total Santa Rosa County	53,052.13	11,094.85	14,308.25	3,012.233	8,519.052
Test Area Emissions	3.637079	0.433079	0.490586	0.019141	0.415651
% Okaloosa County Emissions	0.005%	0.00%	0.00%	0.00%	0.00%
% Santa Rosa County Emissions	0.00%	0.00%	0.00%	0.00%	0.00%

CO = carbon monoxide; NEI = National Emissions Inventory; NO_x = nitrogen oxides; PM = particulate matter; ppm = parts per million; SO_x = sulfur oxides; VOC = volatile organic compounds

4.6.2 Alternative 1

Alternative 1 authorizes the currently level of activity plus foreseeable future activities. Emissions were calculated using the data included in Table 2-4 (Maximum Annual Expendables for Test Area B-70 Under Alternatives 1 and 2) for the number of munitions expected to be used annually. Table 4-20 and Table 4-21 summarize the emissions expected from munitions and vehicle travel. Mitigations were not factored in when calculating emissions.

Emissions for CO, NO_x, and SO_2 would be negligible as compared to the NAAQS. Fugitive dust (particulate matter) is expected to temporarily increase in the local area but would still be well below the federal standards. All criteria pollutant emissions are expected to be less than the 10-percent threshold. Once activity is completed, there would be short-term, temporary increase

in particulate matter emissions and air quality would return to baseline. Adverse impacts are not expected to regional air quality for Alternative 1.

Table 4-20. Alternative 1 Air Emissions Compared to the Federal National Ambient Air Quality Standards (NAAQS)

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	2.800E-06
	8-Hour	9	1.960E-06
NO_x	Annual	0.053	5.972E-09
SO_2	3-Hour	0.5	1.687E-08
	24-Hour	0.14	7.497E-09
	Annual	0.03	1.499E-09
PM_{10}	24-Hour	150 µg/m³	8.732 µg/m³
	Annual	50 µg/m³	1.746 µg/m³

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; ppm = parts per million; SO_2 = sulfur dioxide; µg/m³ = micrograms per cubic meter

Table 4-21. Alternative 1 Air Emissions Compared to the 2002 NEI Data for Okaloosa and Santa Rosa Counties

Area	Emissions (tons/year)				
	CO	NO_x	PM	SO_x	VOC
Total Okaloosa County	63,273.74	7,132.435	8,735.849	838.6539	10,332.94
Total Santa Rosa County	53,052.13	11,094.85	14,308.25	3,012.233	8,519.052
Test Area Emissions	3.714328	0.440501	1.346948	0.019777	0.415651
% Okaloosa County Emissions	0.005%	0.005%	0.012%	0.002%	0.003%
% Santa Rosa County Emissions	0.000%	0.000%	0.000%	0.000%	0.000%

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

4.6.3 Alternative 2

This alternative explores the potential impacts of a level of activity as described in Alternative 1 plus a 300-percent increase in mission activity. Table 4-22 and Table 4-23 summarize the emissions expected from munitions and vehicle travel. Emissions were calculated conservatively assuming that no mitigations would be used.

Under Alternative 2 emissions would be negligible for all criteria pollutants except particulate matter as compared to the federal NAAQS. Particulate matter is expected at a concentration of 119 µg/m^3 averaged over a 24-hour period and 24 µg/m^3 averaged over a year. These emission concentrations are still within federal standards and would not cause adverse affects to the

regional air quality. Also, emissions would make up less than 1 percent of Okaloosa and Santa Rosa County's emissions. The increase in fugitive dust would be short-term and temporary. No adverse impacts to regional air quality are expected for Alternative 2.

Table 4-22. Alternative 2 Air Emissions Compared to the Federal National Ambient Air Quality Standards (NAAQS)

Criteria Pollutant	Averaging Time	NAAQS (ppm)	Calculated Concentration (ppm)
CO	1-Hour	35	8.554E-06
	8-Hour	9	5.988E-06
NO_x	Annual	0.053	2.498E-08
SO_2	3-Hour	0.5	8.729E-08
	24-Hour	0.14	3.880E-08
	Annual	0.03	7.759E-09
PM_{10}	24-Hour	150 ug/m³	118.991
	Annual	50 ug/m³	23.798

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} = particulate matter with a diameter less than or equal to 10 microns; ppm = parts per million; SO_2 = sulfur dioxide; µg/m³ = micrograms per cubic meter

Table 4-23. Alternative 2 Air Emissions Compared to the 2002 NEI Data for Okaloosa and Santa Rosa Counties

Area	Emissions (tons/year)				
	CO	NO_x	PM	SO_x	VOC
Total Okaloosa County	63,273.74	7,132.435	8,735.849	838.6539	10,332.94
Total Santa Rosa County	53,052.13	11,094.85	14,308.25	3,012.233	8,519.052
Test Area Emissions	3.932716	0.540283	12.86035	0.028336	0.415651
% Okaloosa County Emissions	0.005%	0.006%	0.118%	0.003%	0.003%
% Santa Rosa County Emissions	0.000%	0.000%	0.000%	0.000%	0.000%

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

4.7 NOISE

This section addresses noise impacts to the community. Noise impacts to biological resources are addressed in Section 4.4. Noise from missions conducted on TA B-70 includes supersonic overflights, A/S bomb detonations, shallow-water pond detonations (i.e. line charge tests), artillery, and small-arms ammunition fire. Resources potentially affected include the local

community and biological resources. Personnel involved with these activities would be required to wear appropriate hearing protection.

4.7.1 No Action Alternative

Supersonic Noise

There would not be significant impacts to the public from supersonic noise under the No Action Alternative. The 1998 Test Area Programmatic Environmental Assessment Preferred Alternative, which is the No Action Alternative for this REA, evaluated a maximum of 14 supersonic missions. Supersonic flight generates a shock wave that is heard on the ground as a sonic boom. The size and intensity of the boom is dependent upon the size of the aircraft, speed, altitude, and weather. The program, PCBoom4 was used to model supersonic overflights and to determine flight conditions that would prevent excessive noise levels from leaving the Eglin boundary. Eglin has a goal not to exceed 127 dBP (1 psf) leaving the Eglin boundary, but based on noise data collected during supersonic flights, this goal is not always met.

Noise monitoring data from the mid-90s indicated that the 127 dBP goal was exceeded 53 percent of the time. The threshold noise criterion is 138.5 dBP (3.5 psf); if this level is reached during noise sampling, then the mission is terminated. Conducting 14 supersonic missions per year would not result in a change in noise intensity over previous years, but was predicted to result in a higher number of noise complaints.

In 2006, 24 of 77 (or about one-third) complaints from all communities near Eglin AFB (Table 3-8, Relationship Between Noise Level and Percent of Population Highly Annoyed) were attributed by complainants to sonic booms, though there were several communities represented in these complaints located away from TA B-70 and the projected path of the supersonic overflights.

Since TA B-70 is the only land range approved for supersonic overflight, the noise could be attributable to some other type of land-based activity or from aircraft flying over Eglin's water range in the Gulf of Mexico. Figure 4-6 illustrates a sonic boom footprint of an F-16 flying at Mach 1.2 at 1,000 feet and it can be seen that the projected path of the noise would most likely affect the communities of Holley and Navarre. In the 2006 complaint database, only 1 complaint out of the total of 77 for all types of noise was registered from Navarre.

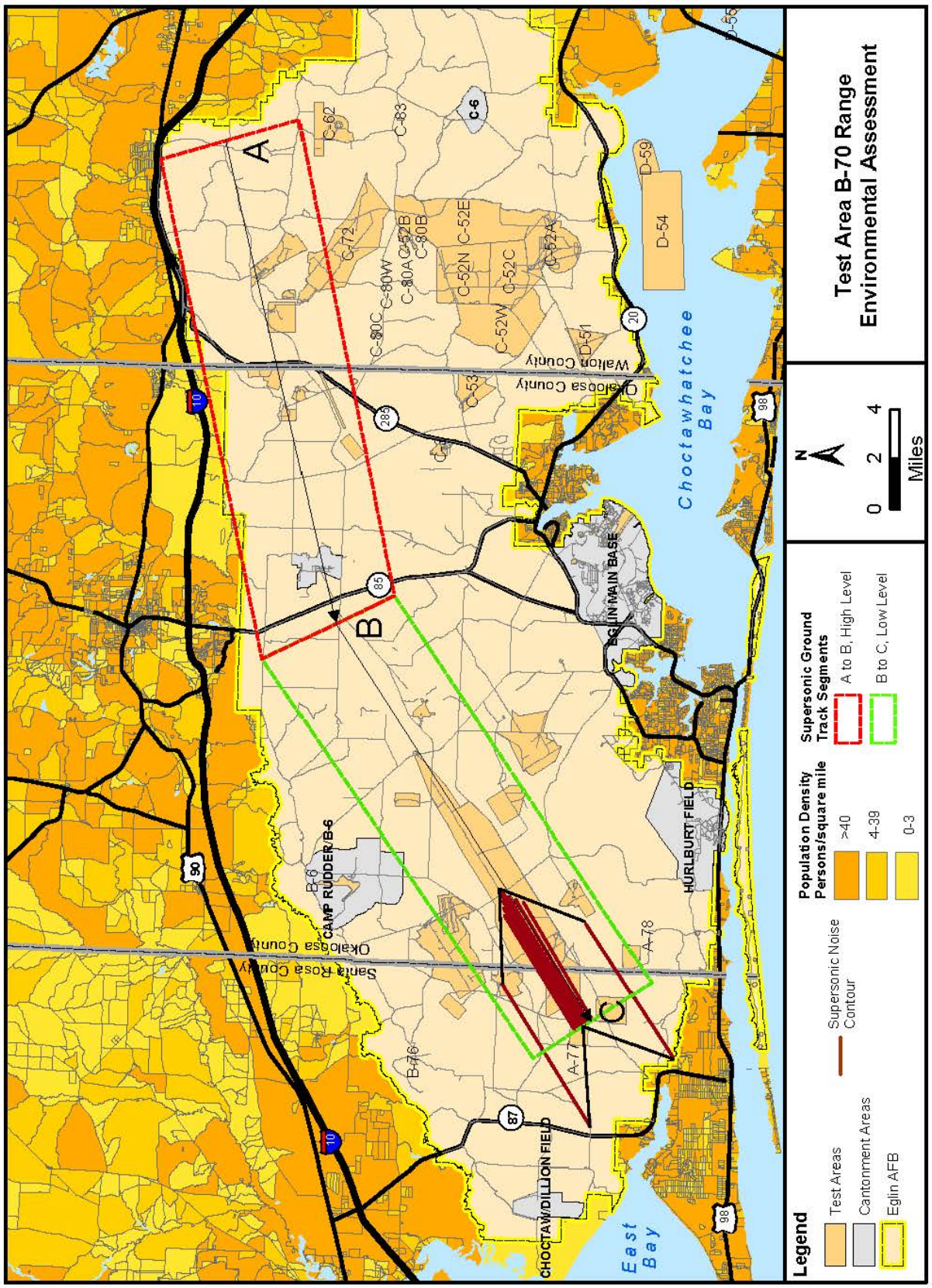

Figure 4-6. Sonic Boom Footprint of F-16 at Test Area B-70

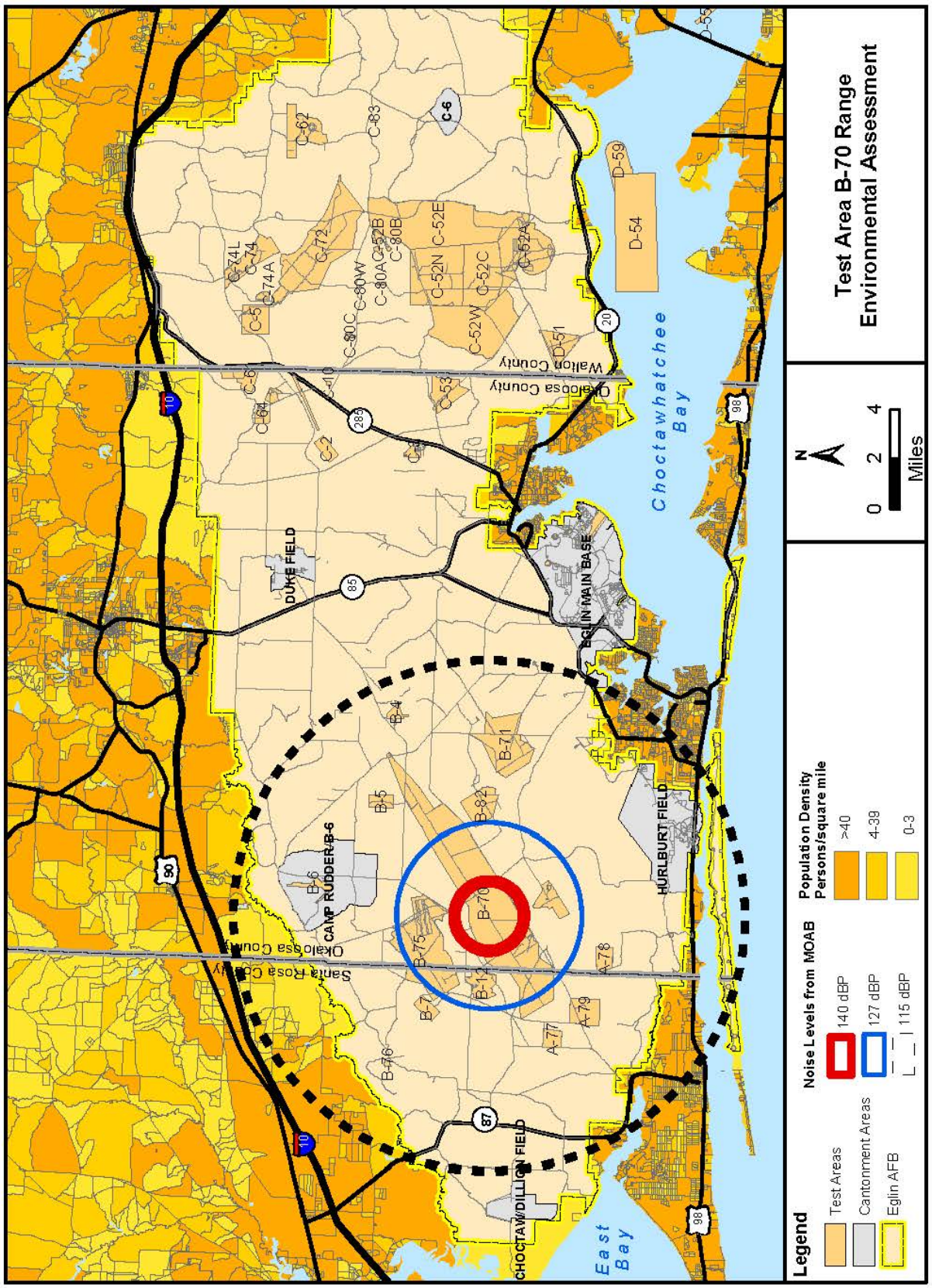

Figure 4-7. Noise Contours from the GBU-43/B

Impulse Noise (Explosive)

Impulse noise impacts to the public would not be significant under the No Action Alternative. The *1998 Test Area B-70 PEA* found noise from stinger and Maverick missiles, and from shallow-water pond detonations to be the primary sources of impulse noise; a biological resource issue rather than an issue of public concern. The relatively small amount of explosive in the stinger and Maverick missiles and the proximity of TA B-70 from the Reservation boundary would not result in noise loud enough to cause annoyance in the surrounding community. Over a thousand pounds of explosive can be used during pond detonations, but the detonations are carried out underwater, which has a dampening effect on the noise propagation.

4.7.2 Alternative 1

Supersonic Noise

Supersonic noise impacts to the public would not be significant under Alternative 1. The number of supersonic missions under this alternative is the same as the No Action Alternative.

Impulse Noise (Explosive)

There would not be significant impacts to the public from impulse noise from Alternative 1. Under Alternative 1, expenditure of 45 live bombs and 109 live missiles are proposed. Most of the live missiles are AGM-65s (Maverick missiles) with 86 pounds of explosives. Mk-84s are the most common live bomb dropped with 945 pounds of net explosive, and the GBU-43B was the largest single munition dropped over the last 10 years, containing 18,700 pounds of H6 explosive. Eight GBU-43Bs are proposed under Alternative 1. Up to 29 rounds of 155 mm artillery are proposed under Alternative 1. Several thousand miscellaneous items, including fuzes, propellants and other small munitions components would also be expended with noise profiles insufficiently loud to be perceived off of the Reservation.

GBU-43/B Analysis

The GBU-43B was modeled using the Noise Assessment and Prediction System model developed for the Air Force by the Dayton Research Institute (Dayton Research Institute, 1996). Figure 4-7 shows selected noise contours for the munition.

According to the Noise Assessment and Prediction System model output, the GBU-43B test produced noise levels (i.e., 115 dBP) off the Reservation that some members of the public would consider as annoying based on U.S. Army guidelines (U.S. Army, 2001). However, this level would not warrant postponing an important test according to the guidelines. Harmful levels of noise would not have extended off of the Reservation (Table 4-24).

Weather scenarios incorporated into the modeling specified no winds and no temperature inversions, conditions ideal for minimizing the propagation of noise. Other weather scenarios may also prove acceptable, while conditions of cool temperatures, strong winds from the north

and the presence of temperature inversions would typify a worst-case weather scenario (U.S. Air Force, 1996a); detonations under these conditions should be avoided.

Table 4-24. Modeled Noise Level Exposures of GBU-43B Detonation on Surrounding Population

Noise Level (P-weighted Decibels)	Threshold	Outward Radial Extent of Noise from Point of Detonation (feet)	Population Exposed
115	Annoys 15 percent of population exposed	54,701	Yes
127	1 in 23 million panes of glass may crack	19,895	No
140	Threshold of pain for humans	7,461	No

Under ideal weather conditions no significant impacts to the population are expected from GBU-43 detonations. Real-time or near real-time modeling should be conducted to account for the influence of weather on noise impacts to the population from large detonations.

Live Bombs and Missiles Analysis

Other live bombs and missiles, such as the Mk-84 and AGM-165, which have much less net explosive than the GBU-43/B, would likewise not produce noise of 140 dBP off of the Reservation. A range of lower decibel levels would be perceived by the community depending on the target chosen, weather conditions and ordnance expended. Meteorological conditions of strong winds and temperature inversions can propagate noise farther than under conditions of calm or no winds. The increase in detonation frequency under Alternative 1 could result in an increase in noise complaints, though the complaint database offers no means of attributing a particular complaint to a specific test area or activity. Further, there is no number of noise complaints that would trigger significance. Any increases in complaints would also have to consider increases in the surrounding population. As more people are subjected to sonic booms or rumbles from distant test detonations, there may be a corresponding increase in complaints, particularly if the new residents are not familiar with the actions that have been occurring for many years on Eglin AFB. So while some members of the public may hear impulse noise and find it annoying, previous noise analysis in the Test Area B-70 PEA (U.S. Air Force, 1998a), Test Area B-70 EBD Update (U.S. Air Force, 2005a), and other NEPA documentation has concluded that the impacts from impulse noise on TA B-70 would not be significant.

