

Final Environmental Assessment

***For the Expansion and Relocation
of the Explosive Ordnance
Disposal Preliminary Course to
Sheppard Air Force Base, Texas***

November 3, 2010



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FINDING OF NO SIGNIFICANT IMPACT FOR THE EXPANSION AND RELOCATION OF THE EXPLOSIVE ORDNANCE DISPOSAL PRELIMINARY TRAINING COURSE TO SHEPPARD AIR FORCE BASE, TEXAS

Description of Proposed Action: An Environmental Assessment (EA) has been developed in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations, and implementing regulations set forth in 32 CFR §989 (*Environmental Impact Analysis Process*), as amended, to analyze a United States Air Force (USAF) proposal to expand the Air Force Explosive Ordnance Disposal (EOD) preliminary training course, and to relocate the course from Lackland Air Force Base (AFB), Texas to Sheppard AFB, Texas.

Currently, the Air Force EOD Preliminary Course is taught at Lackland AFB, Texas. The course length is six days, and Air Force Senior Leadership has determined that the current course does not adequately prepare Air Force personnel for the joint Naval School EOD (NAVSCOLEOD).

The proposed action is to relocate the EOD Preliminary Course from Lackland AFB to Sheppard AFB and to expand the course length from six to 20 days. Specific components of the Proposed Action include:

- Construction of a 50 by 50 foot bunker at the existing range in the northwest end of the installation,
- A maximum of 88 detonations of ½ block (0.625 pounds) of high explosives (C4) per month, spread over four days per month,
- Pouring a concrete slab in the range area to emplace two Armag®EOD magazines for daily, temporary or transitory storage of explosives and detonation supplies for training exercises. At no time would the magazines contain explosive material overnight,
- Occasional (i.e., four days a month) use of Buildings 2705 and 2706 in the range area,
- Interior renovations to Buildings 1719, 1722, and 1723 in the underutilized 82 Training Wing (TRW) Readiness Site,
- Constructing a fence to enclose approximately two acres in the 82 TRW Readiness Site area for “practical problems” training (e.g., locating and identifying dummy explosives), and
- Permanently relocating 11 Air Force training staff to Sheppard AFB.

Description of Alternatives Analyzed: Air Force leadership began examining alternatives to address the high attrition rate of Airmen at the NAVSCOLEOD in 2008. A number of alternatives were initially considered, and all action alternatives other than the expansion of the EOD preliminary course and relocation to Sheppard AFB were eliminated from consideration.

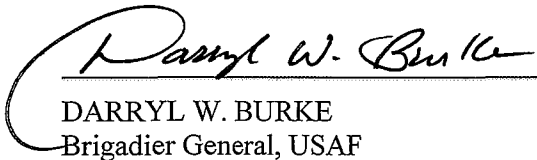
In addition to the proposed action, one other alternative (the No Action alternative) was carried forward for analysis in the EA. Under the No Action alternative, the EOD Preliminary Course would continue as a six-day course at Lackland AFB. Air Force Attrition rates at NAVSCOLEOD would continue to be unacceptably high, and the mission would be compromised.

Summary of Findings: Direct, indirect, and cumulative impacts regarding land use, air resources, hazardous materials and waste, utilities and infrastructure, geology and soils, water resources, biological resources, cultural resources, socioeconomics, environmental justice, and health and safety were analyzed for the proposed and alternative actions at Sheppard AFB.

Implementation of the proposed action would result in an increase in blast frequency in the area of the existing range, a slight increase in air emissions, and a minimal increase in infrastructure demand. A number of measures would be implemented to minimize the potential for impacts to these resources. To minimize noise impacts, explosives training would take place only during normal working hours, and only on weekdays. To minimize impacts to air resources (i.e., fugitive dust emissions) approximately one foot of clean sand would be placed and maintained in the explosives bunker. Any plans, standards, or practices required by local, state, or federal law or USAF regulation would be observed in an effort to avoid or minimize impacts to the resources including BMPs commonly required in construction or renovation contracts for resource protection at Sheppard AFB. Therefore, the analysis in the EA concluded the following:

- There would be no significant impact from the proposed action to land use, air resources, hazardous materials and waste, utilities and infrastructure, geology and soils, water resources, biological resources, cultural resources, socioeconomics or health and safety.
- The proposed action is not expected to contribute appreciably to cumulative environmental impacts when considered in the context of other projects that have recently been completed, are currently under construction, or are anticipated in the near future.

Finding of No Significant Impact: Based on information and analysis presented in the EA and review of public and agency comments submitted, I conclude that implementation of the Proposed Action alternative would not constitute an action that significantly affects the quality of the human environment due to the findings listed above and expanded upon in the EA. Accordingly, a finding of no significant impact is made for this project and an environmental impact statement under the National Environmental Policy Act is therefore not necessary.


DARRYL W. BURKE
Brigadier General, USAF
Commander

5 Nov 2010

Date

Final Environmental Assessment

**For the Expansion and Relocation of the Explosive
Ordnance Disposal Preliminary Course to
Sheppard Air Force Base, Texas**

November 3, 2010

Prepared for:
Air Education Training Command (AETC)
Randolph AFB, Texas
and
The Air Force Center for Engineering and the Environment (AFCEE)

Prepared by:
North Wind, Inc.
535 North Pleasantburg Drive, Suite 136
Greenville, SC 29607

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ACRONYMS

ADA	Americans with Disabilities Act
ADSL	Average Daily Student Load
AETC	Air Education Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AFM	Air Force Manual
AFPD	Air Force Policy Directive
AICUZ	Air Installation Compatible Use Zone
AMSL	above mean sea level
APZ I	Accident Potential Zone 1
APZ II	Accident Potential Zone 2
BMP	Best Management Practice
BNOISE2	Blast Noise Impact Assessment program
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
CRMP	Cultural Resources Management Plan
CSA	Chemical Staging Areas
dB	decibel
DDESB	Department of Defense Explosives Safety Board
DoD	Department of Defense
DOPAA	Description of Proposed Action and Alternatives
EA	Environmental Assessment
EOD	Explosive Ordnance Disposal
ESOH	Environmental, Safety, and Occupational Health (Team)
ESSP	Explosives Safety Site Plan
FFPA	Farmland Protection Policy Act
FONSI	Finding of No Significant Impact

HAP	Hazardous air pollutants
Hz	hertz
ICRMP	Integrated Cultural Resource Management Plan
ISD	Independent School District
L _{dn}	day-night average sound levels
Leq	equivalent noise level
Lmax	maximum sound level
MFH	Military Family Housing
mgd	million gallons per day
MOA	Military Operations Area
MSA	Metropolitan Statistical Area
MSA	Munitions Storage Area
NAVSCOLEOD	Navy School Explosive Ordnance Disposal
NAAQS	national ambient air quality standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NO	nitrogen oxide
O ₃	ozone
OSHA	Occupational Safety and Health Administration
PK	peak sound level
Pb	lead
PM	particulate matter
PM _{2.5}	PM with a diameter of 2.5 microns or less
PM ₁₀	PM with a diameter of 10 microns or less
ppm	parts per million
PSD	prevention of significant deterioration
QD	quantity distance
RCRA	Resource Conservation and Recovery Act

ROI	region of influence
SAC	Strategic Air Command
SEL	sound exposure level
SO ₂	sulfur dioxide
SUA	Special Use Airspace
SWP3	Storm Water Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TPDES	Texas Pollutant Discharge Elimination System
TNT	trinitrotoluene
TRW	Training Wing
USEPA	United States Environmental Protection Agency
USFWS	US Fish and Wildlife Service
WFMA	Wichita Falls Municipal Airport
µg/m ³	micrograms per cubic meter

Organization of the Document

The following is a Description of Proposed Action and Alternatives (DOPAA) for the expansion and relocation of the Air Force Explosive Ordnance Device (EOD) preliminary training course from Lackland Air Force Base (AFB), Texas to Sheppard AFB, Texas. The purpose and need for the project are described in this document, along with the Proposed Action and alternatives considered, including the No Action Alternative.

The DOPAA is the first step in the Environmental Assessment (EA) process and forms the basis of the first two sections of the EA. Information for the remaining sections of the EA will be completed after review and approval of the DOPAA. The EA will be organized into the following sections:

- *Section 1 – Purpose, Need, and Scope*: describes the purpose of and need for the project as well as the general extent of proposed project activities.
- *Section 2 – Description of the Proposed Action and Alternatives*: provides background information for the project and describes the Proposed Action in detail. Also included in this section is a description of the alternatives that were considered for achieving the stated purpose, including any alternatives that were eliminated from detailed study.
- *Section 3 – Affected Environment*: provides a description of existing resources that have the potential to be affected by the action alternative and the No Action Alternative.
- *Section 4 – Environmental Consequences*: describes the environmental effects of implementing the Preferred Alternative, the No Action Alternative, and any other alternatives carried forward for analysis. The analysis is organized by resource and considers direct, indirect, and cumulative effects. The effects of the No Action Alternative provide a baseline for evaluation and comparison. Mitigations and actions included in the Proposed Action that may be taken to reduce impacts to resources are also discussed.
- *Section 5 – Conclusions*: summarizes the findings of the EA.
- *Section 6 – List of Preparers*: provides information regarding the interdisciplinary staff involved in preparing the EA.
- *Section 7 – Persons and Agencies Consulted*: lists those persons and agencies consulted during preparation of the EA.
- *Section 8 – References*: provides citations for documents and other materials used to prepare the EA.

Final Environmental Assessment

For the Expansion and Relocation of the Explosives Ordnance Disposal Preliminary Course to Sheppard Air Force Base, Texas

1. PURPOSE, NEED, AND SCOPE

1.1 Introduction

This Environmental Assessment (EA) is an evaluation of the proposal to expand the Air Force Explosive Ordnance Disposal (EOD) preliminary training course, and to relocate the course from Lackland Air Force Base (AFB), Texas to Sheppard AFB, Texas. The expansion and relocation of the course would allow the Air Force to provide improved training in preparation for the joint Naval School EOD (NAVSCOLEOD) at Eglin AFB, Florida.

Sheppard AFB encompasses approximately 5,297 acres in north-central Texas. It is located six miles south of the Texas/Oklahoma border (**Figure 1**) at an elevation of approximately 1,015 feet above mean sea level (amsl). It is adjacent to and north of the city of Wichita Falls in Wichita County, Texas. The western and southern portions of the Base are located within the Wichita Falls city limits, and the remainder of the installation lies within unincorporated Wichita County. Located midway between Dallas, Texas, and Oklahoma City, Oklahoma, Wichita Falls is accessible by US Highways 82, 281, 287, and Interstate Highway 44. Aerial imagery of Sheppard AFB is provided in **Figure 2**.

1.2 Purpose and Need

The Air Force must maintain the highest level of quality education and training for its force structure. The Air Education and Training Command (AETC) is responsible for the training and education of Air Force personnel. Sheppard AFB, an AETC installation, is the largest of four technical training wings within AETC and has the most diversified training mission. Sheppard AFB conducts technical and healthcare training for the Air Force, United States (US) Army, US Navy, US Marine Corps, and several allied nations.

The purpose and need of the Proposed Action is to adequately prepare Air Force personnel who will be engaged in EOD in accordance with Air Force Instruction (AFI) 13-212 – *Range Planning and Operations* (16 November 2007), and Department of Defense (DoD) Instruction 4140.62 – *Subject: Material Potentially Presenting an Explosive Hazard* (25 November 2008), prior to their participation in the NAVSCOLEOD. NAVSCOLEOD is a joint-service command with specialized training in EOD at Eglin AFB, Florida where oversight and management resides with the Navy. The other participating services in NAVSCOLEOD (i.e., Navy, Marines, and Army) have more rigorous, qualifying training for its personnel prior to participation in NAVSCOLEOD but the AF does not. The AF provides only a six-day preliminary course taught at Lackland AFB, which has proven inadequate due to the high attrition rate of Air Force participants at NAVSCOLEOD as compared to the other services. The proposed new EOD Preliminary Course will provide better training that aligns with NAVSCOLEOD training and better prepares potential Air Force EOD personnel with the expectation that the high attrition rate will be reduced. Compared to the current six-day course, the expanded 20-day course would allow instructors to spend much more time on both classroom training and “practical problem solving” (e.g., locating and identifying dummy explosives).

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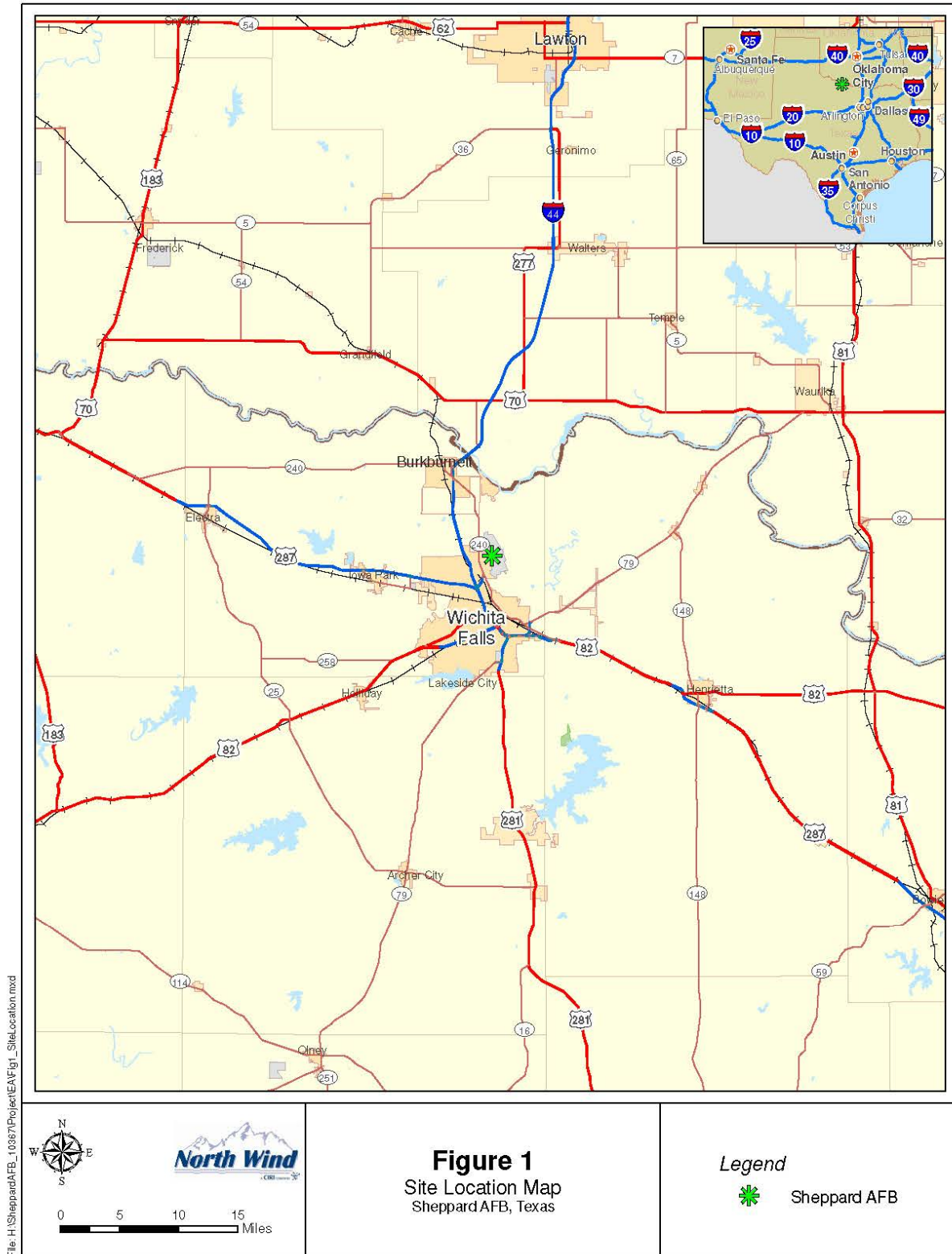


Figure 1. Site location map, Sheppard Air Force Base, Texas.

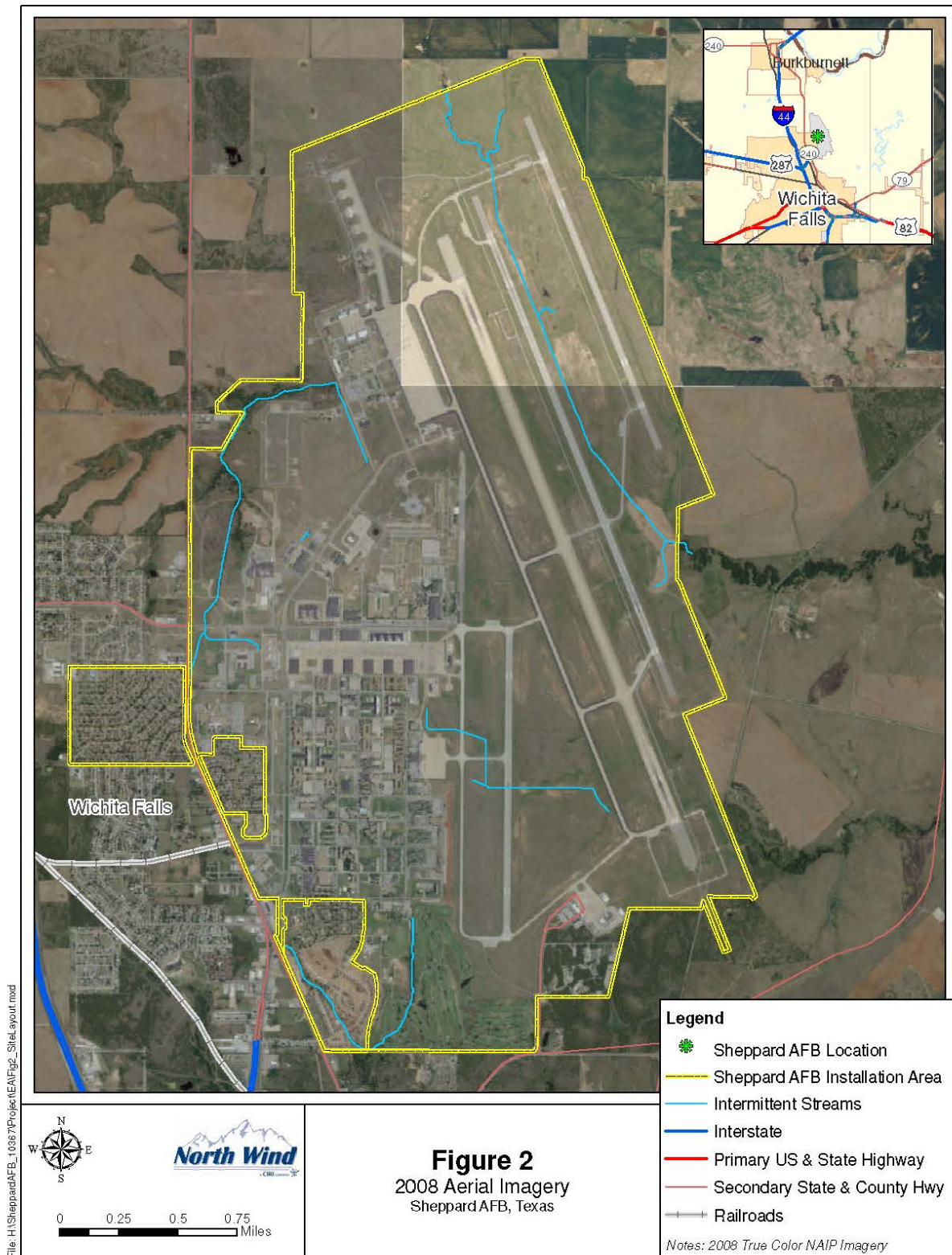


Figure 2. 2008 aerial imagery of Sheppard Air Force Base, Texas.

1.3 Scope of the Analysis

This EA identifies, describes, and evaluates the potential environmental impacts that may result from the relocation and expansion of the Air Force EOD preliminary training course (the Proposed Action), and from the No Action alternative. As appropriate, the affected environment and environmental consequences of the proposed action and alternatives are described in terms of site-specific descriptions or a regional overview. Finally, the EA identifies measures to reduce impacts or best management practices to prevent or minimize environmental impacts, if required.

The resources that could be impacted and are analyzed in the EA include land use, noise, air resources, hazardous materials and waste, utilities and infrastructure, geology and soils, water resources, biological resources, cultural resources, socioeconomics (including environmental justice), and health and safety.

Other actions or potential actions that may be concurrent with the proposed action could contribute to cumulative impacts. The environmental impacts of these other actions are addressed in this EA only in the context of potential cumulative impacts. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the “impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

1.4 Regulatory Framework

Federal, State, and local laws and regulations potentially applicable to this Proposed Action are specified, where appropriate, within this EA, and include, but are not limited to:

- AFI 13-212 – *Range Planning and Operations* (16 November 2007).
- DoD 6055.09-STD – *DoD Ammunition and Explosive Safety Standards* (29 February 2008).
- Air Force Policy Directive (AFPD) 91-2 – *Safety Programs* (28 September 1993).
- Air Force Manual (AFM) 91-201 – *Explosives Safety Standards* (17 November 2008).
- Migratory Bird Treaty Act (MBTA; 16 USC 703-712, 3 July 1918; as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989).
- Endangered Species Act (ESA) of 1973, as amended (7 USC 136; 16 USC 1531 *et seq.*).
- National Historic Preservation Act (NHPA) of 1966, as amended (36 CFR Part 800).
- Federal Clean Air Act (CAA) of 1990 (42 USC §7401 *et seq.*, as amended).
- Native American Graves Protection and Repatriation Act, as amended (NAGPRA) (25 USC 3001 *et seq.*).
- Federal Water Pollution Control Act, or Federal Clean Water Act (CWA), of 1972, as amended, Sections 401 and 404.

- EO 11988, *Floodplain Management* (24 May 1977).
- EO 11990, *Protection of Wetlands* (24 May 1977).
- EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000).
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (11 February 1994).
- EO 13045, *Protection of Children From Environmental Health Risks and Safety Risks* (21 April 1997), as amended by EO 13296 (23 April 2003).

1.5 Public Involvement

On 19 August 2009, the Description of Proposed Action and Alternatives was sent to 11 governmental agencies with an accompanying memorandum requesting their review and comments (The memorandum, distribution list, and complete agency responses are provided in Appendix A). Responses were received from four agencies. Their responses are summarized below:

The United States Environmental Protection Agency stated that they had no comments to offer.

The Texas Commission on Environmental Quality noted that the proposed action location is currently unclassified or in attainment of the National Ambient Air Quality Standards for all six criteria air pollutants. They also recommended that the EA address actions that will be taken to prevent surface and groundwater contamination. This recommendation is addressed in **Sections 3.7** and **4.7** of the EA.

The Wichita Falls Public Works Department noted that the Seymour Aquifer may underlie the proposed action location. They also indicated that the City's primary concern would be the noise generated from the increased number of detonations but they also noted that the remote location of the range would minimize these concerns). Noise issues are discussed in **Sections 3.2** and **4.2** of the EA.

The Texas Historical Commission noted that they had concurred with the Air Force finding of eligibility for three structures at Sheppard AFB for listing in the National Register of Historic Places (NHRP). They also stated that they would require a Cultural Resources Section within the EA. Cultural Resources are addressed in **Sections 3.9** and **4.9**. In a subsequent communication on 4 October 2010, the Texas Historical Commission provided concurrence with the Sheppard AFB Cultural Resources manager's "No Effect" determination for the Proposed Action.

