FINAL
ENVIRONMENTAL ASSESSMENT
FOR THE
MILITARY HOUSING
PRIVATIZATION INITIATIVE (MHPI)
DYESS AIR FORCE BASE, TEXAS

July 2011

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JUL 2011		**00-00-2011 to 00-00-2011**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Final Environmental Assessment for the Military Housing Privatization Initiative (MHPI) Dyess Air Force Base, Texas	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **Science Applications International Corporation,1710 SAIC Drive,McLean,VA,22102**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**78**	

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DYESS AIR FORCE BASE, TEXAS

July 2011

Printed on Recycled Paper

Finding of No Significant Impact

Dyess Air Force Base, Texas

Military Housing Privatization Initiative (MHPI)

Dyess Air Force Base (AFB) has prepared an Environmental Assessment (EA) that evaluates the potential environmental impacts associated with the implementation of the Military Housing Privatization Initiative (MHPI) at Dyess AFB.

Description of the Proposed Action – Section 2.2 of the EA

The United States Air Force, Air Combat Command, proposes to privatize its military family housing at Dyess AFB, Texas. The Proposed Action would involve the conveyance of up to 674 housing units distributed among seven parcels to a private developer. Conveyance would also involve utility connections from each housing unit to points of demarcation as identified by the Air Force. The land areas underlying the conveyed units would be leased to the developer for a period of up to 50 years. Also included in the Proposed Action is the lease of a 7-acre parcel, which includes the Housing Maintenance Facility, and a 14-acre ball park area. The developer would construct a combined housing office and community center with pool on the 7-acre parcel and a small community center with water play/splash park at the ball park area. The total leased area would be 362 acres distributed among nine parcels.

The National Defense Authorization Act of 1996 authorized the Department of Defense to engage private sector businesses through a process of housing privatization wherein private sector housing developers would renovate or demolish existing housing units, build new units, and provide the infrastructure needed to support such developments. The developer would own the units, lease the land from the Air Force, and collect rent from service members while providing maintenance and management.

Alternative 1 – Return of Ball Park to Air Force (Section 2.3 of the EA)

Alternative 1 would be the same as the Proposed Action, except the developer would construct the small community center and water play/splash park within the Frontier Meadows housing area. The 14-acre ball park area would be leased for a period of four years, and the developer would then demolish the existing parking lot and remove the ball park infrastructure at the 14-acre ball park area. Once demolition is completed to the satisfaction of the Government the developer would return this parcel to the Government.

No Action Alternative – Section 2.5 of the EA

Under the No Action Alternative, the Air Force would not implement the MHPI program at Dyess AFB and would manage and maintain existing housing in accordance with existing Air Force policy.

Environmental Consequences – Chapter 4 of the EA

Proposed Action

No significant impacts have been identified under the Proposed Action. There would be approximately 36,000 square feet of construction under the Proposed Action. Air emissions would be minor and short term. A Texas Pollutant Discharge Elimination System (TPDES) permit would be required, the elements of which would serve to minimize or offset any potential soil erosion issues. No construction would occur within wetlands, floodplains, or other water resources. No significant impacts associated with hazardous materials/waste have been identified. There would be no increases in generation of household and housing maintenance hazardous materials and waste, and these materials would continue to be managed according to Air Force and Dyess AFB policies and procedures. Environmental Restoration Program (ERP) Site SS-42 is located in the MHPI area near the existing Housing Maintenance Facility. Soil disturbance at this location would require testing and evaluation, and any contaminated soils would need to be disposed of according to TCEQ, Air Force, and Dyess AFB policies and procedures. Construction and demolition activities would generate approximately 485 tons of debris. This amount would not significantly impact the management capability or the overall life expectancy of nearby landfills. There would be slight increases in water consumption and electricity use resulting from the new swimming pool and water play/splash park. However, these increases are very small increase when compared with daily Dyess AFB water and electrical use.

Alternative 1 – Return of Ball Park to Air Force

Alternative 1 is similar to the Proposed Action, with the exception of the location of the small community center and water play/splash park. Construction would occur within the Frontier Meadows housing area, and the ball park would be returned to the Government. Impacts under Alternative 1 are similar to the Proposed Action. As a result, no significant impacts have been identified for Alternative 1.

No Action Alternative

The No Action Alternative would not result in any additional impacts to the environment beyond the scope of normal conditions and influences within the MHPI region of influence.

Public/Agency Review

The Air Force published a public notice in the *Abilene Reporter News* and the Dyess AFB newspaper (*The Sound of Freedom*) on 27-29 May 2011, inviting the public to review and comment upon the EA (available at the Hardin Simmons University Library in Abilene, TX and from the Dyess AFB Asset Management Office). The Air Force also provided the following agencies copies of the EA for review and comment: U.S. Environmental Protection Agency, Governor's Office of Budget and Planning, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, Texas Historical Commission, and the Texas Commission on Environmental Quality. The public comment and agency review period ended on 27 June 2011. On 30 June 2011 the Texas Parks and Wildlife Department concurred that no significant impacts would occur to sensitive species or other fish and wildlife resources. No other comments were received.

Restrictions/Requirements

Construction activities over 1 acre will require a TPDES permit. Construction of the Large Community Center/Housing Office would require soil testing and evaluation, and proper disposal of any identified contaminated soil.

Because the Proposed Action would include a construction footprint of greater than 5,000 square feet, the design requirements of *Unified Facilities Criteria (UFC) Low Impact Development 3-210-10* would also need to be implemented. UFC 3-210-10 provides the technical criteria, technical requirements, and references for the planning and design of applicable projects to comply with stormwater requirements under the Energy Independence and Security Act, Section 438. These requirements include implementation of low-impact development techniques designed to maintain site hydrology and mitigate the adverse impacts of stormwater runoff and nonpoint source pollution. Methodologies such as bio-retention areas, permeable pavements, cisterns/recycling, or green roofs would be utilized in the project design.

Conclusion

The attached EA was prepared pursuant to Title 32 Code of Federal Regulations (CFR) Part 989, *Air Force Environmental Impact Analysis Process,* and U.S. Council on Environmental Quality regulations (40 CFR 1500–1508) for implementing the procedural requirements of the National Environmental Policy Act. The finding of the EA is that implementation of the Proposed Action or Alternative 1 would not have significant impact on the human or natural environment. This Finding of No Significant Impact is hereby issued, and no environmental impact statement is required.

Teresa A. Clouse, Flight Chief
Asset Management, 7 CES/CEA

18 Jul 11
Date

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Acronyms, Abbreviations, and Symbols

ACAM	Air Conformity Applicability Model
AEP	American Electric Power
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFPD	Air Force Policy Directive
BMP	best management practice
C&D	construction and demolition
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CWA	Clean Water Act
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
FEMA	Federal Emergency Management Agency
FM	Farm-to-Market
FONSI	Finding of No Significant Impact
FONPA	Finding of No Practicable Alternative
HRMA	Housing Requirements and Market Analysis
HWF	Hazardous Waste Facility
I-20	Interstate 20
LBP	lead-based paint
lbs/ft^2	pounds per square foot
LEED	Leadership in Energy and Environmental Design
LID	low impact development
MFH	Military Family Housing
MGD	million gallons per day
MHPI	Military Housing Privatization Initiative
MILCON	military construction
MSW	municipal solid waste
N/A	not applicable
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NFA	no further action
OSHA	Occupational Safety and Health Administration
pCi/L	picocuries per liter
POTW	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Commission on Environmental Quality
TPDES	Texas Pollutant Discharge Elimination System
UFC	Unified Facilities Criteria
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	United States Code
USEPA	U.S. Environmental Protection Agency

1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force, Air Combat Command proposes to privatize its military family housing (MFH) at Dyess Air Force Base (AFB), Texas.

The MHPI Proposed Action would involve the conveyance of up to 674 housing units distributed among seven parcels to a private developer. Conveyance would also involve utility connections from each housing unit to points of demarcation as identified by the Air Force. The land areas underlying the conveyed units would be leased to the developer for a period of up to 50 years. Also included in the Proposed Action is the lease of a 7-acre parcel, which includes the Housing Maintenance Facility, and a 14-acre ball park area. The developer would construct a combined housing office and community center with pool on the 7-acre parcel and a small community center with water play/splash park at the ball park area. The total leased area would be 362 acres distributed among nine parcels. An alternative to the Proposed Action would involve the same activities described under the Proposed Action, except the 14-acre ball park area would be leased for a period of four years, then the developer would demolish the existing parking lot and remove the ball park infrastructure. Once demolition is completed to the satisfaction of the Government the developer, would return this parcel to the Air Force. Chapter 2 details the Proposed Action and alternatives.

The National Defense Authorization Act of 1996 authorized the Department of Defense (DoD) to engage private sector businesses through a process of housing privatization, wherein private sector housing developers would renovate or demolish existing housing units, build new units, and provide the infrastructure needed to support such developments. The developer would own the units, lease the land from the Air Force, and collect rent from service members while providing maintenance and management. Additional information and details regarding the Military Housing Privatization Initiative (MHPI) can be found on the DoD housing privatization website at: http://www.acq.osd.mil/housing.

The proposed privatization activities at Dyess AFB are part of a larger privatization effort that includes Moody Air Force Base, Georgia. Both bases are grouped together as part of a single privatization request for proposal. However, environmental and socioeconomic impacts associated with the privatization action are specific to each installation; therefore, impacts associated with privatization at each installation are analyzed separately for purposes of National Environmental Policy Act (NEPA) documentation.

1.2 LOCATION OF THE PROPOSED ACTION

Dyess AFB is located in the northeast corner of Taylor County, Texas, within the city of Abilene, Texas. The installation occupies approximately 6,342 acres of land (including adjoining easements). Situated in the southwestern portion of the rolling plains of northcentral Texas, Dyess AFB is approximately 180 miles west of the Dallas-Fort Worth metro area. Nearby communities include the cities of Albany, 35 miles to the northwest; Brownwood, 78 miles southeast; San Angelo, 89 miles southwest; Sweetwater, 40 miles west; Lubbock, 165 miles to the northwest; and Tye, bordering the base to the north. Major transportation resources surrounding Dyess include U.S. Interstate 20 (I-20), running east-west, U.S. Highways 83/84 and 277, running north-south, and Abilene Regional Airport. Figure 1-1 shows the location of Dyess AFB and the surrounding area. Figure 1-2 shows the general location of housing areas.

1.3 PURPOSE AND NEED FOR THE ACTION

The purpose of the Proposed Action is to provide access to safe, quality, well-maintained housing in a community where Air Force members and their families will choose to live, a community consisting of neighborhood settings that include amenities such as common areas and recreational opportunities. Determining the specific need for required housing at Dyess AFB involved estimating the number of appropriate private sector housing units available to military families within 20 miles, or a 60-minute commute. To accomplish this, a Housing Requirements and Market Analysis (HRMA) was conducted for Dyess AFB in September 2008 to identify the housing units available to military members in the private community and determine the number of units that the Air Force needs to provide at Dyess AFB. The total MFH requirement for Dyess AFB factored in shortfalls in the available private sector housing, resulting in a military housing requirement on Dyess AFB of 797, with a "Smart Scope" reduction to a 674-unit requirement.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This Environmental Assessment (EA) identifies, describes, and evaluates the potential environmental impacts that may result from the implementation the MHPI under two action alternatives, as well as a no action alternative. As appropriate, the affected environment and environmental consequences of the action alternatives may be described in terms of site-specific descriptions or regional overview. Finally, this document identifies measures that would prevent or minimize environmental impacts.