Artillery Noise

The 155 mm howitzer high explosive (HE) round contains 24 pounds of HE. Analysis of the 155 mm HE round, conducted in 2003 for a Navy-Marine training exercise on Eglin AFB, assumed a 1,000-square foot area of operations within which firing would occur (U.S. Navy and U.S. Marines, 2003). That analysis, which evaluated 200 expenditures over a 10-day period, is provided in Table 4-25. The number of rounds analyzed is comparatively much higher than the 29 rounds actually expended and identified as the level of rounds for Alternative 1. Distance of noise in dBC, the metric for evaluating impulse noise effects to people, is calculated from the leading edge of the operation area and from the lateral edge of the operation area (Table 4-25).

Table 4-25. Noise from 155 mm Howitzer (C-weighted decibels)

Distance (In Feet)	Leading Edge		Lateral Edge	
	$L_{eq(1)}$	$L_{eq(24)}$	$L_{eq(1)}$	$L_{eq(24)}$
500	90.5	76.7	90.2	76.4
1,000	86.5	72.7	86.4	72.6
2,000	81.8	68.0	81.8	68.0
3.000	78.8	65.2	78.8	65.0
4,000	76.6	62.8	76.6	62.8
5,000	74.9	61.1	74.9	61.1

$L_{eq(1)}$ = one-hour equivalent noise level; $L_{eq(24)}$ = 24-hour equivalent sound level; mm = millimeters

Average noise from this event would not cause adverse effects to the surrounding communities, the nearest of which is about 7 miles from the center of TA B-70. The distance to which 62-dBC noise, the threshold, would extend (24-hour average) is less than 1 mile. Though not calculated, the impulse noise (i.e., dBP) from a single round would be much less than several of the other types of bombs and charges detonated on TA B-70. As is the case with any mission involving high explosives, certain weather conditions can magnify noise effects on the community by carrying or reflecting the noise energy to great distances. Thus, missions involving repetitious explosive noise should consider the effects of weather.

4.7.3 Alternative 2

Supersonic Noise

Alternative 2 is not expected to have significant noise impacts to the public, but may require additional management practices to limit the number of noise complaints. An increase in supersonic missions from 14 to 56 would likely generate more complaints from the public. While there is no set threshold, the degree of reaction from the public would have to be considered. Flight scenarios and management procedures for limiting supersonic noise off of the Eglin boundary may need to be implemented. Such measures would need to be developed through dialogue with the Test Wing, Eglin airspace management, and Eglin Environmental Management (96 CEVSP).

Impulse Noise (Explosive)

Alternative 2 is not expected to have significant noise impacts to the public. The increase in number of missile and bomb detonations, and potentially very large detonations of the GBU-43/B would potentially increase the number of complaints from the surrounding communities. The intensity of the noise would not necessarily change as long as tests of very large net explosive were carried out under favorable weather conditions. As the number of detonations desired is increased, the likelihood of conducting the test under ideal meteorological conditions decreases, simply due to the decreased number of days to test.

Average Noise Levels from Small Arms

Average noise levels from small arms is not an issue with regard to the neighboring community. While the annual average number of rounds increases greatly under this alternative, the noise from small arms does not propagate to great distances, and would not reach the community.

4.8 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). In general, testing missions on Eglin are using longer-range weapons and are requiring larger safety footprints extending over more interstitial area with time. Other actions currently undergoing NEPA assessment, such as actions associated with the Eglin Base Realignment and Closure (BRAC) implementation and Alabama Army National Guard training expansion, may also affect access to recreational areas on the Range. Consequently, future conflicts between recreational use and mission use may arise.

However, TA B-70 is located in an area that is permanently closed to the public. There are open recreation areas in the interstitial area to the north of the northeast corner of TA B-70 near the Ground Training Area, but the air-to-surface targets are located in the central and southwestern portions of TA B-70, which are surrounded by permanently closed restricted access areas. Therefore, there would be no effects to restricted access based on the No Action Alternative, Alternative 1, or Alternative 2.

4.8.1 No Action Alternative

Ordnance Use

A number of standard safety procedures exist to ensure limited public access to affected test areas during testing or training activities. These procedures require every practical effort to keep the designated areas clear of all nonparticipating vehicles and personnel. A key part of these procedures includes development of weapon safety footprints, also referred to as surface danger zones (SDZs). SDZs are employed for land-based training where live ordnance is used. These SDZs act as overlays that restrict activities that could normally occur within and adjacent to test or training areas. In general, for aircraft-launched weapons, as the distance from the weapons release to the target increases, so does the footprint. The same is true for altitude and speed at launch or release; as the launch altitude and/or aircraft speed increases, so does the size of the footprint (U.S. Air Force, 2003a).

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

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, 2003a).

Weapon safety footprints would be employed for land- and aircraft-based training where live or inert ordnance would be used. Standard safety procedures, such as closing range gates and blocking all passable trails, would be implemented in all cases to ensure limited public access to affected areas during training activities. As a result, there are no safety concerns based on the levels of activity authorized by the *1998 Test Area B-70 Programmatic Environmental Assessment* under the No Action Alternative.

Unexploded Ordnance

For the 60 years the Eglin Range has been in use, the location of impact areas and the SDZs have changed many times. Impact areas and SDZs are locations where ordnance might have been accidentally dropped long or short of their target or might have landed after ricocheting. In 2000, Congress dictated an inventory of land contaminated by UXO to gain an understanding of the UXO liability nationwide. The Eglin inventory classified 724 square miles as active range using two subcategories: current impact areas (50,000 acres) and historic impact areas (335,000 acres). Test areas, some cantonment areas on historic ranges (not UXO-contaminated but restricted due to the mission), and some interstitial areas are closed to the public due to high UXO risk (U.S. Air Force, 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 observe a UXO awareness video prior to being issued recreation permits to access the Range. No injuries to the public are known to have occurred at Eglin AFB as a result of UXO (Caldwell, 2008). However, UXO could potentially pose a danger to the people involved in training, as personnel must sometimes enter potentially hazardous test areas to set up targets or instrumentation in support of test or training activities. However, other controls are in place for personnel involved in range management and/or engaged in missions on the range.

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

As the result of 60 years of use, most areas on the Eglin Range, including TA B-70 have the potential for UXO contamination. While a detailed records search of range use and potential UXO contamination on the Eglin Range has been accomplished by the USACE and a number of other studies have been completed, records of UXO contamination remain incomplete. Eglin has

published a UXO Management Plan, which addresses historic use and contamination, current management practices, and future needs. A number of procedures are in place to minimize risks to Eglin personnel and members of the public who access the Eglin Range. To mitigate any potential adverse impacts from UXO, consultation and coordination with 96 CES/CED personnel would be required to address UXO on TA B-70. Therefore, there are no adverse affects to safety under the No Action Alternative.

4.8.2 Alternative 1

Ordnance Use

Under Alternative 1, the current level of activity at TA B-70 would be authorized. There would be no new user groups, types of activities, or kinds of munitions. Safety procedures and policies that are currently established would remain in effect, and all ordnance would be handled by trained and qualified personnel. As a result, no impacts to safety would occur.

Unexploded Ordnance

Similarly, current procedures and policies for UXO monitoring and clearing would remain in place under Alternative 1. These procedures minimize the risk to Eglin personnel operating on TA B-70. Users would continue to coordinate with 96 CES/CED with regard to UXO encounters on TA B-70. This would mitigate any potential adverse impacts to safety from UXO on TA B-70.

4.8.3 Alternative 2

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

4.9 SOCIOECONOMIC RESOURCES

This section discusses 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 explosions and sonic booms. 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 TA B-70 are discussed.

4.9.1 No Action Alternative

Under this alternative, the level of training activities would remain the same as defined by the Preferred Alternative in the 1998 *Test Area B-70 Programmatic Environmental Assessment (PEA)* (U.S. Air Force, 1998a), which authorized a 100-percent increase in test missions and associated expendables over the baseline level captured in the *Fiscal Year 1995* (*FY95) Range*

Utilization Report (U.S. Air Force, 1996b) and anticipated mission additions. The previously approved level of activity would not have significant impacts to minority/low-income populations or pose special risks to children.

4.9.2 Alternative 1

Alternative 1 would authorize the current level of activity plus foreseeable future activities. There are no new types of activities, new user groups, or new kinds of expendables in the foreseeable future.

Alternative 1 is not expected to create significantly adverse environmental or health impacts. Consequently, 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 under this alternative that may disproportionately affect children.

Environmental Justice

Minority or low-income communities of concern would not be disproportionately impacted by the activities associated with TA B-70. The environmental justice issues that could potentially be associated with this test area are noise from explosions and sonic booms.

Noise impacts would primarily affect communities located near the test area. Since TA B-70 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 TA B-70 is Navarre. Although a high percentage of minority/low income residents make up this community, the sound-front communities in northern Navarre and in Holley would be subject to the same impacts. The portions of Navarre and Holley that contain no environmental justice concerns are located closest to Test Area B-70. These communities are comprised of mid- to upper-level income individuals. Therefore, disproportionate impacts are not anticipated.

Risks to Children

The risks that could potentially be associated with activities on Test Area B-70 include noise from explosions and sonic booms. 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 central Navarre. Noise analysis, conducted in Section 4.7, finds that the sounds from these activities would not contribute in any appreciable manner to the existing noise environment. 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 TA B-70 would be the most impacted by noise from activities at TA B-70. However, communities closest to the test area made the least amount of complaints regarding noise from

Eglin. Therefore, it is anticipated that the noise from activities under Alternative 1 would not result in a significant increase in the number of noise complaints in the area.

4.9.3 Alternative 2

Alternative 2 would authorize the current level of activity plus foreseeable future activities. There are no new types of activities, new user groups, or new kinds of expendables in the foreseeable future.

Alternative 2 is not expected to create significantly adverse environmental or health impacts. Consequently, 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 associated with the Proposed Action that may disproportionately affect children.

Environmental Justice

Minority or low-income communities of concern would not be disproportionately impacted by the activities associated with TA B-70. The environmental justice issues that could potentially be associated with this test area are noise from explosions and sonic booms.

Noise impacts would primarily affect communities located near the test area. Since TA B-70 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 TA B-70 is Navarre. Although a high percentage of minority/low income residents make up this community, the sound-front communities in northern Navarre and in Holley would be subject to the same impacts. The portions of Navarre and Holley that contain no environmental justice concerns are located closest to TA B-70. These communities are comprised of mid- to upper-level income individuals. Therefore, disproportionate impacts are not anticipated.

Risks to Children

The risks that could potentially be associated with activities on TA B-70 include noise from explosions and sonic booms. 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 central Navarre. Noise analysis, conducted in Section 4.7, finds that the sounds from these activities would not contribute in any appreciable manner to the existing noise environment. 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 TA B-70 would be the most impacted by noise from activities at TA B-70. However, communities closest to the test area made the least amount of complaints regarding noise from Eglin. Therefore, it is anticipated that the noise from activities under Alternative 2 would not result in a significant increase in the number of noise complaints in the area.

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APPENDIX A

BIOLOGICAL RESOURCES

BIOLOGICAL RESOURCES

Federally Listed Species

Reticulated Flatwoods Salamander

The reticulated flatwoods salamander is proposed for listing as federally endangered and is a state species of special concern. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola-Flint Rivers with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders (*A. cingulatum*) ranging to the east of the rivers. There are 18 known breeding ponds for the flatwoods salamander on the Eglin Range. Additionally, the Eglin Range supports approximately 17,000 acres of potential salamander habitat in mesic flatwoods.

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

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

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

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) is listed as a federal and state-threatened species that is the largest nonvenomous snake in North America. The primary reason for its listing is population decline resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats exposes the snake to danger from increased contact with humans. Indigo snakes frequently utilize gopher tortoise burrows and the burrows of others

species for over-wintering. The snake frequents flatwoods, hammocks, stream bottoms, riparian thickets, and high ground with well-drained, sandy soils. The indigo snake could occur anywhere on the Eglin Range because it uses such a wide variety of habitats (U.S. Air Force, 2006).

The species is extremely uncommon on the Eglin Range with the sighting of only 29 indigo snakes throughout the Eglin Range from 1956 to 1999, while no sightings have been reported since 1999 (Gault, 2006). Most of these snakes were seen crossing roads or after being killed by vehicles. It is difficult to determine a precise number or even estimate of the number of these snakes due to the secretive nature of this species (U.S. Air Force, 2006).

Red-cockaded Woodpecker

The red-cockaded woodpecker (RCW) (*Picoides borealis*) is listed as a federally endangered bird species and a state species of special concern. The RCW excavates cavities in live longleaf pine trees that are at least 85 years old. The RCW historically had a habitat range as far north as New Jersey and as far west as Oklahoma. Today, the RCW has been restricted to the southeastern United States, from Florida to Virginia and to southeast Texas, due to a loss of habitat. In the southeast, 98 percent of the longleaf pine forests have been removed, making relatively undeveloped federal lands such as Eglin AFB primary habitat for the species. Due to the preservation of continuous longleaf pine forests on Eglin, the Eglin Range has one of the largest remaining populations of RCWs in the country. In 2003, the USFWS identified Eglin AFB as 1 of 13 primary core populations for the RCW (U.S. Air Force, 2006). Eglin's population goal is 350 Potential Breeding Groups (PBGs). The Eglin population has been increasing since 1994, and the current population has 390 active clusters and an estimated 347 PBGs as of 2008.

The removal of longleaf pine trees, degradation of quality habitat, or noise generated from mission-related or other activities are potential threats to the RCW on the Eglin Range. Eglin is executing a USFWS-approved management strategy to meet certain growth objectives of the RCW and to obtain increased mission flexibility with the federal requirements for RCW impacts (U.S. Air Force, 2006).

The Eglin Natural Resources Section (NRS) Geographic Information System (GIS) database includes the locations of active RCW cavity trees (tree containing one or more cavities that are utilized by the RCW) and inactive RCW cavity trees (tree containing cavities that were once utilized by the RCW but have not shown recent activity). Inactive RCW cavities, which are defined as those cavities that were once utilized by the RCW but have not shown recent activity, are spatially recorded. The NRS also maps RCW foraging habitat around active clusters of RCW cavities in the GIS. Consultation guidelines require that transient foot and vehicle traffic lasting more than two hours be avoided within 200 feet of active RCW trees. Also, within this 200-foot buffer, traffic must stay on established trails and roads, and digging, excavating, and bivouacking are prohibited. In addition, if timber is to be removed within 0.5 miles of active cavity trees, then a forage habitat analysis must be completed to determine potential impacts. Consultation will be required if resulting resources fall below USFWS guidelines.

State-Listed and Rare Species

Eglin AFB provides habitat for many state-listed and rare species in addition to the federally listed species described in the previous sections. Air Force Instruction (AFI) 32-7064 calls for the protection and conservation of state-listed species when not in direct conflict with the military mission. The conservation of state-listed species and other rare but unlisted species is encouraged and in some cases is critical to ensuring continued mission flexibility. Management actions conducted by Eglin for many of the federally listed species provide direct and indirect benefits to many state-listed and rare species. Below are descriptions of the state-listed and rare species of particular concern for Test Area B-70.

Florida Black Bear

The Florida black bear (*Ursus americanus floridanus*) is currently listed as a state threatened species except in Baker and Columbia Counties and in Apalachicola National Forest. Florida black bear populations are currently found in Florida and Georgia, and there is also 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. Reasons for population declines include loss of habitat due to urban development, and direct mortality due to collisions with vehicles. Black bear in Florida breed in June through July, and young are born in January through February. Most black bears within the Eglin Range utilize the large swamps and floodplain forests in the southwest and northern portions of the Eglin Range, where they feed on fruits, acorns, beetles, and yellow jackets. Black bear sightings have occurred at numerous locations throughout the Eglin Range, the majority of which have been within the interstitial areas (U.S. Air Force, 2006).

Florida Burrowing Owl

The Florida burrowing owl (*Athene cunicularia floridana*) is a state species of special concern. The owl creates burrows, similar to gopher tortoise burrows, in which to hide from predators. They are typically found in open habitats with short grasses and few trees. These small owls have been seen on many test areas across the Eglin Range, but the only confirmed population is on Test Area B-70 (U.S. Air Force, 2006).

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*) 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).

A Candidate Conservation Agreement for the gopher tortoise has been developed as a cooperative effort among state, federal, nongovernmental, and private organizations. The

purpose of this agreement is to collectively implement proactive gopher tortoise conservation measures across its eastern range. This agreement will be made final by the end of 2008.

Florida Bog Frog

The Florida bog frog (*Rana okaloosae*), a state species of special concern, can only be found within Walton, Okaloosa, and Santa Rosa Counties. Most of the habitat for the frog lies on Eglin AFB property with all known locations of the frog in small tributary streams of the Yellow, Shoal, and East Bay Rivers. There are 65 documented bog frog locations on the Eglin Range, but only 58 of those have been verified.

Southeastern American Kestrel

The southeastern American kestrel (*Falco sparverius paulus*), a state-threatened species, is a common permanent resident of Eglin. This small raptor typically preys on small rodents, reptiles, and insects in clearings or woodland edges. The species can be found within the Sandhills and Open Grassland/Shrubland ecological associations, and may occur on or near any of the test areas at Eglin.

Florida Pine Snake

The Florida pine snake (*Pituophis melanoleucus mugitus*), a state species of concern, inhabits dry areas such as the longleaf pine, oak woodlands, and sand pine scrub communities found within the Sandhills ecological association. The species is physically adapted for digging into loosely packed sand. It also enters into rodent burrows and occasionally into gopher tortoise burrows.

Gopher Frog

Gopher frogs (*Rana capito*), a state species of concern, are associated with gopher tortoise habitat, as they use gopher tortoise burrows for cover, but are also known to flourish where the tortoises no longer occur. They also use old field mouse burrows, hollow stumps, and other holes for cover. The species requires nearby seasonally flooded grassy ponds, depression marshes, or Sandhills upland lakes that lack fish populations, found within the Sandhills ecological association, for breeding. They have been found in the longleaf pine, turkey oak, pine flatwood, sand pine scrub, and xeric hammock open or forested communities of the Sandhills and Open Grassland/Shrubland ecological associations up to 2 kilometers from the breeding ponds. Eglin supports the largest known concentration of reproductive sites of the gopher frog subspecies anywhere within its range (Florida Natural Areas Inventory [FNAI], 1993).

Migratory Birds

Migratory birds pass through the region of influence (ROI), but neither Eglin nor Hurlburt is considered an important stopover area or concentration site for neotropical migratory birds in the spring or fall (Tucker et al., 1996). Breeding neotropical migrants at Eglin and Hurlburt are primarily found in riparian, hammock, and barrier island habitats. These areas can serve as temporary habitat for neotropical birds migrating to and from the Caribbean and South and

Central America. Neotropical migrants are more common in the Eglin and Hurlburt areas during fall migration than spring migration (Tucker et al., 1996).

Pineland Hoary Pea

The state-threatened pineland hoary pea (*Tephrosia mohrii*) is a small herbaceous perennial herb that can be found in the Sandhills ecological association and where fire or other disturbance occurs. The species is endemic to Florida.

Pineland Wild Indigo

The pineland wild indigo *(Baptista calycosa var villosa)* is a state-threatened herbaceous pea plant that can be found throughout Eglin in the Sandhills ecological association in areas with an open canopy and sandy soils. The range of this species includes only one other county outside of Eglin (FNAI, 1992).

Curtiss' Sandgrass

Curtiss' sandgrass *(Calamovilfa curtissi*) exhibits great vigor in response to frequent fires that control shrub encroachment within the Flatwoods ecological association. The species is specifically found in wet prairies, wet flatwoods, and the edges of dome swamps. Curtiss' sandgrass is a threatened species in Florida.