The Draft EA and Draft Finding of No Significant Impact (FONSI) were made available at the Wichita Falls Public Library and online to provide public access to the document during the 15-day public comment period, which began on 17 October 2010 and ended on 1 November 2010. Notification of this 15-day comment period detailing the availability of the document for public review was placed in the Wichita Falls Times Record News (Appendix A). In addition, copies of the Draft EA and FONSI were delivered to the 11 governmental agencies that received the DOPAA (Appendix A). No comments were received during the public comment period.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The AETC proposes to relocate the EOD Preliminary Course from Lackland AFB to Sheppard AFB and to expand the course length from six to 20 days. Implementation of the Proposed Action would require:

- Construction of a 50 by 50 foot bunker at the existing range in the northwest end of the installation,
- Approximately 88 detonations of ½ block (0.625 pounds) of high explosives (C4) per month, spread over four days per month,
- Removal of an approximately 10 by 15 foot concrete pad located immediately east of the existing bunker,
- Pouring a concrete slab in the range area to emplace two Armag® EOD magazines for daily, temporary or transitory storage of explosives and detonation supplies for training exercises. At no time would the magazines contain explosive material overnight,
- Occasional (i.e., four days a month) use of Buildings 2705 and 2706 in the range area,
- Interior renovations to Buildings 1719, 1722, and 1723 in the underutilized 82 Training Wing (TRW) Readiness Site (e.g., removal of some doors, addition of cabinets, shelving, storage lockers, and cipher locks, replacement of some flooring and ceilings [see **Section 2.3.2.2** for a detailed breakdown of proposed renovations]),
- Constructing a fence to enclose approximately two acres in the 82 TRW Readiness Site area for “practical problems” training (e.g., locating and identifying dummy explosives), and
- Permanently relocating 11 Air Force training staff to Sheppard AFB.

The locations of activities included in the Proposed Action on Sheppard AFB are shown on **Figure 3**. More detailed depictions of the Proposed Actions at the existing range and the 82 TRW Readiness Site are shown in **Figures 4 and 5**, respectively. In Figure 4, QD is the quantity distance, defined as the quantity of explosives material and distance separation relationships that provide defined types of protection. The QD arc is commonly referred to as a “safety fan.”

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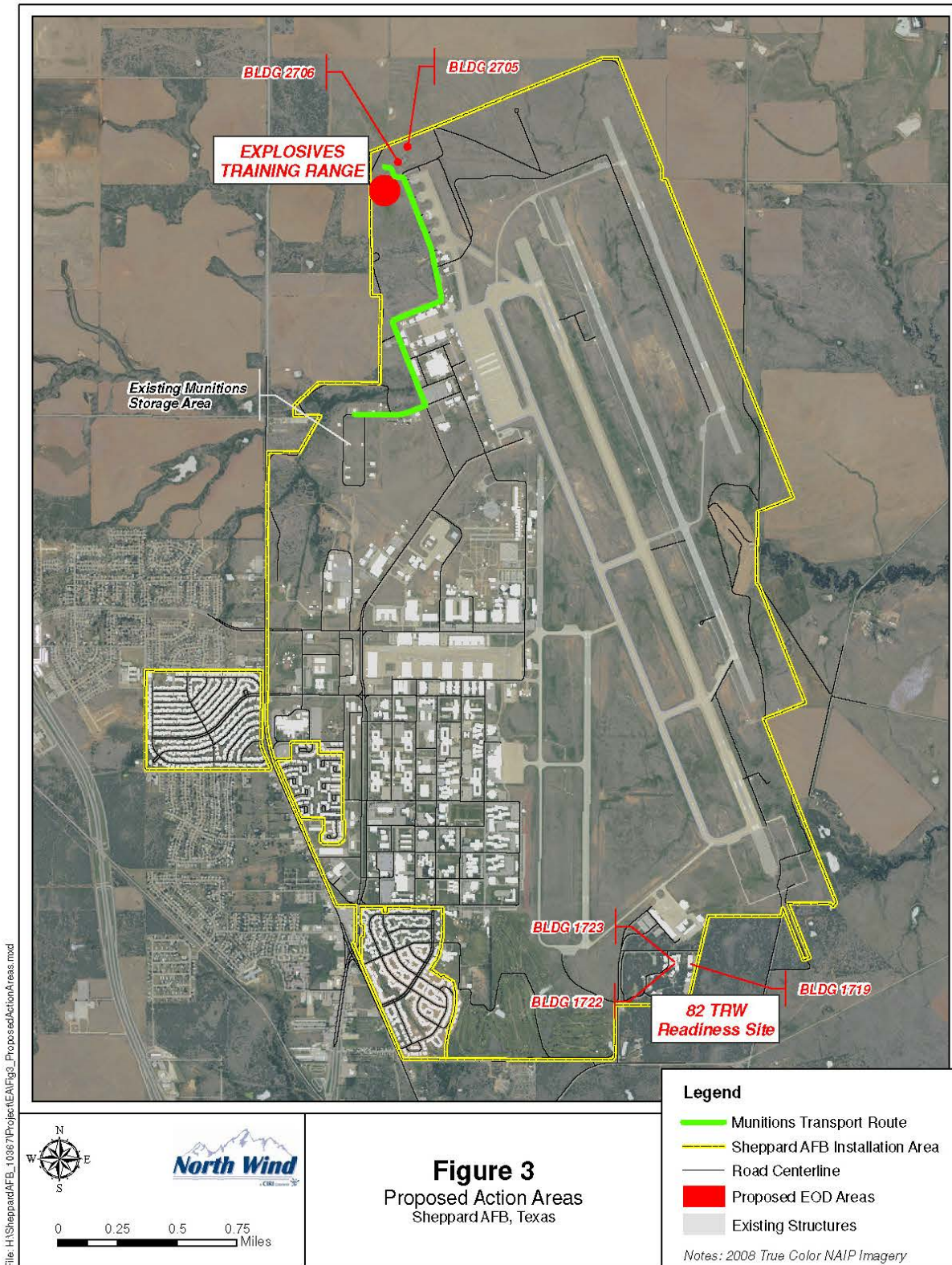


Figure 3. Proposed Action areas, Sheppard Air Force Base, Texas.

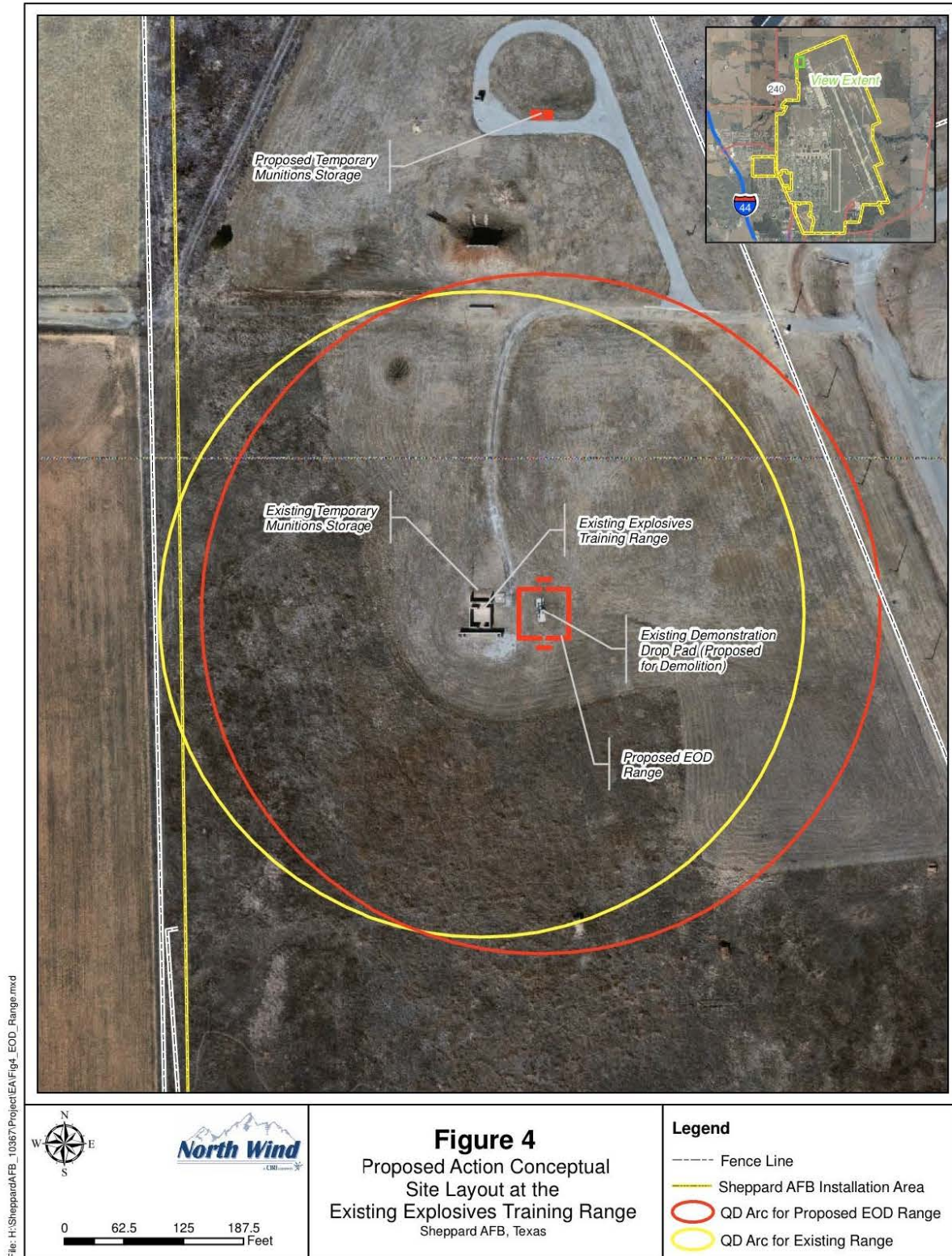


Figure 4. Proposed Action conceptual site layout at the existing Explosives Training Range, Sheppard Air Force Base, Texas.



Figure 5. Proposed Action conceptual site layout at the existing 82 TRW Readiness Site, Sheppard Air Force Base, Texas.

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2.1 Alternatives Development

The National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and 32 Code of Federal Regulations (CFR) 989, *Environmental Impact Analysis Process*, require that a range of reasonable alternatives to the Proposed Action be rigorously explored and objectively evaluated. Alternatives that are eliminated from detailed analysis must also be identified along with a brief discussion of the reasons for their elimination. For purposes of this analysis, an alternative was considered “reasonable” only if it would enable the Air Force to accomplish the primary goal of providing potential EOD specialists with adequate training to facilitate successful completion of NACSCOLEOD and eventually provide mission critical combat capabilities to the Air Force and other service branches. “Unreasonable” alternatives would not enable the Air Force to meet the purpose of and need for the Proposed Action.

Air Force leadership began examining alternatives to address the high attrition rate of Airmen at the NAVSCOLEOD in 2008. A number of alternatives were initially considered, and all action alternatives other than the expansion of the EOD preliminary course and relocation to Sheppard AFB were eliminated from consideration. A brief discussion of alternatives initially considered is provided in Section 2.2.

Figure 6 depicts the locations of all sites that were considered.

2.2 Alternatives Eliminated from Consideration

2.2.1 Alternative 1: Extend the Current EOD Preliminary Course at Lackland AFB

Under this alternative, the EOD Preliminary Course would be extended from six to 20 days, and would remain at the current location (i.e., Lackland AFB). This alternative was removed from consideration because Lackland AFB does not have the capacity (i.e., billeting and dining facilities) to handle the increased average daily student load (ADSL) that would result from extension of the course.

2.2.2 Alternative 2: Extend the Current EOD Preliminary Course and Relocate it to Eglin AFB

Under this alternative, the EOD Preliminary Course would be extended from six to 20 days, and would be relocated to Eglin AFB, Florida. Although this alternative has the advantage of being co-located with the NAVSCOLEOD, it was eliminated from consideration in December 2009 due to the lack of required housing and dining facilities at Eglin for the Air Force students.

2.2.3 Alternative 3: Extend the EOD Preliminary Training and Relocate to Sheppard AFB, Conduct Explosives Training at Fort Sill, Oklahoma

Under this alternative, the EOD Preliminary Course would be extended from six to 20 days, and would be relocated to Sheppard AFB. However, the Explosives handling and detonations portions of the course would be conducted one hour to the north at Fort Sill, Oklahoma. The advantage to this alternative would be that Fort Sill has vast experience with high explosives, and ample range capacity. Additionally, Sheppard AFB has an existing relationship with Fort Sill (Fort Sill is the EOD Response Unit for Sheppard AFB). However, this alternative was eliminated from consideration because of the lost training time and logistical hurdles related to transporting explosives, students, and instructors from Sheppard AFB to Fort Sill.

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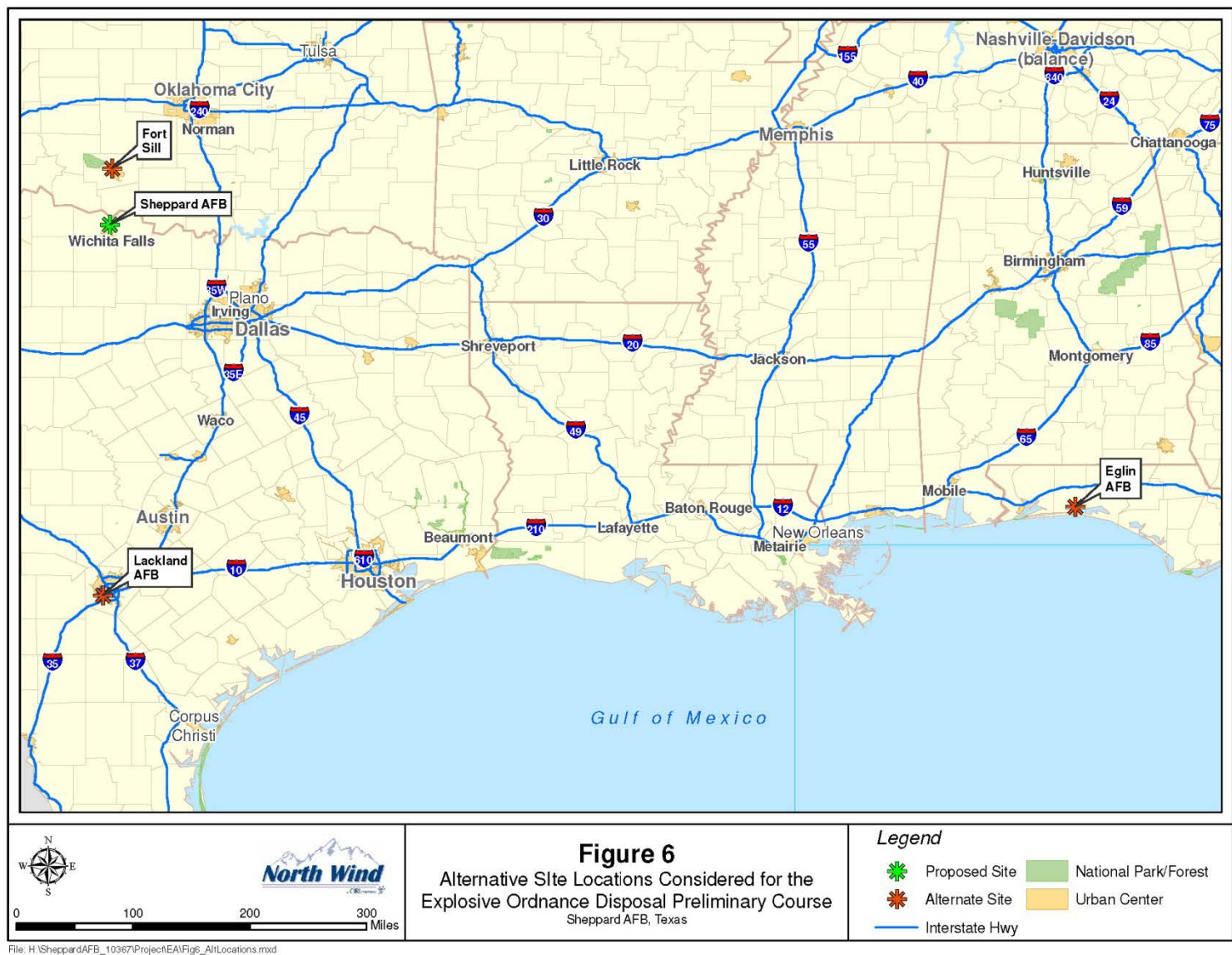


Figure 6. Alternative Site locations considered for the Explosive Ordnance Disposal Preliminary Course, Sheppard Air Force Base, Texas.

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2.3 Evaluated Alternatives

2.3.1 No Action Alternative

Under the No Action Alternative, the EOD Preliminary Course would continue as a six-day course at Lackland AFB. Air Force Attrition rates at NAVSCOLEOD would continue to be unacceptably high, and the mission would be compromised.

While the No Action Alternative would not satisfy the purpose of or need for action, this alternative was retained to provide a comparative baseline against which to analyze the effects of the Proposed Action, as required under Federal law.

2.3.2 Proposed Action: Extend the EOD Preliminary Course and Relocate to Sheppard AFB

The Proposed Action would relocate the EOD Preliminary Course to Sheppard AFB, and extend the course from six to 20 days. Maximum class size would be increased from 20 to 22 students. The interval at which new classes start would be increased from seven to 10 days. As noted at the beginning of Section 2, implementation of the Proposed Action would require:

- Construction of a 50 by 50-foot bunker at the existing range in the northwest end of the installation;
- A maximum of 88 detonations of ½ block (0.625 pounds) of high explosives (C4) per month, spread over four days per month;
- Pouring a concrete slab in the range area to emplace an Armag® EOD magazine for temporary (i.e., daily) storage of explosives for training exercises;
- Occasional (i.e., four days a month) use of Buildings 2705 and 2706 in the range area;
- Interior renovations to Buildings 1719, 1722, and 1723 in the underutilized 82 TRW Readiness Site (see **Section 2.3.2.2** for proposed renovation details);
- Constructing a fence to enclose approximately two acres (including Building 1719) for “practical problems” training (e.g., locating and identifying dummy explosives); and
- Permanently relocating 11 Air Force training staff to Sheppard AFB.

The Proposed Action would result in a maximum increase of 528 students at the installation per year (based on 22 students per class, 24 classes per year). The average daily student load (i.e., the number of students at Sheppard AFB for EOD Preliminary Course on any given day) for the EOD Preliminary Course would be 43. Eleven instructors would be permanently relocated to Sheppard AFB from various locations around the country and abroad. These students and instructors would utilize classrooms, dining facilities, support offices, and warehouse space at Sheppard AFB. The majority of the course would be taught at the existing, currently underutilized 82 TRW Readiness Site. The 82 TRW Readiness Site is underutilized because the 882nd Training Group relocated from Sheppard AFB to Fort Sam Houston, Texas in 2010. The course would be conducted on the explosives range one day per 20-day training session.

The training would include physical fitness, team building, ordnance identification, use of EOD technical orders, ordnance reconnaissance, EOD demolition operations involving the use of high explosive, and

explosive safety. The explosive training at the range would consist of the following: Each student would be issued a 1.25-pound block of C4 explosives. Under the supervision of training staff, the students will divide the block into two halves, and detonate one-half via electric detonation (reusable wire) and the other half using detonation chord and time fuse. Based on an average of 22 students per class and two classes per month, 88 detonations would occur each month (44 detonations per day, two days per month).

The detonations would take place sequentially, in a series of 10 explosions. In other words, 10 students would prepare their half block of C4 for detonation, and place all 10 half blocks in the bunker. Once all personnel are cleared, the students would detonate their charges, one at a time, at the direction of the instructor (one to five seconds apart). Those same 10 students would then prepare their remaining half blocks of C4 for non-electric demolition. Students not involved in demolition would be stationed north of the range in Building 2706 (**Figure 3**).

2.3.2.1 Proposed Construction/Improvements Components at the Explosives Training Range

Implementation of the Proposed Action would include construction of a bunker adjacent to the existing bunker at the Sheppard AFB range. The bunker would have an interior measurement 50 by 50 feet, with two-foot wide concrete walls eight feet tall with two six-foot wide openings on the north and south ends. Wooden structures (i.e., railroad ties or similar) would be bolted to the interior concrete walls (**Figure 7**). An existing 10 by 15 foot concrete pad would be removed to facilitate construction of the bunker. Additionally, one 10 foot by 20 foot concrete pads for the Armag® EOD magazines will be poured at the north end of the range (one magazine will be used for the C4 explosives, and the other will be used for detonation materials) (**Figure 4**).

2.3.2.2 Proposed Construction/Improvements Components at the 82 TRW Readiness Site

Implementation of the Proposed Action would require the use of Buildings 1719, 1722, and 1723 at the 82 TRW Readiness Site (**Figure 3**). The following interior renovations would be required to bring the buildings to required standards for the EOD Preliminary Course:

- In Building 1719, most of the existing vinyl flooring and acoustical ceiling tiles would be replaced, walls would be painted, limited plumbing and electrical upgrades would be completed (to facilitate installation of a washer and dryer), restrooms would be renovated to make them Americans with Disabilities Act (ADA) compliant, a drinking fountain would be replaced to make it ADA compliant, cipher locks would be installed on all exterior and some interior doors, selected interior doors would be removed, some rooms would be sound-proofed, cabinets and storage lockers would be installed, and lighting fixtures would be replaced with more energy efficient designs.
- A fence encompassing approximately two acres would be constructed immediately south of Building 1719 (**Figure 5**). The area within the fence would be used for “practical problems” training (e.g., locating and identifying dummy explosives).
- In Building 1722, existing folding partitions would be removed, and walls would be painted as needed.
- In Building 1723, existing folding partitions would be removed, an overhead cable system would be installed to facilitate hanging acoustical curtain (to divide the room into two equal halves), and walls would be painted as needed.