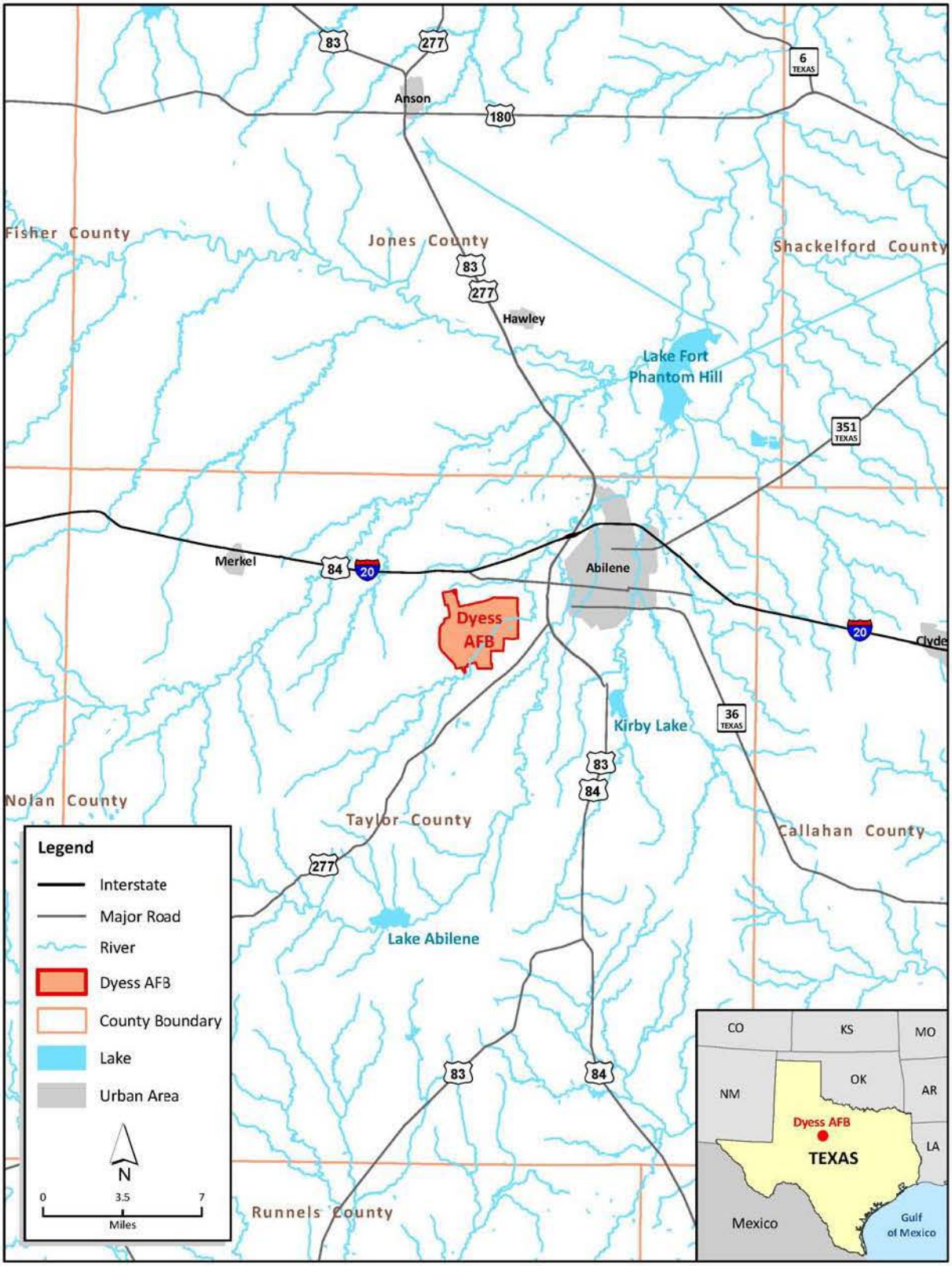

Figure 1-1. Location of Dyess AFB, Texas

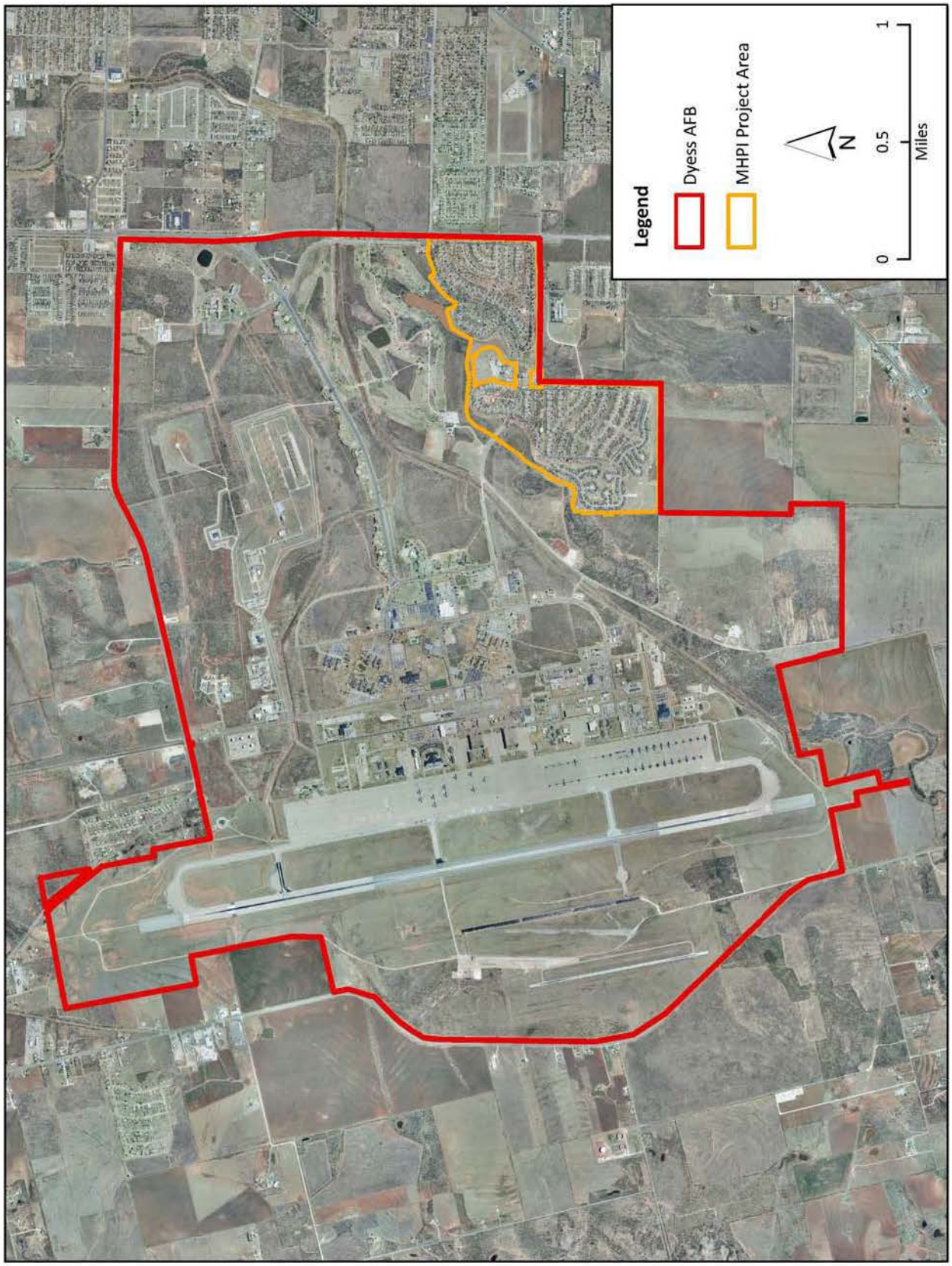

Figure 1-2. Location of Housing Areas at Dyess AFB, Texas

Federal agencies are required to consider the environmental consequences of proposed actions in the decision-making process under NEPA, 42 United States Code (USC) 4321, et seq. The Council on Environmental Quality (CEQ) was established under NEPA, 42 USC 4342, et seq., to implement and oversee federal policy in this process. In 1978, the CEQ issued regulations implementing the NEPA process under Title 40, Code of Federal Regulations (CFR), Parts 1500–1508. The CEQ regulations require that the federal agency considering an action evaluate or assess the potential consequences of the action or alternatives to the action, which may result in the need for an EA or environmental impact statement. Under 40 CFR:

- An EA must briefly provide sufficient evidence and analysis to determine whether a finding of no significant impact (FONSI) or environmental impact statement (EIS) should be prepared.
- An EA must facilitate the preparation of an EIS if required.

The proposed activities addressed within this document constitute a federal action and, therefore, must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action must include the development of an EA to address the environmental issues related to the proposed activities. The Air Force Environmental Impact Analysis Process (EIAP) is accomplished by following the procedures set forth in CEQ regulations and 32 CFR 989, Air Force Environmental Impact Analysis Process.

The following environmental features were identified for analysis in this EA: air quality, water resources, soils, hazardous materials and waste (includes Environmental Restoration Program [ERP] sites), utilities, and solid waste.

1.4.1 Issues Not Carried Forward for Detailed Analyses

Issues with minimal or no impacts were identified through a preliminary screening process. The following describes those issues not carried forward for a detailed analysis, along with the rationale associated with their elimination.

Cultural Resources: Based on interviews with Dyess AFB personnel and survey information in the installation's *Integrated Cultural Resources Management Plan*, no historical, archaeological, or tribal resources are located within or adjacent to the proposed Dyess AFB MHPI action areas (Walton, 2011; U.S. Air Force, 2006). As a result, no impacts to cultural resources are associated with implementing the Proposed Action.

***Biological Resources*:** Based on interviews with Dyess AFB personnel and survey information in the installation's *Integrated Natural Resources Management Plan*, no threatened, endangered, or species of concern are located within or adjacent to the proposed Dyess AFB

MHPI action areas (Walton, 2011; U.S. Air Force, 2006a). Additionally, the housing areas are all improved areas that do not provide habitat for wildlife species, and no unimproved areas are proposed for development. As a result, no impacts to biological resources would result from implementing the Proposed Action.

***Land Use*:** All action areas associated with the MHPI at Dyess AFB are either currently utilized for housing or are improved grounds used for purposes similar to the expected final disposition under the Proposed Action (U.S. Air Force, 2010a). As a result, the Air Force does not anticipate changes in land use designations associated with MHPI; thus, no impacts to internal or adjacent land use would occur.

***Transportation*:** In the housing areas, no changes in current installation transportation infrastructure would occur, and a minimal increase in personnel and associated traffic would occur under the MHPI (six base housing office personnel would be relocated to the new housing office). Intermittent, localized traffic delays from construction/demolition/renovation associated with MHPI activities may occur, but only until completion of proposed activities. As a result, the Air Force does not anticipate any significant impacts to Dyess AFB transportation.

***Safety and Occupational Health*:** No historical firing ranges have been identified within or adjacent to the proposed project areas (Sakai, 2011), and according to Dyess AFB Explosive Ordnance Disposal, no unexploded ordnance issues have been identified with the housing areas. Day-to-day construction operations and maintenance activities at Dyess AFB are conducted in accordance with applicable Air Force safety regulations, published Air Force technical orders, and standards prescribed by Air Force Occupational Safety and Health (AFOSH) requirements. For construction and demolition (C&D) activities on the installation, appropriate job site safety plans are required; these plans explain how job safety will be ensured throughout the life of the project. Construction and demolition workers are also required to follow applicable Occupational Safety and Health Administration (OSHA) requirements. Occupational health and safety would be governed by the terms of the contract, which may incorporate Air Force regulations and technical orders, AFOSH standards, and OSHA standards.

The developer would be required to use criteria for site design elements found in Unified Facilities Criteria (UFC) 4-010-01, *DoD Minimum Antiterrorism Standards for Buildings* (19 January 2007). Other design elements (such as gates, fences, setbacks, traffic patterns, lighting, and landscaping designs) would also be required, to minimize terrorist impacts, minimize access from surrounding communities, eliminate places of concealment, offer the most protection against crime, and discourage undesirable traffic. The Air Force does not anticipate impacts to safety or occupational health given required implementation of standard AFOSH/OSHA protocols and force protection standards.

***Noise*:** The noise environment at Dyess AFB is dominated by aircraft use. Construction and demolition activities associated with the MHPI would occur over a multiyear period. Thus, at any one time, several projects at multiple locations may be under way simultaneously. The

primary sources of noise during these activities would be truck and vehicle traffic, heavy earth-moving equipment, and other construction equipment or infrastructure powered by internal combustion engines used on-site. C&D noise would cause a temporary, short-term increase in the ambient sound environment. Workers associated with the construction activities would be expected to wear appropriate hearing protection as required by OSHA. C&D activities associated with the Proposed Action would be minimal and would occur during normal business hours. Therefore, no noise issues would arise during evening, early morning, or weekend hours. Additionally, C&D noise would not exceed USEPA benchmark annoyance levels (USEPA, 1974) more than 500 feet from the source; no noise-generating C&D activities would be conducted within 500 feet of any residences or other noise receptors. As a result, the Air Force does not anticipate significant noise impacts.

***Socioeconomics*:** The Proposed Action would involve only minimal C&D activities. While these actions would provide a small benefit to the local community if local labor is used, the short-term nature of the project would not result in any long-term socioeconomic benefit. No significant or adverse socioeconomic impacts would occur under the Proposed Action.

***Environmental Justice*:** Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to identify community issues of concern during the NEPA process, particularly those issues relating to decisions that may have an impact on low-income or minority populations. The MHPI and proposed C&D activities would occur within established areas of Dyess AFB and would not affect communities outside Dyess AFB in any appreciable manner, including low-income or minority populations. Therefore, the Air Force does not anticipate environmental justice impacts under the Proposed Action.

1.5 APPLICABLE REGULATORY REQUIREMENTS

1.5.1 Environmental Coordination and Public Review

EO 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of Interagency and Intergovernmental Coordination for Environmental Planning, the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate the potential environmental impacts of a proposed action. Comments from these agencies are subsequently incorporated into the EIAP. NEPA also requires that the Government provide the public with an opportunity to review and provide input on the proposal and the potential environmental consequences prior to the Government decision regarding a proposed action and alternatives.

The Air Force published a public notice in the *Abilene Reporter News* and the Dyess AFB newspaper (*The Sound of Freedom*) on 27-29 May 2011, inviting the public to review and comment upon the EA (available at the Hardin Simmons University Library in Abilene, TX and from the Dyess AFB Asset Management Office). The Air Force also provided the following agencies copies of the EA for review and comment: U.S. Environmental Protection Agency, Governor's Office of Budget and Planning, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, Texas Historical Commission, and the Texas Commission on Environmental Quality. The public comment and agency review period ended on 27 June 2011. On 30 June 2011 the Texas Parks and Wildlife Department concurred that no significant impacts would occur to sensitive species or other fish and wildlife resources. No other comments were received. Appendix A of the Final EA includes a copies of public/agency correspondence and the display advertisement.

1.5.2 Environmental Permitting/Coordination Requirements

A Texas Pollutant Discharge Elimination System (TPDES) permit would be required for construction activities that disturb more than 1 acre. This TPDES permit, issued by the Texas Commission on Environmental Quality (TCEQ), would require development of a stormwater pollution prevention plan (SWPPP) and implementation of associated best management practices (BMPs).