Karst Pond Yellow-eyed Grass

Karst pond yellow-eyed grass *(Xyris longisepala*) is a small yellow-flowered herb that grows on karst soils. It is found in depression marshes and in the sandhills upland lakes community of the Sandhills ecological association. The karst pond yellow-eyed grass is state-listed as endangered.

Ecological Assets

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. TA B-70 includes Sandhills, Wetland/Riparian areas, grasslands/shrublands, and urban/landscaped areas, which are described below.

<u>Sandhills Matrix</u>

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. 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).

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).

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.

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

Flora and Fauna of Ecological Associations

Table A-1 provides a summary of some of the plant and animal species commonly found within the ecological associations described above. The list is not a comprehensive inventory of the species found within these ecological associations; the table provides a reference summary.

Table A-1. Typical Plant and Animal Species of Eglin AFB by Ecological Association

Plants		Animals	
Common Name	**Scientific Name**	**Common Name**	**Scientific Name**
Sandhills Ecological Association			
Longleaf Pine	*Pinus palustris*	Red-cockaded Woodpecker	*Picoides borealis*
Turkey Oak	*Quercus laevis*	Bobwhite Quail	*Colinus virginianus*
Blackjack Oak	*Q. marilandica*	Great Horned Owl	*Bubo virginianus*
Bluejack Oak	*Q. incana*	Gopher Tortoise	*Gopherus polyphemus*
Wiregrass	*Aristida stricta*	Six-lined Racerunner	*Cnemidophorus sexlineatus*
Saw Palmetto	*Serona repens*	Diamondback Rattlesnake	*Crotalus adamanteus*
Bracken Fern	*Pteridium aquilinum*	Raccoon	*Procyon lotor*
Blueberry	*Vaccinium* spp.	Florida Black Bear	*Ursus americanus floridanus*
Yaupon	*Ilex vomitoria*	Fox Squirrel	*Sciurus niger*
Gallberry	*Ilex glabra*	Least Shrew	*Cryptotis parva*
Gopher Apple	*Licania michauxii*	Cottontail Rabbit	*Sylvilagus floridanus*
Sand Blackberry	*Rubus cuneifolius*	Pocket Gopher	*Geomys pinetus*
Pine-woods Bluestem	*Andropogon arctatus*	White-tailed Deer	*Castor canadensis*
Wetland and Riparian Ecological Association			
Cattail	*Typha domingensis*	Florida Black Bear	*Ursus americanus floridanus*
Phragmites	*Phragmites australis*	American Alligator	*Alligator mississippiensis*
White Cedar	*Chamaecyparis thyoides*	Pine Barrens Tree Frog	*Hyla andersonii*
Swamp Tupelo	*Nyssa biflora*	Five-lined Skink	*Eumeces fasciatus*
Purple Pitcher Plant	*Sarracena purpurea*	Green Anole	*Anolis carolinensis*
Swamp Titi	*Cyrilla racemiflora*	Garter Snake	*Thamnophis sirtalis*
Tulip Poplar	*Liriodendron tulipifera*	Raccoon	*Procyon lotor*
Sweetbay Magnolia	*Magnolia virginiana*	American Beaver	*Castor canadensis*
Redbay	*Persea borbonia*	Little Blue Heron	*Egretta caerulea*

Sensitive Habitats

High Quality Natural Communities

Eglin's contribution to southeastern conservation is evident in its extraordinary biodiversity and the exemplary quality of its many remnant natural communities. While the greater part of the installation is globally significant due to its biodiversity, specific areas have been designated "High Quality Natural Communities" due to their exceptional high quality or the presence of rare species. These areas were identified by the FNAI through a project funded by the Department of Defense (DoD) Legacy Resource Management Program. These areas are distinguished by the uniqueness of the community, ecological condition, species diversity, and/or presence of rare species. These high quality areas, totaling 75,266 acres and covering approximately 16 percent of the installation, are tangible examples of the successful restoration actions of Jackson Guard and the compatibility of these communities with most mission activities (U.S. Air Force, 2007).

Outstanding Natural Areas

From the High Quality Natural Communities FNAI identified, 17 larger-scale landscapes containing complexes of these high quality areas and locations of rare species were named Outstanding Natural Areas, and are listed below (U.S. Air Force, 2007):

1) Test Area A-77 Outstanding Natural Area
2) Alaqua-Blount Creek Confluence
3) Alice Creek
4) Boiling Creek/Little Boiling Creek
5) Brier Creek
6) East Bay Flatwoods and Scrub Mosaic
7) Live Oak Creek
8) Lower Weaver River
9) Patterson Outstanding Natural Area and Extension
10) Piney Creek
11) Prairie Creek
12) Santa Rosa Island (SRI)
13) Scrub Pond
14) Spencer Flats Wetlands
15) White Point
16) Whitmier Island
17) Yellow River Basin

Significant Botanical Sites

FNAI also identified 15 Significant Botanical Sites that support rare plants on Eglin; they are listed below.

1) East Bay Savannahs
2) Patterson Natural Area Expansion
3) SRI
4) Blue Spring Creek Lakes
5) Malone Creek
6) Titi Creek Wilderness Area
7) Live Oak Creek
8) Turkey Gobbler Creek Cypress Swamp
9) Turkey Hen Creek Swamp
10) Boiling Creek and Little Boiling Creek
11) Hick's Creek Prairie
12) Whitmier Island
13) Brier Creek
14) Hickory Branch Hardwood Forest
15) Piney Creek

Large portions of the Outstanding Natural Areas and the Significant Botanical Sites overlap. Combined, both of these areas total 43,210 acres, or approximately 9 percent of the installation (U.S. Air Force, 2007).

Invasive Non-native Species (INS) Management

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

The Eglin AFB INS Management Program focuses on invasive non-native plant and animal species that cause or may cause negative environmental impacts to Eglin ecosystems. Some of the main invasive non-native species of concern are Chinese tallow, cogon grass, Japanese climbing fern, Chinese privet, torpedo grass, feral pigs, and feral cats (U.S. Air Force, 2006). The program's purpose is to protect the integrity of Eglin's natural ecosystems by reducing and controlling the spread of INS. The plan includes a recommendation to limit foot traffic and vehicle traffic in areas where INS are present to prevent the spread of the invasive and exotic species. Equipment moving through these areas needs to be washed so that all seedlings are

removed before the equipment is transferred to a non-contaminated area. Standard operating procedures dictate that all vehicles are cleaned prior to use, which would lessen or eliminate the potential for the spread of INS.

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APPENDIX B

AIR QUALITY

AIR QUALITY SUPPLEMENTAL INFORMATION

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

AIR QUALITY PROGRAM OVERVIEW

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

The CAA gives states the authority to establish air quality rules and regulations. These rules and regulations must be equivalent to, or more stringent than, the federal program. The Division of Air Resource Management within 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] Part 51), except Florida has established a more conservative standard for sulfur dioxide (SO_2). USEPA has set the annual and 24-hour standards for SO_2 at 0.03 parts per million (ppm) (80 micrograms per cubic meter [$\mu g/m^3$]) and 0.14 ppm (365 $\mu g/m^3$), respectively. Florida has adopted the more stringent annual and 24-hour standards of 0.02 ppm (60 $\mu g/m^3$) and 0.1 ppm (260 $\mu g/m^3$), respectively. In addition, Florida has adopted the national secondary standard of 0.50 ppm (1300 $\mu g/m^3$). Federal and State of Florida ambient air quality standards are presented in Table B-1 (Florida Administrative Code [FAC]).

Based on measured ambient air pollutant concentrations, the USEPA designates areas of the United States as having air quality better than the NAAQS (attainment), worse than the NAAQS (nonattainment), and unclassifiable. Those areas 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 that have successfully reduced air pollutant concentrations below the standard. Maintenance areas are under special maintenance plans and must operate under some of the nonattainment area plans to ensure compliance with the NAAQS. All areas of the state of Florida are in compliance with the NAAQS.

Table B-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	50 µg/m^3
Particulate Matter <2.5 Micrometers ($PM_{2.5}$)	Annual(3)	15 µg/m^3	15 µg/m^3	150 µg/m^3
Ozone (O_3)	24-hour(4)	35µg/m^3	35 µg/m^3	15 µg/m^3
	1-hour(7)	0.12 ppm (235 µg/m^3)	0.12 ppm (235 µg/m^3)	65 µg/m^3 0.12 ppm
	8-hour(5)	0.075 ppm (2008 std)		(235 µg/m^3)
	8-hour(6)	0.08 ppm (1997 std) (157 µg/m^3)	0.08 ppm (157 µg/m^3)	
Sulfur Dioxide (SO_2)	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)

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

ppm = parts per million; mg/m^3 = milligrams per cubic meter; NAAQS = National Ambient Air Quality Standards; µg/m^3 = 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 ug/m^3.

(4) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 ug/m^3 (effective December 17, 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 the USEPA 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 June 15, 2005 the USEPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.

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

Florida has a statewide air quality-monitoring network that is operated by the state *FDEP State Air Monitoring Reports* (FDEP, 1996). 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 levels to be in attainment with the standards; also included are areas where the ambient standards are being met, but plans are necessary to ensure maintenance of acceptable levels of air quality in the face of anticipated population or industrial growth.

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

The FDEP Northwest District operates monitors in several northwest counties, including Bay, Escambia, and Santa Rosa Counties. Over the years of record there have been exceedances (pollutant concentration greater than the numerical standard) of the 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, all areas in the state of Florida are attainment for all criteria pollutants.

PROJECT CALCULATIONS: AIR EMISSIONS

Regulatory Compliance Methodologies

Mission-generated air emissions were analyzed to enable comparison to NAAQS and to the cumulative impact to the air shed within the affected Region of Influence (ROI). Activities occurring within the Test Area (TA) B-70 range that have the greatest potential to impact air quality are munitions and vehicle activities including particulate emissions that result from the dust of unpaved roads and trails. Aircraft emissions have been omitted from this REA, since all aircraft emissions are addressed in the Air Operations Environmental Baseline Document (EBD). In order to conservatively estimate the potential impact of these operations with short-term

ambient air quality, a Closed Box Assessment (CBA) was performed. Additionally, the annual emissions were compared to the USEPA 2002 National Emissions Inventory (NEI) for the ROI. Both techniques are described below, as well as the emissions calculations and project assumptions.

The Closed Box Assessment

The CBA provides a means to estimate maximum short-term impacts from emissions in a given element of space. Several assumptions are incorporated into this technique. First, it assumes that emissions are homogeneously mixed and contained within a defined volume of space throughout which the activities occur. For this assessment, this volume of air is defined by vertical and lateral boundaries. The vertical boundary of altitude established was 3,000 feet above sea level (ASL), and the dimensional area within the TA B-70 Range was utilized for lateral boundaries.

Second, the CBA assumes that the calculated concentrations within the defined box of criteria pollutants 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 B-70 range operated randomly. The ceiling altitude of 3,000 feet was chosen as a conservative estimate of the average height for stable temperature inversion common to the area. This type of inversion can significantly inhibit, if not effectively block, vertical mixing and widespread dispersion of some air pollutants. Therefore, pollutants can be considered confined between the base of the inversion and the ground, or that portion of the lower atmosphere commonly termed the mixing layer. The mixing-layer height determines the vertical extent of the dispersion process for pollutant releases below the mixing height.

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

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 B-70.

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 2002 Eglin Mobile Source Emissions Inventory. Previously, it has been determined that over 90 percent of the Eglin Range vehicular traffic is gasoline powered, while the remainder, over 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 B-70 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 B-70 was a direct correlation with the vehicle miles traveled within TA B-70. 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 emission factors and mathematical expression provided below.

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

Emissions (tons/yr) = (RRM/TRRM) x TAYVM x EF x CF1
Emissions ($\mu g/m^3$ x hr) = (RRM/(TRRM x TV) x TAYVM x EF x 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
CF_1 = Conversion Factor (1.1E-6)
CF_2 = Conversion Factor (3.6E5)

CF_1 converts from grams to pounds, and then to tons. CF_2 converts into micrograms and weights the value over an hour.

Table B-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 vehicle mile traveled; NO_x = nitrogen oxides; PM = particulate matter; SO_x = sulfur oxides; VOC = Volatile Organic Compounds

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

In accordance with Section 176(c) of the 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, FAC. The Conformity Rule only affects federal actions occurring in nonattainment areas (areas that do not meet the NAAQS) and maintenance areas (areas that were classified as nonattainment but now are in attainment). Since the Proposed and Alternative Actions are located in attainment areas, Eglin Air Force Base (AFB) would not be required to prepare a conformity determination for the activities described. However, the general concept of the conformity rule was used as a criterion, although not necessary.

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

National Emissions Inventory

The NEI is operated under USEPA's Emission Factor and Inventory Group, which prepares the national database of air emissions information with input from numerous state and local air agencies, from tribes, as well as from industry. The database contains information on stationary and mobile sources that emit criteria air pollutants and hazardous air pollutants (HAPs). The database includes estimates of annual emissions, by source, of air pollutants in each area of the country, on an annual basis. The NEI includes 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 available currently for years 1996, 1999, and 2002 for criteria pollutants and HAPs.

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

- Carbon Monoxide (CO)
- Nitrogen Oxides (NO_x)
- SO_2
- Particulate Matter (PM_{10} and $PM_{2.5}$)

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 NO_x in the atmosphere to form ozone. The NEI database defines three classes of criteria air pollutant sources.

- Point sources - Stationary sources of emissions, such as an electric power plant, that can be identified by name and location. A "major" source emits a threshold amount (or more) of at least one criteria pollutant and must be inventoried and reported. Many states also inventory and report stationary sources that emit amounts below the thresholds for each pollutant.

- Area sources - Small point sources such as a home or office building, or a diffuse stationary source, such as wildfires or agricultural tilling. These sources do not individually produce sufficient emissions to qualify as point sources. Dry cleaners are one example (i.e., a single dry cleaner within an inventory area typically will not qualify as a point source), but collectively the emissions from all of the dry cleaning facilities in the inventory area may be significant and therefore must be included in the inventory.
- Mobile sources - Any kind of vehicle or equipment with a gasoline or diesel engine, airplane, or ship.

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

- For electric generating units – USEPA's Emission Tracking System/Continuous Emissions Monitoring Data (ETS/CEM) 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 (FHWA's) estimate of vehicle miles traveled and emission factors from USEPA's MOBILE Model.
- For non-road mobile sources – USEPA's NONROAD Model.
- For stationary area sources - State data, USEPA-developed estimates for some sources, and older inventories where state or USEPA data was not submitted.

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

References:

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APPENDIX C

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 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.

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 Federal Aviation Administration 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 non-native, 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 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.

APPENDIX D

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) B-70 on Eglin Air Force Base (AFB), Florida (Figure 1).

Proposed Federal agency action:

The region of influence (ROI) for this analysis is TA B-70, which is located on the western side of the Eglin Range Complex in Okaloosa and Santa Rosa Counties, about 15 miles northwest of Eglin Main Base as shown in Figure 2. TA B-70 is approximately 13 miles long and averages 1.25 miles wide, making it the second largest test area on the Eglin Range Complex. The test area provides over 16 square miles of continuous land test area.

The mission activities that are included are those events that originate and/or terminate on TA B-70. The air operations that occur in the airspace overlying TA B-70 are not included as part of the scope; the air operations are analyzed cumulatively in the Overland Air Operations Range Environmental Assessment (REA). However, supersonic flights and the expendables that are released during air operations, as they impact TA B-70 and the vicinity, are included in the TA B-70 REA.

TA B-70 supports a variety of testing and training activities that include:

- **Air-to-surface bombing and missiles.** This activity is conducted as both testing and training missions, although primarily training. The bombs and missiles are released from various aircraft at ground targets on the test area. Most of the weapon systems do not contain a live warhead and are used for targeting purposes. Also included in this category, however, is a live bomb test (referred to as Massive Ordnance Air Blast [MOAB]) involving a Guided Bomb Unit- (GBU-) 43B weighing approximately 21,000 pounds and containing 18,700 pounds of high explosives.
- **Surface-to-surface cruise missiles.** These are the long range weapon systems that are used during test missions only. TA B-70 is used for the target area, but the cruise missiles are inert and almost always equipped with a parachute for "soft" landings.
- **Ground training and paratroops.** Some groups conduct ground training exercises on TA B-70. It consists of either paratrooper drops onto the area or troop movement across the area (on foot). No weapons are expended in association with these operations.

- **Shallow water pond detonations.** The shallow water pond is used as a mine countermeasures and beach assault obstacle test area. The explosive devices that are used as part of these tests include Mk-82 general purpose bombs, shallow water assault breaching (SABRE) charges, and mine clearing systems.
- **Electronic countermeasures including release of chaff and flares.** The electronic countermeasures are used for both testing and training missions. Chaff and flares are released as countermeasures to electronic tracking devices.
- **Air-to-surface weapons testing during supersonic flight.** TA B-70 is the only test area that lies within the supersonic corridor and, thus, it is the only test area that can be used for weapons testing during overland supersonic flights. Generally, inert weapons are used for these tests.
- **Drone take-offs and landings.** Drones that are used as missile targets are launched from and land on TA B-70. Small-scale drones are used as targets for Stinger missile tests over TA B-70.

Missions on TA B-70 are under the purview of the 46th Test Wing (TW). Primary user groups include the 40th Flight Test Squadron (40 FTS), 46th Test Squadron (46 TS), and the 780th Test Squadron (780 TS). The 46th Range Support Squadron (46 RANSS) supports many of the non-46th TW missions at TA B-70, including the 6th Ranger Training Battalion (6 RTB), which uses B-70 for paradrops.

The Proposed Action is for the 46th TW Commander to establish a new authorized level of activity for TA B-70 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 Proposed Action would authorize the current level of activity plus a 300-percent increase in mission activity; including management actions identified in Chapter 4 of the TA B-70 REA. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1995 through FY2007; this approach accounts for periods of low or no activity of a certain mission. Air-to-surface testing and training constitute the majority of missions on TA B-70, but electronic counter-missions testing, ground testing, and other testing and training missions also occur on B-70 (Table 1). A 300-percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency.

Table 1. Current Types and Numbers of Test Area B-70 Missions

Type of Mission	Maximum Annual (Year)[1]
Live Air-to-Surface Testing	28 (2001)
Inert Air-to-Surface Testing	74 (1996)
Electronic Counter-missions Testing	45 (1995)
Air Operations Testing*	17 (2005)
Surface-to-Surface Testing	29 (2005)
Surface-to-Air Testing	12 (2003)
Air-to-Air Testing	4 (2003)
Ground Testing	63 (1998)
Live Air-to-Surface Training	7 (2002)
Inert Air-to-Surface Training**	246 (2006)
Paradrop/paratroops	19 (1998)
Lasers	47 (2005)
Supersonic Flights	7 (1995)

Source: U.S. Air Force, 2008a
1) Maximum annual missions from 1995 to 2007
*Includes air overland missions that were classified as Mission Activity "Other." (May include a variety of things such as flares, substances, chaff, decoys, guided bomb units [GBUs], bombs, etc.)
**Includes air overland/water missions that were classified as Mission Activity "Other" that were tied to various expenditures considered "inert." (These expenditures include but are not limited to practice bombs, flares, cartridge impulses, etc.)

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.