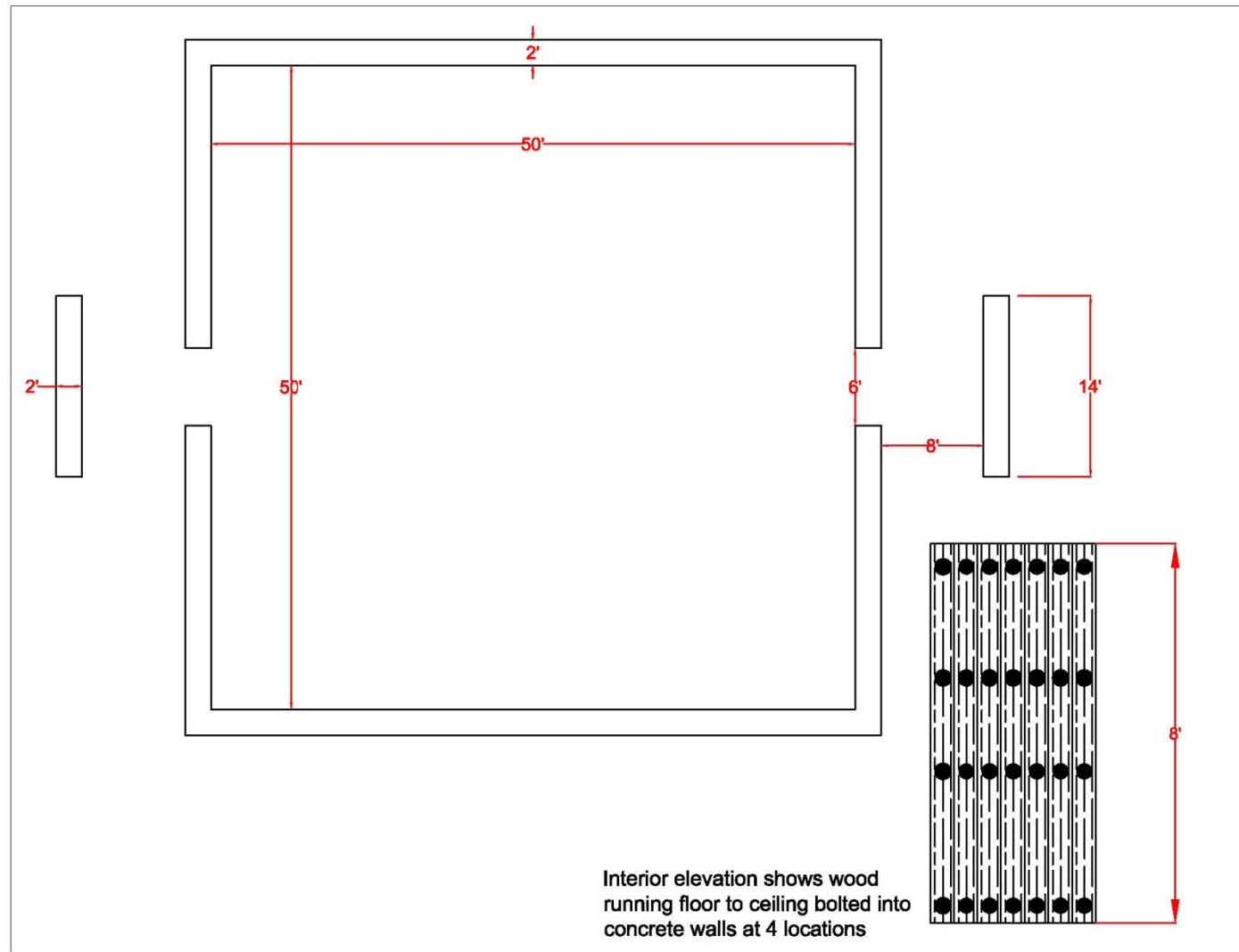


Figure 7. Proposed Design for EOD Training Bunker, Sheppard Air Force Base, Texas (see Figure 4 for location).

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3. AFFECTED ENVIRONMENT

The affected environment is the baseline against which potential impacts caused by the Proposed Action and alternative actions (including the no action alternative) are assessed. This section focuses on the human environment that has the potential to be affected by the proposed relocation of the EOD Preliminary Course from Lackland AFB to Sheppard AFB and the increase of training course days. As stated in 40 CFR 1508.14, the potentially affected human environment is interpreted comprehensively to include natural and physical resources and the relationship of people with the resources. Relevant natural and physical resources were selected for description in this section. Information is presented in this section to the level of detail necessary to support the analysis of potential impacts in Section 4, Environmental Consequences.

Sheppard AFB is located in north-central Texas approximately six miles south of the Texas/Oklahoma border (**Figure 1**). Situated at 1,015 feet amsl, it encompasses approximately 5,297 acres (**Figure 2**). The following subsections describe the existing conditions of the Resource Areas that would potentially be affected by the Proposed Action.

3.1 Land Use

The Federal Government owns the land at Sheppard AFB. On-base land use and regional off-base land use are detailed in the following sections.

3.1.1 Definition of the Resource

The attributes of land use considered in this analysis included general land use patterns, land ownership, land management plans, and special use areas. Land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, recreational, and other developed use areas. Major land ownership categories include private, federal, and state. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and are often intended to protect specially designated or environmentally sensitive areas.

Noise is another factor in determining appropriate land uses since elevated sound levels are incompatible with residential areas. The region of influence (ROI) for land use includes Sheppard AFB and the area surrounding the Base that may be affected by aircraft or blast noise. On-base and off-base land use is discussed in the following sections.

3.1.2 On-base Land Use

Sheppard AFB encompasses 5,297 acres (**Figure 2**). In May 2008, a *General Plan* was completed that details the Installation's existing and future land use plans (EJES 2008). There are 13 land use categories at Sheppard AFB, ranging from aircraft operations and maintenance to training (**Table 1**). Excluding the airfield, indoor training is the land use covering the largest land area of the Base, accounting for 532 acres. The next largest land use areas are outdoor recreation (335 acres) and open space (325 acres). The current and future land use maps at Sheppard AFB are included in the *Capability Analysis for the Installation Development on Sheppard Air Force Base Texas* (SAIC 2006).

Certain land use designations are specific to military installations and are incompatible with residential areas. The Air Installation Compatible Use Zones (AICUZ) program is designed to promote land uses compatible with military airfield operations while allowing maximum beneficial use of adjacent properties. AICUZ land use guidelines are based on studies prepared and sponsored by several federal agencies, including the Department of Housing and Urban Development, the U.S. Environmental

Protection Agency (USEPA), Air Force, and state and local agencies. The most recent AICUZ study for Sheppard AFB was completed in January 2003. Three zones were established based on historic aircraft accident patterns: the clear zone, Accident Potential Zone 1 (APZ I), and Accident Potential Zone 2 (APZ II). The clear zone, the area closest to the runway end, is the most hazardous and must be clear of any development. APZ I is adjacent to the clear zone, and APZ II is adjacent to APZ I. Some development is allowed in APZs I and II, although it is usually limited to light industrial, manufacturing, transportation, and similar land uses. Uses that concentrate people in small areas are not considered acceptable in either APZ I or II.

Table 1. Air Force Land Use Categories.

Air Force Land Use Categories	Description
Airfield	Aircraft operating areas, associated clearances, and safety zones.
Runways/Taxiways/Aprons	Runways, taxiways, and aprons.
Aircraft Operations and Maintenance	Aircraft maintenance hangers, shops, docks. Base operations, control tower, fire station, and flight training.
Training - Indoor	Officer, technical, classroom instruction, and field training.
Industrial	Base engineering, maintenance shops, storage, warehousing, and utilities.
Administrative	Headquarters, civilian personnel, education center, law center, and security operations.
Community - Commercial	Commissary, exchange, club, dining hall, recreation center, gym, and theater.
Community - Service	Post office, library, chapel, childcare center, and education center.
Medical	Hospital, clinic, and medical storage.
Housing Accompanied	Family housing, temporary living facilities and associated support.
Housing Unaccompanied	Dormitories and visitors' housing.
Open Space	Conservation area, buffer space, and undeveloped land.
Outdoor Recreation	Swimming pool, outdoor courts and field, golf course, and marina.

3.1.3 Off-base Land Use

Land use in the area is dominated by the oil and gas industry and agriculture, although large durable goods manufacturing is growing in the region. The lands immediately surrounding Sheppard AFB fall within the City of Wichita Falls, the City of Burkburnett, and unincorporated Wichita County. Urban development within the City of Wichita Falls flanks the Base to the south, southwest, and west; additionally, portions of the Base lie within the city limits. Neighboring city land uses affected by Sheppard AFB flight operations primarily consist of strip commercial development along major roads and intersections and single and multi-family residential development, including several mobile home parks. These existing land uses are generally consistent with the underlying zoning.

The City of Burkburnett lies approximately 10 miles northwest of Sheppard AFB. Land uses within Burkburnett potentially affected by Sheppard AFB flight operations include rural residential areas, agricultural and grazing lands, and oil fields. A very small portion of Runway 15R's APZ II extends into an undeveloped area within the southern corporate limits of Burkburnett.

A majority of the area adjacent to Sheppard AFB is within the jurisdiction of unincorporated Wichita County. Land uses surrounding the Base in unincorporated Wichita County are predominantly agricultural and rural single-family residential. The greatest residential density can be found north of the Base in the large lot, Carriage Lane Estates development, which has an average lot size of two acres. Several auto salvage yards are located south of the Base in the McKinley Road and Airport Drive vicinity.

Of the surrounding political entities, the City of Wichita Falls has taken the most proactive approach to land use controls with respect to Air Force AICUZ guidelines. In 1982, the city adopted a zoning ordinance addressing encroachment protection of height obstructions and land use controls for incompatible development within the clear zone and APZ I for Runways 17/35, 15R/C/L, and 33R/C/L. Additionally, the city's zoning ordinance does not permit mobile homes or manufactured residential construction within the day-night average sound (Ldn) 65 dB noise contour (see **Section 3.4.2** below).

3.2 Noise

This section addresses noise considerations and conditions in the area around Sheppard AFB, Texas. Metrics used to describe noise are discussed and existing noise conditions are discussed.

3.2.1 Definition of the Resource

Noise is considered unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive, stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along relatively established paths (e.g., highways, railroads, aircraft flight tracks), or randomly.

The physical characteristics of noise (or sound) include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the eardrum. As the acoustic energy increases, the intensity or amplitude of these pressure waves increases, and the ear senses louder noise.

There is wide diversity in responses to noise that not only varies according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (e.g., a person, livestock, bird, or other type of animal). Sound intensity is measured in decibels (dB) on a logarithmic scale. At distances of about three feet, noise from normal human speech ranges from 63 to 65 dB, from kitchen appliances is 83 to 88 dB, and from rock bands approaches 110 dB.

The following definitions provide a better understanding of how data were developed for input to the noise models used to calculate noise associated with Sheppard AFB.

Maximum Sound Level. The Lmax metric defines peak noise levels. Lmax is the highest sound level measured during a single noise event (e.g., an aircraft over flight), and is the sound actually heard by a person on the ground. For an observer, the noise level starts at the ambient noise level, rises up to the maximum level as the aircraft flies closest to the observer, and returns to the ambient level as the aircraft recedes into the distance. Maximum sound level is important in judging a noise event's interference with conversation, sleep, or other common activities.

Sound Exposure Level. Lmax alone may not represent how intrusive an aircraft noise event is because it does not consider the length of time that the noise persists. The SEL metric combines intensity and duration into a single measure. However, the SEL does not directly represent the sound level heard at any given time; rather, it provides a measure of the total exposure of the entire event. Its value represents all

of the acoustic energy associated with the event, as though it was present for one second. Therefore, for sound events that last longer than one second, the SEL value will be higher than the Lmax value. The SEL value is important because it is the value used to calculate other time-averaged noise metrics.

Time-Averaged Cumulative Noise Metrics. The number of times noise events occur during given periods is also an important consideration in assessing noise impacts. The “cumulative” noise metrics that support the analysis of multiple time-varying noise events are the Ldn and the equivalent noise level (Leq).

Day-Night Average Sound Level. Ldn is an average sound level of individual noise events over a specified length of time. Normally, it is used to assess aircraft operations around an airport. It is a composite metric that considers the maximum noise levels, the duration of the events, the number of events that occur, and the time of day during which they occur. This metric adds 10 dB to those events that occur between 10:00 p.m. and 7:00 a.m. to account for the increased intrusiveness of noise events at night.

Ignoring the nighttime penalty, Ldn may be thought of as the continuous or cumulative A-weighted sound level that would be present if all variations in sound level that occur over the given period were smoothed out so as to contain the same total sound energy. While Ldn does provide a single measure of overall noise impact, it is fully recognized that it does not provide specific information about the number of noise events or the specific individual sound levels that occur. For example, an Ldn of 65 dB could result from very few noisy events, or a large number of quieter events. Although it does not represent the sound level heard at any one particular time, it does represent the total sound exposure.

Equivalent Noise Level. Leq is also an average sound level of individual noise events over a specified time period. Common averaging times are 8- and 24-hour periods [Leq(8) and Leq(24)]. No penalty is assigned for the time at which the noise event occurs. Therefore, if no noise events occur at night, calculations of Ldn and Leq would be identical.

Peak Sound Level. PK is the maximum, or peak, value reached by the sound pressure. There is no time-constant applied. This is the true peak of the sound pressure wave. Peak sound level should not be confused with Lmax. Lmax can be many decibels less than PK.

PK15(met) is the peak sound level, factoring in the statistical variations caused by weather, that is likely to be exceeded only 15% of the time (i.e., 85% certainty that sound will be within this range). This “85% solution” gives the base and the community a means to consider the areas that at times may be impacted by training noise. The PK15 (met) levels would occur under unfavorable weather conditions that enhance sound propagation.

PK50(met) is the peak level that would be expected 50 % of the time. These levels would be seen during neutral weather conditions. It should be noted that if activities take place under favorable weather conditions, such as the wind blowing away from the receiver, noise levels would be lower.

Frequency. The frequency of sound is measured in cycles per second, or hertz (Hz). This measurement reflects the number of times per second the air vibrates from the acoustic energy. Low frequency sounds are heard as rumbles or roars, and high frequency sounds are heard as screeches. Sound measurement is further refined through the use of “A weighting.” The normal human ear can detect sounds that range in frequency from approximately 20 Hz to 15,000 Hz. However, not all sounds throughout this range are heard equally. Because the human ear is most sensitive to frequencies in the 1,000 to 4,000 Hz range, some sound meters are calibrated to emphasize frequencies in this range. Sounds measured with these instruments are termed “A-weighted,” and are indicated in terms of A-weighted decibels (dBA). The

duration of a noise event and the number of times noise events occur are also important considerations in assessing noise impacts.

In this document, sound levels for aircraft operations in the airfield environment are presented in terms of daily L_{dn}. While this cumulative metric does not represent the variations in sound levels, it does provide an excellent measure for comparing environmental noise exposures when there are multiple noise events to be considered. Scientific studies and social surveys have found the L_{dn} metric to be the best measure to assess levels of community annoyance associated with all types of environmental noise and its use is endorsed by the scientific community and governmental agencies (American National Standards Institute 1983 and 1986; USEPA 1974; Federal Interagency Committee on Urban Noise 1980; and Federal Interagency Committee on Noise 1992). Furthermore, L_{dn} is the preferred noise metric of the Department of Housing and Urban Development, the Department of Transportation, the Federal Aviation Administration, the USEPA, and the Department of Veterans Affairs.

Public annoyance is the most common concern associated with exposure to elevated noise levels. **Table 2** shows the percentage of the population expected to be highly annoyed at a range of noise levels. **Table 2** also shows the risk of noise complaints at a range of peak noise levels.

Aircraft operations at Sheppard AFB receive relatively few noise complaints (i.e., an average of less than 10 per year from the period 1999-2009, and an average of less than 5 per year from 2005-2009). Activities at the explosives training range have not generated any noise complaints since 1999 (the earliest date for which noise data was available) (Digman pers. Comm.).

Table 2. Population Highly Annoyed and Risk of Complaints by Elevated Noise Levels.

Noise Exposure (L _{dn} in dBA)	Percent Highly Annoyed
< 65	< 12
65 – 70	12 – 21
70 – 75	22 – 36
75 – 80	37 – 53
80 – 85	54 – 70
> 85	> 71
Noise Exposure (PK in dB)	Risk of Complaints
<115	Low
115—130	Moderate
>130	High
L _{dn} = Day-Night Average Sound Level dBA = A-weighted decibel PK = Peak Sound Level Source: Finegold et al. 1994, U.S. Army 2010	

3.2.2 Existing Conditions

The Sheppard AFB complex is joint-use, supporting military training requirements and functioning as the Wichita Falls Municipal Airport (WFMA) servicing commercial and general aviation traffic (USAF 1996). There are three parallel runways oriented northwest to southeast that primarily support military operations, and one runway oriented north to south that primarily supports civil aviation activity. Controlled airspace (Class D and E) has been established in the region to manage air traffic.

Pilot training is supported by regional Special Use Airspace (SUA). There are six Military Operations Areas (MOAs) and a Restricted Area that support air-to-ground training. The Sheppard 1 and Sheppard 2 MOAs are located north and east of the Base, respectively. The Westover 1 and Westover 2 MOAs are

located south-southwest of the Base. The Hollis MOA is located northwest of the Base. The Washita MOA is located north of the Base. Most of these MOAs are subdivided into smaller areas, which facilitate scheduling. The Restricted Area (R-5601) is situated between the northern border of the Sheppard 1 MOA and the southern border of the Washita MOA (USAF 1998).

Using measured sound levels as a basis, the Air Force developed several computer programs to calculate noise levels resulting from aircraft operations. Sound levels calculated by these programs have been extensively validated against measured data, and have been proven highly accurate. The noise simulation program used to assess demolition noise at the explosives training range is the Blast Noise Impact Assessment (BNOISE2) program (U.S. Army 2009).

The BNOISE2 program requires operational data concerning the range location and the type/weights of the detonations. The ROI for the noise assessments is the area around Sheppard AFB exposed to elevated noise levels caused by aviation-related noise and other human activities in the region.

The following sections describe existing noise at Sheppard AFB resulting from aircraft activity, military training, and other ground-based activities, including explosives demolition, operations, maintenance, and industrial activities.

3.2.2.1 Aircraft Activity Noise

Aircraft activity noise includes noise from aircraft operating around airfields. The airfields include runways, taxiways, aircraft parking area, ramps, an Air Traffic Control Tower, and the flight line, which includes surrounding grassed areas, and roads. **Table 3** shows L_{max} values at various distances associated with typical military aircraft operating at Sheppard AFB. **Table 4** shows SEL values that correspond to the aircraft and power settings depicted in **Table 3**.

Table 3. Representative Maximum Sound Levels.

Aircraft/Type Power	L_{max} Values (in dBA) at Varying Distances (in feet)				
	500	1,000	2,000	5,000	10,000
Take-off/Departure Operations					
T-37	98.3	91.0	82.9	70.4	59.3
T-6	85.1	78.3	71.2	61.0	52.4
Landing/Arrival Operations					
T-37	91.5	84.2	76.3	64.1	53.4
T-6	82.8	75.8	68.6	58.0	48.8
L_{max} = maximum sound level dBA = A-weighted decibel Source: OMEGA108					

Table 4. Representative Sound Exposure Levels.

Aircraft/Type Power	SEL Values (in dBA) at Varying Distances (in feet)				
	500	1,000	2,000	5,000	10,000
Take-off/Departure Operations					
T-37	103.2	97.7	91.4	81.4	72.1
T-6	97.9	92.9	87.6	79.8	73.0
Landing/Arrival Operations					
T-37	98.2	92.7	86.5	76.8	67.9
T-6	86.3	81.1	75.6	67.5	60.1
SEL = sound exposure level dBA = A-weighted decibel Source: OMEGA108					

Under baseline conditions, Sheppard AFB supports approximately 410,500 military aviation operations (USAF 2006a). This equates to approximately 1,579 daily operations. Considering all types of flight activities, a scenario representing an “average busy day” of operations was developed. The operations considered include arrivals (landings), departures (takeoffs), and closed patterns¹. Flight operations data are provided in **Table 5**.

Table 5. Average Daily Operations at Sheppard Air Force Base.

Aircraft	Arrivals		Departures		Closed Patterns		Totals
	Day	Night	Day	Night	Day	Night	
Based T-38	132	3.7	136	0	505	38.6	816
Based T-37/T-6	114	0	114	0	530	0	759
Transient	2.4	0	2.4	0	0	0	4.9
Total	249	3.7	253	0	1,035	38.6	1,579
Source: USAF 2006a							

The Air Force's BASEOPS/NOISEMAP (Moulton 1990) computer models were used to calculate Ldn. Input data included the frequency of flight operations, runway utilization, flight tracks and flight profiles, climatology, and maintenance activities. These noise levels were calculated and plotted on a background map in 5-decibel increments to create the baseline contours shown in **Figure 8**. Blast noise contours are also depicted in **Figure 8**. The land area (in acres) encompassed by each noise contour representing existing conditions is shown in **Table 6**.

¹ Aircraft operations are categorized as take-offs, landings, or closed patterns (which could include activities referred to as touch-and-gos or low approaches). Each take-off or landing constitutes one operation. A closed pattern occurs when the pilot of the aircraft approaches the runway as though planning to land, but then applies power to the aircraft and continues to fly as though taking off again. The pilot then flies a circular or rectangular track around the airfield, and again approaches for landing. In some cases, the pilot may actually land on the runway before applying power, or in other cases, the pilot simply approaches very close to the ground. In either event, although a closed pattern is entered into the noise model as a single event, because the operation essentially consists of a landing and a take-off, it is considered two operations.

Table 6. Land Areas Exposed to Indicated Sound Levels.

Sound Level (in dB L _{dn})	Acres of Land		Total
	On-Base	Off-Base	
65 – 70	721	4,853	5,574
70 – 75	547	2,301	2,848
75 – 80	871	1,206	2,077
80 – 85	814	220	1,034
> 85	1,031	24	1,055
Total > 65	3,984	8,607	12,591
Sound Level (in dB PK)			
115-130 (PK 15)	1,402	3,124	4,526
115-130 (PK 50)	639	1,009	1,648
>130 (PK 15)	413	565	978
>130 ((PK 50)	107	73	180
L _{dn} = Day-Night Average Sound Level (i.e. primarily aircraft noise) PK = Peak Sound Level (i.e. explosives detonation)			

Table 7 depicts the number of on-base and off-base residents exposed to an L_{dn} of 65 dB and greater for the baseline condition. The number of persons within the noise zones was determined by placing the noise contours over 2000 US Census Bureau data. The number of residents within each noise zone was then calculated for comparison purposes. Population and dwelling counts calculated with US Census Bureau data are estimates and are most useful in determining relative change in population impact between different noise zones (noise zones are shown on **Figure 9**). Approximately 4,837 on-base and 567 off-base residents are exposed to the 65 dB noise contour or greater under existing or baseline conditions (**Table 7**).

Table 7. Affected Population (Baseline Condition).