1.6 ORGANIZATION OF THE DOCUMENT

This EA follows the requirements established by CEQ regulations (40 CFR 1500–1508). This document consists of the following chapters:

1. Purpose and Need for Action
2. Description of Proposed Action and Alternatives
3. Affected Environment
4. Environmental Consequences
5. Persons and Agencies Contacted
6. List of Preparers
7. References

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

This chapter describes the process used by the Air Force to formulate alternatives for implementing the Proposed Action, the alternatives that the Air Force considered but did not carry forward, and the No Action Alternative. The potential environmental impacts of the Proposed Action and alternatives are summarized at the end of this chapter.

2.2 PROPOSED ACTION

The Proposed Action consists of activities associated with the overall proposal for the Air Force to implement the MHPI program at Dyess AFB. The Dyess AFB HRMA determined that the installation would require 674 housing units by Calendar Year 2010 (U.S. Air Force, 2008).

From 1995 to 2008, the Air Force added the Hunter's Mesa housing area and replaced housing constructed prior to 1995 through several military construction (MILCON) projects. Old housing was demolished and new units were constructed. The Proposed Action is to convey up to 674 units, as well as associated playgrounds, recreational facilities, carports, garages, sheds, fences, bus shelters, gazebos, refuse collection areas, and parking areas, to a private developer who would own and operate the housing units and associated infrastructure. Out of the 674 units, 501 would be conveyed "as is," while 173 would require minor maintenance and repairs. These housing units are distributed among seven parcels.

Also included in the Proposed Action is the lease of a 14-acre ball park area and a 7-acre parcel for the Housing Maintenance Facility. The developer would have the option of developing the ball park area in a manner suitable for Government use (e.g., recreational area) or demolishing the current infrastructure and returning the parcel to the Air Force within four years of project closing. The developer would be encouraged to provide desired features such as a community centers and a water park within the leased areas. The Air Force proposes to lease the land area under the housing neighborhoods (up to 362 acres) to the developer for a period of up to 50 years.

Table 2-1 summarizes the activities associated with the Proposed Action. Figure 2-1 shows the locations of activities associated with the Proposed Action and alternatives.

Table 2-1. Dyess AFB MHPI Proposed Action Housing Details

Existing Housing Area	Estimated Size of Lease (Acres)	Length of Lease (Years)	Number of Units Conveyed	Year Built	Conveyance Disposition
Patriot Acres	26	50	34	2007–2008	As is
Freedom Run	8		17		
Liberty Crossing	54		171		
Hunter's Mesa	91		173	1995	Minor maintenance/ repairs
Eagle Heights	33		34	2007–2008	As is
Frontier Meadows	97		160	2007–2009	
Lone Star Trails	32		85	2003	
Housing Maintenance Facility	7		0	1995	
Ball park area	14			N/A	
Total	**362**		**674**		

N/A = not applicable

The minor maintenance and repairs of the 173 Hunter's Mesa units would involve the following:

- Replacing name signs and corroded mailboxes in Hunter's Mesa
- Updating kitchen and bathroom materials in Hunter's Mesa, such as installing corian counter tops, faucets, sinks, light fixtures, etc.
- Increasing attic insulation in Hunter's Mesa to achieve R-30 or 40 rating
- Replacing unit fencing at Hunter's Mesa

In addition to the activities discussed above, the following new facilities and housing unit renovations are included in the MHPI as desired features. The Air Force desires that new facilities and renovation features are designed and constructed such that they are capable of achieving "Leadership in Energy and Environmental Design (LEED) for New Construction" Silver certification or above:

<u>New Facility Construction</u>

- Consolidated housing office and community center with pool, fitness room, business center, outdoor center, outdoor gazebo with large gas BBQ, and tennis courts near the existing Housing Maintenance Facility.
- Smaller community center near Hunter's Mesa.

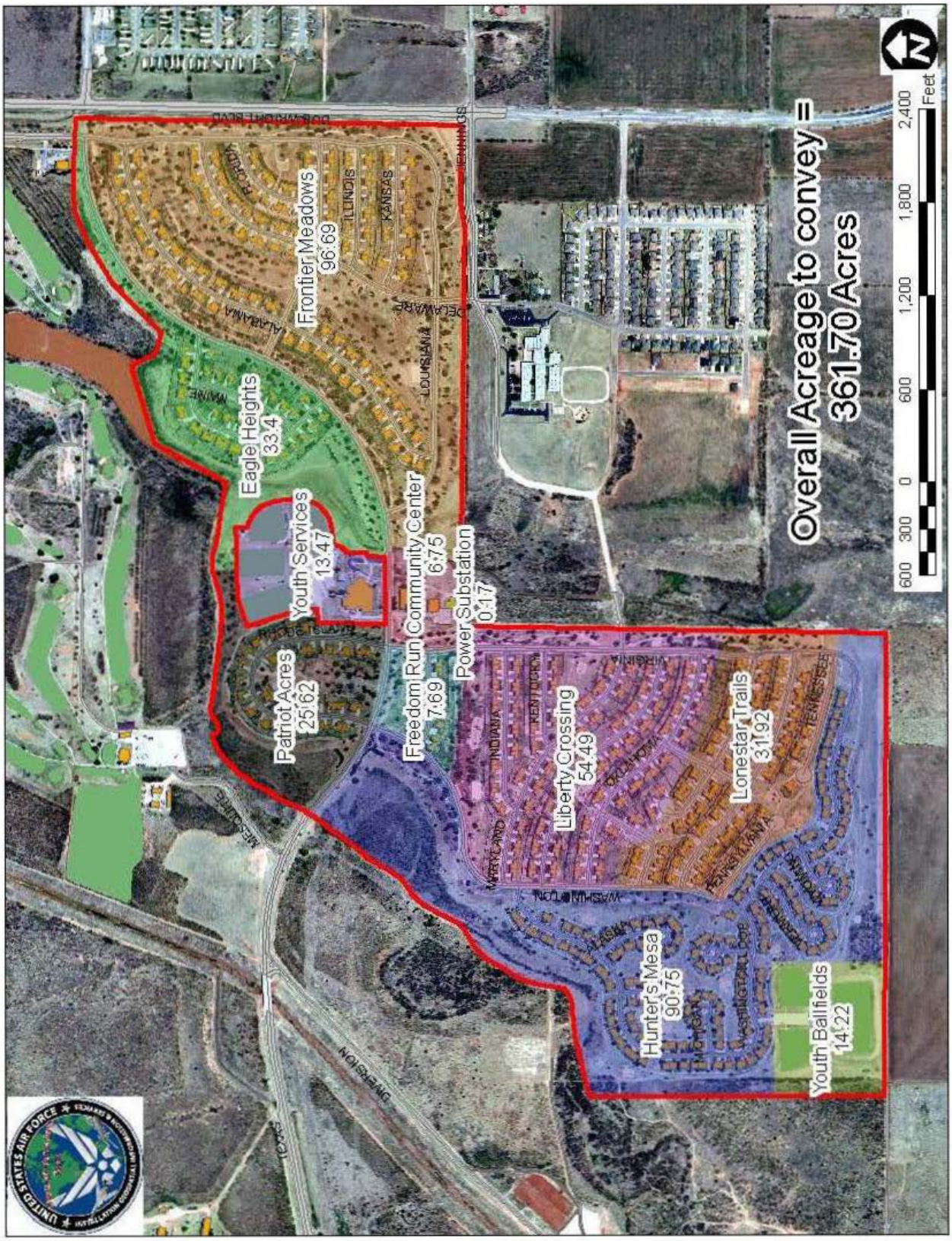

Figure 2-1. Project Activities Associated with MHPI at Dyess AFB, Texas

- Water play/splash park at ball field near Hunter's Mesa. A splash park is a zero-depth play area where water sprays from structures or ground sprays and then is drained away before it can accumulate. The splash park would include a nonporous surface with several water-spraying mechanisms, water drainage and recirculation/disinfection features, and a playground with enclosed play structures, swings, and slides.
- Shade structures for existing play equipment.

Housing Unit Renovations

- Increase size of senior officer patios and install patio ceiling fans and patio foundation lights.
- Install solar-powered accent lighting.
- Install ceramic or vinyl tile flooring in high-traffic or wet areas, e.g., kitchen and bathrooms.
- Add recycle/bulk trash collection area.
- Install ceiling fans with light fixtures.
- Install programmable thermostats.
- Install built-in microwave ovens.

The developer would be encouraged to provide these facilities and renovations as part of the development plan (Table 2-2). At this time, the size the desired facilities is not known. As a result, for purposes of analysis, the Air Force has made assumptions regarding the size of desired features based on typical standard-sized facilities.

Table 2-2. Proposed Action Potential Desired Feature Construction

Desired Feature	Number of Items	Estimated Square Footage[a]	Potential Location
Large community center / housing office	1	15,000	Near existing housing maintenance office
Small community center	1	7,000	Hunter's Mesa
Water play/splash park	1	12,000[b]	Hunter's Mesa
Shade structures	15	100	Throughout housing areas
	Total	***35,500***	

a. Based on typical standard-sized facilities.
b. Based on a water play/splash park at Fort Lewis, Washington.

2.3 ALTERNATIVE 1 – RETURN OF BALL PARK TO AIR FORCE

Alternative 1 would be the same as the Proposed Action, except the developer would construct the small community center and water play/splash park within open space of the Frontier Meadows housing area, north of Louisiana Avenue. The 14-acre ball park area would be leased for a period of four years, and the developer would then demolish the existing parking lot and remove the ball park infrastructure at the 14-acre ball park area. Once demolition is completed to the satisfaction of the Government, the developer would return this parcel to the Air Force.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

Since all of the housing units that would be owned and operated under privatization are relatively new (constructed since 1995), alternatives associated with developing new housing areas were not considered as part of the MHPI. No other alternatives to MHPI have been identified at Dyess AFB that would meet the purpose and need of MHPI.

2.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, the Air Force would not implement the MHPI at Dyess AFB and would manage and maintain existing and newly constructed housing in accordance with existing Air Force policy.

2.6 ALTERNATIVE SUMMARY

Table 2-3 lists the current housing areas, estimated acreage, lease lengths, conveyance conditions, and construction details under the Proposed Action and Alternative 1.

Table 2-3. Alternative Summary

Proposed Action and Alternative 1					
Existing Housing Area	**Estimated Size of Lease (Acres)**	**Length of Lease (Years)**	**Number of Units Conveyed**	**Year Built**	**Conveyance Disposition**
Patriot Acres	26	50	34	2007–2008	As is
Freedom Run	8		17		
Liberty Crossing	54		171		
Hunter's Mesa	91		173	1995	Minor maintenance/ repairs
Eagle Heights	33		34	2007–2008	As is
Frontier Meadows	97		160	2007–2009	
Lone Star Trails	32		85	2003	
Housing Maintenance Facility	7		0	1995	
Ball park area	14	4 or 50[a]		N/A	
Total	**362**		**674**		

Construction Activity				
Desired Feature	**Number of Items**	**Estimated Square Footage[a]**	**Potential Location**	
			Proposed Action	**Alternative 1**
Large community center	1	15,000	Housing Maintenance Facility	
Small community center	1	7,000	Hunter's Mesa	Frontier Meadows
Water play/splash park	1	12,000[b]		
Shade structures	15	100	Throughout housing areas	
		Total: ***35,500***		

a. Under the Proposed Action, the ball park area would be leased for 50 years. Under Alternative 1, no later than four years after transaction closing, or upon successful completion of the demolition of the parking lot and other improvements, the lease would be terminated and the parcel would be returned to the Government unless the developer proposes a use for the parcel that is acceptable to the Government.

b. Based on typical standard-sized facilities.

Table 2-4. Alternative Impact Summary and Comparison

Resource / Issue Area	Alternatives		
	Proposed Action	**Alternative 1**	**No Action**
Air quality	No significant impacts would occur under the Proposed Action. Construction activities would cause a temporary increase of less than 1 percent of the region's criteria pollutant emissions level (significance threshold is 10 percent of the county's emissions).	No significant impacts would occur under Alternative 1. Construction and demolition activities would cause slightly higher emissions than the Proposed Action. Emissions would be less than 1 percent of Taylor County emissions and would be temporary.	The No Action Alternative would not result in any additional impacts to the environment beyond the scope of normal conditions and influences within the MHPI region of influence.
Water resources	No significant impacts to water resources have been identified. No construction activities would occur within wetlands, floodplains, or other water resources. Construction of desired features would disturb more than 1 acre and therefore require a TPDES permit and implementation of permit-related BMPs, including development of an SWPPP.		
Soils	No significant impacts to soils have been identified. Construction activities may result in minor, site-specific soil erosion issues. However, these impacts would be short-term, and implementation of TPDES permit and SWPPP requirements would serve to further minimize or offset any potential erosion issues.		
Hazardous materials/waste	No significant impacts associated with hazardous materials/waste have been identified. There would be no increases in generation of household and Housing Maintenance hazardous materials and waste, and these materials would continue to be managed according to Air Force and Dyess AFB policies and procedures. ERP Site SS-42 is located in the housing area near the existing Housing Maintenance Facility. Soil disturbance at this location would require testing and evaluation and any contaminated soils would need to be disposed of according to TCEQ, Air Force, and Dyess AFB policies and procedures.		
Solid waste	Construction and demolition activities would generate approximately 485 tons of debris. This amount would not significantly impact the management capability or the overall life expectancy of nearby landfills.		
Utilities	No significant impacts to utilities have been identified. There would be slight increases in water consumption and electricity use resulting from the new swimming pool and water play/splash park. However, these increases would be very small when compared with daily Dyess AFB water and electrical use.		

AFB = Air Force Base; BMP = best management practice; ERP = Environmental Restoration Program; MHPI = Military Housing Privatization Initiative; SWPPP = Stormwater Pollution Prevention Plan; TCEQ = Texas Commission on Environmental Quality; TPDES = Texas Pollutant Discharge Elimination System

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3. AFFECTED ENVIRONMENT

This chapter provides details regarding the resource areas potentially affected by the Proposed Action and Alternatives. Resources discussed include air quality, water resources, soils, hazardous materials and waste, solid waste, and utilities.