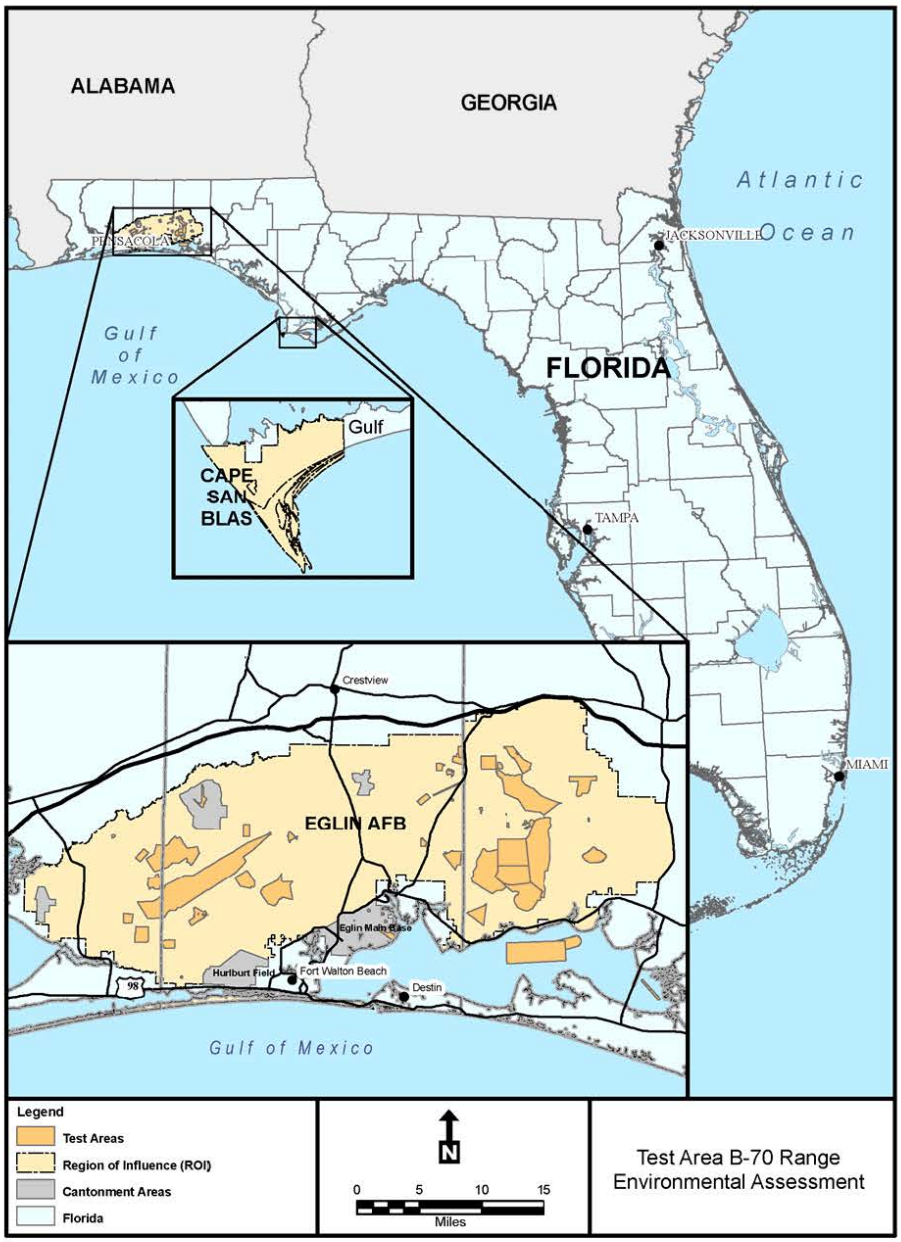

Figure 1. Regional Location of Eglin Air Force Base

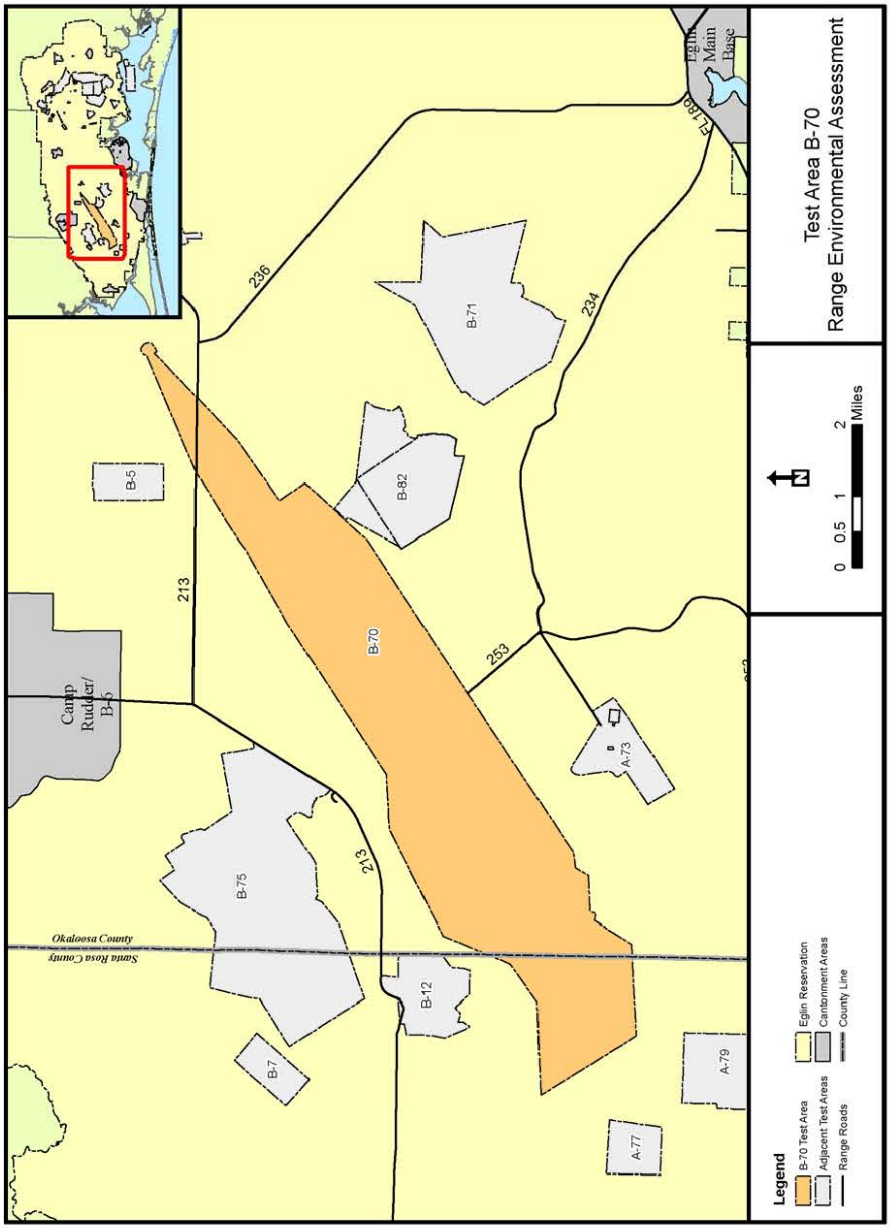

Figure 2. Interstitial Area Region of Influence

Florida Coastal Management Program Consistency Review

Statute	Consistency	Scope
Chapter 161 *Beach and Shore Preservation*	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 *Growth Policy; County and Municipal Planning; Land Development Regulation*	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 *State and Regional Planning*	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 *Emergency Management*	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 *State Lands*	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 *State Parks and Preserves*	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 *Land Acquisition for Conservation or Recreation*	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 *Recreational Trails System*	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 *Multipurpose Outdoor Recreation; Land Acquisition, Management, and Conservation*	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 *Historical Resources*	All areas eligible for survey within TA B-70 have been surveyed. A total of 15 archaeological sites are located within TA B-70, all of which have been determined as ineligible to the NRHP. Thirteen structures are listed as historic structures and buildings within TA B-70. One structure is considered eligible for the NRHP. The remaining 12 structures are considered ineligible to the NRHP. The building identified as eligible for inclusion in the NRHP requires protection and maintenance. Maintenance standards and guidelines are described in the Eglin AFB Integrated Cultural Resources Management Plan and the Programmatic Agreement between the AAC, the Florida State	Addresses management and preservation of the state's archaeological and historical resources.

	Historic Preservation Officer (SHPO), and the Advisory Council on Historic Preservation. Continued coordination should occur with 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. No adverse effects to cultural resources are expected from implementation of the Proposed Action. Therefore, the Proposed Action would be consistent with the State's policies concerning historical resource management.	
Chapter 288 *Commercial Development and Capital Improvements*	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 *Transportation Administration*	The Proposed Action would not affect transportation.	Addresses the state's policy concerning transportation administration (Chapter 334).
Chapter 339 *Transportation Finance and Planning*	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 *Saltwater Fisheries*	The Proposed Action would not affect saltwater fisheries.	Addresses management and protection of the state's saltwater fisheries.
Chapter 372 *Wildlife*	A 300-percent mission surge would increase the frequency, and in some cases the severity, of impacts to biological resources on and near	Addresses the management of the wildlife resources of the state.

	TA B-70. TA B-70 air operations, munitions and pyrotechnics use, and ground operations may affect sensitive habitats and species through direct encounters, noise, chemical impacts, and habitat alteration. The management actions in Section 4.4.2 of the TA B-70 REA would serve to eliminate or minimize many of the potential impacts from TA B-70 activities. Overall impacts to biological resources would not be significant for any of the alternatives, and the activity levels for the three alternatives are not likely to adversely affect the red-cockaded woodpecker (RCW), reticulated flatwoods salamander, or eastern indigo snake. Eglin is conducting an Endangered Species Act Section 7 consultation with the USFWS to address potential impacts to federally listed species. Eglin NRS has determined that the Proposed Action "May Affect, but is Not Likely to Adversely Affect" these species based on the implementation of the management requirements discussed in Section 4.4.2 of the TA B-70 REA. Therefore, the Proposed Action would be consistent with the State's policies concerning wildlife resource management.	
Chapter 373 *Water Resources*	There would be no significant impacts to surface waters, wetlands or floodplains. However, based on a comparison with existing modeling results, analysis indicates that explosive residue from increased gunnery rounds may	Addresses the state's policy concerning water resources.

	exceed USEPA thresholds for ground water. Additional modeling is required before a clear determination of significance can be made. The number of gunnery rounds approved for use at this range may need to be reduced. Eglin Water Resources (96 CEG/CEVCE) would ensure that any applicable permitting requirements would be satisfied in accordance with Florida Administrative Code (FAC). Therefore, the Proposed Action would be consistent with the State's policies concerning water resource management.	
Chapter 376 *Pollutant Discharge Prevention and Removal*	Ordnance expenditures would increase three-fold, and therefore the release of hazardous chemicals would increase. Despite this, Toxic Release Inventory-Data Deliver System reporting and no new 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 dudded munitions and that they would be removed. Any dudded 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 *Energy Resources*	The Proposed Action would not affect energy resource production, including oil and gas, and/or the	Addresses regulation, planning, and development of oil and gas resources of the state.

	transportation of oil and gas.	
Chapter 380 *Land and Water Management*	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 *Public Health, General Provisions*	The Proposed Action would not affect public health.	Establishes public policy concerning the state's public health system.
Chapter 388 *Mosquito Control*	The Proposed Action would not affect mosquito control efforts.	Addresses mosquito control effort in the state.
Chapter 403 *Environmental Control*	Emissions would be negligible for all criteria pollutants except particulate matter as compared to the federal NAAQS. These emission concentrations are still within federal standards and would not cause adverse affects to the regional air quality. Also, emissions would make up less than 1 percent of Okaloosa and Santa Rosa County's emissions. The increase in fugitive dust would be short-term and temporary. No adverse impacts to regional air quality are expected. 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.	Establishes public policy concerning environmental control in the state.
Chapter 582	The interaction between	Provides for the control and

Soil and Water Conservation	stormwater runoff and the soil surface, in association with land disturbances, can periodically create conditions prone to erosion that may result in adverse impacts to land and potentially to water resources. Land clearing and heavy munitions use could modify the terrain such that best management practices would be required to minimize potential adverse impacts from loss of soil. No adverse impacts are anticipated to the underlying geology of the area from the proposed activities at TA B-70. Therefore, the Proposed Action would be consistent with the State's policies concerning soil and water conservation efforts.	prevention of soil erosion.

APPENDIX E

BIOLOGICAL ASSESSMENT

TM [illegible]
PK [illegible]
NM [illegible]

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 96TH AIR BASE WING (AFMC)
EGLIN AIR FORCE BASE FLORIDA

RECEIVED
JAN 29 2009

Mr. Stephen M. Seiber
Chief, Natural Resources Section
96 CEG/CEVSN
501 De Leon Street, Suite 101
Eglin AFB FL 32542-5133

JAN 23 2009

Ms. Janet Mizzi
U.S. Fish and Wildlife Service
1601 Balboa Avenue
Panama City FL 32405

Dear Ms. Mizzi:

The following information is being submitted to fulfill requirements under Section 7 of the Endangered Species Act (ESA). Briefly, this report assesses potential impacts to the red-cockaded woodpecker (RCW), the flatwoods salamander, the Eastern indigo snake, and four state-listed species from Test Area (TA) B-70 activities described in the Test Area B-70 Draft Range Environmental Assessment (REA), Eglin Air Force Base (AFB), Florida (U.S. Air Force, 2008).

Description of Proposed Action

The region of influence (ROI) for this analysis is TA B-70 and a one-mile buffer around the test area. TA B-70 is located on the western side of the Eglin Range Complex in Okaloosa and Santa Rosa Counties, about 15 miles northwest of Eglin Main Base as shown in Figure 1. TA B-70 is approximately 13 miles long and averages 1.25 miles wide, making it the second largest test area on the Eglin Range Complex. TA B-70 is the only overland supersonic range east of the Mississippi River in the United States (U.S. Air Force, 2005).

The mission activities that are included are those events that originate and/or terminate on TA B-70. The air operations that occur in the airspace overlying TA B-70 are not part of the scope for this BA; the air operations are analyzed cumulatively in the *Overland Air Operations Environmental Baseline Document* and *Landing Zone Environmental Baseline Document*. However, supersonic flights and the expendables that are released during air operations, as they impact TA B-70 and the vicinity, are included in this BA.

TA B-70 supports a variety of testing and training activities that include:

Air-to-surface bombing and missiles. This activity is conducted as both testing and training missions, although primarily training. The bombs and missiles are released from various aircraft at ground targets on the test area. Most of the weapon systems do not contain a live warhead and are used for targeting purposes.

Surface-to-surface cruise missiles. These are the long range weapon systems that are used during test missions only. TA B-70 is used for the target area, but the cruise missiles are inert and almost always equipped with a parachute for "soft" landings.

Ground training and paratroops. Some groups conduct ground training exercises on TA B-70. It consists of either paratrooper drops onto the area or troop movement across the area (on foot).

Shallow water pond detonations. The lined shallow water pond is used as a mine countermeasures and beach assault obstacle test area. The explosive devices that are used as part of these tests include MK-82 general purpose bombs, shallow water assault breaching (SABRE) charges, and mine clearing systems.

Electronic countermeasures including release of chaff and flares. The electronic countermeasures are used for both testing and training missions. Chaff and flares are released as countermeasures to electronic tracking devices.

Air-to-surface weapons testing during supersonic flight. TA B-70 is the only test area that lies within the supersonic corridor and, thus, it is the only test area that can be used for weapons testing during overland supersonic flights. Generally, inert weapons are used for these tests.

Drone take-offs and landings. Drones that are used as missile targets are launched from and land on TA B-70. Small-scale drones are used as targets for Stinger missile tests over TA B-70.

A complete description of all current testing and training activities, user groups, and expendables are described in the *TA B-70 Final Environmental Baseline Document (EBD)*, Chapter 2, Mission Summary (U.S. Air Force, 2005), and the *TA B-70 REA*, Chapter 2, Alternatives (U.S. Air Force, 2008). Issues related to ongoing maintenance activities, such as herbicide spraying and roller-drum chopping, are addressed in the *Test Area B-70 Maintenance Plan* (U.S. Air Force, 2006), thus are not discussed in this BA.

The Proposed Action would authorize the current level of activity plus a 300 percent increase in mission activity (Table 1), and would include avoidance and minimization measures as part of the proposed action. A 300 percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency. The current level of activity is defined as the maximum annual expenditure for each type of expendable from FY1995 through FY2007; this approach accounts for periods of low or no activity of a certain mission. The Proposed Action would approve up to 56 low-level [(below 30,000 Above Ground Level (AGL)] supersonic sorties annually.

Table 1. Maximum Annual Expendables for Test Area B-70 Under the Proposed Action

Expendable	Number Expended
Bombs (Inert)	6,040
Bombs (Live)	188
C-4 Explosive	3976
Chaff	27,396
Decoy	44
Detonation Cord, ft	72,893
Explosive Net	76
Flare (Live)	4,875
Grenade (Inert)	2,576
Grenade (Live)	13,936
Ground Burst Simulator	4,800
Gun (Inert)	331,224
Gun (Live)	1,168
Laser Operations	852
Mines (Inert and Live)	696
Mines (Inert)	1,060
Mine Clearing Line Charge	8
Missile (Inert)	860
Missile (Live)	436
Paradrops	44
Paratroops	9,624
Rockets (Live)	48
SABRE Charge (Live)	1,692
Small Arms (Inert)	4,289,516
Small Arms (Live)	6,428
Smokes	6,256

Biological Information

Three federally-listed endangered and threatened species are known or have potential to occur within the project area. The following list indicates those species considered for this action:

Common Name	Scientific Name	Federal Status
Red-cockaded Woodpecker	*Picoides borealis*	E
Reticulated Flatwoods Salamander	*Ambystoma bishopi*	Proposed E
Eastern Indigo Snake	*Drymarchon corais couperi*	T

Red-Cockaded Woodpecker

The red-cockaded woodpecker (*Picoides borealis*) is listed as a federally endangered bird species and a state species of special concern. The RCW excavates cavities in live longleaf pine trees that are at least 85 years old. The RCW historically had a habitat range as far north as New Jersey and as far west as Oklahoma. Today, the RCW has been restricted to the southeastern United States, from Florida to Virginia and to southeast Texas, due to a loss of habitat. In the southeast, 98 percent of the longleaf pine forests have been removed, making relatively undeveloped federal lands such as Eglin AFB primary habitat for the species. Due to the preservation of continuous longleaf pine forests on Eglin, the Eglin Range has one of the largest remaining populations of RCWs in the country. In 2003, the USFWS identified Eglin AFB as 1 of 13 primary core populations for the RCW (U.S. Air Force, 2006a). Eglin's population goal is 350 Potential Breeding Groups (PBGs). The Eglin population has been increasing since 1994, and the current population has 390 active clusters and an estimated 347 PBGs as of 2008.

The removal of longleaf pine trees, degradation of quality habitat, and noise generated from mission-related or other activities are potential threats to the RCW on the Eglin Range. Eglin is executing a USFWS-approved management strategy to meet certain growth objectives of the RCW and to obtain increased mission flexibility with the federal requirements for RCW impacts (U.S. Air Force, 2006a).

The Eglin Natural Resources Section (NRS) Geographic Information System (GIS) database includes the locations of active RCW cavity trees (tree containing one or more cavities that are utilized by the RCW) and inactive RCW cavity trees (tree containing cavities that were once utilized by the RCW but have not shown recent activity). The NRS also maps RCW foraging habitat around active clusters of RCW cavities in the GIS. Consultation guidelines require that transient foot and vehicle traffic lasting more than two hours be avoided within 200 feet of active RCW trees. Also, within this 200-foot buffer, traffic must stay on established trails and roads, and digging, excavating, and bivouacking are prohibited. In addition, if timber is to be removed within 0.5 miles of active cavity trees, then a forage habitat analysis must be completed to determine potential impacts. Consultation will be required if resulting resources fall below USFWS guidelines.