Noise Zone (dB Interval)	On-base	Off-base	Total
	(Number of People)		
65-70	2,717	485	3,202
70-75	1,879	64	1,943
75-80	239	17	256
80-85	1	1	2
>85	1	0	1
Total	4,837	567	5,404
Notes: Population exposed is estimated based on census tract population data and the relative proportion of the tract encompassed by given noise contour levels. Persons expected to be annoyed are estimated based on total population exposed and the average percentage of that population expected to be annoyed by the indicated noise level (see Table 3). Data obtained from 2000 Census information and Geographical Information System data. dB = decibel			

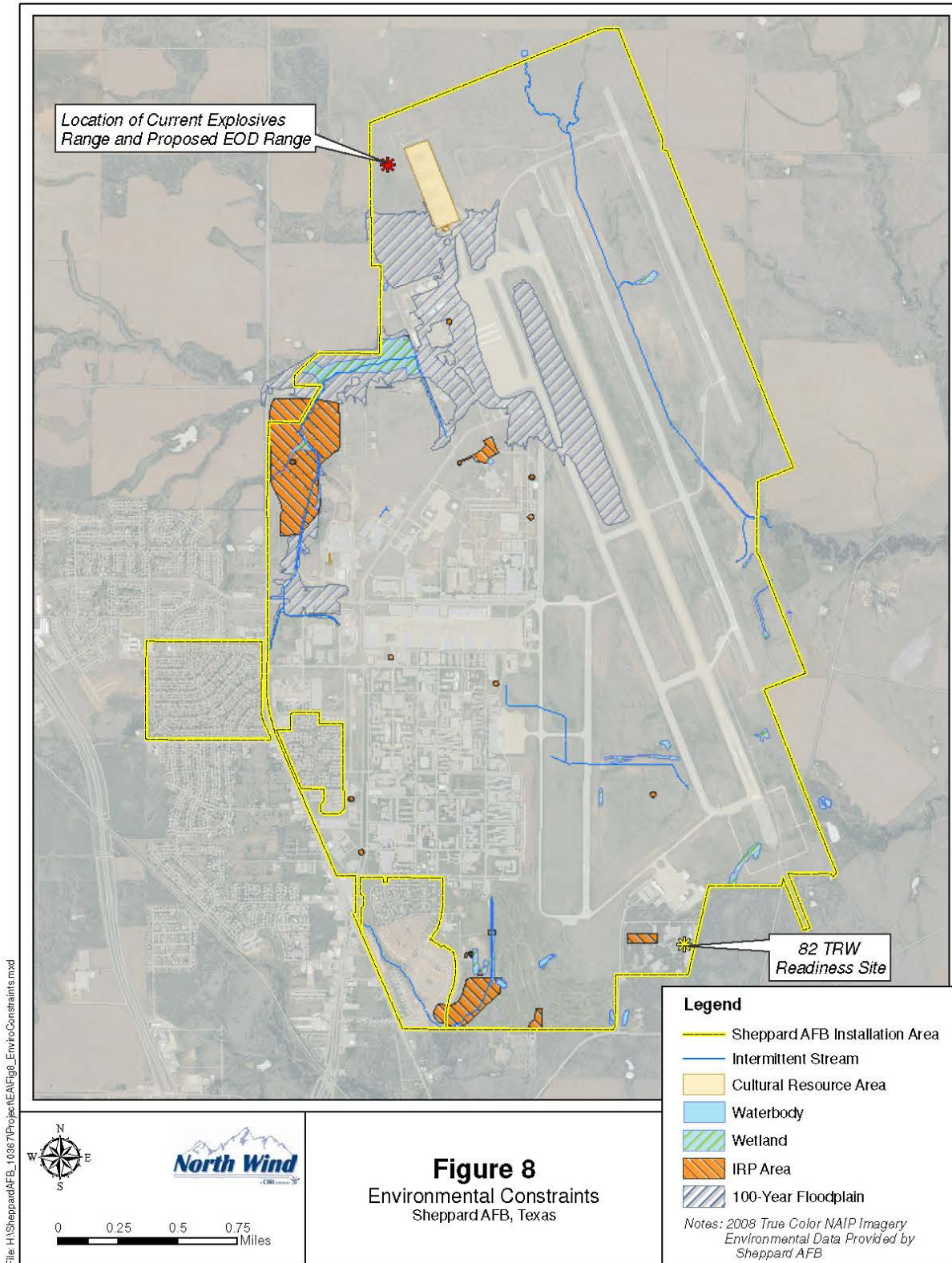
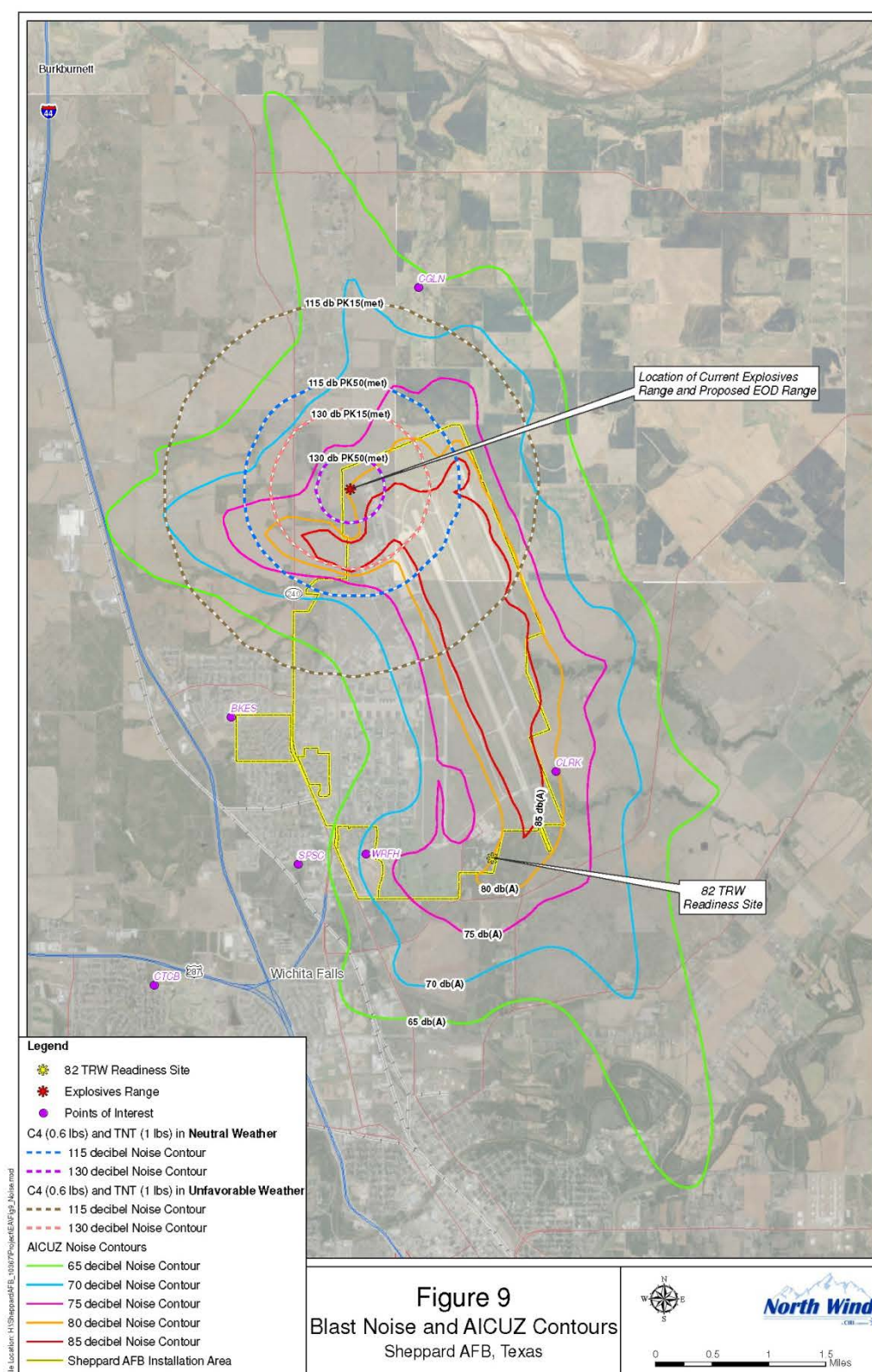


Figure 8. Environmental Resources.



Most of Sheppard AFB is within the 65 dB noise contour of the airfield. The 65 dB noise contour also extends into a residential housing area north of Sheppard AFB and into the area used by a gun club to the south. Other off-base residential areas exposed to the 65 dB noise contour or greater occur primarily to the northwest, southwest, and east of the airfield. These areas are primarily agricultural with scattered residences.

Additionally, residential development activity is occurring south of the Base in densities higher than those recommended by Air Installation Compatible Use Zone (AICUZ) guidelines. Although Wichita Falls and Burkburnett, a small town north of Sheppard AFB, have no development regulations in place, Wichita Falls prohibits residential development within the 65 dB noise contour. All dormitory housing, some family housing, and some of the natural areas on-base are within the 65 dB noise contour, but this noise has been a part of the Base since its inception as an air training center in World War I. On-base buildings have been constructed to reduce noise levels inside to acceptable levels.

The effects of noise on wildlife are not well known, although some avoidance behavior of noisy areas may reasonably be expected, and is in some cases desired (see **Sections 3.2.2.3** and **3.8.3**).

3.2.2.2 Existing Range Usage

The explosives training range is currently utilized once per week, when a single, one-pound charge of trinitrotoluene (TNT) is detonated for demonstration purposes. The demonstration charge is detonated as part of the Munitions Systems Specialist tech school. Peak sound level contours shown on **Figure 8** and **Tables 2 and 6** are based on the detonation of one pound of TNT.

Under neutral weather conditions (typically bright sunny days, mid-morning to mid-afternoon), there are no residences located within the 130 dB PK (i.e., the high complaint risk) noise contour. Under unfavorable weather conditions (typically night, early morning, sunset, foggy, or overcast) there is one residence in the 130 dB PK noise contour. That same residence is the only dwelling within the 115 dB PK (i.e., the moderate complaint risk) noise contour during neutral weather conditions. Under unfavorable weather conditions, approximately 55 residences lie within the 115 dB PK noise contour.

Activities at the explosives training range have not generated any noise complaints since 1999 (the earliest date for which noise data was available) (Digman pers. comm.).

3.2.2.3 Other Ground-based Activity Noise

Operations, maintenance, and industrial activities on Sheppard AFB generate non-aircraft related noise including transportation noise from the operation of ground-support equipment. However, this noise is generally localized in industrial areas on or near the airfield, or on established lines of communication supporting traffic to and from the airfield. Another source of noise at Sheppard AFB is the 32 propane-powered cannons used to deter wildlife as part of the Bird Aircraft Strike Hazard (BASH) minimization program (see **Section 3.8.3** for BASH-targeted wildlife species). The cannons, which are located throughout the airfield, are generally fired at the beginning of the training day (i.e., 0700-0800), and throughout the day as needed (averaging firing of at least some of the cannons approximately six times per day) (Chapman pers. comm.). The nearest cannon to the explosives training range is approximately 3,000 feet southeast. Noise is also generated from other commercial activities located near the airfield. Noise resulting from aircraft operations remains the dominant noise source in the airfield region.

3.3 Air Quality

This section discusses air quality considerations and conditions in the area around Sheppard AFB, Texas. It addresses air quality standards and describes current air quality conditions in the region.

3.3.1 Definition of the Resource

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. Air quality in a given location is described by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). The significance of a pollutant concentration is determined by comparing it to federal and state ambient air quality standards. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare, with a reasonable margin of safety.

3.3.2 Air Quality Regulations

The federal Clean Air Act (CAA) of 1977 is the primary regulatory authority used by the Texas Commission on Environmental Quality (TCEQ) to protect the state's air quality. In addition to the CAA, state law grants broad authority to the TCEQ to protect the quality of air in Texas. Under the CAA, the USEPA regulates six common air pollutants, referred to as criteria pollutants that are considered harmful to public health, the environment, and property. The criteria pollutants are carbon monoxide (CO), lead (Pb), sulfur dioxide (SO_2), nitrogen oxide (NO), ozone (O_3), and particulate matter (PM). The term "criteria" air pollutants is used because these are regulated through human health and environmental-based criteria, which set permissible levels (or concentrations) in the air. The set levels are called ambient air quality standards and are used to define acceptable upper limits. Of the criteria pollutants, PM and ground-level O_3 are responsible for the most widespread health threats in the United States. In addition, regulations for a number of toxic air pollutants, also referred to as hazardous air pollutants, have been established under the CAA Amendments of 1990 to reduce the release of these pollutants into the environment. Hazardous air pollutants (HAP) are known or suspected to cause cancer or other serious health effects. Under Title V of the CAA, any source that emits or has the potential to emit 100 tons per year (tpy) or more of any criteria air pollutant, 25 tpy total HAP, or 10 tpy of any individual HAP is a major source and must obtain a Title V operating permit. Sheppard AFB is classified as a synthetic minor source and, therefore, does not operate under a Title V operating permit. There are many different sources of criteria air pollutant emissions that contribute to regional air quality.

These include man-made emissions from industrial sources, mobile sources, land use and construction activities, and residential sources. There are also natural sources (e.g., wind erosion, trees, wildfires). Since all these sources contribute toward the overall air quality in an area, they must all be considered in an assessment of air quality. The USEPA has identified ambient air monitoring as the proper method for assessing air quality. TCEQ maintains and operates ambient air monitoring stations throughout Texas for this purpose.

3.3.3 Ambient Air Quality Standards

The ambient air quality in an area can be characterized in terms of whether or not it complies with the national ambient air quality standards (NAAQS) established by the USEPA (40 CFR 50 and CAA §108). Texas has adopted the NAAQS as its state ambient air quality standards under TAC §30.1.101.21. The USEPA is tasked with constantly reviewing the NAAQS and recommending changes based on improved scientific knowledge and understanding of how these pollutants impact health and the environment. For this reason, there have been a number of changes to the NAAQS in recent years, along with currently proposed changes. The current NAAQS are presented below in **Table 8**. Note that particulate matter is divided into two categories, PM with a diameter of 10 microns or less (PM_{10}) and PM with a diameter of 2.5 microns or less ($\text{PM}_{2.5}$).

Table 8. National and Texas Ambient Air Quality Standards.

Pollutant	Averaging Period	Federal NAAQS and Texas AAQS
Carbon Monoxide (CO)	1-hour 8-hour	35 ppm 9 ppm
Lead (Pb)	3-month rolling Calendar quarter (90 day)	0.15 $\mu\text{g}/\text{m}^3$ 1.5 $\mu\text{g}/\text{m}^3$
Nitrogen Dioxide (NO ₂)	1-hour Annual	100 ppb 53 ppb
Particulate Matter (PM _{2.5}) ≤ 2.5 microns in diameter	24-hour Annual	35 $\mu\text{g}/\text{m}^3$ 15 $\mu\text{g}/\text{m}^3$
Particulate Matter (PM ₁₀) ≤ 10 microns in diameter	24-hour	150 $\mu\text{g}/\text{m}^3$
Ozone (O ₃)	8-hour	0.075 ppm
Sulfur Dioxide (SO ₂)	1-hour 24-hour Annual	75 ppb 0.14 ppm 0.03 ppm
NAAQS = National Ambient Air Quality Standards $\mu\text{g}/\text{m}^3$ = micrograms per cubic meter ppm = parts per million ppb = parts per billion		

The fundamental method by which the USEPA tracks compliance with the NAAQS is the designation of a particular region as “attainment,” “nonattainment,” or “unclassifiable.” Areas meeting or having better air quality than the NAAQS are said to be in attainment. Areas that exceed the NAAQS are said to be in nonattainment. Areas that cannot be classified on the basis of available information as attainment or nonattainment are defined as unclassifiable and are treated as attainment areas. Maintenance areas are areas that were previously nonattainment but have reduced pollutant concentrations below the standard and must maintain some of the nonattainment area plans (maintenance plans) to stay in compliance. The DoD, like all federal agencies, is subject to the General Conformity determination as specified in the

CAA, to make emissions from federal activities consistent with the air quality planning goals of the CAA. The conformity rule applies only in those air basins or parts of air basins designated as nonattainment for one or more of the NAAQS or attainment areas subject to maintenance plans. Federal actions occurring in areas that are in attainment with the NAAQS are not subject to the conformity rule. Under the CAA, individual states are required to develop and implement a State Implementation Plan (SIP) that defines strategies for assessing and maintaining the NAAQS. TCEQ has a federally approved SIP for designated nonattainment areas.

Sheppard AFB is located in Wichita County, which is currently unclassified or in attainment of the NAAQS for all six criteria air pollutants. Therefore, the SIP and General Conformity do not apply.

3.3.4 Prevention of Significant Deterioration

In addition to the NAAQS, EPA and the states have promulgated additional prevention of significant deterioration (PSD) regulations to provide further protection to public health and welfare by managing industrial growth, preserving existing clean air resources, and affording additional protection to certain environmentally sensitive areas. Sheppard AFB is classified under the PSD regulations as a Class II area, an area with reasonable or moderately good air quality that allows moderate industrial growth. Class I

areas have the highest level of protection from air pollutants, and very little deterioration of air quality is allowed. The closest Class I area to Sheppard AFB is the Wichita Mountains National Wildlife Refuge located approximately 50 miles to the northwest in Oklahoma. Planned activities at Sheppard AFB must not negatively impact air quality in this Class I area.

3.3.5 Existing Conditions

3.3.5.1 Climate

Average temperatures at Sheppard AFB range from 42 °F in January to 85 °F during July and August. Average annual precipitation is 27.9 inches, with May being the wettest month and January the driest. Average annual snowfall is 6.1 inches. Snowfalls occur on an average of 4 days a year and one major ice storm can be expected each year (TFRN 1988). Winds are predominantly from the south during March through December, and from the north during January and February. Wind velocity at Sheppard AFB averages 10 knots (Operational Climatic Data Summary 2004). In winter, Sheppard AFB can be subject to surface winds gusting from 35-45 knots and low-level wind shear. Wind patterns for Wichita Falls are similar and are shown in **Table 9**.

Table 9. Climatic Wind Data for Wichita Falls, Texas.

Wind	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Prevailing Direction	N	N	N	N	S	S	S	S	SE	SE	S	S	S
Speed (mi/hr)	11	12	13	13	12	12	11	10	10	11	11	11	11
Speed (knots)	10	10	11	11	10	10	10	9	9	10	10	10	10
Peak Gust (mi/hr)	51	62	52	53	56	55	74	52	64	52	63	52	74
Peak Gust (knots)	44	54	45	46	49	48	64	45	56	45	55	45	64
Source : Climatic Wind Data for the United States, National Climatic Data Center, November 1998. Wind Direction Compass Point to Whole Azimuth Degrees: N = 350-010°, S = 170-190°, SE = 130-140°.													

The characteristic patterns of local air movement in the Sheppard AFB area are illustrated by the annual wind rose shown in **Figure 10**. The wind rose provides a graphical description of the prevailing winds giving the frequency of occurrence of the wind speed and direction. **Figure 10** and **Table 9** both show that prevailing winds generally come from the south-southeast (May through December) or north (January through April).

Sheppard AFB is located on the southwestern edge of “Tornado Alley,” a favored development area for tornadoes, and is subject to extremely severe thunderstorms. Heavy rain, winds greater than 60 knots, large hail, and tornadoes can accompany these severe storms during March through May. Funnel clouds are most commonly sighted during April through June. Historical meteorological data indicates that Sheppard AFB can expect a tornado within 5 miles approximately every 2 years.

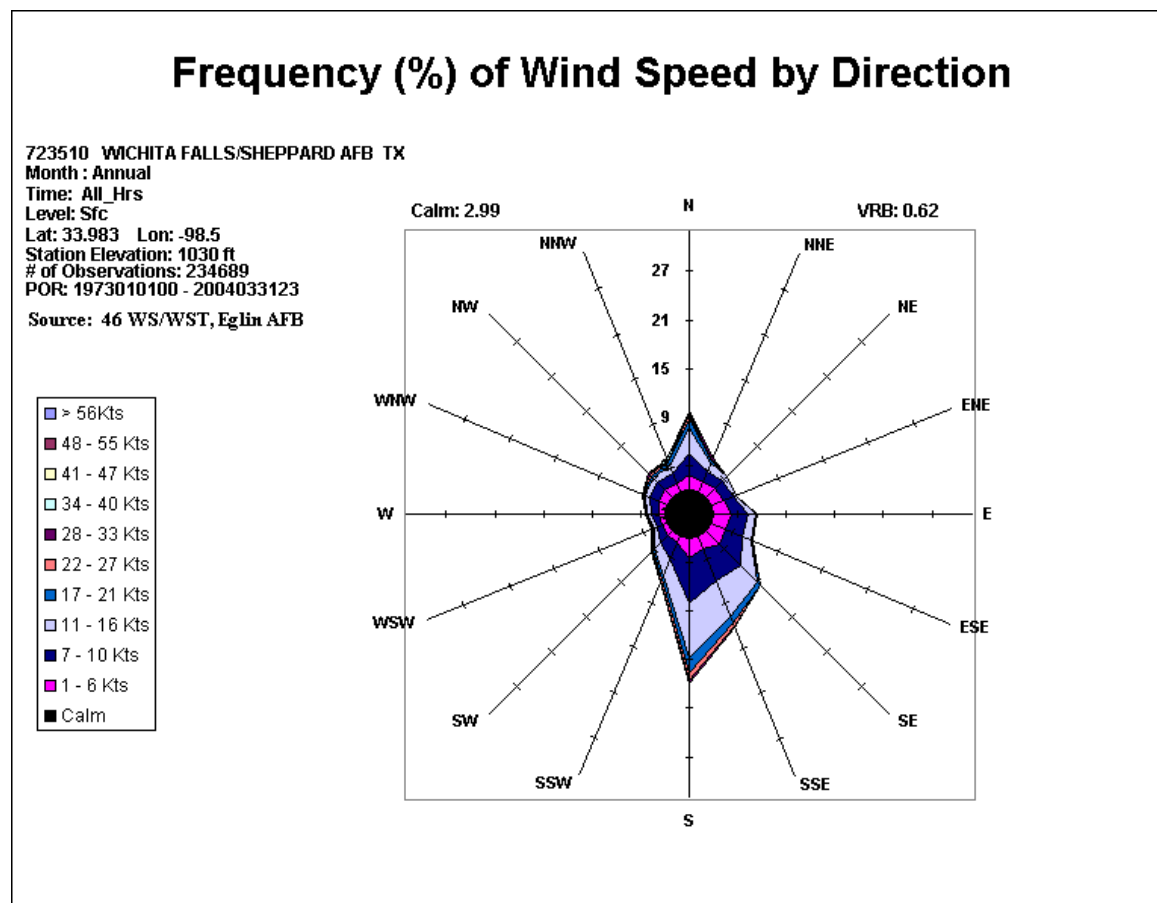


Figure 10. Annual Wind Rose for Sheppard Air Force Base.

3.3.5.2 Baseline Air Quality

Sheppard AFB is located in Wichita County, Texas, which is part of TCEQ Region 3 and federal Air Quality Control Region 210. Air quality in this region is within the levels set by the USEPA for acceptable air quality (40 CFR 81.344). As such, the area is considered to have good air quality. The nearest nonattainment area is the Dallas-Fort Worth area (in TCEQ Region 4). This area is currently classified as nonattainment for O₃ (ozone), and is approximately 100 miles southeast of Sheppard AFB. Two other areas of O₃ nonattainment in Texas are Houston-Galveston (which also includes Beaumont-Port Arthur) and San Antonio; each over 300 miles south-southeast of Sheppard AFB. There are no areas of nonattainment for PM_{2.5} or any other pollutants within the states of Texas or Oklahoma. Sheppard AFB

is sufficiently distant from Dallas-Fort Worth, Houston-Galveston, and San Antonio that it is not affected by any corrective action requirements of these non-attainment areas.

In addition to the NAAQS, there are air quality regulations and permitting programs, which are applicable to facilities that emit regulated air pollutants. Sheppard AFB operates under a Synthetic Minor Permit for air emissions. This permit identifies the Base's air emission sources along with the conditions and requirements of operation, and is the basis for ensuring that it is operating in compliance with the air quality regulations.

3.3.5.3 Baseline Air Emissions

USEPA prepares and maintains a National Emissions Inventory (NEI) database of air pollutant emissions using input from state and local air agencies on all sources of air pollution (www.epa.gov/oar/data/). At the time of this report, the NEI database included annual emissions on a county-by-county basis for the period 1996 through 2002. Emissions data were not available from NEI for the years 2003 through the present.

Wichita County

The NEI data for Wichita County are presented in **Figure 11** and represent the baseline emission levels for the area. Volatile organic compounds (VOCs) are included; however, ozone is not included because it is not generally emitted directly into the atmosphere, but rather forms as a result of chemical reactions between VOCs and other gaseous pollutants in the presence of sunlight. It is this reaction of other pollutants that contributes toward the formation of ground-level ozone.