3.1 AIR QUALITY

Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions. The levels of pollutants are generally expressed on a concentration basis in units of parts per million or micrograms per cubic meter.

The baseline standards for pollutant concentrations are the National Ambient Air Quality Standards and state air quality standards (TCEQ, 2011). These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare.

3.1.1 Affected Environment

Dyess AFB is located east of Abilene in Taylor County, Texas. According to USEPA, Taylor County is in attainment for all criteria pollutants (USEPA, 2011).

The Proposed Action and alternatives will be compared to Taylor County emissions obtained from USEPA's 2002 National Emissions Inventory (NEI); this is the latest available data. These data are presented in Table 3-1. The county data include emissions from point sources, area sources, and mobile sources. *Point sources* are stationary sources that can be identified by name and location. *Area sources* are point sources whose emissions are too small to track individually, such as a home or small office building or a diffuse stationary source, such as wildfires or agricultural tilling. *Mobile sources* are any kind of vehicle or equipment with gasoline or diesel engine, an airplane, or a ship. Two types of mobile sources are considered: on-road and non-road. On-road sources consist of vehicles such as cars, light trucks, heavy trucks, buses, engines, and motorcycles. Non-road sources are aircraft, locomotives, diesel and gasoline boats and ships, personal watercraft, lawn and garden equipment, agricultural and construction equipment, and recreational vehicles (USEPA, 2009).

Table 3-1. Baseline Emissions Inventory for Taylor County

Source Type	Emissions (tons/year)					
	CO	**NO_x**	**PM_{10}**	**$PM_{2.5}$**	**SO_2**	**VOCs**
Area source	819	307	19,101	2,447	442	3,607
Non-road mobile	7,420	1,186	84	79	101	656
On-road mobile	28,903	9,715	167	132	220	1,919
Point source	6.33	7.40	1.14	0.79	0.04	184.56
Total	***37,148***	***11,216***	***19,353***	***2,659***	***763***	***6,366***

Source: USEPA, 2002

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; SO_2 = sulfur dioxide; VOC = volatile organic compound

3.2 WATER RESOURCES

Water resources analyzed in this section include surface water and groundwater quantity and quality. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater resources include subsurface hydrologic resources of the physical environment and are an essential resource in some regions. Groundwater properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

Other issues relevant to water resources include the downstream water and watershed areas affected by existing and potential runoff, as well as hazards associated with 100-year floodplains. 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, the area subject to a one percent or greater chance of flooding in any given year" (that area inundated by a 100-year flood). Floodplain values include natural attenuation of floods, water quality maintenance, groundwater recharge, and habitat for many plant and animal species.

Section 404 of the Clean Water Act (CWA) established a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. Activities in waters of the United States that are regulated under this program include fills for development, water resource projects (such as dams and levees), infrastructure development (such as highways and airports), and conversion of wetlands to uplands for farming and forestry. EO 11990, *Wetlands Management,* requires all federal agencies to avoid negatively impacting wetlands whenever possible.

The region of influence (ROI) for water resources in this EA is the boundaries of Dyess AFB housing areas and surface water resources immediately adjacent to the housing areas.

3.2.1 Affected Environment

Surface Water

Dyess AFB is located in the semiarid region of west-central Texas. The area is generally dry, with summer precipitation coming as cellular and highly intense thunderstorms. Surface water stream flow in this area generally corresponds with precipitation events. During summer months, most streams experience periods of low or no base flow. During spring and winter months, the stream flow is generally higher and more constant due to increased precipitation.

Little Elm Creek flows through Dyess AFB (Figure 3-1). Surface waters on have been significantly altered during the history of the installation. During the 1950s the natural Little Elm Creek system was diverted and channelized. The primary flow of Little Elm Creek presently occurs in a large drainageway, located north of the historical channel, which enters the southwest corner of the base and flows northeast through the base. A tributary that flows from the northwest corner of the base has also been channelized. Through the channelization efforts, the hydrology of the historic Little Elm Creek has been eliminated and only a few depressional areas in the bed pond runoff. Additionally, the northern tributary to Little Elm Creek and a drainageway for the flightline have been lined with concrete for a fuel-spill retention system.

One unnamed tributary, which flows into Lake Totten on the golf course, drains the southeastern portion of the base, including the housing area, drop zone, and golf course. Lake Totten is a shallow man-made recreational water body and has a surface area of approximately 10 acres when full. When the lake is full, water exits over a spillway at the east end into Little Elm Creek. The second tributary drains the northern and northwestern portion of Dyess AFB and flows directly into Little Elm Creek. Little Elm Creek is a gaining stream as it flows through Dyess AFB, meaning the base flow of the creek is enhanced by the contribution of groundwater (U.S. Air Force, 2006).

The flow of surface water flow is readily discernible and controlled by man-made ditches and channels. Surface water from the industrial portion of Dyess AFB sheet flows off the flightline and other areas to be captured by the stormwater drains and diversion ditches channeled to flow into Little Elm Creek, which discharges into Big Elm Creek approximately 4 miles downstream, northeast of Dyess AFB. Big Elm Creek then discharges into Lake Fort Phantom Hill, located north of Abilene, and is considered suitable for recreational use, fish and wildlife propagation, and domestic use. Lake Fort Phantom Hill is the principal source of potable water supply for Abilene and Dyess AFB.

The city of Abilene and Dyess AFB obtain much of their municipal water supply from Lake Fort Phantom Hill. Therefore, Texas regulations require that point-source discharges into streams draining into Lake Fort Phantom Hill must not degrade the quality of the water in the reservoir to levels below the established standards. Dyess AFB has implemented a program for stormwater management, which is detailedin the installation's SWPPP (Dyess AFB, 2010). The

SWPPP complies with the TPDES permit requirements. The current TPDES General Permit for Dyess AFB will expire on 14 August 2011 (U.S. Air Force, 2010a).

Construction projects encompassing more than 1 acre of disturbed areas require a separate TPDES permit (U.S. Air Force, 2010a). Any construction projects that disturb more than 5 acres are required to have a SWPPP in place and obtain a stormwater permit by submitting a notice of intent (NOI) to TCEQ. Any construction disturbing greater than 1 acre but less than 5 acres requires a SWPPP but not an NOI (U.S. Air Force, 2010a).

Floodplains and Wetlands

Wetlands are "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." The 7 CES Environmental Section manages wetlands via the Wetlands Management Plan. Significant federal statutes and orders relative to wetlands management include Sections 401 and 404 of the CWA, as amended; EO 11990, Protection of Wetlands; EO 19; and EO 12372, Intergovernmental Review of Federal Programs. The U.S. Army Corps of Engineers (USACE) regulates impacts to wetlands under Section 404 of the CWA. No city, county, or state wetland ordinances or regulations are applicable. There are 12 sites on Dyess identified as jurisdictional wetlands, covering a total of 3.2 acres. A small wetland area is located along the northwest border of the Hunter's Mesa housing area (Figure 3-1).

The Floodplain Management Plan, a component of the base's Integrated Natural Resources Management Plan, defines 100-year floodplains as areas with a 1 percent chance of inundation in any given year. These floodplains provide for the natural control and conveyance of floodwaters and provide a number of water quality maintenance, cultural resource, and living resource values. Alteration and reduction of floodplains can lead to higher flow velocities and increased erosion as well as property damage and possible loss of life within the modified floodplain area and areas downstream. On Dyess AFB, substantial portions of low-lying areas along Little Elm Creek in the south and east, including portions of the golf course and areas within the MHPI area, are within the 100-year floodplain. This floodplain is associated with two features: the diversion ditches and Little Elm Creek. Figure 3-1 shows the location of floodplains associated with the proposed project area.

Federal agencies are subject to additional constraints under EO 11988, 1977, *Floodplain Management* (42 Federal Register 26951), with regard to development within the floodplain. Under EO 11988, federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. The EO stipulates that agencies proposing actions in floodplains consider alternative actions to avoid adverse effects, avoid incompatible development in the floodplains, and provide opportunity for early public review of any plans or proposals.

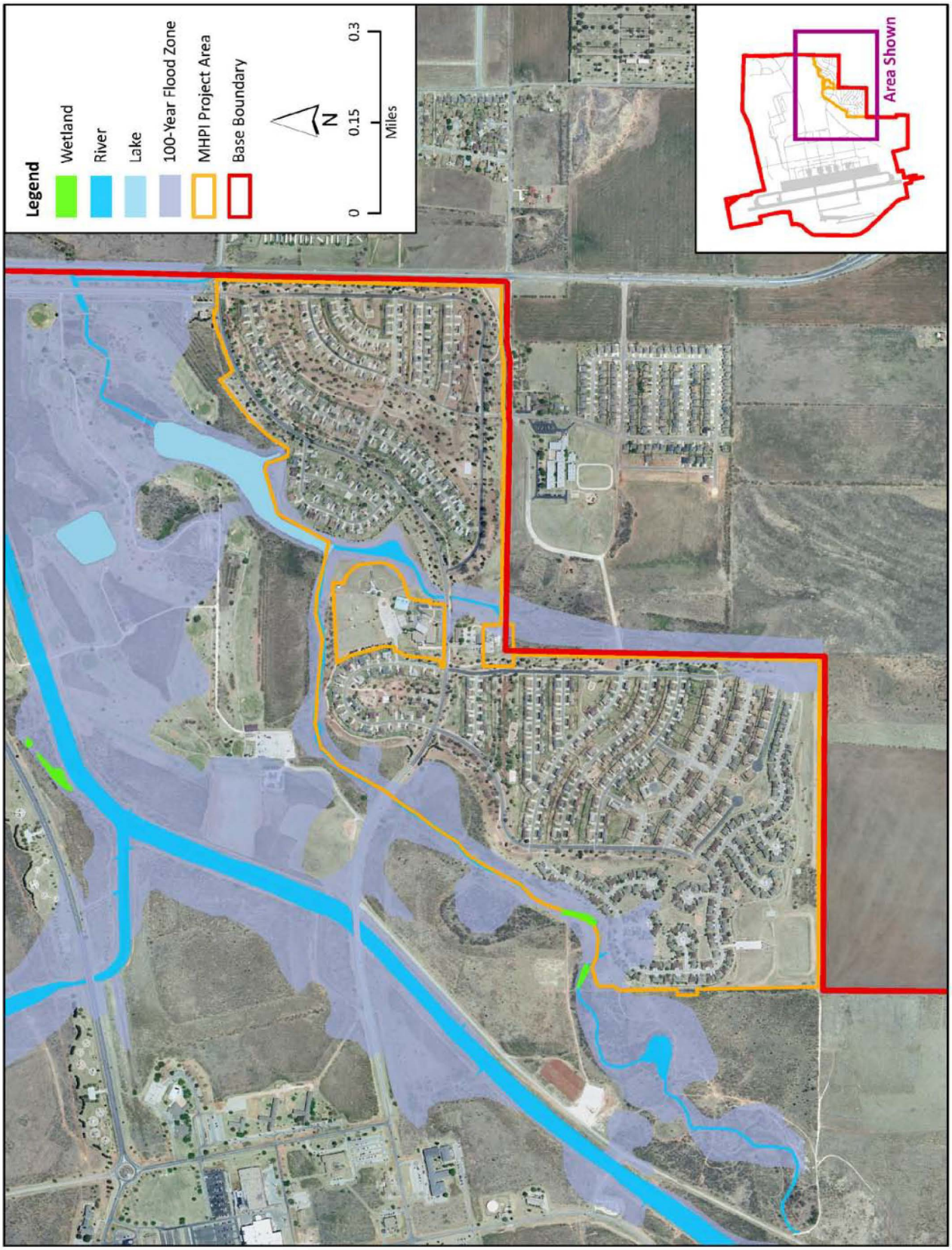

Figure 3-1. Water Resources at Dyess AFB

If adverse effects are unavoidable, the action agency must include mitigation measures in the action to minimize impacts. In addition, Section 3(d) of EO 11988 requires that "when property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal agency shall (1) reference in the conveyance those uses that are restricted under identified Federal, State or local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance." As a result, the contract between the Air Force and the MHPI developer would be required to include identification of floodplain areas and any associated land use restrictions.

3.3 SOILS

The term "soil" refers to unconsolidated materials overlying bedrock or other parent material. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability of the ground to support man-made structures and facilities, to provide a landscaped environment, and to control the transport of eroded soils into nearby drainages. In undeveloped areas, the quality and productivity of soil are a critical component of agricultural production. The ROI for soil resources includes the MHPI portion of Dyess AFB (Figure 3-1).

3.3.1 Affected Environment

A soil mapping unit represents an area dominated by one major kind of soil, or an area dominated by several kinds of soils (referred to as a *complex*). Each of the soil mapping units includes minor soils that may have different properties and limitations that can only be delineated on-site. The properties and limitations of the majority soil type in each mapping unit indicate the conditions and limitations found in the project area. The MHPI project area of includes six soil series and nine distinct soil mapping units (Figure 3-2). Characteristics of each soil series or soil mapping unit are summarized in Table 3-2.

Descriptions of soil series are derived from the Soil Survey of Taylor County, Texas (USDA, 1976), Official Series Descriptions of the Natural Resources Conservation Service (USDA, 2009), and the NRCS Web Soil Survey online data resource (USDA, 2011). In general, soils in the project area are deep, well drained, not prone to flooding or wind/water erosion, have moderate shrink-swell potential, and can corrode untreated steel due to their high lime content.