Eglin NRS personnel have observed no difference in RCW productivity or survival from those clusters located near an active range compared to those far away. RCWs continue to thrive in the forests around TA B-70 and active RCW trees and foraging habitat surround TA B-70, with 523 acres of RCW foraging habitat and one inactive tree actually on TA B-70 (Figure 2). Habitat quality seems to be influential in determining RCW productivity, survival and population stability.

Reticulated Flatwoods Salamander

The reticulated flatwoods salamander is proposed for listing as federally endangered and is a state species of special concern. Based on molecular and morphological analyses, Pauly et al. (2007) proposed the separation of the flatwoods salamander into two species. The division lies along the Apalachicola-Flint Rivers with reticulated flatwoods salamanders (*Ambystoma bishopi*) inhabiting areas to the west and frosted flatwoods salamanders (*A. cingulatum*, federally threatened) ranging to the east of the rivers. There are 18 known breeding ponds for the flatwoods salamander on the Eglin Range. Additionally, the Eglin Range supports approximately 17,000 acres of potential salamander habitat in mesic flatwoods.

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

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

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

Thirty-seven acres of potential flatwoods salamander buffer habitat fall within TA B-70, but the pond itself is not on the test area (Figure 3). Although the likelihood of flatwoods salamanders existing in this pond is low and no flatwoods salamanders have been found here, Eglin protects all potential habitat due to the difficultly of trapping the salamander.

Eastern Indigo Snake

The eastern indigo snake (*Drymarchon corais couperi*) is listed as a federal and state-threatened species that is the largest nonvenomous snake in North America. The primary reason for its listing is population decline resulting from habitat loss and fragmentation. Movement along travel corridors between seasonal habitats exposes the snake to danger from increased contact with humans. Indigo snakes frequently utilize gopher tortoise burrows and the burrows of others species for over-wintering. The snake frequents flatwoods, hammocks, stream bottoms, riparian

thickets, and high ground with well-drained, sandy soils. The indigo snake could occur anywhere on the Eglin Range because it uses such a wide variety of habitats (U.S. Air Force, 2006a).

The species is extremely uncommon on Eglin, with the sighting of only 29 indigo snakes throughout the Eglin Range from 1956 to 1999, while no sightings have been reported since 1999 (U.S. Air Force, 2006a). Most of these snakes were seen crossing roads or after being killed by vehicles. It is difficult to determine a precise number or even estimate of the number of these snakes due to the secretive nature of this species (U.S. Air Force, 2006a).

The indigo snake has been sighted at TA B-70 (Figure 3). Most of TA B-70 lacks the forested habitat preferred by the indigo snake, thus indigo snakes may traverse TA B-70, but are not likely to use the area as primary habitat.

Other Species Considered

Migratory Birds

The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Under the provisions of the MBTA it is unlawful "by any means or manner to pursue, hunt, take, capture or kill any migratory bird except as permitted by regulations issued by the USFWS. The term "take" is not defined in the MBTA, but the USFWS has defined it by regulation to mean to pursue, hunt, shoot, wound, kill, trap, capture or collect any migratory bird, or any part, next or egg or any migratory bird covered by the conventions or to attempt those activities. Migratory birds pass through the region, but neither Eglin nor Hurlburt is considered an important stopover area or concentration site for neotropical migratory birds in the spring or fall (Tucker et al., 1996).

Florida Burrowing Owl

The Florida burrowing owl (*Athene cunicularia floridana*) is a state species of special concern. The owl creates burrows, similar to gopher tortoise burrows, in which to hide from predators. They are typically found in open habitats with short grasses and few trees. These small owls have been seen on many test areas across the Eglin Range, but the only confirmed population is on Test Area B-70 (U.S. Air Force, 2006a). Historically, Florida burrowing owls have been found in the middle portion of the southern half of TA B-70 (Figure 3). Re-surveys currently are in progress and available data have been included.

Florida Black Bear

The Florida black bear (*Ursus americanus floridanus*) is currently listed as a state threatened species except in Baker and Columbia Counties and in Apalachicola National Forest. Florida black bear populations are currently found in Florida and Georgia, and there is also 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. Reasons for population declines include loss of habitat due to

urban development, and direct mortality due to collisions with vehicles. Black bear in Florida breed in June through July, and young are born in January through February. Most black bears within the Eglin Range utilize the large swamps and floodplain forests in the southwest and northern portions of the Eglin Range, where they feed on fruits, acorns, beetles, and yellow jackets. Black bear sightings have occurred at numerous locations throughout the Eglin Range, the majority of which have been within the interstitial areas (U.S. Air Force, 2006a).

The black bear has been sighted at TA B-70 (Figure 3). Most of TA B-70 lacks the forested habitat preferred by the black bear, thus black bears may traverse TA B-70, but are not likely to use the area as primary habitat.

Gopher Frog

Gopher frogs (*Rana capito*), a state species of concern, are often associated with gopher tortoise habitat, as they use gopher tortoise burrows for cover, but are also known to flourish where tortoises no longer occur. They also use old field mouse burrows, hollow stumps, and other holes for cover. The species requires nearby seasonally flooded grassy ponds, depression marshes, or Sandhills upland lakes that lack fish populations for breeding. They have been found in the longleaf pine, turkey oak, pine flatwoods, sand pine scrub, and xeric hammock communities of the Sandhills and Open Grassland/Shrubland ecological associations up to 2 kilometers from the breeding ponds. One confirmed gopher frog pond exists on the western portion of TA B-70, and one along the northeastern boundary (Figure 3).

Gopher Tortoise

The gopher tortoise (*Gopherus polyphemus*), a state-threatened species, is found primarily within the Sandhills and Open Grassland ecological associations on Eglin, 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 are important habitat for many species, including the federally-listed indigo snake (U.S. Air Force, 2006a).

A Candidate Conservation Agreement for the gopher tortoise has been developed as a cooperative effort among state, federal, nongovernmental, and private organizations. The purpose of this agreement is to collectively implement proactive gopher tortoise conservation measures across its eastern range. Historically, gopher tortoise burrows have existed on various portions of TA B-70. Re-surveys currently are in progress and available data have been included.

Determination of Impacts

Based on the scope of the Proposed Action, as described above, potential impacts to sensitive species from TA B-70 activities (supersonic flights, munitions and pyrotechnics use, and ground operations) can be categorized as follows:

Direct Physical Impacts – Physical harm (i.e., injury or mortality) to listed species as a result of human activities. The main cause of direct physical impacts associated with the Proposed Action would be physical contact, which could involve the crushing/trampling of, or collision with, a species due to vehicle traffic or human movements, or a munitions or shrapnel strike resulting in physical damage or mortality of a species. Chemical impacts from metals and explosives residue would also be considered direct physical impacts.

Harassment – Actions that create the likelihood of injury to listed species to such an extent as to significantly disrupt normal behavior patterns, which include, but are not limited to, breeding, feeding, or sheltering. Activities under the Proposed Action may result in harassment due to the following:

- Nest/burrow destruction – Destruction of a nest or burrow due to excessive ground disturbance, causing a species to relocate.
- Foraging/nesting disturbance – Disruption of normal breeding/nesting or foraging activity.

Habitat Impacts – Habitat impacts include loss, alteration, and/or degradation of habitat. These impacts characterize the physical damage, stress, or disruptions that may adversely alter or degrade the habitats essential to the sustainment of a species. A habitat in this instance refers to the ecological and geomorphological components, such as vegetation, soil, topography, and water that support listed species. Activities under the Proposed Action may result in habitat impacts due to the following:

- Soil erosion – Loss of soil due to vehicular traffic, human movements, munitions impacts, or other activities that involve the destruction or removal of vegetative ground cover occurring in or near sensitive species habitat resulting in habitat loss, alteration, or degradation.
- Sensitive habitat destruction – Destruction or degradation of sensitive habitats such as wetland areas or foraging habitat resulting from human activities (i.e., driving, wildfires, munitions, pyrotechnics) having a negative impact.

Red-cockaded Woodpecker

Direct Physical Impacts

Direct physical impacts would be possible from inert munitions and live munitions (in the form of shrapnel). Examination of sensitive species locations in relation to targets and ground training areas revealed that the likelihood of a direct strike was very low. No active RCW trees fall within the potential munitions landing radius for any of the TA B-70 targets. Using the MK-84 as the largest live munition for Test Target (TT)-7, TT-12, and TT-19, a maximum fragment throw distance of 3,880 feet was overlaid with active RCW trees. The other targets are used for inert munitions, so shrapnel fragments are not an issue. No active RCW trees are within the 2,580-foot maximum fragment throw distance for the 155-millimeter target. One active RCW tree (TT-12) and three active RCW trees (TT-19) are located within the 3,880-foot shrapnel dispersal radius. Although four active trees do fall within the fragment throw distance, all of

them are more than 3,000 feet from the impact site, and RCWs are likely to be either inside the cavity tree or foraging outside of the impact area at the time of impact. The likelihood of a direct impact from shrapnel is extremely low.

Harassment

Primary noise sources on TA B-70 include supersonic overflights, air-to-surface (A/S) bomb detonations, shallow-water pond detonations (i.e., line charge tests), artillery, small-arms ammunition fire, and ground operations. Noise from these activities has the potential to affect the behavior and reproduction of RCWs on and near TA B-70. Due to a lack of criteria available for birds, human noise thresholds were used to determine the potential for impacts to the RCW. The noise analysis in this section uses the maximum individual intrusive noise event (i.e., P-weighted decibels [dBP]). The maximum noise event may be repeated at other times during the year, but each event will be of a very short duration and will not occur continuously. Still, the potential for noise impacts to RCWs exists and could result in non-lethal harassment. RCWs will be most sensitive during nesting season (1 April to 1 July).

Low-level Supersonic Flights

Up to 56 low-level (below 30,000 feet AGL) supersonic flights may occur annually at TA B-70. The primary concern from these flights is the noise associated with the shock wave generated when the aircraft exceeds the speed of sound; the shock wave is heard on the ground as a sonic boom. The magnitude and duration of the boom depends on the size, shape, and weight of the aircraft and its altitude and flight parameters. The area over which the wave sweeps the ground during a supersonic mission is often referred to as the boom carpet.

The PCBoom model was developed to determine the noise levels that will be generated by military aircraft flying at supersonic speeds. PCBoom4 was used to model the boom carpet generated by an F-15 or F-16 during supersonic flight under various flight and weather conditions. The results of the PCBoom4 modeling efforts show that aircraft altitude has the greatest effect on the size and intensity of the boom carpet; speed and aircraft type have limited influence on the boom footprint. An increase in altitude creates a larger boom carpet footprint, but has a lower dB level. A decrease in altitude creates a more intense but smaller boom carpet footprint. The F-15 and F-16 were each modeled for a variety of scenarios, based on typical supersonic mission flight parameters. The variables for the scenarios that were considered include:

- five weather conditions,
- two aircraft (F-15 and F-16),
- two speeds (Mach 1.05 to Mach 1.2), and
- range of altitude (500 to 2,000 feet AGL).

Potential effects of sonic booms on the federally endangered RCW are of concern at TA B-70. Many active RCW trees and acres of RCW foraging habitat are present within the modeled 140-decibel (dB) contour, with one RCW tree exposed to noise levels up to 154.6 dB from low-level supersonic flights in the TA B-70 vicinity (Table 2 and Figure 4). Under conditions that

would produce the most intense sonic boom, up to 345 active RCW trees may be exposed to noise levels over 140 dB (Table 2), which can cause hearing loss in humans. In contrast to humans, birds can regenerate hair cells even after considerable losses, indicating that birds may be more resilient from hearing damage than humans (Bowles, 1995).

Table 2. RCWs Potentially Exposed to Noise from Sonic Boom

Receptor	Noise Level (dB)			
	153.6 - 154.6 dB	151.1 - 153.6 dB	147.6 - 151.1 dB	139.8 - 147.6 dB
RCW active trees	1	12	14	318
RCW foraging habitat (ac)	453	822	2235	23,328

dB = Decibels; RCW = Red-cockaded Woodpecker

Noise meaning is a crucial determinant in whether wild animals react to a noise source. For example, waterfowl and other game bird species are typically more responsive to noise than non-game species due to the associated danger for hunted species (i.e., loud guns). Hunted species may become sensitized such that they will increase energy expenditures to avoid perceived danger from loud noises. Alternately, if a noise is deemed harmless by an animal, then the animal may habituate or adapt behaviorally and physiologically over time (Bowles, 1995). Animals may initially react with a startle effect from noises, but adapt over time, so that even this behavior is eradicated. The use of specified flight paths for supersonic flights facilitates the habituation of wildlife by making the noise source spatially predictable. Because RCWs in the TA B-70 vicinity are regularly exposed to loud impulse noise (i.e., detonations, sonic booms) without any associated physical danger, these individuals have likely become habituated to the noises, such that they do not expend energy on harmless stimuli.

Based on a review of literature pertaining to noise exposure in wildlife, Bowles (1995) suggests outcome measures, such as reproductive success, are better indicators of distress in wildlife than short-term responses (i.e., startle reaction). Negative reproductive effects have not been seen in the RCW clusters in the TA B-70 area, and the population in the TA B-70 vicinity actually is growing. Based on the fact that the entire Eglin RCW population continues to grow, it appears that RCWs on Eglin have adapted to all of the noises associated with the military mission, including sonic booms. There is other suitable habitat available on Eglin, but the RCWs have continued to nest and forage near TA B-70. Quality habitat appears to outweigh any negative influences associated with sonic booms.

Munitions

Munitions noise is categorized as high explosive impulse noise, such as occurs from live bombs or artillery. This type of noise is accompanied by abrupt increases in pressure and powerful, low frequency sound that rapidly spreads from the point of detonation. The sound and pressure of a detonation can temporarily or permanently affect hearing, as well as injure or kill an animal depending on the proximity of the animal to the source. Inert and live bombs will be dropped on existing targets on TA B70. Potentially harmful levels of noise could extend outward to active

cavity trees. Although brief, exposure to this noise carries a risk of acoustic discomfort. Similar exposures are occurring on occasion throughout the test area and other test areas on the reservation with no known detrimental impacts to the overall population. Eglin NRS personnel have observed no difference in RCW productivity or survival from those clusters located near an active range compared to those far away. Compared to noise, habitat quality seems to be more influential in determining RCW productivity, survival and population stability.

Small Arms and Artillery Noise. RCWs could be disturbed by small arms and artillery noise. Delaney and others (2002) published results of an experiment showing that at certain distance and noise levels from small-arms use and artillery, RCWs would not flush. RCWs did not flush when the experimental sources (.50 cal blanks and artillery simulators) were located more than 152 meters away (Delaney et al., 2002). When nesting, RCWs did flush in response to noise, but they returned to the nests within several minutes and nesting success was not affected (Delaney et al., 2002). Based on observations of military training and RCW response, Delaney and others (2002) suggest that: 1) land management (i.e., prescribed fire) is a more influential factor in the overall success of RCWs than training activities or noise, and 2) the RCW's ability to deal with disturbance factors during breeding season is strongly affected by the presence of quality habitat (i.e., foraging habitat and available nest cavities).

The degree of disturbance to wildlife created by small-arms fire is difficult to separate from the additive effects, and probably more disturbing effect of human presence. A study noted that humans, eagles, and boats caused a greater percentage of black brants (a type of geese) to take flight than jets, propeller aircraft, and gunshots (Ward et al., 1986). In general, human presence and natural predators more often caused startle responses than noise (Manci et al., 1988).

Based on the 7.62 mm data in Table 3, potentially harmful noise levels from single-event small-arms fire occur within 50 feet of the point of fire. Thus, firing within 50 feet of an active RCW cavity tree or other known sensitive species location is not recommended. U.S. Army guidelines allow firing of small arms, but not artillery, within 200 feet of a marked cavity tree (U.S. Army, 2006).

Table 3. Impulse Noise from 7.62 mm Fire

Noise Level (P-weighted Decibels)	Distance (feet)
155	At Gunner
140	50
92	1,640

Source: U.S. Army CHPPM, 2004

MK-84. While a variety of live munitions are used on TA B-70, the analysis here focuses on the MK-84 because it is the largest live munition regularly used on the test area. A few most frequently used *live* ordnance targets are the focus of the analysis, as these areas are the most likely locations that munitions noise may affect sensitive species. The targets and their uses are:

- TT-7: Variety of bombs and missiles
- TT-10: AGM-65s (Mavericks)
- TT-12: GBU 17B Bunker; used for guided penetrator bombs
- TT-19: A/G WSEP Area Target; sea containers, primary target for live weapons fire

Eleven active RCW trees fall within the 140-dB footprints for the MK-84 (945 lbs NEW) around TT-7, TT-10, TT-12, and TT-19 (Figure 5). Each MK-84 detonation is a single event, which is less disruptive to birds than continuous, repetitive noise. RCWs continue to thrive in the forests around TA B-70 and do not appear to suffer from any long-term noise impacts from TA B-70 activities.

MOAB Detonations. MOAB detonations (GBU-43B; 18,700 lbs H6 explosive) create noise levels of 140 dBP that extends out 7,460 ft from the point of origin (Figure 6). For lack of wildlife-specific thresholds for impulse noise, the human measure was used for analysis. Noise levels of 140 dBP (zone of slight injury for humans) from the MOAB detonations did encompass eight active RCW cavity trees (Figure 6). As discussed previously for sonic booms, birds can regenerate hair cells even after considerable losses, indicating that birds may be more resilient from hearing damage than humans (Bowles, 1995). Also, RCWs in the TA B-70 vicinity are regularly exposed to loud impulse noise (i.e., detonations, sonic booms) without any associated physical danger, thus these individuals have likely become habituated to the noises. RCWs continue to thrive in the area surrounding the MOAB detonation location, thus there appear to have been no lasting impacts from the noise.

Pond Detonations. For the shallow water pond (TT-5) on TA B-70, noise modeling was conducted for the M-58 (1,750 pounds of C-4 explosive). The noise model was not able to determine the amount of noise reduction due to water attenuation, so the actual area affected by noise from the detonation is smaller than that calculated in the model. The 140-dB noise contour does not reach any RCW trees or RCW foraging habitat.

Maverick Missile. The Maverick missile is used at TT-10. No active RCW trees are within the 140-dB contour for Maverick missile noise at TT-10.

Ground Operations

Vehicle movement and foot traffic associated with ground operations may create noise and disturbance that will affect RCWs foraging along the periphery of TA B-70. Depending on the type of vehicle, noise levels may be quite loud and accompanied by heavy vibration. Delaney et al. (2002) monitored nesting RCWs as a convoy of vehicles passed (Table 4). Birds flew away as a result of the passing of the convoy, but returned shortly thereafter. Vehicle use along existing TA B-70 roadways does not represent a novel 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. 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 5). Military training within 200 feet of marked cavity trees is limited to military activities of a transient nature (less than 2 hours of occupation). 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. Activities that are not allowed within the 200-foot buffer include bivouacking and establishing command posts. U.S. Army (2006) provides a detailed description of management requirements with respect to training near RCWs.

Harassment Summary

Although RCWs may be exposed to high noise levels associated with TA B-70 missions, each noise event is very short and occurs only occasionally throughout the year. RCWs continue to nest successfully near TA B-70 in spite of the noise from sonic booms and munitions; the presence of suitable habitat appears to outweigh any negative influences associated with mission-related noise.