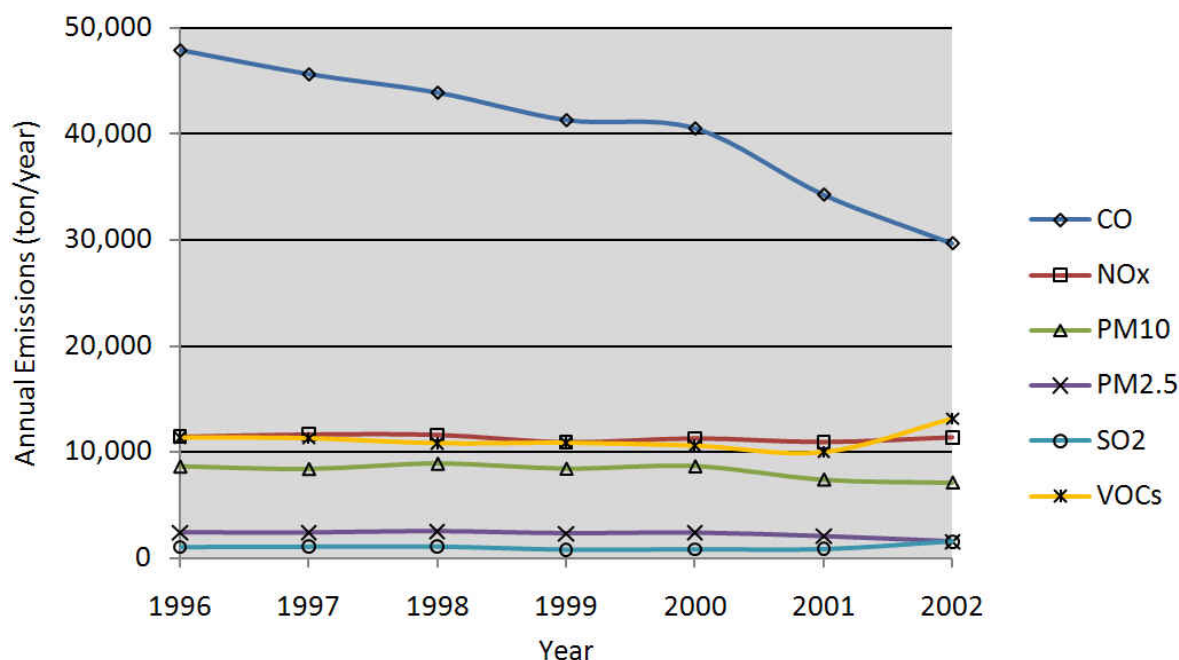


Figure 11. Criteria Pollutant Emissions Trend for Wichita County, Texas – 1996 to 2002 (see Table 11 for constituents).

Figure 11 shows that regional emissions for criteria pollutants remained relatively constant between 1996 and 2002, with the exception of CO, which showed a marked decreasing trend. Due to the lack of more recent data and the fact that no increasing trend in annual air emission rates could be identified, the data for 2002 was selected to represent baseline criteria air pollutant emissions for Wichita County. **Table 10** presents the values used in Figure 1 for year 2002 as the baseline emission. Note that Table 1 includes lead and total HAP emissions. These pollutants were not shown in Figure 1 since this information was only available from the NEI database for two years.

Table 10. Baseline Emissions for Wichita County, Texas – 2002.

Pollutant	Total Annual Emissions (tons/year)
Carbon Monoxide (CO)	29,651
Lead (Pb)	520
Nitrogen Oxides (NO _x)	11,402
Particulate Matter (PM _{2.5})	1,570
Particulate Matter (PM ₁₀)	7,159
Sulfur Dioxide (SO ₂)	1,548
Volatile Organic Compounds (VOCs)	13,145
Total Hazardous Air Pollutants (Total HAPs)	1,675
Note: Total HAPs is the sum of all 188 individual HAPs identified by USEPA.	

Sheppard AFB

Sheppard AFB prepares annual Air Emissions Inventories (AEI) of actual emissions based on actual facility operations for the year. The most recently completed AEI was for year 2008 (Sheppard AFB 2009a). It will serve to define the baseline emissions associated with operation of the Base. These emissions are summarized in **Table 11**.

Table 11. Baseline Emissions for Sheppard AFB, Texas – 2008.

Pollutant	Total Annual Emissions (tons/year)
Carbon Monoxide (CO)	27.7
Lead (Pb)	0.0001
Nitrogen Oxides (NO _x)	23.7
Particulate Matter (PM _{2.5})	9.2
Particulate Matter (PM ₁₀)	9.4
Sulfur Dioxide (SO ₂)	0.3
Volatile Organic Compounds (VOCs)	24.5
Total Hazardous Air Pollutants (Total HAPs)	4.3
Note: Total HAPs is the sum of all 188 individual HAPs identified by USEPA.	

3.4 Hazardous Materials and Waste

This section discusses hazardous materials and waste management at Sheppard AFB.

3.4.1 Definition of the Resource

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, 42 U.S.C. § 9601-9675), Occupational Safety and Health Administration (OSHA) regulations (29 U.S.C. § 651), and the Emergency Planning and Community Right-to-Know Act (42 U.S.C. § 11011 et seq.). Hazardous materials are defined to include any substance with special characteristics that could harm people, plants, or animals. Hazardous waste is defined in the Resource Conservation and Recovery Act (RCRA) as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that could or do pose a substantial hazard to human health or the environment (42 U.S.C. § 6901 et seq.). In general, both hazardous materials and wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, may present substantial danger to public health or welfare or to the environment when released or otherwise improperly managed.

3.4.1.1 Hazardous Materials

Hazardous materials management at Air Force installations is established primarily by AFI 32-7086, Hazardous Materials Management for the reduction of hazardous material uses and purchases. The purchase and use of hazardous materials at Sheppard AFB must be authorized by the Installation Hazardous Materials Management Instruction 32-7001, established by AFI 32-7086. As part of this program, the Base operates a hazardous materials pharmacy (Building 2116) and five additional Chemical Staging Areas (CSA) through which all hazardous materials enter the Base. The CSAs provide the facilities to minimize, track, and control the ordering, storage, distribution, use, and disposal of hazardous materials. Hazardous material is brought onto Sheppard AFB only after it is approved for use by the Environmental, Safety, and Occupational Health (ESOH) Team, entered into the standard Air Force Hazardous Materials tracking system, and when all other requirements for its possession, storage, use and disposal are met. The office of primary responsibility for the authorization process is the 82nd Civil Engineer Squadron/Environmental Flight 82 CES/CEV (EJES 2008).

Explosives and munitions are stored in the Munitions Storage Area (MSA), and are transported to the explosives training range via the munitions transport route (**Figure 3**) (363d Training Squadron 2009). Explosives are at the range only when required for use, and are never stored overnight at the range.

Small quantities of residential-type hazardous and non-hazardous substances (e.g., gasoline, maintenance and cleaning products, commercially available pesticides) are likely present in the Military Family Housing (MFH) housing units at Sheppard AFB (USAF 2005). However, the Base does not track these purchases and the quantity of these materials is unknown.

Sheppard AFB is located in Wichita County, which is located in the EPA radon Zone 3. Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L (i.e., a low potential for dangerous radon gas levels).

A prior asbestos survey of the installation reported that asbestos-containing building materials were identified in most of the buildings and were present in a variety of conditions. There were no imminently dangerous situations encountered during the survey. The majority of the asbestos building materials are found in nonfriable form. Lead paint has also been identified in buildings 147, 164, 195, 810, 1200, 1658 and approximately 66% of base housing. *Lead and Asbestos Summary Reports* for Buildings 1719, 1722,

1723, 2705, and 2706 (i.e., all buildings involved in the Proposed Action), stated that due to the recent build date of the facilities there are no sampling results available (the buildings were constructed between 1995 and 2000; Sheppard AFB stopped using lead-based paint and asbestos containing materials in building construction in 1984 [Manry, pers. comm.]). The reports also stated that there is no reason to believe that any lead based paint or asbestos containing material exists within the buildings (DS2 2010a, 2010b, 2010c, 2010d, 2010e).

3.4.1.2 Hazardous Waste

Hazardous waste generated at Sheppard AFB includes antifreeze, paint, stripping elements, acids, batteries, oils, contaminated fuels, spent solvents, and a variety of other waste materials. The majority of hazardous waste is generated by maintenance and training activities and is stored within buildings. Emergency spill cleanup equipment and materials are located at the Fire Department, Buildings 1093 and 10049. There are currently no RCRA or Superfund sites or Records of Decision at Sheppard AFB (EJES 2008).

Unless otherwise exempted by CERCLA regulations, RCRA Subtitle C (40 CFR Parts 260 through 270 and 280) regulations applicable to the management of hazardous wastes are administered by the USEPA. Hazardous waste must be handled, stored, transported, disposed, or recycled in accordance with these regulations. Sheppard AFB has a Hazardous Waste Management Plan to assist in compliance with these regulations (USAF 2004b). The plan, which also applies to contractors, establishes procedures to achieve and maintain regulatory compliance regarding accumulation, transportation, and disposal of hazardous waste. The Base does not have a hazardous waste collection and disposal process for MFH wastes and considers its residential waste exempted by RCRA (USAF 2005c).

3.4.2 Installation Restoration Program

The Installation Restoration Program (IRP) is an Air Force program to identify, quantify, and mitigate hazardous waste sites on all installations. Old landfills, fire training areas, disposal areas, and abandoned underground storage tanks are common target areas for IRP investigation and remediation efforts. There are 18 IRP sites at Sheppard AFB. All IRP sites have decision documents and are closed. There are no active IRP sites in the vicinity of either Proposed Action site (i.e. the EOD range or the 82 TRW Readiness Site).

3.5 Utilities and Infrastructure

This section describes the existing condition of utilities and infrastructure at Sheppard AFB. Included are descriptions of electricity and natural gas, water and wastewater, solid waste management, transportation, and stormwater management.

3.5.1 Definition of the Resource

Infrastructure consists of human-made systems and physical structures that enable a population in a specified area to function. The availability of infrastructure and its capacity to support growth generally define the degree to which an area is characterized as “urban” or developed. As projects at Sheppard AFB are conceptualized and planned, required infrastructure and utility specifications are incorporated into plans.

3.5.1.1 Electricity and Natural Gas

Sheppard AFB purchases all of its electricity from the Texas Utilities Company. The Base owns the one on-site substation and the distribution system it supplies, but not the feed lines. Two feeds from the Texas

Utilities Company supply the installation, each with 69 kilovolts (EJES 2008). The distribution system includes about 23 miles of primary overhead lines, 41 miles of secondary overhead lines, 24 miles of primary underground lines, and 8 miles of secondary underground lines. Consumption data collected between 2003 and 2005 indicate a peak load between 27,869 kilowatts and 29,901 kilowatts per day (SAIC 2007).

Atmos Gas supplies natural gas to Sheppard AFB through a 1.25-inch pipeline at approximately 20 pounds per square inch, with a guaranteed supply of 5,520 thousand cubic feet per day (Mcf/d). Thirty percent of the distribution system is metal pipe, and the remainder is polyethylene piping. Consumption data collected between 2003 and 2005 indicate an annual consumption between 446,565,000 and 408,445,000 cubic feet, with a peak load condition of 1,862,000 cubic feet per day (USAF 2007).

3.5.1.2 Potable Water

Sheppard AFB purchases potable water from the City of Wichita Falls, Texas. The sources of this water are Lake Arrowhead and Lake Kickapoo. Potable water is delivered from the city-owned Puckett water tower to the Freedom Estates housing area and the Building 140 area (EJES 2008). The potable water system was designed to supply 6.6 million gallons per day (mgd) (USAF 2006b). Potable water consumption at Sheppard AFB in FY2005 averaged approximately 1.24 mgd; the maximum daily consumption was estimated as 1.82 mgd (USAF 2006d).

3.5.1.3 Wastewater

Sheppard AFB discharges its wastewater to the City of Wichita Falls' wastewater collection system. Approximately 80% of this wastewater flows to the River Road Wastewater Treatment Plant south of the Base; the remaining 20% flows to the North Side Wastewater Treatment Plant. The FY2005 annual wastewater discharge was 277,572,000 gallons with an average daily flow of 0.76 mgd. Sheppard AFB's wastewater collection system is structurally adequate to handle the current mission needs (EJES 2008). The historic peak average daily flows are less than 32% of design capacity. No overall capacity limitations regarding the long-range development plan are anticipated.

3.5.1.4 Solid Waste Management

Municipal solid waste at Sheppard AFB is managed in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*, which establishes requirements for a solid waste management program. Requirements include a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record keeping and reporting; and pollution prevention.

Non-hazardous municipal solid waste at Sheppard AFB is collected by a private contractor and disposed off base at the Buffalo Creek Landfill (formerly the Iowa Park Landfill), a Type I landfill operated under TCEQ Permit Number 1571. The landfill is located approximately 11 miles west of Sheppard AFB. According to 2004 data, the landfill currently receives approximately 202,200 tons of waste per year (TCEQ 2006a) and is anticipated to remain open for another 100 years. There are no on-base landfills in operation.

Organic (food) waste from the dining facilities on the installation is also collected by the refuse contractor and transported to the city of Wichita Falls' regional compost facility. The Base also has a recycling program to meet the installation's solid waste reduction goals. The program includes collection of office waste paper, plastics, aluminum cans, newspapers and cardboard, and collection of scrap metal through curbside collection.

3.5.1.5 Transportation

The closest interstate to Sheppard AFB is Interstate 44. Access to the Base is from State Highway 240 (Burkburnett Road), the main north south thoroughfare paralleling the west side of the installation. Missile Road and the Highway 325 Spur connect Interstate 44 and Burkburnett Road in the vicinity of the Base (**Figure 1**).

Sheppard AFB has three entrance gates off Burkburnett Road. The Main Gate is located on the south side of the Base. The Hospital Gate is located about one mile north of the Main Gate on the west side of the Base in direct line with the entrance to the Freedom Estates housing area. The Missile Road Gate and Visitors Center are located slightly north of the Hospital Gate at Missile Road. The current gate system is functional but has insufficient capacity to process current and anticipated future demands during peak hours without delays to gate users and backups on public roads (EJES 2008).

The existing road network at Sheppard AFB consists of approximately 32 miles of roads and streets, primarily constructed of asphalt pavement (**Figure 2**). The Base road network is a grid-type pattern, except for one diagonal road (Bridwell Road) that was formerly Kell Field runway. Ninth Avenue divides the built-up area of the Base into two distinctive north and south portions. The primary roads in the northern portion of the Base are Avenues D and E, Bridwell Road and Missile Road to Avenues D and E. Secondary roads are Avenue H, Avenue J, Tenth Avenue, Missile Road east of Avenues D and E, and 21st Avenue. The primary roads in the southern portion of the Base are Avenues D and E, Avenue J, First Avenue and Ninth Avenue. Secondary roads that serve the southern portion of the Base are Nehls Boulevard through the Windcreek housing area, Falcon Boulevard through the Freedom Estates housing area, and Avenue H.

Parking at Sheppard AFB is currently constrained by anti-terrorism/force protection measures, which require a large portion of parking lots to be reduced or blocked off entirely. The Base does not have a good network of troop walks, bike paths, or walkways. Troop walks currently use existing sidewalks, roadways, and aircraft pavement areas.

3.5.1.6 Stormwater Management

Stormwater management at Sheppard AFB is conducted in accordance with the Storm Water Pollution Prevention Plan (SWP3) (Sheppard AFB 2008). This plan supports and implements requirements as outlined in the USEPA National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Storm Water Discharges, 25 Sep 1992, Federal Register, as well as the TCEQ Texas Pollutant Discharge Elimination System (TPDES) requirements. The NPDES Multi-Sector General Permit for Sheppard AFB expired on 29 Sep 00. The Texas Commission on Environmental Quality (TCEQ) issued the Texas Pollutant Discharge Elimination System (TPDES) general permit, TXR050000, on 20 Aug 01. The TPDES permit allows continued authorization for the same discharges. Facilities that were authorized under the expired NPDES permit could continue to discharge under the conditions and requirements of the permit until the TPDES permit was issued.

The TCEQ issued the TPDES general permit, TXR150000, on 5 March 03. This TPDES permit allows discharge from construction activities under the conditions and requirements of the permit. The City of Wichita Falls leases land from Sheppard AFB for the operation of a municipal airport. Since this operation is separate from Sheppard AFB, and the City leases and accepts responsibility for the infrastructure occupied by the municipal airport, the City is responsible for maintaining its own SWP3.

The Sheppard AFB SWP3 sets forth standard operating procedures for the identification of pollutant sources, BMPs, facility evaluation checklists, measures and controls relating to storm water, and related support activities. BMPs include good housekeeping measures, preventive maintenance, runoff

management, and spill prevention and response procedures. The SWP3 outlines permit requirements including the identification of a Pollution Prevention Team (PPT), a drainage map showing facility locations, and employee training, record-keeping, and monitoring requirements. The SWP3 must be revised and updated annually, or whenever there is a significant change in the types or amounts of materials, or material management practices, which may affect the exposure of materials to storm water.

The Sheppard AFB storm sewer system has been evaluated for presence of non-storm water discharges and the discharge of non-permitted, non-storm water does not occur. Sheppard AFB has prepared and implemented a Spill Prevention and Response Plan. The Spill Plan details corrective actions and emergency response measures to be carried out in the event of a spill of oil or hazardous substances and is incorporated by reference into the SWP3. The SWP3 maintains consistency with other Sheppard AFB plans.

Sheppard AFB directs storm water discharges to one of three outfall structures, all of which discharge to the Wichita River, which flows into the Red River. Outfall 001S is located on the eastern base property line, approximately 3,100 feet south of Runway 33 R. The outfall is a 30-foot-wide segment of a storm water ditch with vegetated walls and drains approximately 5,200 acres. The estimated percent of impervious cover in the drainage basin is 8.4 % and an estimate of the runoff coefficient of the drainage area is medium. Outfall 002S consists of three secondary outfall sites located between 1,100-1,700 feet east of the southeastern end of the NW-SE runway in the clear zone. The primary outfall is comprised of three parallel storm drainage ditches at the point where they intersect the base property line. The outfall drains approximately 363 acres with approximately 48.8% impervious cover and an estimated low runoff coefficient. Outfall 003S is on the southern property line, roughly 1,000 feet east of the southwestern corner of the base. The outfall drains approximately 622 acres with about 24.8% impervious cover and an estimated low runoff coefficient.

The Base collects stormwater samples quarterly during significant rain periods for analysis of ammonia, chemical oxygen demand, biochemical oxygen demand, and pH. Annual stormwater sampling is also conducted and samples are analyzed for arsenic, barium, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium, silver, and zinc. In addition to storm water sampling and laboratory analysis, Sheppard AFB also performs visual evaluations of storm water at the Outfall 001S. Visual observations include assessments of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution and probable sources of any observed storm water contamination.

3.6 Geology and Soils

This section describes the geology and soils at Sheppard AFB, including topography.

3.6.1 Geology

Sheppard AFB is located in the Central Rolling Red Plains of the Redbeds Plains unit of the Central Lowland physiographic province. Soils formed on an erosional surface characterized by rolling plains having ancient stream terraces associated with stream dissection. Soils (mostly red) formed in gently dipping Triassic and Permian sedimentary deposits and alluvium weathered from outcropping bedrock.

3.6.2 Soils

Sheppard AFB is located on a broad east-west soil belt known as the Kamay-Bluegrove-Deandale Association. This association consists of loamy soils that formed in red-bed clay, shale or sandstone, or in

old alluvium derived from red-bed clay and shale. Common soil series include Kamay, Bluegrove, and Deandale.

Soils at Sheppard AFB are generally characterized as reddish-brown sandy loam, highly susceptible to wind and water erosion, underlain with red clay-to-clay loam. In certain areas, red-bed shale and sandstone are near the surface. Adequate landscaping is required to maintain soil stability at the Base; current landscaping policy requires low-maintenance native plant species (EJES 2008).

Soils at the explosives training range consist of Deandale silt loam. Soils at the 82 TRW Readiness Site include Bluegrove loam and Kamay silt loam. All three of these soils are classified as Prime Farmland soils (NRCS 2009). Prime Farmland soils are soils that are best suited for food, feed, forage, fiber, and oilseed crops, and have properties that favor the economic production of sustainable high yields of crops. The Farmland Protection Policy Act (FPPA) is implemented by federal regulations published in 7 CFR Part 658. The purpose of the Act is to minimize the contribution of federal programs to unnecessary conversion of farmland (including prime farmland) to non-agricultural uses. The FPPA applies to all projects that require new rights-of-way and that are planned for federal funding; however, lands that are used for national defense purposes are exempt from the provisions of the FPPA (7 CFR Parts 657 and 658).

3.6.3 Topography

The general topography in the vicinity of Sheppard AFB consists of smooth rounded hills with broad shallow valleys. The Base itself and the surrounding countryside are generally flat, facilitating effective pilot training. Elevations on Sheppard AFB range from 1,030 feet amsl at the north end of the runways to 965 feet amsl on the east side of the installation along Bear Creek, a tributary of the Wichita River (EJES 2008).

3.7 Water Resources

Water resources at Sheppard AFB are defined and described below.

3.7.1 Definition of the Resource

Water resources analyzed in this EA include surface waters, groundwater, and floodplains. Surface waters include streams, rivers, bays, ponds, and lakes. Groundwater is any water found below the land surface; it is found in aquifers, pore spaces of rocks, in unconsolidated sediments, and as soil moisture. Floodplains are defined by EO 11988, Floodplain Management, as “the lowland and relatively flat areas adjoining inland and coastal waters including flood-prone areas of offshore islands, including at a minimum, that area subject to a 1% or greater chance of flooding in any given year.”

3.7.2 Surface Water

Drainage in Wichita County is generally from west to east. The Red River valley is located to the north of the Base, and the Wichita River is situated to the south. Natural surface water features on Sheppard AFB include Bear Creek and its tributaries (**Figure 8**). The Bear Creek watershed originates west of Sheppard AFB. Flow to Bear Creek is augmented by treated wastewater effluent from the city of Wichita Falls Northside wastewater treatment plant and flow here is permanent because of this discharge. At Sheppard, the stream is routed through underground drainage systems beneath the runways in a southeastward direction, and discharges into the Wichita River approximately 20 miles northeast of the Base. South of the installation, Plum Creek receives drainage from the southern portion of Sheppard AFB and is susceptible to flooding in off-base areas (USAF 1997). Plum and Bear Creeks are tributaries of the Wichita River, which eventually joins the Red River.

The golf course on Sheppard AFB has three manmade one-acre ponds. One pond is supplied with treated wastewater effluent, serves as a temporary storage and aeration basin, and is used for irrigation. The other two ponds are water hazards only.

3.7.3 Groundwater

The Seymour Aquifer is a major aquifer that extends across north-central Texas. It occurs in Wichita County adjacent to the Red and Wichita Rivers, possibly extending to the north side of Sheppard AFB from the Red River and to the south side of the installation from the Wichita River (TWDB 1995). There are no minor aquifers as defined by the TWDB in Wichita County.

Depth to groundwater across the Seymour aquifer averages 23 feet, and aquifer thickness is generally less than 100 feet. Groundwater is contained in isolated patches of alluvium made up of discontinuous beds of poorly sorted gravel, conglomerate, sand, and silty clay. Yields of wells completed in the alluvium range from less than 100 to as much as 1,300 gallons per minute and average about 300 gallons per minute (TWDB 2006). Water ranges from fresh to slightly saline, although natural salt pollution exists in localized areas. The aquifer is affected by excess nitrate throughout its extent, caused partly by natural processes and partly by human activities, and excess chloride. Approximately 90% of the groundwater pumped from the aquifer is used for irrigation, and the remainder is used primarily for municipal supply.

Shallow groundwater has been documented at various locations underneath Sheppard AFB in limited quantities, typically associated with perched aquifers. The top elevations of shallow groundwater range from 970 feet amsl on the south side of the base to 1,020 feet amsl on the west side of the base (USAF 1996), with corresponding ground surface elevations ranging between 970 to 1,050 feet amsl. Groundwater in the northern portion of the base flows northeastward towards the Bear Creek drainage; groundwater in the southern portion of the installation flows south and east towards the Wichita River (USAF 1996).