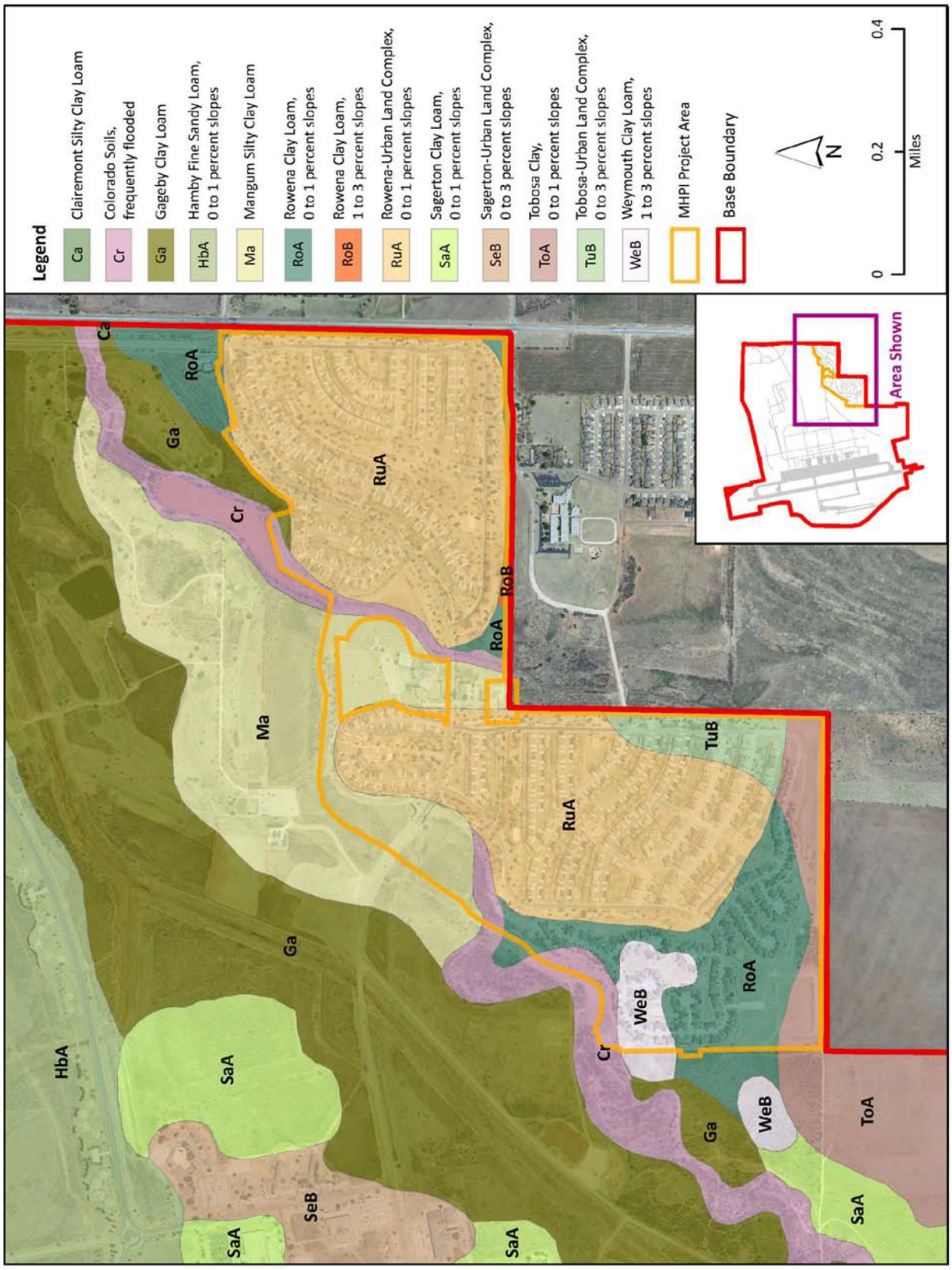

Figure 3-2. Soil Resources at Dyess AFB

Table 3-2. Properties of Soils in MHPI Project Area.

Soil Map Unit	Acres in Project Area	% of Project Area	Shrink-swell potential	Permeability	Surface Runoff	Flooding	Limitation for Development	Corrosion Risk: Uncoated Steel
Ca - Colorado Soils, frequently flooded	14.0	3.7	low	moderate	Low	frequent	very – flooding potential	high
Ga - Gageby clay Loam	0.9	0.2	low	moderate	very low	occasional	very – flooding potential	moderate
Ma - Mangum silty Clay Loam	37.0	10.2	moderate	very slow	High	occasional	very – flooding potential	high
RoA - Rowena clay loam, 0 to 1 percent slopes	48.4	13.6	moderate/ high	moderately slow	negligible	none	somewhat – shrink-swell potential	high
RoB - Rowena clay loam, 1 to 3 percent slopes	0.4	0.1	moderate/ high	moderately slow	very low	none	somewhat – shrink-swell potential	high
RuA - Rowena-urban land complex, 0 to 1 percent slopes	220.5	60.9	moderate/ high	moderately slow	negligible	none	somewhat – shrink-swell potential	high
ToA - Tobosa clay, 0 to 1 percent slopes	17.1	4.7	very high	very slow	Low	none	very – shrink-swell potential	high
ToB - Tobosa-urban land complex, 0 to 1 percent slopes	13.6	3.7	high	very slow	Low	none	very – shrink-swell potential	high
WeB - Weymouth clay loam	10.4	2.9	low	moderate	medium to rapid	none	somewhat – shrink-swell potential	moderate

3.4 HAZARDOUS MATERIALS AND WASTE

This section describes the affected environment associated with hazardous materials and hazardous wastes at Dyess AFB, including ERP sites. The terms "hazardous materials" and "hazardous wastes" refer to substances defined as hazardous by the Comprehensive Environmental Response, Compensation, and Liability Act and the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act (RCRA). The ROI for hazardous materials and waste is defined as the boundary of the MHPI area and encompasses areas that could be exposed to an accidental release of hazardous substances from construction activities and areas where hazardous materials would be utilized and hazardous wastes generated as part of the Proposed Action or alternatives.

In general, hazardous materials include substances that, because of their quantity, concentration, or physical, chemical, or infectious characteristics, may present substantial danger to public health or the environment when released. Hazardous wastes that are regulated under RCRA are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes that either exhibit one or more of the hazardous characteristics of ignitability, corrosivity, toxicity, or reactivity, or are listed as a hazardous waste under 40 CFR Part 261.

The affected resource also includes Air Force ERP sites. The ERP is used by the Air Force to identify, characterize, clean up, and restore sites contaminated with toxic and hazardous substances, low-level radioactive materials, petroleum, oils, lubricants, or other pollutants and contaminants. The ERP has established a process to evaluate past disposal sites, control the migration of contaminants, identify potential hazards to human health and the environment, and remediate the sites.

The affected resource does not include the potential presence of lead-based paint (LBP) or asbestos in structures. The use of LBP in housing ceased in 1978, while asbestos has not been significantly used in construction materials since 1987. A comprehensive survey for the presence of LBP or asbestos has not been conducted at housing units; however, all existing units, as well as the Housing Maintenance Facility, were constructed after 1994, limiting their potential to contain these materials.

Additionally, the affected resource does not include radon in structures. Air Force policy requires the implementation of a mitigation program to prevent exposure at indoor radon levels above 4 picocuries per liter (pCi/L). A radon assessment and mitigation program that surveyed 35 housing units did not find radon to be a concern at Dyess AFB (U.S. Air Force, 2004). Personnel confirm that radon has not been identified at concentrations that require mitigation at the installation (Tittlebaum, 2011). The affected resource also *does not include petroleum storage tanks*. There are no aboveground or underground storage tanks associated with housing areas.

3.4.1 Affected Environment

Hazardous Materials and Hazardous Waste

Housing areas contain no industrial facilities; however, residents may purchase cleaning supplies and other chemicals for personal use that contain constituents classified as hazardous materials. These products are typical of those found in a household and include small volumes of gasoline, motor oils, paints and thinners, small pesticides, cleaning solvents, and janitorial supplies. The use of these chemicals is not tracked by the installation, and the quantity stored of these materials is unknown.

Routine household hazardous wastes are generated in housing areas, including used batteries, pesticides, and paint-related products. Household hazardous wastes generated by those living in base housing may be turned in at the Abilene Environmental Recycling Center, located at 2209 Oak Street. Items accepted include oil and oil filters, antifreeze, brake fluid, transmission fluid, car batteries, car tires (for a fee), paint, fertilizers, pesticides, solvents, pool chemicals, hobby supplies, acids, cleaners, aerosol cans, and poisons. The items must be in the original container and the container must be in sound condition with original labels. Current policies prohibit maintenance of vehicles in housing areas, limiting these activities to the Auto Hobby Shop.

Hazardous materials, including petroleum, oils, lubricants, and paints, are also stored at the Housing Maintenance Facility (Building 11913). These materials are typically stored in metal flameproof cabinets employing integral secondary containment. Housing Maintenance Facility personnel also store used fluorescent lamps collected from housing units, as well as small quantities of used oil from minor on-site equipment maintenance. These wastes are managed in accordance with the installation's Integrated Waste Management Plan (URS, 2005c).

ERP Sites

The ERP at Dyess AFB began in 1984 with a basewide records search that identified seven ERP sites for further investigation. Supplemental site assessments and investigations in the later 1980s and early 1990s have brought the total number of sites to 43. All Dyess AFB ERP sites have been closed effective 2 December 2008 under "no further action" decisions; six sites are undergoing long-term monitoring. The sites include storage tanks, oil/water separators, landfills, drainage areas, fire training areas, spill areas, and waste disposal pits. Primary contaminants in soil and water include fuels, waste solvents, and pesticides (URS, 2005a).

ERP Site SS-42, Background Boring Number 2, is located in the MHPI area as shown in Figure 3-3. This site was investigated as part of the RCRA permit as a background boring. The findings of this investigation included elevated levels of refrigerants, thought to be the result of incidental spillage from temporary storage of air conditioning units during remodeling. No further action was recommended in the investigation, and the site was not designated as a solid waste management unit (URS, 2005a). The site was closed in 1996 with the deed record stipulating future industrial use only, according to the Dyess AFB Management Action Plan (URS, 2005b). The site is currently a vacant lot and construction of residential structures would not be compatible with the property deed. Therefore, no housing would be constructed on this site, and no impact on the ERP site would occur. There are no other ERP sites located within housing areas.

3.5 SOLID WASTE

"Solid waste" is defined in Chapter 361 of the Texas Solid Waste Disposal Act as garbage, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, municipal, commercial, mining, and agricultural operations and from community and institutional activities. State regulations specify permit requirements for landfills and the types of waste landfills can accept. Wastes generated or requiring management under the Proposed Action would consist of C&D debris.

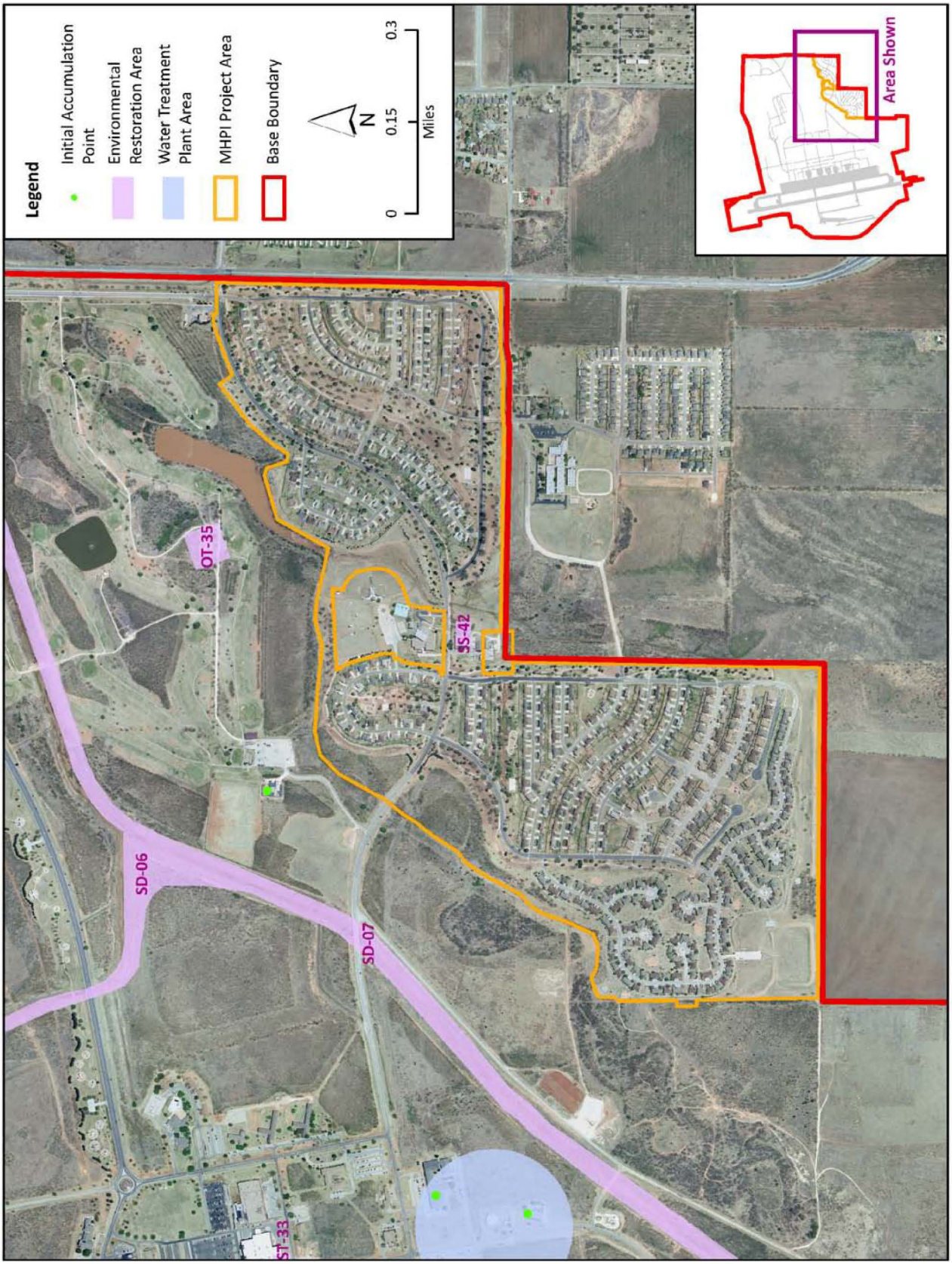

Figure 3-3. ERP Sites On or Near MFH Areas

Air Force regulatory requirements and management of solid waste are established by Air Force Policy Directive (AFPD) 32-70, Environmental Quality. AFPD 32-70 requires compliance with applicable federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by Air Force Instruction (AFI) 32-7042, Solid and Hazardous Waste. AFI 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan that addresses handling, storage, collection, disposal, and reporting of solid waste. AFI 32-7080, Pollution Prevention Program, contains the solid waste requirement for preventing pollution through source reduction, resource recovery, and recycling.