Habitat Impacts

The use of munitions and pyrotechnics increases the risk of wildfires. Fires are usually beneficial to longleaf communities, but it is unknown whether the wildfires potentially associated with the Proposed Action would have a net positive or negative effect on RCWs. The RCW requires 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.

Air Force missions involving tracers, bombs, missiles, and rocket motors are responsible for almost all wildfires on TA B-70. Although more than 90 percent of the fires on TA B-70 are contained to the test area, occasionally one will go into the interstitial area beyond the test area boundary. The average size of a wildfire ignited by TA B-70 activities is approximately 142 acres, with an average of 7 wildfires annually (Table 6). Assuming a 300 percent increase in TA B-70 activities would result in a 300 percent increase in wildfires, there may be an average of 28 wildfires annually under the Proposed Action.

Table 5. 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 maximum	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 Combat Support/Combat Service Support (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, hardwood only	Yes
Establish camouflage netting	No
Vehicle maintenance for no more than 2 hours	Yes
Weapons Firing:	
7.62 millimeter and below blank firing	Yes
.50 caliper 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
Hexachloroethane (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

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.

Table 6. Wildfires at TA B-70 Missions from 1995 to 2007

	Year												
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Number of Fires	NA	5	4	1	1	16	8	8	11	10	11	11	15
Acres Burned	NA	3,688	722	0.5	1	235	80	3,511	443	789	519	1,257	622
Average Size (ac)	NA	738	181	0.5	1	15	10	439	40	79	47	114	41

NA = Not Available
Source: Eglin DSS, 2008

Munitions and pyrotechnics use will 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 Natural Resources Section. Within 3 working days of notification, the Eglin Natural Resources Section will reprovision a cavity tree if one is destroyed due to TA B-70 activities (i.e., due to wildfire).

Avoidance and minimization measures will be in place to minimize the potential for damaging wildfires. Additionally, although the Proposed Action will likely result in an increased number of wildfires on TA B-70, due to increased frequency, the intensity of each wildfire will likely be less due to a reduced fuel load.

Summary

Eglin Natural Resources Section believes the proposed action is NOT LIKELY TO ADVERSELY AFFECT the RCW or its foraging habitat because the likelihood of direct physical impacts to RCWs is low, avoidance and minimization measures are in place to minimize potentially damaging hot wildfires, and RCWs continue to thrive in the vicinity of TA B-70 despite noise from detonations and sonic booms.

Flatwoods Salamander

Habitat alteration to potential flatwoods salamander habitat is possible from munitions, pyrotechnics, and ground operations. The increase in munitions and pyrotechnics use will increase the number of wildfire starts at TA B-70, with a predicted average of 28 wildfires annually. Wildfires ignited by TA B-70 activities could have both positive and negative impacts. The flatwoods salamander requires frequent fire to keep scrubby vegetation to a minimum. Wildfires may achieve this purpose, but with every wildfire, there is the potential for the alteration of the hydrology of salamander habitat from fire suppression activities. To minimize the likelihood of damaging wildfires, munitions and pyrotechnics use will follow Eglin's Wildfire Specific Action Guide Restrictions (U.S. Air Force, 2006b).

Vehicles, especially tracked vehicles such as tanks, also have the potential to alter salamander habitat in the form of soil disturbance and erosion if conducted in or near potential flatwoods salamander habitat. Because off-road vehicle use and other ground-disturbing activities are restricted within 1,500 feet of potential flatwoods salamander ponds, the possibility of impacts is minimal. Tracked vehicles travel primarily along a tank trail adjacent to Centerline Road, which is over a mile away from potential flatwoods salamander habitat, thus effectively have no chance for affecting potential salamander habitat. Soil disturbance from munitions impacts is concentrated around established target areas, the closest of which is over 0.50 mile from the edge of potential flatwoods salamander.

Chemical residue from munitions and pyrotechnics has the potential to impact flatwoods salamander health if accumulated in water. Chemicals can interfere with respiration, reproduction, nervous system functions, and other physiological functions. Munitions may leach explosive residue into soils, or metals such as lead, aluminum, and copper from weathered casings and projectiles if the expended munitions are not retrieved. Existing factors limit the likelihood of such contamination from occurring: 1) Range personnel routinely remove spent ordnance from target areas; and 2) the closest target is over 0.50 mile from the edge of potential flatwoods salamander habitat. Additionally, Eglin restricts the release of any chemical or metal within the 1,500-foot buffer for potential flatwoods salamander ponds.

With adherence to the Eglin Wildfire Specific Action Guide Restrictions, and restrictions on where munitions, pyrotechnics, and vehicles can be used, the Eglin NRS believes TA B-70 activities are NOT LIKELY TO ADVERSELY AFFECT the reticulated flatwoods salamander.

Eastern Indigo Snake

Increased levels of tracked and wheeled vehicular traffic have the potential to impact indigo snakes and their habitat. However, almost all of TA B-70 is open grassland, which is not the preferred habitat of the indigo snake. Additionally, the potential for encountering an indigo snake is very low; Eglin has not had any indigo snake sightings or reports since 1999. Incidental contact with personnel on foot or vehicles could result in trampling or crushing of individuals, but this occurrence is unlikely, as a snake would most likely move away from the area if it sensed a general disturbance in its vicinity. If an indigo snake is sighted, personnel will cease activities until the snake has moved away from the area, and will immediately notify the NRS. Personnel will follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004).

Due to the low probability of an encounter and the requirement to avoid any sighted indigo snake, the Eglin NRS has determined that this action is NOT LIKELY TO ADVERSELY AFFECT the Eastern indigo snake.

Other Species Considered

Migratory Birds

Migratory birds pass through the region of influence (ROI), but Eglin is not considered an important stopover area or concentration site for neotropical migratory birds in the spring or fall (Tucker et al., 1996). Breeding neotropical migrants at Eglin and Hurlburt are primarily found in riparian, hammock, and barrier island habitats. These areas can serve as temporary habitat for neotropical birds migrating to and from the Caribbean and South and Central America. Neotropical migrants are more common in the Eglin and Hurlburt areas during fall migration than spring migration (Tucker et al., 1996). The Eglin NRS believes TA B-70 activities will not significantly impact migratory birds.

Florida Burrowing Owl

Direct physical impacts and noise impacts to Florida burrowing owls are possible from supersonic flights, munitions, and off-road vehicle use. Inert munitions, shrapnel from live munitions, and vehicles may result in direct physical impacts to burrowing owls. Only one burrowing owl burrow (at TT-13) falls within the potential landing radius of 500 feet for unguided munitions. Using the MK-84 as the largest live munition for TT-7, TT-12, and TT-19, a maximum fragment throw distance of 3,880 feet was overlaid with burrowing owl locations. The other targets are used for inert munitions, so shrapnel fragments are not an issue. Within the 3,880-foot shrapnel dispersal radius, there are eight burrowing owls at TT-7, nine burrowing owls at TT-12; and six burrowing owls at TT-19. Ten burrowing owls are within the 3,525-foot maximum fragment throw distance for the Maverick missile at TT-10. No owls are within the 2,580-foot maximum fragment throw distance for the 155-millimeter target. Although some burrows do fall within the fragment throw distance, all of them are more than 1,300 feet from the impact site. The likelihood of a direct impact from shrapnel is extremely low, and is further reduced at times when owls are in their burrows.

Vehicles primarily remain on the established roads, which limits the potential for impacts. Prior to missions involving extensive off-road activities in the vicinity of burrowing owls, the NRS will install markers next to burrows for avoidance. Troops will be instructed to avoid burrowing owls and their burrows. Burrowing owls do not seem to be in any danger and have the ability to fly away from a moving vehicle or any ground training activity. Any new construction or activity will require a burrowing owl survey.

Burrowing owls may be exposed to high noise levels associated with TA B-70 missions; however, sound generated in air does not transmit into denser media (i.e., water, ground) very well, thus burrowing owls may be sheltered to some extent if in their burrows when the noise is emitted. Also, as discussed for the RCW, noise meaning is a crucial determinant in whether wild animals react to a noise source (Bowles et al., 1995). Under conditions that would produce the most intense sonic boom, up to 35 burrowing owl burrows may be exposed to noise levels over 140 dB (Figure 4), which can cause hearing loss in humans. In contrast to humans, birds can regenerate hair cells even after

considerable losses, indicating that birds may be more resilient from hearing damage than humans (Bowles, 1995). Ten burrowing owl burrows are within the 140 dB footprint for the Maverick missile at TT-10, and 30 burrowing owl burrows fall within the 140-dB footprints for the MK-84 around TT-7, TT-10, TT-12, and TT-19 (Figure 5). Noise levels of 140 dBP from the MOAB detonations encompassed 18 burrowing owl burrows (Figure 6). Each MK-84, MOAB, and missile detonation is a single event, which is much less disruptive to birds than repetitive noise. As most of the B-70 population of burrowing owls is within the 140-dB footprint for these targets, it would appear that the owls have habituated to TA B-70 activities.

Habituation of burrowing owls has likely been facilitated by the spatial predictability of most of the activities at TA B-70, such as the use of specified flight paths for supersonic flight, limiting almost all vehicle traffic to roadways, and using established target areas for munitions. Also helpful is the fact that many of these activities occur on a regular basis. The Eglin NRS believes vehicles, munitions, and supersonic flight will not significantly impact the Florida burrowing owl.

Florida Black Bear

Vehicle strikes and munitions noise impacts are possible from TA B-70 activities. Due to the open nature of TA B-70, vehicle operators would be able to easily spot any bears prior to reaching them. Vehicle operators will be instructed to stop and allow bears to move away from the road before continuing activities, and to contact the NRS to report the sighting.

Because bears are not limited to any particular geographic area or habitat on Eglin, they are free to avoid noise and disturbance from munitions. Bears would likely just move away from noisy areas. Additionally, exposure to low-level aircraft noise and munitions noise is likely already occurring given the wide distribution of the black bear on Eglin AFB. The Eglin NRS believes TA B-70 activities will not significantly impact the Florida black bear.

Gopher Frog

Habitat alteration and chemical impacts may affect the two gopher frog ponds at TA B-70 (Figure 3). The restriction on off-road vehicle use within 100 feet of gopher frog ponds will minimize the potential for vehicle impacts. Sedimentation from munitions target areas would not affect gopher frog ponds, with the closest munitions target being over 0.50 mile from the ponds. As discussed for the flatwoods salamander, wildfires ignited by TA B-70 activities could have both positive and negative impacts to gopher frog breeding ponds. To minimize the likelihood of damaging wildfires and suppression activities, user groups will follow the Eglin Wildfire Specific Action Guidelines.

Aluminum from chaff and magnesium from flares are the primary chemicals of potential concern for gopher frogs on TA B-70 because these are released across the entire test area. Repeated, concentrated exposure to chaff and flare debris could negatively affect the inhabitants of small bodies of water (i.e., Bull Pond, a gopher frog breeding pond).

The number of units expended compared to the surface area over which they will be delivered is relatively small; the Air Force would have to expend five times more chaff and flare units, to approach toxic concentrations in Bull Pond (U.S. Air Force, 2008). Mandatory munitions clean-up procedures and distance to targets (over 0.5 mile) limit the likelihood of contamination from munitions.

With the adherence to Eglin Wildfire Specific Action Guidelines, and munitions cleanups, and restrictions on where munitions, pyrotechnics, and vehicles can be used, the Eglin NRS believes TA B-70 activities will not significantly impact the gopher frog.

Gopher Tortoise

Burrow collapse and direct physical impacts are possible from vehicles and munitions use on TA B-70. Recent surveys have been concentrated around active target sites, but they will cover the entire test area by completion. Data available to-date have been included here; the NRS will coordinate with the USFWS as needed upon completion of the surveys. The areas of concern for impacts to gopher tortoises are the munitions targets and any areas where extensive off-road vehicle use may occur.

Two gopher tortoises are within the potential munitions-landing radius (for inert munitions) at TT-13. With the largest direct impact area at this target being 2.3 square feet out of the 785,400-square-foot potential landing area, the probability of a direct hit is extremely small. Five gopher tortoises are within the 3,525-foot maximum fragment throw distance for the Maverick missile at TT-10. No gopher tortoises are within the 2,580-foot maximum fragment throw distance for the 155-millimeter target. Using the MK-84 as the largest live munition for TT-7, TT-12, and TT-19, a maximum fragment throw distance of 3,880 feet was overlaid with gopher tortoise locations. The other B-70 targets are used for inert munitions, so shrapnel fragments are not an issue. The following sensitive species are located within the 3,880-foot shrapnel dispersal radius for live munition targets: ten gopher tortoises (TT-7), five gopher tortoises (TT-12); and five gopher tortoises (TT-19). Although some gopher tortoises do fall within the fragment throw distance, all of them are more than 1,100 feet from the impact site. The likelihood of a direct impact from shrapnel is extremely low, and is further reduced at times when tortoises are in their burrows.

Vehicles are used primarily on established roads, which limits the potential for impacts. However, data are not maintained on the number of vehicles that are used on the test area as a part of mission activity, and a quantified probability of impacts cannot be produced. The probability of widespread loss of burrows is extremely low. Prior to missions involving extensive off-road activities in the vicinity of gopher tortoise burrows, the NRS will install markers next to burrows for avoidance. Troops will be instructed to avoid gopher tortoises and gopher tortoise burrows, and not to dig within 25 feet of any gopher tortoise burrow. Any potential digging or ground disturbance would require a separate 813 document and gopher tortoise survey prior to construction. The Natural Resources Section should be notified if a tortoise is sighted.

The Eglin NRS believes that TA B-70 activities will not significantly impact the gopher tortoise.

Avoidance and Minimization Measures

The following avoidance and minimization measures will reduce or eliminate impacts associated with the proposed action. These measures are part of the proposed action and will be implemented through the proposed action's initiation.

RCWs

Continue monitoring of RCWs by the Eglin Natural Resources Section.

Follow the Army Guidelines for RCWs (U.S. Army, 2006).

Within 200 feet of marked RCW cavity trees allow only military activities of a transient nature (less than two hours occupation).

Within the 200-foot RCW buffer, prohibit bivouacking, excavating, digging, and establishing command posts.

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.

Immediately report to Range control known damage to any marked cavity or cavity start tree and/or any known extensive soil disturbance in and around RCW clusters; Range control must notify NRS biologists immediately.

Within 3 working days of notification, the Eglin NRS will reprovision a cavity tree if one is destroyed due to training activity.

If a unit causes damage to training land within a cluster, the responsible unit will coordinate with the NRS to repair damage as soon as practicable (normally within 3 working days of notification).

All digging for military training activities in RCW habitat management units must be filled and inspected by the proponent upon completion of training.

Continue prescribed burning as much as possible in fire dependent habitats, particularly RCW foraging habitat.

Continue the following practices: use specified flight paths for supersonic flight, limit most vehicle traffic to roadways, and use established target areas for munitions.

Flatwoods Salamander and Gopher Frog

On field maps, mark gopher frog ponds with a 100-ft buffer and flatwoods salamander ponds with a 1,500 ft buffer as areas to avoid; inform trainees of importance of avoiding these areas.

Digging, vegetation cutting, off-road vehicle use and other ground-disturbing activities should not occur within 1,500 feet of flatwoods salamander ponds or within 100 feet of gopher frog ponds.

Do not use smokes, simulators, or flares within 100 feet of natural water bodies (i.e., Bull Pond, Live Oak 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. These restrictions also apply within the 1,500-foot buffer for potential flatwoods salamander habitat.

For permitted off-road vehicle use, vehicles shall avoid driving in wetlands, floodplains, and on steep slopes. Vehicles and equipment must stay a minimum of 50 meters (164 feet) from the edge of slopes leading down to streams.

Avoid large troop movements on steep slopes and in wetlands.

For activities that require digging, such as the establishment of fighting positions, troops shall fill in holes once they are finished and cover them with pine straw or leaves to minimize erosion potential.

During ground operations, keep digging to a minimum—no holes deeper than 3 feet will be dug, especially within 100 feet of any stream.

No new cleared areas (bivouac, fighting position, etc.) shall be established within 100 feet of any water body, wetland, or floodplain, or on steep slopes.

Avoid ground disturbing fire suppression activities (bulldozers) in wetlands, particularly in flatwoods salamander habitat and gopher frog ponds.

Locate munitions impact areas away from wetlands, especially flatwoods salamander and gopher frog ponds.

Manage lead-based projectiles near natural water bodies, particularly flatwoods salamander and gopher frog ponds.

Indigo Snake

Follow the *Standard Protection Measures for the Eastern Indigo Snake* (U.S. Air Force, 2004.

Inform vehicle operators to avoid indigo snakes. The Natural Resources Section should be notified if one is sighted.

Gopher Tortoise

Do not dig within 25 feet of any gopher tortoise burrow.

Inform vehicle operators to avoid gopher tortoises and gopher tortoise burrows. The Natural Resources Section should be notified if one is sighted.

For missions involving off-road vehicle use near burrows, install markers near burrows for avoidance.

Conduct gopher tortoise surveys prior to any new construction.

Florida Burrowing Owl

Do not dig within 25 feet of any burrowing owl burrow.

Inform vehicle operators to avoid burrowing owls and their burrows.

Continue the following practices: use specified flight paths for supersonic flight, limit most vehicle traffic to roadways, and use established target areas for munitions.

For missions involving off-road vehicle use near burrows, install markers near burrows for avoidance.

Conduct burrowing owl surveys prior to any new construction.

Florida Black Bear

Instruct vehicle operators to stop and allow bears to move away from the road before continuing activities, and to contact the NRS to report the sighting.

All Sensitive Species

In accordance with Section 12.5.13.2 of AFI 32-7064, Integrated Natural Resources Management, cooperate with and support the Eglin Natural Resources Section 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 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 pyrotechnics use 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' AGL. 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 Wildland Fire Program Manager or designee at Eglin Natural Resources (Jackson Guard) (96 CEG/CEVSNP, 882-6233 or FAX 882-5321).

- Fire Danger can be determined by calling the dispatch office or on the Environmental Management website in the Fire Management Section.

- Immediately notify Eglin AFB Fire Department Dispatch of any wildfire.

To reduce potential seed sources, treat areas with known invasive nonnative species problems.

Provide conditions and restrictions regarding biological resources to all participants in verbal or written form.

Conclusion

The proposed action would have no significant adverse effects on any of the resources evaluated in this BA. Management requirements, which are part of the proposed action, would preclude direct effects to biological resources and their habitats. Based on analysis of the potential impacts to federally protected species from the proposed activities, Test Area B-70 activities are NOT LIKELY TO ADVERSELY AFFECT any protected species (Table 7).

Table 7. Cumulative Effects Determinations for TA B-70 Activities

Activity	RCW	Flatwoods Salamander	Indigo Snake
Low-level Supersonic Flights	NLAA	NLAA	NLAA
Munitions and Pyrotechnics	NLAA	NLAA	NLAA
Ground Operations	NLAA	NLAA	NLAA

NLAA = Not Likely to Adversely Affect

The U.S. Fish and Wildlife Service will be notified immediately if any of the actions considered in this proposed action are modified, or if additional information on listed species becomes available, as a re-initiation of consultation may be required. If impact to listed species occurs beyond what has been considered in this assessment, all operations will cease and the Service will be notified. Any modifications or conditions resulting from consultation with the Service will be implemented prior to commencement of activities. The Natural Resources Section believes this fulfills all requirements of the Endangered Species Act and no further action is necessary.