3.7.4 Floodplains

The northern one third of Sheppard AFB is bisected by a generally crescent shaped 100-year floodplain associated with the Bear Creek drainage (EJES 2008) (**Figure 8**). Development is restricted in this area. The floodplain affects the 80 FTW area and a portion of Runway 15R/33L. Building site modifications (several feet of additional fill) have been made to accommodate floodplain issues in the 80 FTW area.

3.8 Biological Resources

The following sections describe the existing condition of biological resources at Sheppard AFB. Most of the information in this section was obtained from the most recent Integrated Natural Resources Management Plan (INRMP) for Sheppard AFB (Sheppard AFB 2010a).

3.8.1 Definition of the Resource

Biological resources are defined for the purposes of this EA as vegetation, wildlife, and the habitats (including wetlands) in which they occur. The ROI for biological resources at Sheppard AFB is the installation itself. The majority of the Base is developed and occupied by roads, buildings, and runways. Open areas consist primarily of mowed lawns or semi-wooded lots between buildings. According to the INRMP, the Base supports two state-protected species that are candidates for federal listing (see **Section 3.2.8.4**) (Sheppard AFB 2010a).

3.8.2 Vegetation

Much of the land at Sheppard AFB is characterized as semi-improved or improved; these areas have been planted with vegetation specified on approved planting lists that are maintained for grasses, trees, evergreen shrubs, and groundcovers and vines. Natural areas surrounding the 82 TRW Readiness Site complex are composed of mesquite woodland. The proposed EOD range area is composed of grasses that are periodically mowed, including Bermuda (*Cynodon dactylon*), buffalo grass (*Buchloe dactyloides*), blue grama (*Bouteloua gracilis*), yellow bluestem (*Andropogon ischaimum*), silver bluestem (*Andropogon saccharoides*), Texas wintergrass (*Stipa leucotricha*), Johnson grass (*Sorghum halepense*), and purple three-awn (*Aristida purpurea*).

3.8.3 Wildlife

Representative mammal species occurring in the area include white-tailed deer (*Odocoileus virginiana*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), opossum (*Didelphis virginiana*), and coyote (*Canis latrans*). Other common small mammals include Eastern cottontail (*Sylvilagus floridanus*), black-tailed jackrabbit (*Lepus californicus*), and Mexican ground squirrel (*Spermophilus mexicanus*). Amphibians and reptiles observed on the Base include red-eared slider (*Trachemys scripta elegans*), snapping turtle (*Chelydra serpentina*), ribbon snake (*Thamnophis sauritus*), bullsnake (*Pituophis catenifer*), and bullfrog (*Rana catesbeiana*). Representative avian species occurring in the geographical region include predatory species, such as northern harriers (*Circus cyaneus*), red-tailed hawks (*Buteo jamaicensis*), and burrowing owls (*Athene cunicularia*). Game birds observed locally include northern bobwhite (*Colinus virginianus*), mourning dove (*Zenaida macroura*), and wild turkey (*Meleagris gallopavo*). Numerous urbanized bird species including mockingbird (*Mimus polyglottos*), rock dove (*Columba livia*), house sparrow (*Passer domesticus*), and northern cardinal (*Cardinalis cardinalis*) have established resident populations in the region and on the base. Sheppard AFB is located within the migratory flight path of many bird species and sightings of listed species at the base include bald eagle (*Haliaeetus leucocephalus*), peregrine falcon (*Falco peregrinus*), piping plover (*Charadrius melodus*), and interior least tern (*Sterna antillarum athalassos*) (Sheppard AFB 2010a).

In and around the airfield, the presence of wildlife is discouraged because of the threat posed to aircraft, people, and wildlife. Birds identified in the Sheppard AFB BASH Plan for deterrence or depredation in airfield areas (due either to individual size, group numbers, or times of activity) include cormorants, cattle egrets, waterfowl (i.e., ducks, geese, and swans), hawks, vultures, gulls, terns, doves, nighthawks, flycatchers, swallows, blackbirds, grackles, cowbirds, starlings, meadowlarks, house sparrows, and warblers. Mammals identified for deterrence or depredation include white-tailed deer, coyotes, rabbits, hares, rodents, beaver, and feral hogs.

Over the last nine years (i.e., 2001-2009), 326 BASH incidents have been reported at Sheppard AFB (an average of 36 per year). Since 2005 (i.e., over the past five years), the average has dropped to 27 incidents per year. This decrease is primarily due to increased deterrence and depredation efforts that began in 2005 (Chapman pers. comm.).

3.8.4 Threatened and Endangered Species

Two state-protected species, both candidates for the federal threatened species list, have been observed at Sheppard AFB: the Texas horned lizard (*Phrynosoma cornutum*) and loggerhead shrike (*Lanius ludovicianus*). The horned lizard has been observed on the Base, primarily in the area of the old landfill, but it has also been observed at the former Saddle Club area, and the northern ends of the airfields. The shrike has been observed in the northwestern corner near the old landfill area. This area is already constrained by the jurisdictional wetland (see **Section 3.8.5** below) and IRP Site LF-06. Sheppard AFB

does not have a Biological Opinion on these species, and no critical habitat has been identified (Sheppard AFB 2010a).

3.8.5 Wetlands

Wetlands are those areas inundated or saturated by surface or groundwater at a frequency and for a duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The presence of hydrophytic vegetation, hydric soils, and wetland hydrology were used to determine the existence and extent of wetland areas. The overall management objective for this resource, as required by Section 404 of the Clean Water Act and the EO on Wetlands (EO 11990), is that there be “no net loss of wetlands.”

A wetland inventory was completed for Sheppard AFB by the U.S. Fish and Wildlife Service (USFWS) in July 1993 (USFWS 1993). The installation has 41.82 acres of wetlands, of which 20.66 acres is classified as jurisdictional. Wetlands on Sheppard AFB are associated with the floodplain in the northwestern corner (**Figure 8**), which drains south to Plum Creek.

The wetland areas are identified on the installation comprehensive plan inspected by the NRCS annually or as needed and are marked prohibiting all traffic and construction. All decision-making concerning wetlands follows the procedures in AFIs 32-7062, 32-7064, 32-9003 and EOs 11988, and 11990.

3.9 Cultural Resources

Cultural resource management at Air Force installations is established in AFI 32-7065, Cultural Resources Management. AFI 32 7065 details compliance requirements for protecting cultural resources through an Integrated Cultural Resources Management Plan (ICRMP). Sheppard AFB completed an ICRMP in 2010 (USAF 2010). The ICRMP includes an inventory and evaluation of all known cultural resources; identification of the likely presence of other significant cultural resources; description of installation strategies for maintaining cultural resources and complying with related resource statutes, regulations, policies, and procedures; standard operating procedures and action plans that include budget, staffing and scheduling activities; clear identification and resolution of the mission impact on cultural resources; and conformance with local, state, and federal preservation programs.

3.9.1 Definition of the Resource

Cultural resources consist of prehistoric and historic districts, sites, structures, artifacts, and any other physical evidence of human activity considered important to a culture or community for scientific, traditional, religious, or other reasons. They include archaeological resources (both prehistoric and historic), historic architectural resources, and American Indian sacred sites and traditional cultural properties. Under 36 CFR 800, federal agencies must take into consideration the potential effect of an undertaking on “historic properties,” which refers to cultural resources listed in, or eligible for inclusion in, the NRHP, in accordance with the National Historic Preservation Act (NHPA) of 1966, as amended.

Four tribal groups identified as having occupied the Sheppard AFB vicinity were contacted to determine if there were any concerns or issues regarding cultural resources within the bounds of the Base. These groups include the Comanche, Wichita, Kiowa and Apache, and Tonkawa tribes. Based on discussions with the tribes and survey and evaluation of the cultural resources on base, no traditional cultural properties or sacred places within the installation’s boundaries were identified (Sheppard AFB 2010b).

3.9.2 Existing Conditions

Sheppard AFB has completed three cultural resource surveys. The first survey was the “Cultural Resource Assessment of Sheppard Air Force Base” conducted in 1993 by the National Park Service. The second was the “Cultural Resource Survey of the Sheppard Air Force Base Recreation Area at Lake Texoma” conducted in 1994 by U.S. Army Corps of Engineers contractor Geo-Marine, Inc. The third was an inventory and assessment of the Cold War-era (1945–1991) built environment at Sheppard done in 2000 by U.S. Army Corps of Engineers contractor Geo-Marine, Inc. Results of these surveys are described below according to archaeological resources (prehistoric, historic, and traditional) and historical resources (historic buildings and structures including architectural significance) (Sheppard AFB 2010b).

3.9.2.1 Archaeological Resources

The 1993 cultural resources assessment included an archeological reconnaissance survey of the base. The survey covered the northwestern part of the base and open areas, including the parasail training area, the physical training area, civil engineering training area, and the pastures associated with the saddle club. Observations of existing developed areas and ongoing construction-related activities indicated that there was an extremely low probability of any intact cultural deposits within the Base. No archaeological resources were identified and it was recommended no further archaeological investigations be required. SHPO concurred with these findings and recommendations.

In 1994, a second archaeological survey was also conducted and focused on the Sheppard AFB Recreational Area (Sheppard AFBRA). An initial literature and archival search was conducted to establish the presence of any previously recorded sites on the Sheppard AFBRA property. Information was found on two previously recorded sites (4IGSIIS and 41GS26). Both are currently completely submerged in Lake Texoma; consequently, they were not investigated. No archaeological resource sites were located during the 1994 survey and no sites eligible for nomination to the NRHP were found. SHPO concurred with these findings. If there are any inadvertent discoveries, impacts to any historic resources will be evaluated to determine if they are eligible for inclusion in the NRHP.

3.9.2.2 Historical Resources

Surveys evaluating historic buildings, structures and landscapes at Sheppard AFB were conducted in 1993 and 2002, and the Base recently completed an Integrated Cultural Resource Plan (ICRMP) (Sheppard AFB 2010). During the archaeological assessment of the Base in 1993, the Base’s Real Property Inventory listing was reviewed for the period from 1928 to 1950 to identify any buildings or structures that might meet the eligibility requirements for listing on the NRHP. During this survey, the Kell Field Air Terminal Building was the only building determined eligible for both the NRHP and State register. The Kell Field Air Terminal was formerly listed as a Recorded Texas Historic Landmark by the Texas Historical Commission in 1981 (Sheppard AFB 2010b).

A Cold War inventory was conducted in 2002. Of the 256 buildings and structures at Sheppard that were constructed on the Base during the Cold War period, only two (Buildings 2560 and 2130) were recommended eligible for NRHP listing as Cold War resources. Building 2130, also known as the Little Adobe, was built circa 1928, was dedicated as a recorded Texas Historical Landmark in November 1981, and is currently used as a historical museum (Heritage Center). Building 2560 and the Alert Apron were used during the Cold War as the Strategic Air Command (SAC) facilities (**Figure 8**).

The Alert Apron and Building 2560 are the only two cultural resources in the general vicinity of the Proposed Action. Both are in the northwest portion of the Base. The Alert Apron is located approximately 550 feet east of the proposed EOD range; and Building 2560 is located approximately 1800 feet south-southwest of the proposed EOD range.

3.10 Socioeconomics

3.10.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with the human environment, generally including factors associated with population, housing, education, and the economy. Direct impacts to any of these factors may generate secondary effects, resulting in a series of potential socioeconomic ramifications within the affected area.

3.10.2 Population

The baseline population associated with Sheppard AFB is 18,378 persons, including 2,517 military personnel, 6,016 trainees and cadets, 6,106 military dependents, and 3,739 civilian personnel (**Table 12**). The baseline population includes off-base military dependents and civilian personnel. An estimated 42 % of the Sheppard AFB population resides on base, including 5,947 personnel and 1,832 dependents. The remaining 58% reside off base and are comprised of 6,325 personnel and 4,274 dependents (**Table 12**). The base population constitutes 18% and 13% of the City of Wichita Falls and the Wichita Falls Metropolitan Statistical Area (MSA) populations, respectively (Sheppard AFB 2009b).

The Wichita Falls MSA experienced moderate population growth between 1990 and 2000, increasing by 8.0%. Between 2000 and 2007, however, the Wichita Falls MSA experienced a population decline of 4.5%, decreasing from 151,524 to 144,651 (Wichita Falls BCI 2009). The City of Wichita Falls, which comprises about 70% of the MSA, has experienced similar population trends, decreasing 4.6% from 104,197 persons in 2000 to 99,354 in 2006. By comparison, the population of the State of Texas increased approximately 12% between 2000 and 2007 (Census Bureau 2010).

Table 12. Sheppard Air Force Base Baseline Population.

	Living On-base	Living Off-base	Total
Military Personnel	1,108	1,409	2,517
Trainees/Cadets Personnel	4,839	1,177	6,016
Military Dependents	1,832	4,274	6,106
Civilian Personnel	0	3,739	3,739
Total Baseline Population	7,779	10,599	18,378
Source: 2009 Sheppard AFB Economic Impact Statement (Sheppard AFB 2009b)			

Table 13 identifies total population and percentage of disadvantaged and youth populations in the City of Wichita Falls, the three counties comprising the Wichita Falls MSA, the State of Texas, and the United States. The proportion of minority residents in the region associated with the Proposed Action is lower than for the state overall. Minority persons as a percentage of the total population represent a range of 4.0% in Clay County to 20.2% in Wichita County, and comprise 23.1% of the City of Wichita Falls population. In the State of Texas, minorities comprise 28.6% of the population. Persons of Hispanic or Latino origin represent the predominant minority group in each jurisdiction, followed closely by Black persons and Asian persons.

Table 13. Total Population and Populations of Concern (2008).

	Total Population	Percent Minority	Percent Low-Income	Percent Youth
City of Wichita Falls ¹	101,767	23.1%	16.7%	24.9%
Archer County	8,912	3.6%	8.5%	24.8%
Clay County	10,893	4.0%	11.0%	21.8%
Wichita County	128,098	20.2%	15.1%	25.2%
Wichita Falls MSA	148,181	18.2	-14.4	24.8
State of Texas	23,845,989	28.6%	16.3%	27.7%
United States	301,237,703	25.7%	13.2%	24.5%
Note: City of Wichita Falls population estimates are for calendar years 2006-2008. Ratios for population of concern are calendar year 2005 estimates. % = percent MSA = Metropolitan Statistical Area Source: Census Bureau 2010 and 2010a				

3.10.3 Housing

The Military Family Housing (MFH) inventory at Sheppard AFB includes 691 units in the Balfour Beatty Communities. Units in the Freedom Estates, Windcreek, and Heritage Heights Housing Areas have been recently privatized as part of the Military Housing Privatization Initiative (USAF 2006e). MFH units are generally fully occupied. There are presently 6,530 bed spaces for student use in non-prior service (NPS) dormitories, and the occupancy rate is 80.3% (i.e., there are an average of 1,285 available bed spaces).

According to the Census, there were a total of 64,952 housing units in the Wichita Falls MSA in 2008 (Census Bureau 2010). The vacancy rate was 12.4%, and the homeownership rate was 65.9%. The City of Wichita Falls had 44,164 housing units, of which 12.5% were vacant and 59.3 were owner-occupied. The median value of owner-occupied homes in the MSA was \$83,800. There were 38,640 households in the City of Wichita Falls, with an average household size of 2.33 persons.

3.10.4 Education

There are four Independent School Districts (ISD) serving the population surrounding Sheppard AFB, with an estimated total enrollment of 20,764 students in the 2010-2011 school year (**Table 14**). The Wichita Falls ISD is the largest of the four districts, with over 14,000 students enrolled in the district's 31 schools (including head start and alternative schools).

Table 14. Wichita County Public School Enrollment (2010-2011).

	Enrollment	Teachers	Student-Teacher Ratio
Burkburnett Independent School District	3,384	278	12.2
City View Independent School District	975	83	11.7
Iowa Park Independent School District	1,800	150	12.0
Wichita Falls Independent School District	14,605	1,057	13.8
Total	20,764	1,568	13.2
Source: Ridinger 2010, Phillips 2010, Lovelady 2010, and Matthews 2010.			

3.10.5 Economy

In addition to the traditional northern Texas industries of agriculture and oil/gas production, economic activity in the Wichita Falls region has diversified to include manufacturing, military, health care, and education. Local farming and ranch operations continue to represent an important part of the economy.

The civilian labor force in the Wichita Falls MSA included 73,600 persons in July 2010, of which 67,600 were employed (Census Bureau 2010). The unemployment rate in July 2010 was 8.2%. Median household income was \$43,217 (Wichita Falls BCI 2009).

Sheppard AFB is by far the largest single employer in the region with 12,201 total personnel, and is considered a primary economic driver in the Wichita Falls region (Wichita Falls BCI 2009). The total annual payroll is over \$606 million. The estimated annual economic impact of the Base on the surrounding region is \$998 million. However, the Base has recently experienced workforce reductions in both the military and civilian sectors. For instance, the average size of the permanent military workforce over the past 10 years is 3,360, and Sheppard AFB was 25% below that in 2009. The 2009 civilian workforce was 13% below the 10-year average in 2009.

Additionally, the relocation of the 882nd Training Group to Ft. Sam Houston in San Antonio, Texas will result in the loss of about 360 military and 51 civilian positions at Sheppard AFB during 2010 and 2011; the average daily student load will decrease by about 1,500 over this period.

Other large employers in Wichita Falls are presented in **Table 15**.

Table 15. Wichita Falls Top Ten Employers.

Organization	Product	Employees
Sheppard Air Force Base	Military	12,201
Wichita Fall Independent School District	Public School System	2,000
North Texas State Hospital	Health Care	1,987
United Regional Healthcare System	Health Care	1,794
City of Wichita Falls	City Government	1,576
Midwestern State University	4-year University	1,222
Wal-Mart (3 locations)	Department Store	1,188
Howmet Castings Alcoa	Gas Turbine Engine Components	1,020
James V. Allred Unit	State Maximum Security Prison	908
AT&T and AT&T Wireless	Communications + Customer Service	836
Cryovac Division—Sealed Air Corporation	Flexible Packaging	735
Saint-Gobain Vetrotex America	Fiberglass Reinforcements	725
Burkburnett ISD	Public School System	575
Wichita County	County Government	485
Source: Wichita Falls BCI 2009		

3.11 Environmental Justice

3.11.1 Definition of the Resource

The 1994 EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs federal agencies to address disproportionate environmental and human health effects in minority and low-income communities. Similarly, the 1997 EO 13045, Protection of Children from Environmental Health Risks and Safety Risks, directs federal agencies to identify and assess environmental health and safety risks to children, coordinate research priorities on children's health, and ensure that their standards take into account special risks to children. Potential disproportionate impacts to minority or low-income populations and special risk to children are assessed only when adverse environmental consequences to the human population are anticipated, otherwise no analysis is required.

3.11.2 Existing Conditions

Demographic data indicate that minority and low-income groups do not represent a disproportionate number of the ROI population for Sheppard AFB. The incidence of poverty in the affected region is somewhat below the state average, which is 16.3%, with the exception of the City of Wichita Falls, which is slightly greater. Individuals living below the poverty level account for 16.7 and 14.4% of the population in the City of Wichita Falls and the MSA, respectively, and between 8.5% and 15.1% in the three MSA counties (**Table 13**).

The youth population, comprised of children under the age of 18 years, is relatively consistent throughout the region, with no known concentrated areas of concern where youth might experience special health or safety risks. Children constitute 24.8% of the population in the Wichita Falls MSA overall, comparable to the state youth population of 27.7% (**Table 13**).

3.12 Health and Safety

Because the Proposed Action Alternative would take place on a US Air Force installation, Air Force regulations and standards regarding health and safety would be followed. All plans and specifications for new construction or building renovations at Sheppard AFB must be in compliance with OSHA construction industry standards in 29 CFR 1926.

3.12.1 Existing Conditions

All operations at the explosives training range are conducted in accordance with all applicable Air Force and DoD regulations and guidance, including the following:

- AFI 13-212 – *Range Planning and Operations* (16 November 2007).
- DoD 6055.09-STD – *DoD Ammunition and Explosive Safety Standards* (29 February 2008).
- Air Force Policy Directive (AFPD) 91-2 – *Safety Programs* (28 September 1993).
- Air Force Manual (AFM) 91-201 – *Explosives Safety Standards* (17 November 2008).

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4. ENVIRONMENTAL CONSEQUENCES

This chapter describes potential environmental consequences, or impacts to natural and physical resources, that could occur if either the Proposed Action is implemented or the No Action alternative is selected. The No Action alternative provides a baseline for evaluation and comparison to the Proposed Action alternative. Cumulative impacts were analyzed considering previous, ongoing, and additional actions proposed on or around Sheppard AFB with the potential to affect the project. This chapter also contains a summary of mitigation measures; natural or depletable resource requirements and conservation potential; a discussion of irreversible and irretrievable commitment of resources; environmental effects that cannot be avoided; the relationship between short-term uses of the environment and long-term productivity; and includes a list of conditions normally requiring an Environmental Impact Statement (EIS).

4.1 Land Use

Land use impacts can result if an action displaces an existing use or reduces the suitability of an area for its current, designated, or formally planned use. In addition, a proposed activity may be incompatible with local plans and regulations that provide for orderly development to protect the general welfare of the public, or may conflict with management objectives of a federal or state agency for an affected area.

4.1.1 No Action Alternative

Under the No Action alternative, there would be no change to land use from baseline conditions described in **Section 3.1.1**. All existing facilities would remain, and no new facilities would be constructed. No impacts to land use or visual resources are expected, and no changes in the frequency of detonations at the explosives training range would occur. Sheppard AFB would continue to manage on-base development activity according to the General Plan and established planning, architectural, landscaping, and civil guidelines. Coordination with local communities affected by flight activity would continue with the AICUZ program.

4.1.2 Proposed Action Alternative

There would be no effect to land use from the Proposed Action alternative. Proposed construction and improvements at the Explosives Training Range and the 82 TRW Readiness Site are considered minor, would not change any land use classifications, and would be consistent with established planning, architectural, landscaping, and civil guidelines to ensure that the base character and aesthetic qualities are retained.

4.2 Noise

4.2.1 No Action Alternative

Under the No Action alternative, no proposed construction or renovation activities would occur, and there would be no change to the frequency of detonations at the explosives training range at Sheppard AFB. Therefore, there would be no change to noise levels from baseline conditions described in **Section 3.1.2**. In recent years, there have been no noise complaints and any noise issues associated with on-going aircraft operations are considered minimal.

4.2.2 Proposed Action Alternative

Under the Proposed Action, the blast noise contours depicted in **Figure 9** would not change (i.e., the current one-pound charge of TNT that is detonated at the range is acoustically similar to the proposed 0.625 charge of C4). However, there would be an increase in the frequency of detonations. Although the maximum increase in the number of detonations would be 88 per month (based on the maximum course size of 22 students), Sheppard AFB is projecting class sizes of 15 to 18 students (Newsome 2010). Those class numbers would equate to 60 to 72 blasts per month, or 15 to 18 per day for four days per month (generally two consecutive days about two weeks apart).

The blast sequence on those four days would be as follows: the first group of students (i.e., half of the class) would set up their explosive charges and retreat to a safe area. They would then detonate their charges at the individual command of the Range Safety Supervisor. The detonations would occur approximately 15 seconds apart, after which there would be an approximately 15 minute break for the next group of students to set up. Therefore, using the high end of the projected class size (i.e., 18 students), detonation training days would consist of a series of nine explosions over less than two minutes. After approximately 15 minutes, the sequence would repeat. Training sessions would typically occur during mid morning hours, and only on weekdays.