The ROI for solid waste includes Proposed Action areas, as well as regional landfills that would receive generated wastes.

3.5.1 Affected Environment

Collection and disposal of solid waste at Dyess AFB is conducted by a private contractor under the direction of the Civil Engineering Squadron and the Contracting Office. There are no on-base disposal facilities for municipal solid waste (MSW). Two on-base municipal landfills were used in the past, but both have been closed. All refuse and nonrecyclables, including food waste and construction wastes with no marketable value, are disposed at local landfills. Disposal of C&D debris generated during development activities at the installation is the responsibility the construction contractor.

MSW and C&D debris generated at Dyess AFB may be transported for disposal to the Abilene Environmental Landfill, located north of Abilene on Farm-to-Market (FM) Road 3034. The landfill began operation in January 2006. It has a projected life expectancy of approximately 60 years, with a disposal capacity of 700 tons per day (Knowles, 2011). MSW and C&D debris may also be disposed at the BFI Landfill, also located on FM 3034. This landfill, which has been in operation since 1983 and covers nearly 400 acres, has a projected life expectancy of approximately 200 years. The landfill has an average disposal rate of 700 to 800 tons per day (Grothaus, 2010).

3.6 UTILITIES

The utilities described and analyzed for potential impact resulting from the implementation of the MHPI include wastewater, potable water, and electricity. The description of the each utility focuses on existing infrastructure (e.g., wells, water systems, wastewater treatment plants), current utility use, and any predefined capacity or limitations as set forth in permits or regulations.

3.6.1 Affected Environment

Wastewater

Wastewater generated is a combination of both domestic flows originating from housing and administrative facilities and industrial flows mostly from flight line operations and maintenance facilities. Currently, no wastewater treatment is performed on Dyess AFB. The installation discharges its wastewater to the Abilene Publicly Owned Treatment Works (POTW).

Potable Water

Dyess AFB receives its potable water supply from the city of Abilene. Fort Phantom Hill Lake is the primary surface water source, although other surface water supply sources include O. H. Ivie Reservoir and Hubbard Creek Lake. Dyess AFB has a contract with the Abilene Water Department to supply 5 million gallons per day (mgd), but usage typically runs between 0.5 and 3 mgd, with a maximum summer usage of 4 mgd.

Water usage over the past two years has averaged 29 million gallons per month, with a high and low month of 56 and 18 million gallons, respectively. Water used for irrigation is not metered but likely accounts for much of the increase in water consumption on base during the warmer months. Dyess AFB has implemented the use of piped effluent water for irrigation of the golf course, which significantly reduces potable water consumption.

Electricity

The electrical distribution system consists of two American Electric Power (AEP), 69-kilovolt feeders serving three on-base AEP substations, one of which is adjacent to the MHPI area near the existing Housing Maintenance Facility.

There are approximately 400 pad-mounted transformers, typically in the new housing areas, and approximately 1,100 pole-mounted transformers, typically in the older housing and other areas. The distribution system is looped with approximately 26 percent of the primary and 53 percent of the secondary lines underground. The remainders of the lines are overhead, many on poles more than 40 years old. Cross-arm and pole replacement is a pressing need for the electrical distribution system. Approximately 110 poles were replaced in 1999, but the need continues for many that remain.

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4. ENVIRONMENTAL CONSEQUENCES

This chapter discusses the impacts of the Proposed Action and alternatives on the resource areas discussed in Chapter 3.

4.1 AIR QUALITY

4.1.1 Analysis Methodology

Construction activities would be the primary source of emissions under the Proposed Action and alternatives. This includes emissions from heavy construction machinery, semi-tractor trailer rigs, dust (particulate matter) from demolition, and vehicle exhaust from contracted employees' personal vehicles. For this analysis, a threshold on an individual pollutant-by-pollutant basis has been established. The individual pollutant emissions from the project would not exceed 10 percent of Taylor County emissions for each corresponding pollutant as represented in the USEPA 2002 NEI (U.S. Air Force, No Date).

To evaluate the air emissions and their impact to the overall ROI, emissions associated with the project activities were compared with the total emissions on a pollutant-by-pollutant basis for the ROI's 2002 NEI data. Potential impacts to air quality are identified as the total emissions of any pollutant that equals 10 percent or more of the ROI's emissions for that specific pollutant. The 10 percent criteria approach is used in the General Conformity Rule as an indicator for impact analysis for nonattainment and maintenance areas. Although Taylor County is in attainment, the General Conformity Rule's impact analysis was utilized to provide a consistent approach to assessing the impact of construction and aircraft emissions. To provide a more conservative evaluation, the impacts screening used a more restrictive criterion than required in the General Conformity Rule. Rather than comparing emissions from construction activities with regional inventories (as required in the General Conformity Rule), emissions were compared with the individual county (Taylor) potentially impacted, which is a smaller area.

A DoD-developed model, the Air Conformity Applicability Model (ACAM), used by the U.S. Air Force for conformity evaluations, was utilized to provide a level of consistency with respect to emissions factors and calculations. Emissions associated with C&D activities would be the main emissions generated by the Proposed Action and were the focus of the air analysis. Air quality issues associated with operational activities at Dyess AFB after the completion of construction are not included in this evaluation.

4.1.2 Proposed Action

The Proposed Action includes the construction of large and small community centers, a water play/splash park, shade structures, and demolition of the ball park area. The use of large mobile equipment emissions are calculated and summarized in Table 4-1. The project impacts would be less than 1 percent of each of the criteria pollutants and would result in a short-term, temporary increase in emissions. No significant impacts to regional air quality would occur under the Proposed Action.

Table 4-1. Proposed Action Air Emissions Compared with Taylor County

Emission Activities	Emissions (tons/year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Construction Emissions	19.97	6.62	4.99	4.99	0.78	1.37
Point Source	0.12	0.14	0.01	0.01	0.00	0.01
Total	**20.09**	**6.76**	**5.00**	**5.00**	**0.78**	**1.38**
Taylor County	37,148.41	11,215.76	19,352.93	2,658.55	762.82	6,366.43
Percentage of County Emissions	***0.05%***	***0.06%***	***0.03%***	***0.19%***	***0.10%***	***0.02%***

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; SO_2 = sulfur dioxide; VOC = volatile organic compound

4.1.3 Alternative 1 – Return of Ball Park Area to Air Force

Alternative 1 is essentially the same as the Proposed Action with regard to construction. Under this alternative, the ball park would be demolished. Emissions from the demolition and construction activities are summarized in Table 4-2. Construction emissions would be temporary and would not exceed 10 percent of the county emissions. No significant impacts would occur to regional air quality with the implementation of Alternative 1.

Table 4-2. Alternative 1 Air Emissions Compared with Taylor County

Emission Activities	Emissions (tons/year)					
	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOCs
Construction/Demolition	19.97	6.62	7.29	7.29	0.78	1.37
Point Source	0.24	0.29	0.02	0.02	0.00	0.01
Total	**20.21**	**6.91**	**7.31**	**7.31**	**0.78**	**1.39**
Tayler County	37,148.41	11,215.76	19,352.93	2,658.55	762.82	6,366.43
Percentage of County Emissions	***0.05%***	***0.06%***	***0.04%***	***0.27%***	***0.10%***	***0.02%***

CO = carbon monoxide; NO_x = nitrogen oxides; PM_{10} and $PM_{2.5}$ = particulate matter with a diameter of less than or equal to 10 microns and 2.5 microns, respectively; SO_2 = sulfur dioxide; VOC = volatile organic compound

4.1.4 No Action Alternative

The No Action Alternative would not result in any additional impacts to air quality beyond the scope of normal conditions and influences within the ROI.

4.2 WATER RESOURCES

4.2.1 Analysis Methodology

Evaluation criteria for impacts associated with the Proposed Action and alternatives on water resources focus on whether the Proposed Action would do one or more of the following:

- Substantially affect water quality adversely
- Endanger public health by creating or worsening adverse health hazard conditions
- Threaten or damage unique hydrologic resources
- Violate established laws or regulations that have been adopted to protect or manage water resources of an area

Impacts of flood hazards related to proposed actions can be significant if such actions are in areas with high probabilities of flooding or in some way alter flood conveyance.

4.2.2 Proposed Action

Surface Waters

As indicated in Section 3.2, surface water drainages are adjacent to and flow through the housing areas (Figure 3-1). In addition, Lake Totten is located adjacent to the MHPI area. Under the Proposed Action, no new housing units would be constructed. Construction of the large community center/housing office may occur near drainages located near the existing housing maintenance office, and the small community center and water splash/play park may be constructed near a drainage located adjacent to the existing ball park area. Based on estimations, the Proposed Action would involve construction disturbing approximately 1 acre. However, this is an estimation. Should the developer propose actual construction activities that disturb more than 1 acre, a TPDES permit would be required. Under the TPDES permit, the developer would be required to implement BMPs as part of the SWPPP requirements. These BMPs would be required to mitigate any potential impacts to water resources resulting from the Proposed Action. While project-specific BMPs would be developed during the permitting process, general BMPs typically included in the SWPPP are:

- Adherence to all relevant DoD, Air Force, and state of Texas construction regulations/ specifications
- Avoidance of uncoated steel being directly exposed to soils due to potential for corrosion
- Installation of silt fencing and sediment traps
- Proper soil stockpiling methods (if dig and/or fill methods are used in construction)
- Revegetation of any disturbed areas as soon as possible, as appropriate

With application of BMPs as required, potential impacts to surface waters would be minimal, and no significant impacts would occur under the Proposed Action.

In December 2007, Congress enacted the Energy Independence and Security Act (EISA); Section 438 of this act establishes stormwater runoff requirements for federal development and redevelopment projects. In January 2010, the Deputy Under Secretary of Defense, Installation and Environment issued a memorandum directing DoD components to implement EISA Section 438 using low-impact development (LID) techniques. As a result, the policy has been incorporated into UFC 3-210-10, Low Impact Development. LID is a stormwater management strategy designed to maintain site hydrology and mitigate the adverse impacts of stormwater runoff and non-point source pollution. While the criteria and design standards in UFC 3-210-10 apply to all DoD construction, EISA Section 438 requirements apply to projects where the construction footprint is greater than 5,000 square feet. The overall design objective is to maintain predevelopment hydrology and prevent any net increase in stormwater runoff. Project site design options shall prioritize integrated management practices that are proven within the regional area and have the greatest cost benefit/ lowest lifecycle costs. Stormwater retention/reuse would typically include bio-retention areas, permeable pavements, cisterns/recycling, and green roofs. Since the proposed desired features are all greater than 5,000 square feet in size, requirements of the EISA would apply to the Proposed Action.

Floodplains and Wetlands

A small wetland area is located along the northwest border of the Hunter's Mesa housing area (Figure 3-1). No construction activities would occur within or near this wetland. However, there are several areas of floodplain within the MHPI project area, in particular running through the Eagle Heights housing area southward and bisecting the Frontier Meadows housing area and proposed large community center/housing office (Figure 3-1). Under the Proposed Action, EO 11988, *Floodplain Management*, Section 3(d) requires that "when property in floodplains is proposed for lease, easement, right-of-way, or disposal to non-Federal public or private parties, the Federal agency shall (1) reference in the conveyance those uses that are restricted under identified Federal, State or local floodplain regulations; and (2) attach other appropriate restrictions to the uses of properties by the grantee or purchaser and any successors, except where prohibited by law; or (3) withhold such properties from conveyance." As a result, the contract between the Air Force and the MHPI developer would be required to include identification of floodplain areas and any associated land use restrictions. New construction of desired features (e.g., large community center/housing office) under the Proposed Action would not occur within identified floodplain areas and no impacts to floodplains would occur.

4.2.3 Alternative 1 – Return of Ball Park Area to Air Force

Impacts under Alternative 1 would be similar to those described under the Proposed Action, except the construction of the small community center and water play/splash park would occur within the open space of the Frontier Meadows housing area north of Louisiana Avenue, as opposed to the ball park area. No floodplains, wetlands, or other surface water resources occur within this location (Figure 3-1).

4.2.4 No Action Alternative

The No Action Alternative would not result in any additional impacts to water resources within and adjacent to the MHPI project area beyond the scope of normal conditions and influences at these locations.