If you have any questions regarding this letter or any of the proposed activities, please do not hesitate to contact either Mr. Bob Miller (850) 883-1153 or myself at (850) 882-8391.

Sincerely,

STEPHEN M. SEIBER, YF-02
Chief, Natural Resources Section

Attachment: Figures 1-6

REFERENCES:

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INFORMAL CONSULTATION REGARDING

POTENTIAL IMPACTS TO FEDERALLY LISTED SPECIES
RESULTING FROM TA B-70 ACTIVITIES, EGLIN AFB, FL

Prepared by: _____ 11/20/09
Stephanie Hiers — Date
Environmental Scientist, SAIC
Eglin Natural Resources Section

Reviewed by:

_____ 11/20/09
Bob Miller — Date
Endangered Species Biologist
Eglin Natural Resources Section

_____ 11/23/09
Bruce Hagedorn — Date
Endangered Species Biologist
Chief, Wildlife Element
Eglin Natural Resources Section

_____ 11/23/09
Stephen M. Seiber — Date
Chief, Eglin Natural Resources Section

USFWS CONCURRENCE:

_____ 12-18-09
Project Leader — Date
U.S. Fish and Wildlife Service
Panama City, FL

FWS Log No 4/410-2009-I-0126

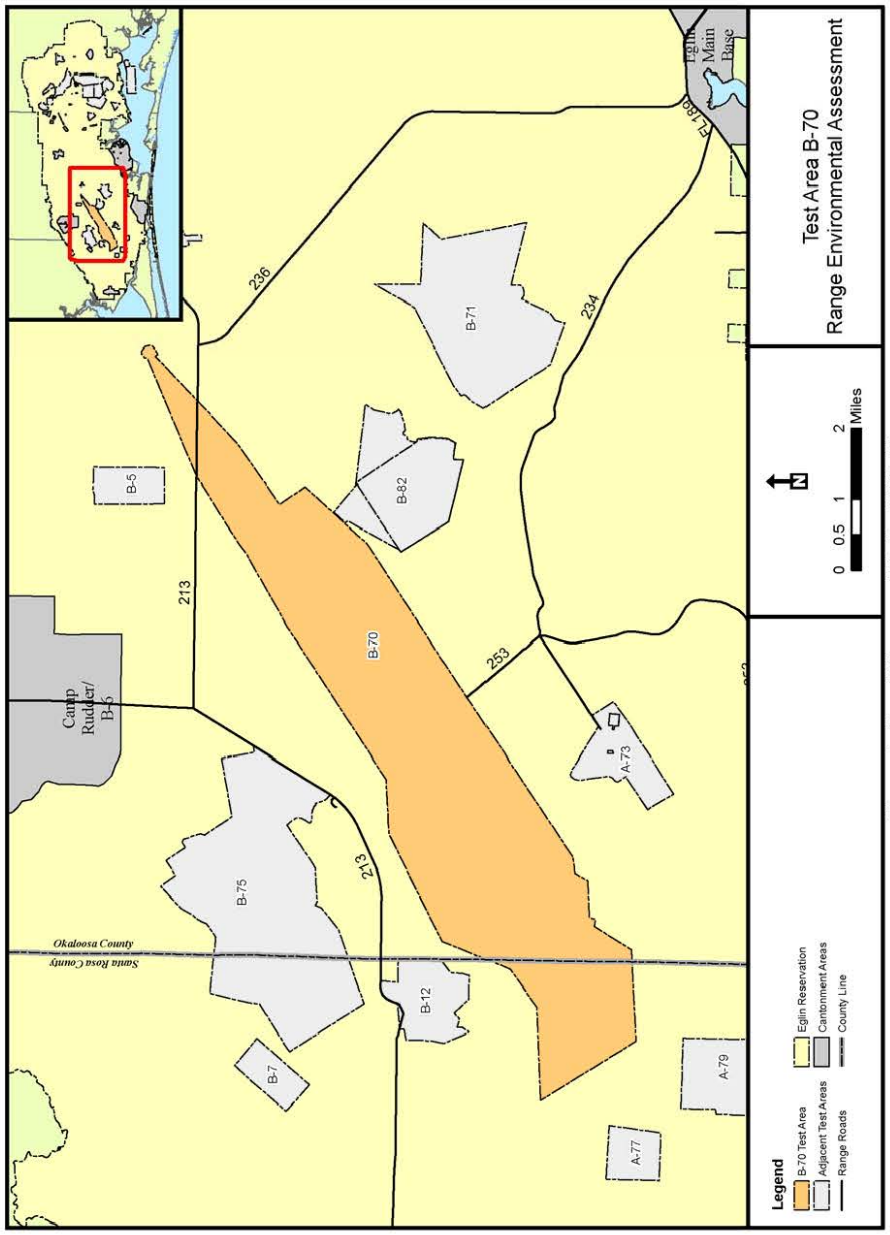

Figure 1. Land Ranges of Eglin AFB, FL

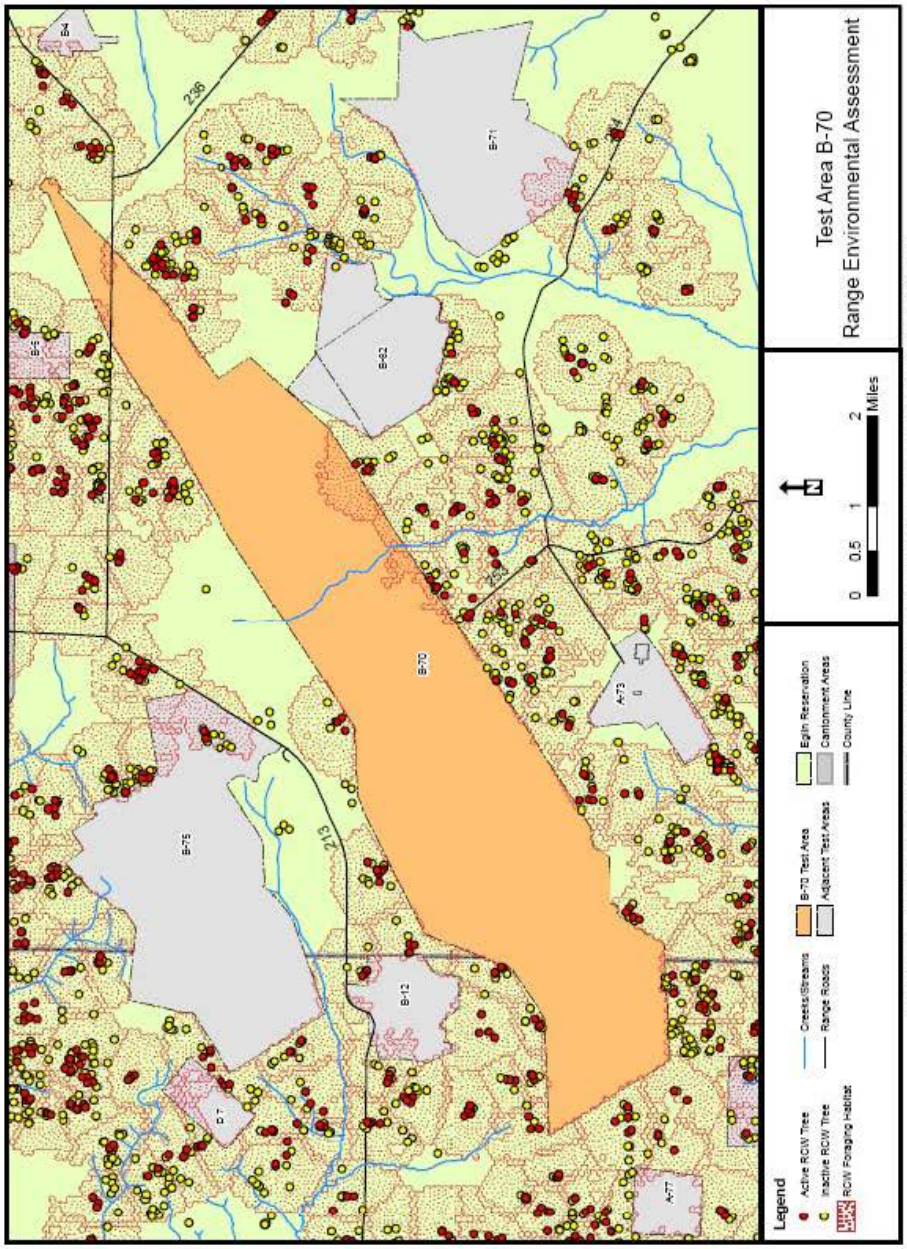

Figure 2. RCW Active Trees and Foraging Habitat on and Near Test Area B-70

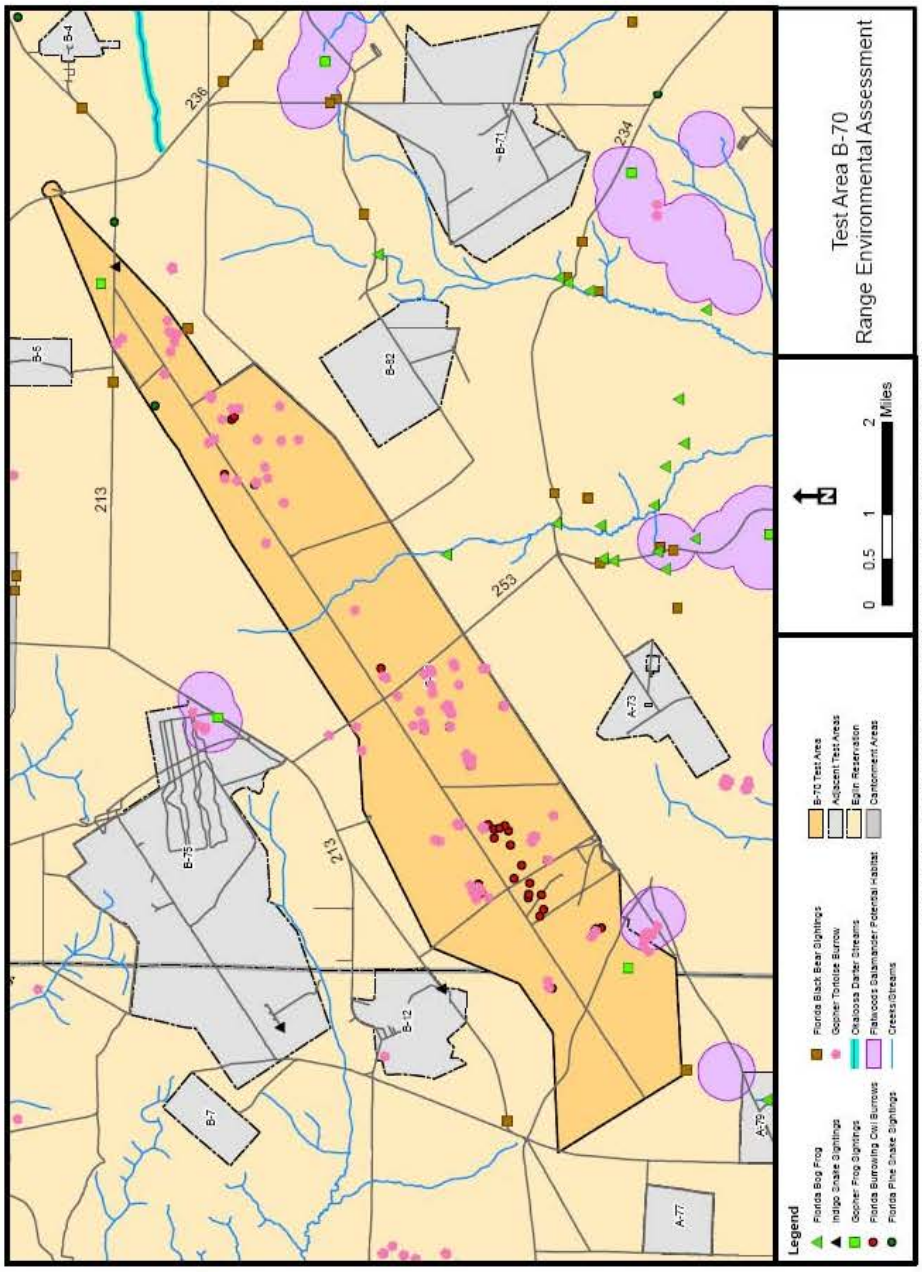

Figure 3. Sensitive Species Other than the RCW at TA B-70

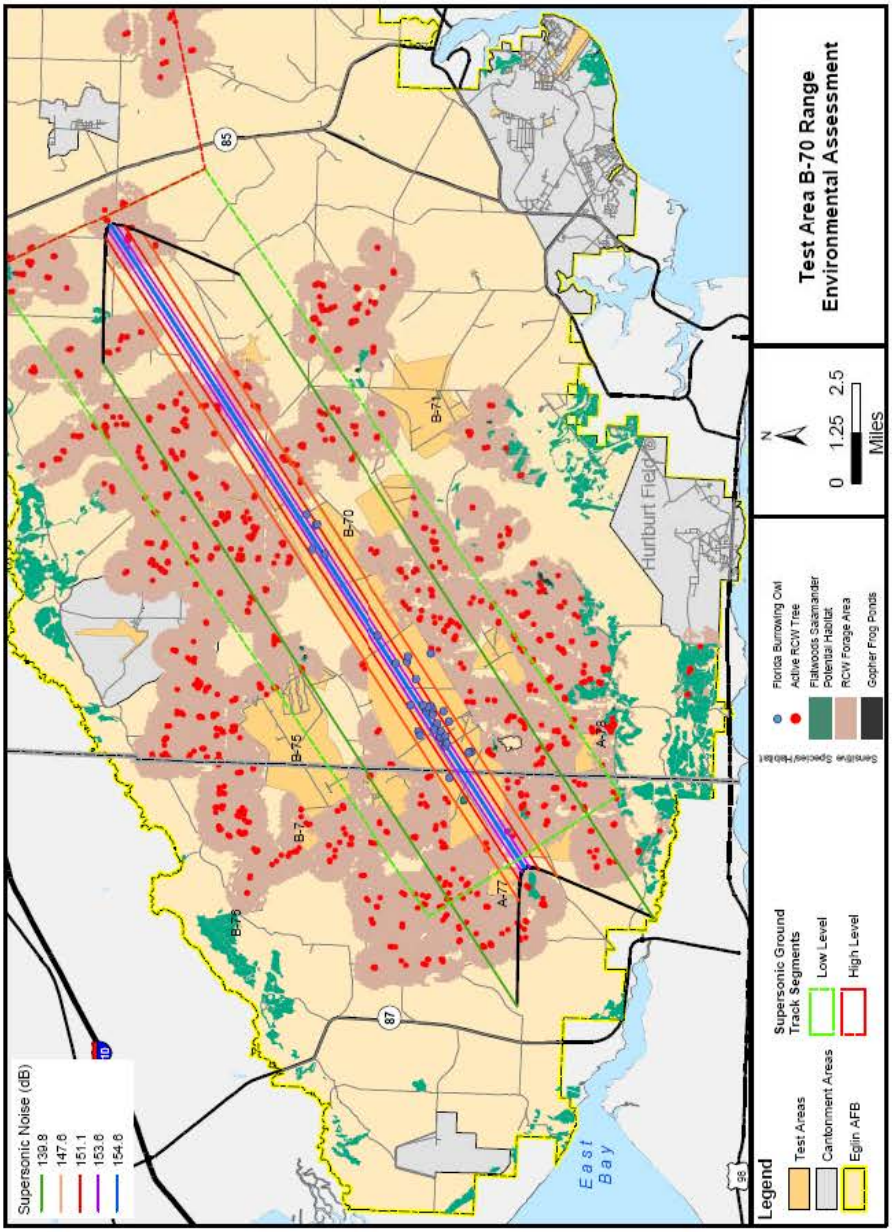

Figure 4. RCWs and Florida Burrowing Owls within the Low-level Supersonic Corridor