The bunker that has been designed for the Proposed Action alternative would have 8-foot high walls and an earthen outer layer to help direct the blast/sound waves upward, which would help to reduce the noise impacts to the surrounding area. The likelihood of complaints from the blasting can be greatly minimized by conducting explosives training activities during periods of favorable weather conditions (i.e., mid-morning to mid-afternoon on bright, sunny days) to the greatest extent possible.

The land area and affected residences discussed in **Section 3.2.2.3**, and depicted on **Figure 9** and **Tables 2 and 6** would not change with implementation of the Proposed Action alternative.

4.3 Air Resources

4.3.1 No Action Alternative

Under the No Action alternative, the expansion and relocation of the EOD preliminary course would not occur at Sheppard AFB. The baseline air quality and emission levels discussed in **Section 3.3.5.3** would remain the same under the No Action alternative. Although the baseline years used for Wichita County and Sheppard AFB are not the same (see **Tables 11 and 12**), a relative comparison can be made of the contribution that the base has toward the regional air emissions. For the criteria pollutants and VOCs, Sheppard AFB is responsible for approximately less than 0.2% of the total regional emissions and less than 0.3% for total HAPs. Therefore, for the No Action alternative, Sheppard AFB's contribution to regional air emission levels would remain insignificant, and the air quality would be expected to remain in compliance with the NAAQS.

4.3.2 Proposed Action Alternative

Under the Proposed Action alternative, the EOD Preliminary Course would be relocated to Sheppard AFB. The Proposed Action alternative is expected to result in an insignificant increase in air emissions from construction and operation activities, as described in the following sections.

4.3.2.1 Construction Emissions

The Proposed Action alternative includes construction of 50 x 50 foot concrete bunker and two 8 x 8 foot pads. This would require grading equipment and haul trucks for sand fill and concrete. Construction

emissions are a one-time event and would occur from fuel combustion in the construction vehicles and equipment, and from fugitive dust from grading operations. Emissions from vehicles are based on fuel type, vehicle class, and total miles traveled. Emissions from construction equipment are based on equipment type, engine size, and hours of operation. Fugitive dust emissions from grading are based on hours of operation. It is estimated that completion of the concrete bunker and pads would occur within a relatively short period time (approximately one week).

Based on the dimensions of the concrete structures, approximately 112 cubic feet of concrete would be needed for the bunker and nine cubic feet for the pads; for a total of 121 cubic yards. In addition, approximately 93 cubic feet of sand fill would be needed for the bunker (i.e., sand to a depth of one foot). These quantities of concrete would require approximately 12 concrete delivery trucks (at 10 cubic yards per load) and six dump trucks (at 15 cubic yards per load) for a total of 18 haul truck deliveries. Using an estimate of a 20-mile round trip for each haul truck delivery, the total heavy-duty truck traffic from construction would be 360 miles.

For grading operations, an estimate of one piece of grading equipment for one standard work day (or 8 hours) each at the beginning and end of the bunker construction would amount to a total operating time of 16 hours and would affect approximately 0.25 acres of land.

Emissions from construction activities can be estimated by multiplying appropriate emission factors by the appropriate operating parameter (i.e., vehicle miles traveled for haul trucks and hours of operation for grading). The total criteria pollutant and VOC emissions from fuel combustion in heavy-duty haul vehicles using diesel fuel would be approximately 4 pounds (0.002 tons) based on the USEPA MOBILE6 emission factor model². Total emissions from grading would be approximately 23 pounds (0.01 tons) from fuel combustion and 5 pounds (0.002 tons) from fugitive dust, based on the USEPA NONROAD emission factor model^{3 4}.

Interior renovations to the three buildings at the 82 TRW Readiness Site would not likely contribute to air emissions.

Based on this analysis, emissions from construction of the bunkers and pads would total approximately 0.014 tons (combined criteria pollutants and VOCs). Considering the baseline regional and facility annual emission levels presented in **Tables 10 and 11**, emissions from construction activities would result in an insignificant impact to the air quality of Wichita County.

4.3.2.2 Operational Emissions

Operational emissions are a recurring event. Changes (i.e., increases) to existing air emissions associated with the Proposed Action alternative would occur primarily from detonation of explosive materials during training exercises. Operating vehicle emissions would also occur from fuel combustion in the estimated 11 additional personal vehicles needed for the relocating of training staff, and from the transport of 528 students per year from Lackland AFB (primarily) to Sheppard AFB.

² Emission factors from USEPA's MOBILE 6.2 emission model using an evaluation year 2011 and average vehicle speed of 35 mph for an emissions evaluation study performed for a Georgia Army National Guard facility to be located in Atlanta, Georgia. This included gram/mile emission factors of 5.14 for NOx, 0.15 for PM2.5, 0.01 for SO2, and 0.33 for VOCs (total of 5.63 gram/mile = 0.012 pound/mile).

³ Emission factors from USEPA's NONROAD emission model using an evaluation year 2011 for an emissions evaluation study performed for a Georgia Army National Guard facility to be located in Atlanta, Georgia. This included gram/hp-hr emission factors of 3.54 for NOx, 0.33 for PM10, 0.16 for SO2, and 0.29 for VOCs assuming a 150 hp bulldozer (total of 4.32 gram/hp-hr x 150 hp = 649 gram/hr = 1.43 pound/hr).

⁴ Fugitive dust emission factor for grading is 10 pound/day/acre (Midwest Research Institute, Improvement of Specific Emission Factors, 1995).

Emissions from the detonation of C4 class explosive were estimated from USEPA AP-42 emission factors for Demolition Block (DODIC M023, 1.25 pound C4), as presented in **Table 16**. The Proposed Action would involve a maximum of 88 half-block detonations per month, which equates to 44 full-block detonations per month or 528 full-block detonations per year.

Table 16. Annual Emissions from Detonation of 44-C4 Explosives Blocks.

Pollutant	Emission Factor (pound/M023 Block)	Quantity (Blocks/Year)	Annual Emissions	
			(pound/year)	(ton/year)
Carbon Monoxide (CO)	0.026	528	13.7	0.007
Lead (Pb)	0.00017		0.1	0.00004
Nitrogen Oxides (NOx)	0.0079		4.2	0.002
Particulate Matter (PM _{2.5})	0.019		10.0	0.005
Particulate Matter (PM ₁₀)	0.026		13.7	0.007
Sulfur Dioxide (SO ₂)	0.00015		0.1	0.00004
VOCs	0.001		0.6	0.0003
Total HAPs	0.00093		0.5	0.0002
Greenhouse Gases:				
Carbon Dioxide (CO ₂)	0.79		417.1	0.21
Methane	0.0016		0.8	0.0004
USEPA AP-42 emission factors from Section 15.9.1 – M023, M112 Demolition Block Charge.				

From **Table 16**, total annual criteria pollutant and VOC emissions would be approximately 0.02 ton/yr from detonation activities. **Table 16** also shows annual emissions of total HAPs and greenhouse gases.

On an annual basis, the vehicle fuel combustion emissions from the 11 additional staff personnel would be based on 260 workdays per year and a round trip distance of 10 mile per vehicle; or 28,600 vehicle miles per year. The total criteria pollutant and VOC emissions from fuel combustion in commuter vehicles would be approximately 86 pounds/year (0.04 ton/year) based on the USEPA MOBILE6 emission factor model⁵.

Emissions from fuel combustion within the student transport vehicles would be distributed along the entire trip route with the routes originating from locations outside of the Sheppard AFB area. As such, only a small portion of the total transport vehicle emissions would occur within Wichita County. Therefore, these emissions were not considered as part of this analysis.

From this analysis, emissions from facility operations associated with the Proposed Action would total approximately 0.06 ton/year (combined criteria pollutants and VOCs). Considering the baseline regional and facility annual emission levels presented in **Tables 10 and 11**, emissions from these additional facility operations would result in an insignificant impact to the air quality of Wichita County.

⁵ Emission factors from USEPA's MOBILE 6.2 emission model using an evaluation year 2013 for an emissions evaluation study performed for a Georgia Army National Guard facility to be located in Atlanta, Georgia. This included gram/mile emission factors of 0.64 for NO_x, 0.01 for PM_{2.5}, 0.01 for SO₂, and 0.69 for VOCs (total of 1.35 gram/mile = 0.003 pound/mile).

4.4 Hazardous Materials and Waste

4.4.1 No Action Alternative

Implementation of the No Action alternative would result in no changes to the existing conditions at Sheppard AFB. Explosives and munitions would continue to be stored in the MSA, and would be transported to the explosives training range via the munitions transport route (**Figure 3**). Explosives would be present at the range only when required for use, and would never be stored overnight at the range.

4.4.2 Proposed Action Alternative

Implementation of the Proposed Action would not change the explosives handling and transport protocols described in **Section 3.4.1.1**. Although the quantities of explosive ordnance would be higher, there is ample storage space in the MSA to accommodate the larger quantities. C4 is widely considered to be the most reliable, stable, safe and controllable high explosive.

The major explosive byproducts of organic nitrated compounds such as those found in C4 include water, carbon dioxide, carbon monoxide, and nitrogen (Cook and Spillman 2000). High-order detonations result in almost complete conversion of explosives (99.997% or more) into such inorganic compounds (USACE 2003). Explosives become an environmental concern when expended ordnance fails to function as designed and explosive compounds are released into the environment. The 15-second interval that would take place between detonations if the Proposed Action is implemented would allow the instructors to verify that all ordnances are detonated. In event of a misfire or a low-order (less-than complete) detonation, the instructors would clear the range of all students and proceed with a clean-up shot. This clean up shot would not exceed the net explosive weight of one 1.25 pound block of C-4 explosives. Therefore, there would not be any reason for the proposed course to restore explosive material that is not in the original packaging.

Buildings 1719, 1722, and 1723 in the 82 TRW Readiness Site (which would be renovated as part of the Proposed Action), and Buildings 2705 and 2706 in the explosives training range (which would be utilized as is) were constructed well after Sheppard AFB discontinued the use of lead based paint and asbestos containing materials, and do not contain these substances (see **Section 3.4.1.1**).

With the adherence to required range safety protocols described in DoD 6055.09-STD and AFRD 91-2, which are implemented by AFM 91-201, no significant impacts to hazardous materials and waste would be expected from implementation of the Proposed Action.

4.5 Utilities and Infrastructure

4.5.1 No Action Alternative

Under the no action alternative, there would be no demolition, construction or mission related changes in activities. Therefore, there would be no effect on utilities and infrastructure described in **Section 3.5**.

4.5.2 Proposed Action Alternative

The Proposed Action would not increase interior building space, but would result in a maximum increase of 528 students at the installation per year, which would equate to an increased average daily student load of 43. Additionally, eleven instructors would be permanently relocated to Sheppard AFB from various locations around the country and abroad. Applying the latest available military dependent ratio available

for Sheppard AFB of 2.14 (SAIC 2007) to the permanent relocations, the total increase in population would be approximately 62. This represents less than a 1% increase in the Base population. The majority of the course would be taught at the existing, currently underutilized 82 TRW Readiness Site. Students and instructors would utilize existing, underutilized classrooms, dining facilities, support offices, and warehouse space at Sheppard AFB.

The most recent Capability Analysis for Sheppard AFB (SAIC 2006), which included plans extending out to 2013, indicated that utilities and infrastructure in 2006 were more than adequate and had the capacity for many more personnel. Because the current total Base population is slightly lower than it was in 2006, there is ample capacity across all aspects of utilities and infrastructure to absorb the small increase in personnel and associated demand that would be associated with implementation of the Proposed Action alternative.

The small amount of debris generated by the minor renovations of the buildings at the 82 TRW Readiness Site would have only a negligible effect on the capacity of the Buffalo Creek Landfill. Short-term transportation impacts related to the transport of debris related to the building renovations would also be negligible.

Approximately 728 square feet of new impervious cover would be added to the installation under the Proposed Action. This is expected to have a negligible impact on the total amount of impervious cover, minimal to no impact on the total volume of stormwater runoff, and would therefore not impact the existing capacity of the stormwater drainage systems. Construction activities would be conducted consistent with the requirements of the TPDES stormwater program, as described in **Section 3.5.1.6**. Therefore, adverse water quality impacts are anticipated to be minimal to none for the Proposed Action, and impacts to all aspects of utilities and infrastructure would be insignificant.

4.6 Geology and Soils

Impacts to geology and soils can often be avoided or minimized with proper structural engineering designs, construction techniques, and erosion control measures. Analysis of potential impacts to geologic resources typically includes identification and description of unique or other geologic resources that could potentially be affected, examination of the potential effects that the action may have on the resource, and provision of mitigating measures, if necessary. Analysis of impacts to soil resources resulting from proposed activities included the determination suitability of locations for proposed operations and activities and the potential impacts of earth disturbance that would expose soil to wind or water erosion.

4.6.1 No Action Alternative

Under the No Action alternative, existing facilities would be utilized and no new facilities would be built or improved. No impacts to geology and soils would occur as a result of the No Action alternative. Conditions would remain as described in Section 3.6.

4.6.2 Proposed Action Alternative

Under the Proposed Action, the underlying geology and topography of the area would not change. There would be a very minor impact to soils. Less than 1,500 square feet of area would be disturbed and approximately 728 square feet would be rendered impervious as a result of the Proposed Action. These activities include construction of two 8 foot x 8 foot slabs for temporary munitions storage and a 50 foot x 50 foot bunker with walls approximately three feet thick, both at the range. Other minor soil disturbance includes fence construction at the 82 TRW Readiness Site.

Soils are suitable for all proposed activities. The minimal soil disturbance resulting from the Proposed Action alternative combined with the flat terrain and moderately erodible soils at Sheppard AFB would limit soil erosion potential. As appropriate, well-maintained silt fences, wetting of the construction site, daily site inspections, and other BMPs would be used to limit or eliminate soil movement, stabilize runoff, and control sedimentation. Following construction, disturbed areas not covered with impervious surfaces would be reestablished with appropriate vegetation and managed to prevent erosion. With these mitigation measures, impacts to geology and soils would be insignificant.

4.7 Water Resources

Impacts to water resources were evaluated according to the potential to affect surface water bodies, groundwater, and floodplains at Sheppard AFB or to violate laws or regulations adopted to protect and manage water resources. Surface water and floodplain evaluations were conducted by identifying floodplain areas and surface water bodies nearest in proximity to the areas associated with the Proposed Action. Groundwater was evaluated by surveying the area around the range site to identify any potential groundwater recharge areas.

4.7.1 No Action Alternative

Under the No Action alternative, there would be no soil disturbance and surface water, groundwater, and floodplain resources would remain comparable to baseline conditions described in **Section 3.7**.

4.7.2 Proposed Action Alternative

The Proposed Action alternative would result in approximately 1,500 square feet of disturbed area during construction, including soil disturbance from the 82 TRW Readiness Site fence construction, and approximately 728 square feet of impervious area from the two 8 foot x 8 foot storage slabs and the 50 foot x 50 foot bunker at the explosives training range. This would result in an insignificant increase in the quantity of stormwater runoff. Furthermore, the minor construction and renovation activities have a very low potential to affect the quality of stormwater runoff via a potential increase in soil erosion.

No surface water features exist on either the explosives training range or the 82 TRW Readiness Site and the terrain is relatively flat. The nearest stream to the range site is approximately 3,700 feet to the east. The nearest stream to the 82 TRW Readiness Site is approximately 3,700 feet to the north. The nearest floodplain to the range site is situated approximately 1,300 feet to the south. The nearest floodplain to the 82 TRW Readiness Site is over two miles away. There is a wetland area approximately 1,900 feet to the northeast of the 82 TRW Readiness Site (**Figure 8**).

The Proposed Action would not result in increased use of the aquifer located under Sheppard AFB because potable water for the installation is provided by surface water sources. There are no groundwater recharge areas in or near either site and none of the activities associated with the Proposed Action would involve installation of materials or equipment that would degrade groundwater quality. Excavation associated with the construction would be limited to approximately three feet below the surface. This shallow excavation would have no effects on groundwater.

Given the relatively small disturbance area coupled with the distance of the Proposed Action alternative locations from waterbodies, overall impacts to water resources (surface water, groundwater, and floodplains) from the Proposed Action alternative are expected to be insignificant.

4.8 Biological Resources

Potential impacts from implementation of the Proposed Action to biological resources, including vegetation, wildlife, threatened and endangered species, and wetlands were evaluated. Results are discussed below.

4.8.1 No Action Alternative

No construction, renovation or changes to the frequency of detonations at the explosives training range would occur under the No Action alternative. Therefore, no impacts to biological resources, including vegetation, wildlife, threatened and endangered species, and wetlands are expected under this alternative.

4.8.2 Proposed Action Alternative

Activities under the Proposed Action would occur within largely developed, maintained urban and suburban areas within a disturbed landscape; therefore, impacts to vegetation and wildlife occurring on Sheppard AFB (as described in **Sections 3.8.2** and **3.8.3**) would be very minimal. Use of BMPs during construction (i.e., stabilizing disturbed ground by reseeding or replanting with approved vegetation identified in the INRMP [Sheppard AFB 2010a]) would minimize the potential for adverse effects to vegetation at and near construction sites, and there would be minimal impacts to native vegetation outside the developed regions of Sheppard AFB. Because activities would occur on previously disturbed areas, (i.e., not suitable habitat for threatened, endangered, or protected species) the Proposed Action would have no potential to impact the two state listed species occurring on Sheppard AFB. Implementation of the Proposed Action would not impact any wetland areas.

Blast noise associated with the Proposed Action alternative would occur in the same location as the current explosives training range, although the frequency would increase. Because the EOD range would be located near the end of the airfield (i.e., where the presence of wildlife is not desired as it can pose a danger to aircraft, people, and wildlife), the increased blast frequency would augment deterrence efforts associated with the Sheppard AFB BASH minimization plan (Chapman pers. comm.). Therefore, impacts to wildlife would be insignificant.

4.9 Cultural Resources

4.9.1 No Action Alternative

No construction or renovation activities would occur under the No Action alternative. Therefore, no impacts to cultural resources are expected under this alternative.

4.9.2 Proposed Action Alternative

As detailed in **Section 3.9.2.1**, no archaeological resources have been identified at Sheppard AFB. The ICRMP (Sheppard AFB 2010) provides the required standard operating procedure that must be followed in the unlikely event that archaeological resources are discovered during the limited ground disturbance that would be required by the Proposed Action.

The Alert Apron and Building 2560 are the only two cultural resources in the general vicinity of the Proposed Action. Both are in the northwest portion of the Base. The Alert Apron is located approximately 550 feet east of the proposed EOD range; and Building 2560 is located approximately 1,800 feet south-southwest of the proposed EOD range (**Figure 8**).

The Sheppard AFB Cultural Resources Manager has made a “no effect” determination regarding potential impacts to cultural resources that would result from implementation of the Proposed Action. “No effect” refers to situations where (1) an undertaking is redesigned to entirely avoid a historic property, or (2) disturbance or intrusion on the historic property is so slight as not to alter the characteristics for which the property is valued. The Sheppard AFB Cultural Resources Manager sent documentation of the “no effect” determination to the SHPO on 9 September 2010. On 4 October, 2010, the SHPO issued its concurrence with the “no effect” determination (**Appendix A**). Therefore, implementation of the Proposed Action would have no effects on cultural resources.

4.10 Socioeconomics

4.10.1 No Action Alternative

Under the No Action alternative, there would be no change in personnel at Sheppard AFB, and no construction or renovation would occur. Population on base and in the surrounding area would not be affected. No impacts to socioeconomic resources would occur under implementation of the No Action alternative.

4.10.2 Proposed Action Alternative

The Proposed Action would be undertaken in a manner that would not substantially affect human health or the environment. Implementation would not exclude persons from participation in, deny persons the benefits of, or subject persons to discrimination under, the program actions because of their race, color, or national origin.

The Proposed Action would result in a maximum increase of 528 students at the installation per year, which would equate to an increased average daily student load of 43. Additionally, eleven instructors would be permanently relocated to Sheppard AFB from various locations around the country and abroad. Applying the latest available military dependent ratio available for Sheppard AFB of 2.14 (SAIC 2007) to the permanent relocations, the total increase in population would be approximately 62. This represents less than a 1% increase in the Base population. Taking into account the recent decrease in the population of the area described in **Section 3.9.2**, implementation of the Proposed Action alternative would result in an insignificant, beneficial impact to socioeconomics.

4.11 Environmental Justice

4.11.1 No Action Alternative

No impacts to socioeconomic resources would occur under implementation of the No Action alternative.

4.11.2 Proposed Action Alternative

As discussed in **Section 3.10.2**, the proportion of minority residents in the region associated with the Proposed Action is lower than for the state overall. Minority persons as a percentage of the total population represent a range of 4.0% in Clay County to 20.2% in Wichita County, and comprise 23.1% of the City of Wichita Falls population. In the State of Texas, minorities comprise 28.6% of the population. Persons of Hispanic or Latino origin represent the predominant minority group in each jurisdiction, followed closely by Black persons and Asian persons. Additionally, no residential communities, schools, places of worship, or commercial centers are located in the vicinity of the Proposed EOD range. Therefore, implementation of the Proposed Action would have no impact on environmental justice.

4.12 Health and Safety

4.12.1 No Action Alternative

Implementation of the No Action alternative would result in no changes to the existing conditions at Sheppard AFB. No construction or renovation activities would take place, and no increased usage of the range area would occur. No impacts to health and safety would occur under implementation of the No Action alternative.

4.12.2 Proposed Action Alternative

Implementation of the Proposed Action would not have a significant impact on the health and safety of construction workers, EOD instructors, or students. Adherence to the protocols detailed below would greatly minimize any potential for worker injury.

The well-being, safety, or health of workers – Workers are considered persons directly involved with the operation producing the effect or who are physically present at the operational site.

No impacts to health and safety would be anticipated, as all appropriate OSHA regulations including CFR 29 Part 1926, *Safety and Health Regulations for Construction*, and Site Specific Health and Safety Plans would be followed during project construction and renovation activities.

Explosives Safety Operations: Training activities (i.e. explosives detonations) at the proposed EOD range would be conducted in accordance with the regulations and guidance identified in **Section 3.12**. Additionally, an Explosives Safety Site Plan (ESSP) would be submitted to and approved by the Department of Defense Explosives Safety Board (DDESB) prior to any range activities.

4.13 Cumulative Effects

In accordance with NEPA, any past, present, and reasonably foreseeable future actions with the potential to cumulatively affect the same resources as the alternatives presented in **Section 2** are discussed below followed by an analysis of cumulative effects. Future actions proposed in the area may require site-specific NEPA analysis prior to implementation.

Cumulative effects on environmental resources result from incremental impacts of an action, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative effects may arise from single or multiple actions and may result in additive or interactive effects. Cumulative effects can result from minor, but collectively substantial actions undertaken over a period of time by various agencies (federal, state, and local) or individuals.

Because it would utilize currently underutilized buildings at the 82 TRW Readiness Site and the range would be constructed within the existing range area, with no change to existing noise impacts, the Proposed Action would have negligible impacts to resources at Sheppard AFB. Additionally, the increase in personnel would be more than offset by the loss incurred by the relocation of the 882nd Training Group to Fort Sam Houston, which will result in the loss of about 360 military and 51 civilian positions at Sheppard AFB during 2010 and 2011.

Therefore, cumulative effects of the Proposed Action, when compared to other past, present, and reasonable foreseeable future actions would be insignificant.

4.14 Best Management Practices Summary

Best Management Practices (BMPs) for the Proposed Action for the eleven resource areas addressed in the EA are summarized in **Table 17**.

Table 17. Best Management Practices for the Preferred Action Alternative.