4.3 SOILS

4.3.1 Analysis Methodology

Minimization of soil erosion and the siting of facilities in relation to potential soil limitations are considered when evaluating impacts to soils. Generally, impacts can be avoided or minimized if proper construction techniques, erosion control measures, and structural engineering designs are incorporated into project development. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that exposes soil to wind or water erosion.

Proposed C&D activities would occur in previously developed areas at Dyess AFB. Soils in these areas have been disturbed by various construction activities related to the housing areas and the supporting infrastructure, such as roads and sidewalks. Therefore, impacts to the productivity of soils were not evaluated.

4.3.2 Proposed Action

Ground disturbance during construction and other related activities could result in soil erosion in the MHPI project area; however, soils located in the project area have little potential for both wind and water erosion. Some of the soil types present do limit development due to their characteristics. The use of BMPs and appropriate construction considerations would reduce any potential impacts from erosion during construction, and impacts to constructed features to a minimum.

The majority of activity associated with the Proposed Action would occur on Rowena-urban land complex soils and Rowena clay loam (Table 4-3). These soils, even though

they have been already developed, can present some challenges to construction, especially to residential development. Issues include cracking and shifting of structures due to shrink-swell potential (largely a function of high clay content), failure of uncoated steel pipes due to the calcareous (high lime content) nature of soils, drainage issues due to moderately slow permeability, and the lack of supporting capacity of the soils for roads.

Table 4-3. Soils in the Area of the MHPI Proposed Action

Soil Map Unit	*Acres in Project Area*	*% of Project Area*
RuA - Rowena-urban land complex, 0 to 1 percent slopes	220.5	60.9
RoA - Rowena clay loam, 0 to 1 percent slopes	48.4	13.6
Ma - Mangum silty Clay Loam	37.0	10.2
ToA - Tobosa clay, 0 to 1 percent slopes	17.1	4.7
Ca - Colorado soils, frequently flooded	14.0	3.7
TuB - Tobosa-urban land complex, 0 to 1 percent slopes	13.6	3.7
WeB - Weymouth clay loam	10.4	2.9
Ga - Gageby clay loam	0.9	0.2
RoB - Rowena clay loam, 1 to 3 percent slopes	0.4	0.1

As discussed previously, a TPDES permit would be required. Under the TPDES permit, the developer would be required to implement BMPs as part of the SWPPP requirements. These BMPs would also serve to mitigate any potential impacts to soils resulting from the Proposed Action. With application of BMPs as required, potential impacts to soil resources would be minimal, and no significant impacts would occur under the Proposed Action.

4.3.3 Alternative 1 – Return of Ball Park Area to Air Force

Conditions and potential environmental consequences under Alternative 1 would be the same as those of the Proposed Action, with the addition of 14 acres of development on Rowena-urban land complex soils, which would present challenges to construction due to shrink-well potential, lime content, and moderately slow permeability.

4.3.4 No Action Alternative

The No Action Alternative would not result in any additional impacts to soils within and adjacent to the MHPI project area beyond the scope of normal conditions and influences at these locations.

4.4 HAZAROUS MATERIALS AND WASTE

4.4.1 Analysis Methodology

The analysis focused on how and to what degree proposed activities would affect hazardous materials management and hazardous waste generation and management. The

analysis considered potential impacts related to hazardous materials and hazardous wastes for the following effects:

- Potential for increased likelihood of a release of hazardous materials (e.g., asbestos or lead from building demolition activities) that could contaminate soil, surface water, groundwater, or air. Analysis of proposed activities determined the potential for these releases and compared the results with the mitigation procedures currently in place. A significant impact would result if implementation of the proposed activities resulted in an uncontrolled release of hazardous materials with a potential to cause environmental damage.
- Potential for adverse impacts to an existing ERP site, such as disturbing the ground on a site identified as having contaminated soil or by causing damage to existing site remediation infrastructures (e.g., pumps and tanks). The evaluation included the identification and comparison of existing ERP sites location and status with the location and scope of proposed activities. In addition, the analysis compared site-specific conditions, such as the existence of land use controls against proposed activities to assess the extent of impacts that overlap existing ERP sites. A significant impact would be one that results in disturbance of an ERP site that would require remediation measures or regulator involvement.

4.4.2 Proposed Action

Hazardous Materials and Hazardous Wastes

Under the Proposed Action, common household chemicals would continue to be used and household hazardous wastes would be generated in housing areas. Hazardous materials and hazardous wastes would also continue to be stored and generated, respectively, at the Housing Maintenance Facility. Housing residents are provided with guidance for the storage and disposal of household hazardous waste, as well as information related to reporting any hazardous material/waste spills. Waste management activities at the Housing Maintenance Facility would continue to be conducted in accordance with the Integrated Waste Management Plan and other associated installation requirements.

New buildings, such as the proposed community centers, would be constructed utilizing normal construction methods, which would limit, to the extent possible, the use of hazardous materials. Petroleum products and other hazardous materials (e.g., paints and solvents) used during construction would be stored in proper containers, employing secondary containment as necessary to prevent and limit accidental spills. All spills and accidental discharges of petroleum products, hazardous materials, or hazardous waste would be reported and mitigated.

No significant impacts to hazardous materials/wastes are anticipated under the Proposed Action.

ERP Sites

ERP Site SS-42, Background Boring Number 2, is located in the MHPI area as shown in Figure 3-3. The site was closed in 1996 (URS, 2005b). The site is currently a vacant lot, and construction of residential structures would not be compatible with the property deed. The large community center/housing office would be constructed in this area but would not be considered residential. However, soils excavated would need to be tested and evaluated for the presence of any contamination and disposed of according to TCEQ, Air Force, and Dyess AFB policies and procedures. Provided these requirements are met, no significant impacts are anticipated. No other ERP sites are located within the MHPI areas.

4.4.3 Alternative 1 – Return of Ball Park Area to Air Force

Hazardous Materials and Hazardous Wastes

There would be no potential impacts to hazardous materials and hazardous wastes for Alternative 1 not already described under the Proposed Action. As a result, there would be no significant impacts to hazardous materials and hazardous wastes under Alternative 1.

ERP Sites

There are no potential impacts to ERP sites for Alternative 1 not already described under the Proposed Action. Therefore, there would be no significant impacts to ERP sites under Alternative 1.

4.4.4 No Action Alternative

The No Action Alternative would not result in any additional impacts associated with hazardous materials/waste and ERP sites within and adjacent to the MHPI project area beyond the scope of normal conditions and influences at these locations.

4.5 SOLID WASTE

4.5.1 Analysis Methodology

The analysis focused on how and to what degree the Proposed Action and alternatives would affect solid waste generation and management. The analysis methodology identified activities associated with the Proposed Action and alternatives and predicted the quantity of waste that would likely be generated from these activities. These data were compared with local capability for managing these wastes. A significant impact was defined as the generation of solid waste in quantities that could not be accommodated by the current management system.

That is, generation of waste in such a quantity that it would exceed the capacity of local landfills or would significantly affect the life expectancy of these landfills.

4.5.2 Proposed Action

Construction activities associated with the Proposed Action would result in the generation of C&D debris, including miscellaneous building debris and concrete and asphalt rubble. To estimate the quantity of C&D debris generated, the following waste generation rates were assumed in the analysis:

- Commercial construction C&D debris (in tons) = [(4.34 lbs/ft^2) x (square footage)] ÷ 2,000 pounds (USEPA, 2003)
- Demolition of paved areas C&D debris (in tons) = [(48.4.0 lbs/ft^2) x (square footage)] ÷ 2,000 pounds (USEPA , 2003)

Table 4-4 presents the resulting quantity of C&D debris generated from implementation of the Proposed Action. To estimate the maximum potential quantity of C&D debris generated, it was assumed that the contractor would demolish the ball park under this alternative.

Table 4-4. C&D debris Generated from Implementation of the Proposed Action

Feature	Construction Area (square feet)	Demolition Area (square feet)	C&D Weight (pounds)	C&D Weight (tons)
Large community center[1]	15,000	-	65,100	33
Small community center	7,000	-	30,380	15
Water play/splash park	12,000	-	52,080	26
Shade structures	1,500	-	6,510	3
Ball park area parking lot[2]	-	16,875*	816,750	408
		Total	**970,820**	**485**

1. Includes swimming pool
2. This represents an estimate of the square footage for the parking lot for the 14-acre ball park area. Other areas associated with the ball park are unpaved.

As the table shows, construction and demolition activities would generate approximately 485 tons of C&D debris. Assuming that all waste would be generated during the same year, this quantity represents less than the average daily disposal quantity at the Abilene Environmental Landfill or the BFI Landfill. Under Dyess AFB's Affirmative Procurement Program, contractors are encouraged to recycle materials discarded as waste as a result of demolition activities. Application of waste recycling practices would further reduce the quantity of C&D debris generated.

The quantity of C&D debris generated under the Proposed Action would not significantly impact the management capability or the overall life expectancy of nearby landfills.

4.5.3 Alternative 1 – Return of Ball Park Area to Air Force

Solid waste generation would be the same as that described under the Proposed Action. Consequently, no significant impacts to solid waste are expected under Alternative 1.

4.5.4 No Action Alternative

The No Action Alternative would not result in any additional impacts associated with solid waste beyond the scope of normal conditions and influences within the ROI.

4.6 UTILITIES

4.6.1 Analysis Methodology

This section discusses potential impacts to utilities, which include wastewater generation, potable water consumption, and electricity usage associated with the proposed project activities. Analysis focuses on assessing the ability of existing utility capacity to accommodate increased or decreased utilization, identifying potential problems related to connecting to existing utilities, and identifying coordinating and procedural requirements associated with establishing new utility infrastructure.

In general, housing area utilities are provided by the installation's utility system and local providers. MHPI at Dyess AFB would not result in a net change in the number of personnel living on the installation, and the only potential increase in utility usage would be associated with the new community centers, housing office, and water play/splash park. Existing utility infrastructure would be utilized to the greatest extent possible and, while there may be minor utility infrastructure work conducted at or near facilities being demolished and construction of a new housing office and community centers, no service interruption to residences would be anticipated.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, sets numerous federal energy requirements and goals that should be considered in the design, construction, and operation of the projects under the Proposed Action. These include increasing alternative and renewable energy use, pursuing cost-effective, innovative strategies to minimize consumption of energy, water, and materials within existing building systems, and identifying alternatives to renovation that reduce existing asset deferred maintenance costs. In addition, the developer would be contractually required to ensure that all homes and other facilities under the MHPI meet Energy Star guidelines for energy conservation and efficiency.

4.6.2 Proposed Action

Under the Proposed Action, a large community center with swimming pool and a water play/splash park would be constructed. While it is unknown at this time how large the swimming pool would be, for purposes of analysis it was assumed be an olympic-sized pool, 50 meters long, 25 meters wide, and a minimum of 2 meters in depth to about 12 meters in depth. This equates to approximately 88,287 cubic feet, requiring a minimum of 660,430 gallons of water. Initially, fresh municipal water is used to fill the system and after that, to replace water that is lost through overspray, evaporation, or from backwashing the filters.

For the water play/splash park, it is also unknown at this time the dimensions or type of facility that would be constructed. Every spray park requires water, electricity, and drainage. There are two types of water sources available for spray parks: a traditional direct supply potable water or recirculating treated water system. There are a number of elements that will affect the amount of water used, but efficient water consumption is a main priority in water park design; water consumption rates of each product used is an important consideration in order to control the amount of water the park uses in both potable and recirculating systems. Control systems and nozzles are an effective way to control total park consumption. When considering water sources, factors include:

- Size of the park
- Water availability
- Cost of water
- Number of hours per day and months per year the park will be operated
- Number of children anticipated using the park
- Available water pressure
- Number of structures and number spraying at a given time
- Duration of spray

A potable water supply that is reclaimed for use in irrigation and other uses is adequate for smaller parks and ensures a high-quality water source at all times, minimizing any health risks. By reclaiming the water for parks, schools, golf courses, cemeteries, residential irrigation, and many other uses, it helps to conserve high-quality groundwater for drinking. A recirculating system is more expensive but a better option for larger parks or areas with strict water policies. As with a swimming pool, fresh municipal water is used to initially fill the system and after that, to replace water that is lost through overspray, evaporation, or from backwashing the filters. With a recirculating system, water quality must adhere to strict safety guidelines and be closely monitored. Recirculating systems for spray parks differ slightly from those used in swimming

pool systems, in that they are required to filter and treat water at a much faster rate. By filtering and treating the water at an accelerated pace, the temperature in the holding tank is less likely to increase, thus eliminating the risk of bacteria growth. It is advisable that local health authorities approve any recirculating water system before installation occurs.

Drainage should be evaluated in the early stages of planning. Ample drainage can help prevent the collection of water, eliminate unsafe conditions for children, and help prevent corrosion.

For estimating water and electricity consumption, a study of water use for a water play/splash park in southern Ontario, Canada, estimated water and electricity usage for both a traditional and recirculating water play/splash park, as presented in Table 4-5. The water park consisted of a "frog pond" and a "water wall"; the study measured consumption during one full season of operation.

Table 4-5. Estimated Water and Electricity Use for Water Play/Splash Park

Play Park Type	Annual Water Use (Gallons)	Estimated Use (mgd)[1]	Annual Electricity Use (Kilowatts/hour)
Traditional direct supply potable water	4,157,276	0.027	31,474
Re-circulating treated water system	147,540	0.001	22,480

Source: Richmond Hill, 2010.