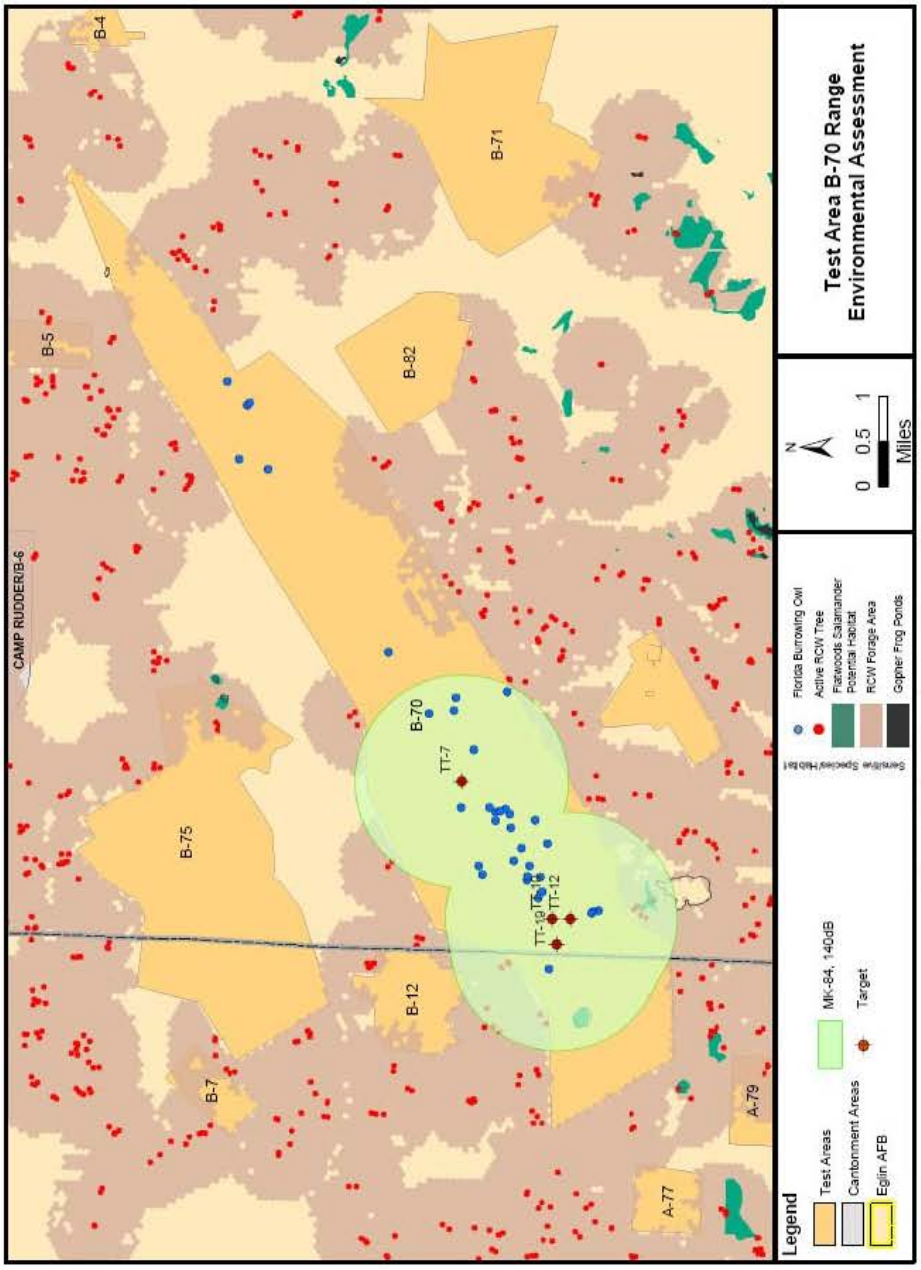

Figure 5. Sensitive Species Exposed to MK-84 Noise

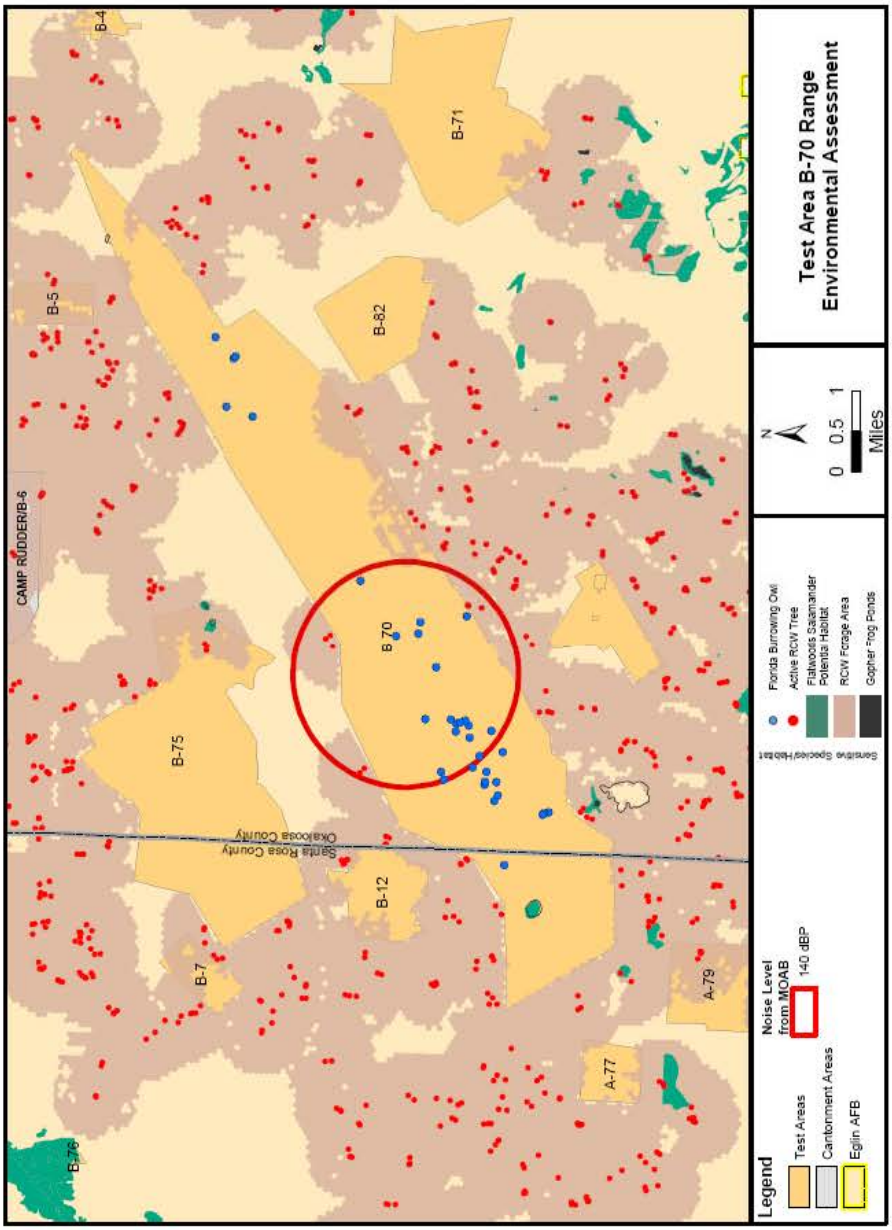

Figure 6. Sensitive Species Exposed to MOAB Noise

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APPENDIX F

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, paradrop/ 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 B-70 on Eglin Air Force Base – Okaloosa and Santa Rosa Counties, FL. SAI # FL200901304569C

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 (NWFWMD) primary concern is the potential for chemical materials to impact water resources and associated natural systems, especially cumulatively over many years of munitions testing. Staff recommends that the quantity and expected fate of all explosive constituents over the course of the analysis period (10 years) be clearly addressed within the REA. A discussion of long-term, cumulative impacts of lead deposition on soils, sediments, water resources and biology is warranted. The amounts of TNT anticipated in groundwater should also be clearly addressed in the document. In general, the U.S. Air Force should assure that the high Sand and Gravel Aquifer recharge area, seepage streams, and wetlands in the project area will be protected through impact avoidance and minimization, periodic monitoring, and any necessary corrective action. Please refer to the enclosed NWFWMD 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.

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.

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,

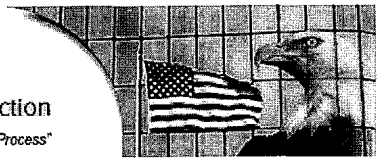
Sally B. Mann

Sally B. Mann, Director
Office of Intergovernmental Programs

SBM/lec
Enclosures

cc: Darryl Boudreau, DEP, Northwest District
Duncan Cairns, NWFWMD
John Gallagher, WFRPC

Florida
Department of Environmental Protection
"More Protection, Less Process"



Categories

DEP Home | OIP Home | Contact DEP | Search | DEP Site Map

Project Information	
Project:	FL200901304569C
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 B-70 ON EGLIN AIR FORCE BASE - OKALOOSA AND SANTA ROSA COUNTIES, FLORIDA.
Keywords:	USAF - DREA, TEST AREA B-70 ON EGLIN AFB - OKALOOSA AND SANTA ROSA CO.
CFDA #:	12.200

Agency Comments:

WEST FLORIDA RPC - WEST FLORIDA REGIONAL PLANNING COUNCIL

The 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.

OKALOOSA - OKALOOSA COUNTY

SANTA ROSA - SANTA ROSA COUNTY

FISH and WILDLIFE COMMISSION - FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION

NO COMMENT BY PAUL SCHARINE ON 2/18/09.

STATE - FLORIDA DEPARTMENT OF STATE

No Comment/Consistent

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 NWFWMD'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. Staff recommends that the quantity and expected fate of all explosive constituents over the course of the analysis period (10 years) be clearly addressed within the Range EA. A discussion of long-term, cumulative impacts of lead deposition on soils, sediments, water resources and biology is warranted. The amounts of TNT anticipated in groundwater should also be clearly addressed in the document. In general, the U.S. Air Force should assure that the high Sand and Gravel Aquifer recharge area, seepage streams 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

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT
Project Review Form

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

RECEIVED
MAR 05 2009
DEP Office of Intergovt'l Programs

DATE: March 4, 2009

SUBJECT: Project Review: **Intergovernmental Coordination**
Title: **Department of the Air Force – Draft Range Environmental Assessment, Revision 1 for Test Area B-70 on Eglin Air Force Base – Okaloosa/Santa Rosa Counties, FL**
SAI #: **FL200902304569C**

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

__x__ Documentation was reviewed.

____ Field investigation was performed.

____ Discussed and/or contacted appropriate office about project.

____ Additional documentation/research is required.

__x__ 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 B-70 Revision 1, Eglin Air Force Base, Santa Rosa and Okaloosa Counties SAI#: FL200901304569C

Test Area B-70 (TA B-70) is the second largest test area on base. It is approximately 13 miles long x 1.25 miles wide, covering about 16 square miles in the western portion of the base. The purpose of the REA is to assess impacts from a desired 300 percent increase in operations over the level approved in 1998, plus foreseeable future activities (Preferred Alternative). While the REA is informative, there are some areas that could be more thoroughly reviewed. These items, and our concerns, are discussed below.

The REA identifies TA B-70 drainage areas variously as Santa Rosa Sound, Choctawhatchee Bay, and Pensacola Bay. It appears that actual drainage is to the Pensacola Bay System via East Bay and lower Yellow River. Watershed identification should be verified and corrected as needed.

The primary concern is the potential for chemical materials to impact water resources and associated natural systems, especially cumulatively over many years of munitions testing (cumulative impacts). Collectively, for example, the three largest bombs could disperse 349,964 pounds of explosives annually. It is not clear how much of each toxic chemical this would release over the course of a year or over the long term, and to what degree annual and cumulative releases would adversely affect water and related resources. It is recommended that the quantity and expected fate of all explosive constituents over the course of the analysis period (10 years) be clearly addressed within the REA.

The assessment of water resource impacts relies on model predictions or comparison with prior approved thresholds and does not consider actual effects from munitions residues, or off-site or cumulative impacts. Surface waters outside TA B-70 could receive contamination from seepage base flow, overland runoff or deposition of chemical residues through the air from testing activities. Field data from monitoring wells and surface water monitoring sites should be considered in order to assess actual conditions. Discernible trends could then be used to modify activity levels.

Lead contamination in particular is a serious concern. Under the Preferred Alternative, annual lead releases would rise to 15,730 pounds, almost 30 times greater than current levels and averaging over 6 pounds per acre. Certain areas are sure to have much higher levels. A discussion of long term, cumulative impacts of lead deposition on soils, sediments, water resources and biology is warranted. Management actions to minimize impacts should be revised to include specific instructions for managing lead-based projectiles.

REA sections on water resources and biological resources are not consistent in the amounts of TNT anticipated in groundwater, with potentially harmful levels. The REA, for example, states, "If such an increase was not a mission necessity, then the number could be reduced to a more realistic level." This issue was not addressed in the water quality section. Also, it is unclear if this is meant as rationale for contaminating groundwater.

It is important to recognize that TA B-70 sits on a significant groundwater recharge area. The site is mostly uplands with elevation ranging from 100 to over 200 feet. It is identified as "vulnerable" to contamination of the Floridan Aquifer System and "more vulnerable" to contamination of the Surficial Aquifer System according to the Florida Aquifer and Vulnerability Assessment (Florida Department of Environmental Protection, Florida Geological Survey). Highly permeable sands recharge groundwater supplying numerous seepage streams heading in multiple directions away from the test site. Many of these seepage streams are associated with steepheads, including Live Oak Creek that bisects the site, elevation approximately 60 feet. In essence, TA B-70 sits at a potentiometric high for the Sand and Gravel Aquifer. It is reasonable to assume that chemical pollutants on the surface could leach through the soil, enter this surficial groundwater aquifer, and discharge at seepage areas into surface waters.

Many streams and wetlands at Eglin are unique and sensitive habitats supporting a rich biological diversity including rare and endemic species. Aquatic ecosystems at Eglin are especially vulnerable to pollution such as changes in water chemistry and siltation.

To summarize, assurances should be included that wetland, stream and groundwater protection measures (avoidance and minimization management actions) will be undertaken through periodic monitoring and corrective action.

JUN.07.2000 18:00 #0137 P.001 /004

West Florida Regional Planning Council

MJ 818-2-3-09

FAX TRANSMITTAL (S) **Total # of Pages (including cover): 4**

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 #
MJ 818 2-3-09	USAF, Draft Range Environmental Assessment, revision 1 for Test Area B-70 on Eglin AFB, Okaloosa & Santa Rosa Counties	MJ 818-2-3-09

	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: 850.769.4854 • F: 850.784.0456
www.wfrpc.org

JUN.07.2000 18:01 #0137 P.002 /004

West Florida Regional Planning Council

MJ 818-2-3-09

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: Monday, March 02, 2009

Subject: Test Area B-70 Draft Range Environmental Assessment on Eglin Air Force Base, FL- Okaloosa and Santa Rosa Counties. RPC# MJ 818-2-3-09, SAI# FL200901304570C

Project: The Proposed Action is for the 46 TW Commander to establish a new authorized level of activity for TA B-70 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 region of influence (ROI) for this analysis is TA B-70, which is located on the western side of the Eglin Range Complex in Okaloosa and Santa Rosa Counties, about 15 miles northwest of Eglin Main Base. TA B-70 is approximately 13 miles long and averages 1.25 miles wide, making it the second largest test area on the Eglin Range Complex. The test area provides over 16 square miles of continuous land test area. TA B-70 is best known as the only overland supersonic range east of the Mississippi River in the United States (U.S. Air Force, 2005a).

Alternative 2: Alternative 1 with a 300-Percent Mission Surge (Preferred Alternative)
This alternative is defined as authorizing the level of activity as described under Alternative 1, plus a 300-percent increase in mission activity; including management actions identified in Chapter 4. A 300-percent increase was chosen as a likely maximum surge increase in military testing and training during a national defense contingency. Alternative 2 would approve up to 56 low-level supersonic sorties annually.

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 practices that controls the amount of runoff that could potentially leave the project site. Control runoff through the use of vegetative ground cover, mulches and compost, surface covers, and engineered runoff controls.

P.O. Box 11399 • Pensacola, FL 32524-1399 • P: 850.595.8910 • 1.800.226.8914 • F: 850.595.8967
551 West 14th Street, Suite E • Panama City, FL 32401 • P: 850.769.4864 • F: 850.784.0456
www.wfrpc.org

Question 1: Are the LDP's lined or are they natural bottoms?

Recommendation 2: Actions should be taken to ensure that impacts, cumulative and secondary, to all surface waters be avoided.

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

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 and Floridan aquifers.

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.

Question 1: Will a biological survey be conducted prior to implementation of the proposed project?

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.

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651 West 14th Street, Suite E • Panama City, FL 32401 • P: 850.769.4854 • F: 850.784.0456
www.wfrpc.org

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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COUNTY: OKALOOSA
SCH - USAF - EG

DATE: 1/29/2009
COMMENTS DUE DATE: 3/6/2009
CLEARANCE DUE DATE: 3/16/2009
SAI#: FL200901304569C

MESSAGE: 2009-00516

STATE AGENCIES	WATER MNGMNT. DISTRICTS	OPB POLICY UNIT	RPCS & LOC GOVS
ENVIRONMENTAL PROTECTION	NORTHWEST FLORIDA WMD		
FISH and WILDLIFE COMMISSION			
X STATE			

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

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

Project Description:

DEPARTMENT OF THE AIR FORCE - DRAFT RANGE ENVIRONMENTAL ASSESSMENT, REVISION 1 FOR TEST AREA B-70 ON EGLIN AIR FORCE BASE - OKALOOSA AND SANTA ROSA COUNTIES, FLORIDA.

To: Florida State Clearinghouse

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

EO. 12372/NEPA

- ☒ No Comment
- ☐ Comment Attached
- ☐ Not Applicable

Federal Consistency

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

From:

Division/Bureau: Historical Resources/Historic Preservation

Reviewer: Samantha Farnest Laura A. Kammerer, Deputy SHPO

Date: 3/5/9 3.6.2009

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BUREAU OF HISTORIC PRESERVATION

Air Force Responses to Comments on the Draft REA

Comment	Proposed 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. 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 identifies TA B-70 drainage areas variously as Santa Rosa Sounds, Choctawhatchee Bay, and Pensacola Bay. It appears that actual drainage is to the Pensacola Bay System via East Bay and lower Yellow River. Watershed identification should be verified and corrected as needed.	Concur, document has been updated to include the Yellow River Drainage Basin and specify the Pensacola Bay Drainage Basin, which include East Bay and Santa Rosa Sound. Additionally, Choctawhatchee Bay has been removed.
The primary concern is the potential for chemical materials to impact water resources and associated natural systems, especially cumulatively over many years of munitions testing (cumulative impacts). Collectively, for example, the three largest bombs could disperse 349,964 pounds of explosives annually. It is not clear how much of each toxic chemical this would release over the course of a year or over the long term, and to what degree annual and cumulative releases would adversely affect water and related resources. It is recommended that the quantity and expected fate of all explosive constituents over the course of the analysis period (10 years) be clearly addressed within the REA.	Munitions related residue released under each alternative are listed in Tables 4-2, 4-4, and 4-6. However, a review of the chemical materials analysis revealed an error in which a representative munitions type used in the analyses for inert small arms was a live munition instead of a blank munition. This reduces the total amount of lead expended from 15,730 lbs to 47 lbs under the Preferred Alternative. The document has been updated to address this error. Additionally, in accordance with AFI 13-212 and AACI 13-206, bi-annual clearance of spent ordnance (surface residue and UXO) to a radius of 300 meters around active targets is required and complete clearance of the range is required once every 5 years (1,000 meter radius), which is incrementally implemented to complete a certain percentage of the range each year over the 5 year period.
The assessment of water resource impacts relies on model predications or comparison with prior approved theresholds and does not consider actual effects from munitions residues, or off-site or cumulative impacts. Surface waters outside TA B-70 could receive contamination from seepage base flow, overland runoff or deposition of chemical residues through the air from testing activities. Field data from monitoring wells and surface water monitoring sites should be considered in order to assess actual conditions. Discernible trends could then be used to modify activity levels.	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."

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

Comment	Proposed Response
Lead contamination in particular is a serious concern. Under the Preferred Alternative, annual lead releases would rise to 15,730 pounds, almost 30 times greater than current levels and averaging over 6 pounds per acre. Certain areas are sure to have much higher levels. A discussion of long term, cumulative impacts of lead deposition on soils, sediments, water resources and biology is warranted. Management actions to minimize impacts should be revised to include specific instruction for managing lead-based projectiles.	Additionally, a review of the chemical materials analysis revealed an error in which a representative munitions type used in the analyses for inert small arms was a live munition instead of a blank munition. This reduces the total amount of lead expended from 15,730 lbs to 47 lbs under the Preferred Alternative. The document has been updated to address this error.
REA sections on water resources and biological resources are not consistent in the amounts of TNT anticipated in groundwater, with potentially harmful levels. The REA, for example, states, "If such an increase was not a mission necessity, then the number could be reduced to a more realistic level." This issue was not addressed in the water quality section. Also, it is unclear if this is meant as rational for contaminating groundwater.	Concur regarding the inconsistency in potential impact of TNT between the water and biological resources section. The statement in the biological resources section has been deleted, as the water resources analysis correctly indicates that the level of activity associated with Alternative 2 would not approach TNT level necessary to exceed USEPA thresholds. The USEPA thresholds were used as screening criteria to determine whether or not there was potential for significant impacts.
It is important to recognize that TA B-70 sits on a significant groundwater recharge area. The site is mostly uplands with elevation ranging from 100 to over 200 feet. It is identified as "vulnerable" to contamination of the Floridan Aquifer System and "more vulnerable" to contamination of the Surficial Aquifer System according to the Florida Vulnerability Assessment (Florida Department of Environmental Protection, Florida Geological Survey). Highly permeable sands recharge groundwater supplying numerous seepage streams heading in multiple directions away from the test site. Many of these seepage streams are associated with steepheads, including Live Oak Creek that bisects the site, elevation approximately 60 feet. In essence, TA B-70 sits at a potentiometric high for the Sand and Gravel Aquifer. It is reasonable to assume that chemical pollutants on the surface could leach through the soil, enter this surficial groundwater aquifer, and discharge at seepage areas into surface waters. Many streams and wetlands at Eglin are unique and sensitive habitats supporting a rich biological diversity including rare and endemic species. Aquatic ecosystems at Eglin are especially vulnerable to pollution such as changes in water chemistry and siltation.	Comment noted.

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

Comment	Proposed Response
To summarize, assurances should be included that wetland, stream and groundwater protection measures (avoidance and minimization management actions) will be undertaken through periodic monitoring and corrective action.	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. 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.
Establish a best management practices that controls the amount of runoff that could potentially leave the project site. Control runoff 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 be avoided.	Comment noted.
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 and Floridan aquifers.	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 environmentally, historically, archaeologically, and culturally significant.	Comment noted.