Resource	Mitigation Measures	Mitigation Timing
Land Use	None identified	
Noise	Conduct explosives training only during normal working hours, and only on weekdays	During operations
Air Quality	1. Water disturbed areas regularly 2. Maintain vehicles and equipment 3. Place and maintain approximately one-foot of clean sand in the explosives bunker	1. During construction of range 2. During construction of range, during renovation activities 3. During range operation
Hazardous Materials and Waste	None identified	
Utilities and Infrastructure	Minimize soil disturbance and stabilize disturbed soils upon construction completion	During construction
Geology and Soils	Minimize soil disturbance and stabilize disturbed soils upon construction completion	During construction
Water Resources	None identified	
Biological Resources	Revegetate disturbed soils with approved species	During/immediately following construction
Cultural Resources	None identified	
Socioeconomics	None identified	
Environmental Justice	None identified	
Health and Safety	None identified	

4.15 Natural or Depletable Resource Requirements and Conservation Potential

Other than the use of vehicle fuels during construction activities and construction materials, the Proposed Action alternative requires no significant use of natural or depletable resources.

4.16 Irreversible or Irretrievable Commitment of Resources

Under the Proposed Action alternative, irretrievable commitments of resources would occur from the minor consumptive use of electrical energy and fuel during the construction and operations phase. Other irreversible or irretrievable commitments of resources would include a minimal amount of soil loss through either wind or water erosion during construction activities and a minor loss of native vegetation.

4.17 Environmental Effects that Cannot be Avoided

Adverse environmental effects that cannot be avoided include construction-related emissions of fugitive dust and exhaust products; and noise impacts resulting from explosives detonation.

4.18 Relationship Between Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Proposed Action alternative would take advantage of existing infrastructure to the maximum extent possible. The productivity and future use of the land would not be significantly impacted.

4.19 Conditions Normally Requiring an Environmental Impact Statement

The potential impacts arising from the relocation and expansion of the EOD preliminary course at Sheppard AFB were evaluated specifically in the context of the criteria for actions requiring an EIS, described in DoD Directive 6050.1, *Environmental Effects in the United States of Department of Defense Actions* (US Department of Defense 1979), and 32 CFR 989.

Specifically, the proposed project activities were evaluated for their potential to:

- Significantly affect environmental quality or public health and safety;
- Significantly affect historic or archaeological resources, public parks and recreation areas, wildlife refuge or wilderness areas, wild and scenic rivers, or aquifers;
- Adversely affect properties listed or meeting the criteria for listing on the National Register or the National Registry of Natural Landmarks;
- Significantly affect prime and unique farmlands, wetlands, ecologically or culturally important areas, or other areas of unique or critical environmental concern;
- Result in significant and uncertain environmental effects or unique or unknown environmental risks;

- Significantly affect a species or habitat listed or proposed for listing on the Federal list of endangered or threatened species;
- Establish a precedent for future actions;
- Adversely interact with other actions resulting in cumulative environmental effects; and
- Involve the use, transportation, storage, and disposal of hazardous or toxic materials that may have significant environmental impacts.

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5. CONCLUSION

The impact to the environment from the proposed relocation and expansion of the EOD preliminary course at Sheppard AFB has been assessed. Two different alternatives (the Proposed Action alternative and the No Action alternative) were examined. A comparison of the environmental consequences of each of the two alternatives that were carried forward is presented in **Table 18**.

No cumulative impacts to the environment were identified for the Proposed Action alternative in the area under consideration in this document. Mitigation measures have been identified and are summarized in **Table 17**.

No significant environmental issues were determined through this EA that indicate a requirement to publish an EIS as required by 32 CFR 989 and NEPA.

Table 18. Summary of Environmental Consequences.

Resource	Preferred Alternative	No Action Alternative
Land Use	No Impact	No Impact
Noise	Insignificant Impact (long term impacts from increased frequency of explosives detonations at the EOD range)	No Impact
Air Quality	Insignificant Impact	No Impact
Hazardous Materials and Waste	Insignificant Impacts	No Impact
Utilities and Infrastructure	Insignificant Impacts	No Impact
Geology and Soils	Insignificant Impacts (short-term construction-related impacts)	No Impact
Biological Resources	Insignificant Impacts	No Impact
Cultural Resources	No Impact	No Impact
Water Resources	Insignificant Impact	No Impact
Socioeconomics	Slight Positive Impact (increase in personnel students and instructor)	No Impact
Environmental Justice	No Impact	No Impact
Health and Safety	No Impact	No Impact

6. LIST OF PREPARERS

David McCormick

Project Manager

M.S., Engineering Management, Air Force Institute of Technology, Wright-Patterson AFB, OH

B.S., Mechanical Engineering, Mississippi State University, Starkville, MS

Tony Ruhlman

Natural Consulting Scientist

M.S. Biology, Central Michigan University, 1992

B.S. Biology, Alma College, Alma, Michigan, 1988

Melanie Ruhlman

Technical Staff Consultant

M.S., Forest Hydrology, University of Georgia, 1996

B.S., Forestry, North Carolina State University, 1990

Ben Carnes, Ph.D.

Consulting Engineer

Ph.D., Civil Engineering (Geotechnical/Engineering Mechanics emphasis), Texas A&M University, 1976

M.S., Civil Engineering, Mississippi State University, Mississippi State, MS, 1974

B.S., Civil Engineering, Texas A&M University, College Station, TX 1969

Robert Golus

Air Quality Expert

M.S., Meteorology, The Pennsylvania State University, 1982

B.S., Geology, Edinboro University of Pennsylvania, 1977

Dan Osbourne

Geologist

M.S. Hydrogeology, Clemson University, South Carolina, 1996

B.S. Geology, Clemson University, South Carolina, 1994

Nicole Adams

Natural Scientist II

M.S. Forest Resources, Clemson University, 2008

B.S. Environmental and Natural Resources, Clemson University, 2007

Eric Potts

GIS Analyst

B.S. Geography, GIS, University of North Carolina at Charlotte, Charlotte, North Carolina

7. INDIVIDUALS/AGENCIES CONSULTED

7.1 Agencies/Organizations Sent Copies of the Assessment

As part of the CEQ Regulations on the National Environmental Policy Act, Sheppard AFB has distributed the DOPAA, and will circulate the Draft EA, to the following agencies, organizations, and individuals. Copies of all correspondence are included in Appendix A.

Denise S. Francis
Single Point of Contact
Governor's Office
P.O. Box 12428
Austin, Texas 78711

Tangela Niemann
Texas Commission on Environmental Quality
Building F
12100 Park 35 Circle
Austin Texas, 78753

Christopher Jurgens
Environmental Review Team Lead
Texas Water Development Board
1700 North Congress, Suite #670
P.O. Box 13231
Austin, Texas 78711-3231

Harold Stone
Intergovernmental Affairs
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Luela Roberts
Branch Chief for Consultations
U.S. Fish and Wildlife Service
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, Texas 78758

Michael Jansky
NEPA Coordinator for Reviews
U.S. EPA Region 6
1445 Ross Avenue
Suite 1200, Mail Code 6ENXP
Dallas, Texas 75202

Isabel Balderas-Sloan
Director
Texas Historical Commission
1511 N. Colorado St.
Austin, Texas 78701

Dennis Wilde
Nortex Regional Planning Commission
4309 Jacksboro Hwy, Suite 200
Wichita Falls, TX 76367

Donald Fairley
Environmental Specialist
Federal Emergency Management Agency
FRC 800 North Loop 288, R6-IM
Denton, Texas 76209-3698

Lee Bourgoin
Emergency Management Coordinator
Wichita County
110 Jefferson St.
Wichita Falls TX 76306

Russell Schreiber
Director of Public Works
1300 7th St., Room 402
Wichita Falls, TX 76301

8. REFERENCES

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APPENDIX A

Agency Correspondence and Notice of Availability

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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

19 August 2010

MEMORANDUM FOR SEE DISTRIBUTION LIST

FROM: 82 TRW/CC
419 G Avenue, Suite 1
Sheppard AFB TX 76311-2941

SUBJECT: Intergovernmental and Interagency Coordination of Environmental Planning (IICEP) for the Proposed Expansion and Relocation of the Air Force Explosive Ordnance Device (EOD) Preliminary Training Course from Lackland Air Force Base (AFB), Texas to Sheppard AFB, Texas

1. The United States Air Force Air Education Training Command (AETC) is preparing environmental documentation for the Proposed Expansion and Relocation of the Air Force EOD Preliminary Training Course from Lackland AFB, Texas to Sheppard AFB, Texas.
2. The Description of Proposed Action and Alternatives (DOPAA) (Attachment 1) describes the purpose of and need for the project as well as the general extent of proposed project activities. It also provides background information and describes the Proposed Action in detail. Included in this section is a description of the alternatives we considered for achieving the stated purpose, to include those which were eliminated from detailed study.
3. As this action is federally funded, we are preparing an Environmental Assessment (EA) to evaluate the environmental, cultural, and socioeconomic impacts associated with the proposed action pursuant to the National Environmental Policy Act (NEPA) of 1969, as amended (42 U.S. Code (USC) §4321 et seq.); the Council on Environmental Quality (CEQ) Regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508); and 32 CFR Part 989.
4. Information Request: *Information your agency can provide on any of the following issue areas (at or in the vicinity of the proposed site) would be appreciated:*
 - a. Potential environmental concerns or issues;
 - b. Surface and groundwater resources, including streams, wetlands, floodplains, open water features, wells, and local aquifers;
 - c. Federally or state listed threatened or endangered species, or any species proposed for such listing, or critical habitat for such species that may occur within a one-mile radius around the proposed site;

d. Parks, nature preserves, conservation areas, designated wild or scenic rivers, migratory bird habitats, or special wildlife issues;

e. Natural resource issues;

f. Traffic, noise, or socioeconomic concerns;

g. Air quality concerns; and

h. Any additional environmental, cultural, land use, or socioeconomic information or concerns your agency may have with regard to the referenced site.

5. Data you make available will provide valuable and necessary input into the NEPA analytical process. As part of the NEPA process, local citizens, groups, and agencies, among others, will have ample future opportunity to review and comment on the information and alternatives addressed in the document.

6. Other Agencies and Organizations: A listing of agencies and organizations to which this request was sent follows this memorandum. *Should you know of any additional agencies or organizations that may have data or concerns relevant to this project, please forward them a copy of this memorandum, include their information in your response, or contact us directly with this information.* We welcome your participation in this analysis. Please respond on or before 31 Aug 10 to enable us to complete this phase of the project within the scheduled timeframe.

7. Please send your written responses via regular mail or e-mail (preferred) to:

North Wind, Inc.
535 N. Pleasantburg Drive
Greenville SC 29607
ATTN: Tony Ruhlman
Phone: (864) 467-0811
truhlman@northwind-inc.com

Thank you for your assistance in this matter.



MICHAEL F. HAKE, Colonel, USAF
Vice Commander

Attachments:

1. Description of Proposed Action and Alternatives
2. Distribution List

Attachment 1: Description of Proposed Action and Alternatives

Attachment 2: Distribution List

DISTRIBUTION LIST

Denise S. Francis
Single Point of Contact
Governor's Office
P.O. Box 12428
Austin, Texas 78711

Tangela Niemann
Texas Commission on Environmental Quality
Building F
12100 Park 35 Circle
Austin TX, 78753

Christopher Jurgens
Environmental Review Team Lead
Texas Water Development Board
1700 North Congress, Suite #670
P.O. Box 13231
Austin, Texas 78711-3231

Harold Stone
Intergovernmental Affairs
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

Luela Roberts
Branch Chief for Consultations
U.S. Fish and Wildlife Service
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, TX 78758

Michael Jansky
NEPA Coordinator for Review
1455 Ross Avenue
Suite 1200, Mail Code 6 ENXP
Dallas, Texas 75202

Isabel Balderas-Sloan, Director
Texas Historical Commission
1511 N. Colorado St.
Austin, TX 78701

Dennis Wilde
Nortex Regional Planning Commission
4309 Jacksboro Hwy, Suite 200
Wichita Falls, TX 76367

Donald Fairley
Environmental Specialist
Federal Emergency Management Agency
FRC 800 North Loop 288, R6-IM
Denton, Texas 76209-3698

Mr. Lee Bourgoin
Emergency Management Coordinator
Wichita County
900 7th Street
Wichita Falls Texas 76301

Russell Schreiber
Director of Public Works
1300 7th St., Room 402
Wichita Falls, Texas 76301

Subject: EXPANSION AND RELOCATION OF THE EXPLOSIVE ORDNANCE DISPOSAL PRELIMINARY COURSE TO SHEPPARD AIR FORCE BASE, TX

Date: Wednesday, August 25, 2010 11:32 AM

From: Jansky.Michael@epamail.epa.gov

To: Tony Ruhlman <truhlman@northwind-inc.com>

EPA has reviewed your letter and attachments dated August 19, 2010, regarding the subject matter. We have no comments to offer.

Thank you for the opportunity to comment. If you have any need of further assistance let me know.

Michael P. Jansky, P.E.
Regional EIS Coordinator
Office of Planning and Coordination
Region 6 EPA

214-665-7451

Bryan W. Shaw, Ph.D., *Chairman*
Buddy Garcia, *Commissioner*
Carlos Rubinstein, *Commissioner*
Mark R. Vickery, P.G., *Executive Director*



TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

August 27, 2010

North Wind, Inc.
535 N. Pleasantburg Drive
Greenville, SC 29607
ATTN: Tony Ruhlman

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2010-431, City of Sheppard AFB, Wichita County - Proposed Expansion and Relocation of the Air Force Explosive Ordnance Device (EOD) Preliminary Training Course from Lackland Air Force Base

Dear Mr. Ruhlman:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the above-referenced project and offers following comments:

A review of the project for General Conformity impact in accordance with 40 CFR Part 93 and Title 30, Texas Administrative Code § 101.30 indicates that the proposed action is located in the City of Sheppard AFB, Wichita County, which is currently unclassified or in attainment of the National Ambient Air Quality Standards for all six criteria air pollutants. Therefore, General Conformity does not apply.

Although any demolition, construction, rehabilitation or repair project will produce dust and particulate emissions, these actions should pose no significant impact upon air quality standards. Any minimal dust and particulate emissions should be easily controlled by the construction contractors using standard dust mitigation techniques.

We recommend the environmental assessment address actions that will be taken to prevent surface and groundwater contamination.

Thank you for the opportunity to review this project. If you have any questions, please call Ms. Tangela Niemann at (512) 239-3786.

Sincerely,

A handwritten signature in black ink, appearing to read "Jim Harrison".

Jim Harrison, Director
Intergovernmental Relations Division



PUBLIC WORKS DEPARTMENT

August 25, 2010

Mr. Tony Ruhlman
North Wind Inc.
535 N. Pleasantburg Drive
Greenville, SC 29607

RE: Response to Environmental Assessment for Relocation of Air Force Explosive Ordnance Device Training

Mr. Ruhlman:

The following is offered in response to Colonel Hake's letter, dated 19 August 2010, regarding the above referenced topic. Each item will be addressed in the order as it appears in the letter with the City's response being italicized.

1. Potential Environmental Concerns or Issues.

The City is unaware of any potential environmental concerns or issues in the area of the proposed munitions training.

2. Surface and Groundwater Resources, Including Streams, Wetlands, Floodplains, Open Water Features, Wells, and Local Aquifers.

To the best of the City's knowledge there are no floodplains, wet lands, streams, or surface water features in the area. There is the potential that the Seymour aquifer underlies the site, however to the City does not utilize the aquifer as a water source and we are not qualified to determine if or how the proposed munitions training site will affect the aquifer.

3. Federally or State Listed Threatened or Endangered Species, or Any Species Proposed for Such Listing, or Critical Habitat for Such Species that May Occur Within a One-Mile Radius Around the Proposed Site.

To the best of the City's knowledge there are no federally or state listed endangered species in or around the proposed site.

CITY OF WICHITA FALLS

1300 7th Street • P.O. Box 1431 • Wichita Falls, Texas 76307 • t: (940) 761-7477 • f: (940) 761-6873
www.wichitafallstx.gov

4. Parks, Nature Preserves, Conservation Areas, Designated Wild or Scenic River, Migratory Bird Habitats, or Special Wildlife Issues.

To the best of the City's knowledge there are none of these issues associated with the site.

5. Natural Resource Issue.

To the best of the City's knowledge there are no natural resource issues associated with the site.

6. Traffic, Noise, or Socioeconomic Concerns.

The City's primary concern would be the noise generated from the projected 88 explosions per month associated with the site. However due to the site's remote location this concern is expected to be minimal. It is also anticipated that the design of the bunker will incorporate sound attenuating materials to the greatest extent possible to mitigate the noise generated from the site.

7. Air Quality Concerns.

To the best of the City's knowledge, currently, there are no air quality issues associated with the site. The City is not qualified to address any air quality concerns as it relates to the actual detonation of the munitions. The City would anticipate the USAF would be required to comply with all federal or state regulatory agency requirements as they relate to air quality of the proposed site.

If additional information is needed, please contact me at 940-761-7477, or by mail at the above address.

Sincerely,



Russell Schreiber, P.E.
Public Works Director

Cc: Darron Leiker
Kevin Hugman
Teresa Rose, P.E.

TEXAS HISTORICAL COMMISSION
real places telling real stories

September 8, 2010

North Wind, Inc.
ATTN: Tony Ruhlman
535 N. Pleasantburg Drive
Greenville, SC 29607

Re: Intergovernmental and Interagency Coordination of Environmental Planning (IICEP) for the proposed expansion and relocation of the Air Force Explosive Ordnance Device Preliminary Training Course from Lackland Air Force Base to Sheppard Air Force Base, Texas.

Dear Mr. Ruhlman:

Thank you for your correspondence describing the above referenced project. This letter serves as comment on the proposed undertaking from the State Historic Preservation Officer, the Executive Director of the Texas Historical Commission (THC).

The THC looks forward to the opportunity to comment further on your planned Environmental Assessment (EA) for the proposed project associated with the Air Force Explosive Ordnance Device Preliminary Training Course at Sheppard Air Force Base. Please note, in 2007, the THC concurred with the U.S. Air Force's (DOD) finding of eligibility for listing in the National Register of Historic Places, for the following structures at Sheppard AFB:

- The B-52 alert pads (apron)
- Building 2560
- Building 2130 (also known as "Little Adobe")

Should this proposed project's area of potential effect change to encompass eligible structures of archeological sites, or potentially eligible structures or archeological sites for inclusion in the NRHP, we look forward to consulting with you further on your eligibility determinations. In such a case, our agency would require a *Cultural Resources Section* within your EA report that includes, but is not limited to:

- A map (similar to the one you have included in the report cited above) indicating where the project is intended to extend in order to demonstrate the scope of work at the site
- A contextual history of the structures or archeological sites, if any, effected
- Historic photographs of each structure impacted by the Area of Potential Effect

Thank you once again for your cooperation in this state and federal review process, and for your efforts to preserve the irreplaceable heritage of Texas. If you have any questions concerning our review or if we may be of further assistance, please contact Mr. William McWhorter at 512/463-5833.

Sincerely,



for
Mark Wolfe,
Executive Director





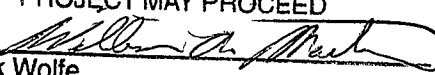
DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

RECD SEP 14 2010

September 9, 2010

Memorandum for F. Lawrence Oaks
Executive Director
Texas Historical Commission
1511 Colorado Street
Austin, TX 78701

FROM: 82 CES/DS2/CEV
231 9th Ave, Bldg 1402
Sheppard Air Force Base (AFB), TX 76833

NO HISTORIC PROPERTIES AFFECTED PROJECT MAY PROCEED	
by	
for Mark Wolfe	
State Historic Preservation Officer	
Date	10/4/10
Track#	33
201100884	

SUBJECT: "NO EFFECT" DETERMINATION ON HISTORIC PROPERTIES

Dear Sir:

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to consider the effects of their undertakings on historic properties and to consult with the State Historic Preservation Officer (SHPO) regarding the undertaking. We hereby initiate coordination and request concurrence regarding our "no effect" determination regarding the proposed action (described below and in the attachments) on historic structures in the project area that have been identified as eligible for listing in the National Register of Historic Places (NRHP).

AETC proposes to relocate the EOD Preliminary Course from Lackland AFB to Sheppard AFB. Implementation of the Proposed Action would require the construction of a 50 by 50 foot bunker at the existing range in the northwest end of the installation and pouring a concrete slab in the range area. Sheppard AFB has concluded that the proposed action would have "no effect" on historic properties. The two properties eligible for NRHP listing as Cold War resources on Sheppard AFB are not in the area of potential effect:

1. The Alert Apron (c. 1960), is located approximately 550 feet E of the proposed EOD range; and
2. Building 2560 (c. 1960), is located approximately 1800 feet SSW of the proposed EOD range.

An Environmental Assessment is being prepared in accordance with the National Environmental Policy Act of 1969, as amended, and your comments are solicited in accordance with Executive Order 12372, Intergovernmental Review of Federal Programs. A copy of the Draft Description of Proposed Actions and Alternatives (DOPAA) for the Expansion and Relocation of the Explosive Ordnance Disposal Preliminary Course to Sheppard Air Force Base

was delivered to your office on August 20, 2010. An additional copy is enclosed for your review.

We look forward to your concurrence with our "no effect" determination. If you have any questions, feel free to contact me at (940) 676-5721.

Sincerely,

A handwritten signature in black ink, reading "Stephanie D. Manry". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Stephanie D. Manry
Cultural Resource Manager

Attachment:

DOPAA

Figure 1. Statewide and Regional Map Showing the Location of Sheppard Air Force Base, Texas

Figure 2. 2008 Aerial Imagery of Sheppard Air Force Base, Texas.

Figure 3. Areas Included in the Proposed Action

cc:

HQ AETC/A7CAN w/Atch

[This version of the Notice of Availability was delivered to regulatory agencies with a CD containing the EA and FONSI on October 15, 2010]

NOTICE OF AVAILABILITY
DRAFT ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT FOR THE
EXPANSION AND RELOCATION OF THE EXPLOSIVE ORDNANCE DISPOSAL
PRELIMINARY COURSE TO SHEPPARD AIR FORCE BASE, TEXAS

Interested parties are hereby notified that the United States Air Force, Sheppard Air Force Base, Texas has completed a Draft Environmental Assessment (EA) that resulted in a Finding of No Significant Impact (FONSI) for the Explosive Ordnance Disposal (EOD) relocation and expansion project. The EA documents the proposed action components for the project – constructing a suitable bunker at the existing range in the northwest end of the installation, conducting a maximum of 88 training detonations of high-explosives (C4) per month (spread over four days each month), completing interior renovations to three buildings in the underutilized 82 Training Wing (TRW) Readiness Site, constructing a fence to enclose approximately two-acres in the 82 TRW Readiness Site area for training purposes, and permanently relocating 11 Air Force training staff to Sheppard AFB. The EA assesses alternatives to the proposed action, the affected environment, and impacts to the affected environment.

The Draft EA and FONSI, dated October 13, 2010, are available for review at the following location:

Wichita Falls Public Library
600 Eleventh Street
Wichita Falls, Texas 76301

The Draft EA and FONSI can also be accessed via the Sheppard AFB web site at: <http://www.sheppard.af.mil/>, or it can be downloaded directly at: <https://newafpims.afnews.af.mil/shared/media/document/AFD-101014-003.pdf>.

Public comments on the Draft EA will be accepted through November 1, 2010. Written comments and inquiries should be directed to Mr. George Woodward, Director – Public Affairs, 419 G Avenue, Suite G, Sheppard AFB, TX 76311-2943. Fax: 940-676-4245. Email: 82trwpa@sheppard.af.mil

**A CD containing the subject EA and FONSI is enclosed
for your review and comment.**