1. Assumes operation for 5 months per year, or approximately 155 days

As the Richmond Hill study shows, a traditional water play park utilizes a significant amount of water during one operational season (more than 4 million gallons), while a recirculating system uses only a fraction of that (0.027 mgd and 0.001 mgd, respectively). For perspective, Dyess AFB typically utilizes between 0.5 and 3 mgd with a maximum summer usage of 4 mgd.

Neither system would significantly impact water or electrical consumption rates at Dyess AFB. However, the recirculating system would be the better option for energy and resource conservation purposes.

4.6.3 Alternative 1 – Return of Ball Park Area to Air Force

Alternative 1 would be similar with regards to impacts to utility usage at Dyess AFB. As a result, no significant impacts would be anticipated.

4.6.4 No Action Alternative

The No Action Alternative would not result in any additional impacts to utility usage within and adjacent to the MHPI project area beyond the scope of normal conditions and influences at these locations.

5. CUMULATIVE IMPACTS

According to CEQ regulations, cumulative effects analysis should consider the potential environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects may occur when there is a relationship between a proposed action or alternative and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. The effects may then be incremental (increasing) in nature and result in cumulative impacts.

Actions overlapping with or in close proximity to a proposed action or alternative can reasonably be expected to have more potential for cumulative effects on "shared resources" than actions that may be geographically separated. Similarly, actions that coincide temporally tend have a greater potential for cumulative effects.

Analysis was conducted by first identifying past, present, and reasonably foreseeable actions as related to the ROI for the particular resource. Cumulative impacts were then identified if the combination of proposed MHPI actions and past, present, and reasonably foreseeable actions were to interact with the resource to the degree that incremental or additive effects occur.

The proposed privatization activities at Dyess AFB are part of a larger privatization effort that includes Moody Air Force Base, Georgia. Both bases are grouped together as part of a single privatization request for proposal. However, environmental and socioeconomic impacts associated with the privatization action are specific to each installation; therefore, impacts associated with privatization at each installation are analyzed separately for purposes of NEPA documentation. With respect to cumulative impacts, decisions regarding whether to implement the proposed action or alternatives at each installation versus a no action alternative may negatively impact the grouped privatization effort, in which case the Air Force would need to evaluate alternative means for implementing privatization at the other bases.

5.1 PAST, PRESENT, AND REASONABLY FORSEEABLE FUTURE ACTIONS

With regard to past, present, and reasonably foreseeable actions, the past actions most relevant to the cumulative impact analysis are associated with the redevelopment of the housing areas. All housing at the installation is less than 15 years old, and substantial ground disturbance occurred in the area from 1995 to 2009. However, the ground area within the MHPI areas has since recovered such that there is little evidence of ground disturbance (e.g., vegetation has been established).

At Dyess AFB, several ongoing and reasonably foreseeable actions are associated with base development and infrastructure improvements. The Dyess AFB General Plan (U.S. Air

Force, 2010b) identifies more than 50 infrastructure and capital improvement projects planned for the coming years. Only one capital improvement project has been identified within the housing areas (the Delaware Gate improvement project), and various infrastructure improvements may occur over time. These have the potential to result in incremental impacts when considered with construction projects associated with the MHPI Proposed Action and alternatives.

5.2 CUMULATIVE IMPACT ANALYSIS

5.2.1 Air Quality

Under the Proposed Action and Alternative 1, air quality impacts would not be significant and would be temporary. Depending on the timing of capital and infrastructure improvement projects occurring on Dyess AFB, there is the potential for incremental increases in fugitive dust and VOC emissions associated with construction activities. However, emissions from several, simultaneous projects are not likely to result in a temporary or long-term combined emission event that would result in exceedence of significance criteria. As a result, no significant cumulative impacts are anticipated.

5.2.2 Water Resources

Any construction projects at Dyess AFB would be required to follow TCEQ requirements for TPDES permitting and erosion control to minimize impacts to surface waters, wetlands, and floodplains. No significant impacts to any of these resources have been identified under the Proposed Action or Alternative 1. As per the Dyess AFB General Plan, proponents of all proposed actions must consider and document whether or not the proposed action may impact a wetland or floodplain. If these areas would be affected, alternatives to the proposed action must be identified. If no practical alternative to the wetland/floodplain location can be identified, the proponent must design or modify the proposed action to minimize harm to or within the wetland/floodplain. Air Force Policy requires completion of a finding of no practicable alternative (FONPA), which must be signed at command level. A FONPA is applicable for all waters of the U.S., including wetlands and floodplains.

Site plans must be configured to minimize the area of wetlands filled, provide vegetation buffer areas along the perimeter of wetlands, and control soil erosion. Mitigation can include restoration of temporarily disturbed wetlands, creation of new wetlands, restoration of previously modified wetlands, or enhancement of degraded wetlands.

For floodplains, minimization of harm could include elevating the proposed structure, using flood-resistant construction materials, or using detention structures to slow runoff and encourage infiltration. Projects with potential encroachments into regulated floodplains require

coordination with the Federal Emergency Management Agency (FEMA), the regulatory authority responsible for granting floodplain development permits.

To the extent practicable, Dyess AFB would avoid any activities in wetlands or floodplains and significant cumulative impacts to these resources are not anticipated.

5.2.3 Soils

As with water resources, any developments would be required to comply with TCEQ and TPDES permitting and erosion control requirements. Implementation of SWPPP and permit requirements would necessarily minimize the potential for incremental impacts associated with soil erosions. Since the proposed construction projects under MHPI are minimal and any potential impacts would be short term, no significant cumulative impacts to soils are anticipated.

5.2.4 Hazardous Materials and Hazardous Waste

Dyess AFB has developed programs and procedures to comply with all federal, state, and local hazardous materials and hazardous waste management and reporting requirements. Any future actions would be required to comply with these programs and procedures. As a result, no cumulative impacts to hazardous material and hazardous waste management are anticipated.

5.2.5 Solid Waste

Dyess AFB is an active facility that will continue to generate solid waste in the form of MSW from personnel and C&D debris from facility upgrades, including construction, renovation, and demolition projects. Although specifics regarding the square footage associated with potential future projects cannot be quantified at this time, due to the large existing and future capacity at local landfills, no foreseeable cumulative impacts to solid waste resources have been identified.

5.2.6 Utilities

Dyess AFB plans several infrastructure and utility projects in the future. These projects would serve to enhance utility infrastructure and efficiency on the installation. Consequently, it is likely that there would be significant beneficial impacts to utility usage on the installation, despite the slight increase in consumption associated with the MHPI.

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6. PERSONS AND AGENCIES CONTACTED

Name	Title/Responsibility	Organization
Ray Grothaus	Manager	BFI Landfill, Abilene, TX
Roy Knowles	Manager	Abilene Environmental Landfill, Abilene, TX
Bryan Foreman	EIAP Manager	7 CES/ CEAN
Larry Eckert	Contract Programmer	7 CES/CEPD
Judy Overby	ERP Program Manager	7 CES/CEAN
Larry McMillon	Tanks Program Manager/ Asbestos/Lead-based Paint Program	7 CES/CEAN
Colette Saucier	Solid Waste and Facilities (former Real Property Manager)	7CES/CEOS
Gary Burling	Hazardous Waste Program Manager	7 CES/CEAN
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APPENDIX A

PUBLIC INVOLVEMENT

The Air Force published a public notice in the *Abilene Reporter News* and the Dyess AFB newspaper (*The Sound of Freedom*) on 27-29 May 2011, inviting the public to review and comment on the EA (available at the Hardin Simmons University Library in Abilene, TX and from the Dyess AFB Asset Management Office). The public comment and agency review period ended on 27 June 2011. No comments were received. Below is the display advertisement:

USAF ANNOUNCES AN ENVIRONMENTAL ASSESSMENT

The United States Air Force has issued a Finding of No Significant Impact based upon an Environmental Assessment (EA) evaluating the Military Housing Privatization Initiative (MHPI) at Dyess Air Force Base, Texas. The MHPI would involve the conveyance of up to 674 housing units distributed among several parcels to a private developer. The land areas underlying the conveyed units would be leased to the developer for a period of up to 50 years. The developer would construct a combined housing office and community center with pool and a small community center with water play/splash park. The total leased area would be 362 acres distributed among nine parcels.

Dyess Air Force Base plans to initiate this action 30 days from the date of this publication of the Finding of No Significant Impact. No copies of the EA will be available by mail. However, copies of the EA and draft Finding of No Significant Impact may be reviewed at the following locations:

On Base:
Asset Management Office
710 3rd St.
Dyess Air Force Base, TX 79607
7 CES/CEAN (NEPA Program Manager) (325) 696-6453
Hrs: 8AM to 4PM Monday through Friday

Off Base:
Hardin-Simmons University Library
2341 Hickory
Abilene, TX 79698
(325) 670-1236
Summer Hours:
M-W 8AM to 7PM
TH-F 8Am to 5PM
Sat 2PM to 5PM

The comment period for this EA is 30 days and runs from 27 May 2011 through 27 June 2011.

Please submit written comments to:

7 CES/CEAN (NEPA Program Manager)
710 3rd Street
Dyess AFB, TX 79607

The Air Force also provided the following agencies copies of the EA for review and comment: U.S. Environmental Protection Agency, Governor's Office of Budget and Planning, Texas Parks and Wildlife Department, U.S. Fish and Wildlife Service, Texas Historical Commission, and the Texas Commission on Environmental Quality. On 30 June 2011 the Texas Parks and Wildlife Department concurred that no significant impacts would occur to sensitive species or other fish and wildlife resources. The following are copies of the letters sent to these agencies, as well as any associated responses/comments.

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Dr. Alfredo Armendariz
Regional Administrator
U.S. EPA Region VI
1445 Ross Avenue, Suite 1200
Dallas, TX 75202

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

1. We are pleased to provide you the Draft Environmental Assessment (EA) for the MHPI at Dyess Air Force Base (AFB). The Proposed Action would involve the conveyance of up to 674 housing units distributed among seven parcels to a private developer. The land areas underlying the conveyed units would be leased to the developer for a period of up to 50 years. Also included in the Proposed Action are the leases of a 7-acre parcel (Housing Maintenance Facility) and a 14-acre parcel (ball park area). The developer would construct a combined housing office and community center with a pool on the 7-acre parcel and a small community center with water play/splash park at the ball park area. The total leased area would be 362 acres distributed among nine parcels.

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3. This document is provided in compliance with the regulations of the President's Council on Environmental Quality implementing the National Environmental Policy Act. Libraries should file this document for public access and reference until the public comment period has ended. Comments on the Draft EA are requested by 27 June 2011.

4. Please send comments and questions to:

7 CES/ CEAN (NEPA Program Manager)
710 3rd Street
Dyess AFB, TX 79607

David E. Laurence
DAVID E. LAURENCE, P.G.
Chief of Environmental

Attachment
Dyess AFB Draft MHPI EA

Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Ms. Denise Francis
Director, State Grants Team
Governor's Office of Budget and Planning
P.O. Box 12428
Austin, TX 78711

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

1. We are pleased to provide you the Draft Environmental Assessment (EA) for the MHPI at Dyess Air Force Base (AFB). The Proposed Action would involve the conveyance of up to 674 housing units distributed among seven parcels to a private developer. The land areas underlying the conveyed units would be leased to the developer for a period of up to 50 years. Also included in the Proposed Action are the leases of a 7-acre parcel (Housing Maintenance Facility) and a 14-acre parcel (ball park area). The developer would construct a combined housing office and community center with a pool on the 7-acre parcel and a small community center with water play/splash park at the ball park area. The total leased area would be 362 acres distributed among nine parcels.

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710 3rd Street
Dyess AFB, TX 79607

David E. Laurence

DAVID E. LAURENCE, P.G.
Chief of Environmental

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Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Ms. Celeste Brancel
Environmental Review Coordinator
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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710 3rd Street
Dyess AFB, TX 79607

David E. Laurence
DAVID E. LAURENCE, P.G.
Chief of Environmental

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Dyess AFB Draft MHPI EA

Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR USFWS
Ecological Services Field Office
10711 Burnet Road, Suite 200
Austin, TX 78758
Attn: Mr. Adam Zerrenner, Field Supervisor

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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Dyess AFB, TX 79607

David E. Laurence

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Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Texas Historical Commission
P.O. Box 12276
Austin, TX 78711-2276
Attn: Mr. Mark Wolfe, SHPO

FROM: 7 CES/ CEAN
710 Third Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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4. Please send comments and questions to:

7 CES/ CEAN (NEPA Program Manager)
710 3rd Street
Dyess AFB, TX 79607

David E. Laurence
DAVID E. LAURENCE, P.G.
Chief of Environmental

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Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Budget Planning and Policy Office
1100 San Jacinto
Austin, TX 78701
Attn: Mr. Toby Baker, Env. Policy Dir.

FROM: 7 CES/ CEAN
710 Third Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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Dyess AFB, TX 79607

/DAVID E. LAURENCE, P.G.
Chief of Environmental

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Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Ms. Winona Henry
Regional Director
Texas Commission on Environmental Quality
1977 Industrial Blvd
Abilene, TX 79602-7833

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

MEMORANDUM FOR Hardin-Simmons University Library
2341 Hickory
Abilene, TX 79698

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET
DYESS AIR FORCE BASE TEXAS 79607-1670

Texas Parks & Wildlife Dept.
MAY 26 2011
Wildlife Habitat Assessment Program

MEMORANDUM FOR Ms. Celeste Brancel
Environmental Review Coordinator
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

FROM: 7 CES/ CEAN
710 3rd Street
Dyess AFB, TX 79607

SUBJECT: Military Housing Privatization Initiative (MHPI) Environmental Assessment, Dyess Air Force Base, TX

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7 CES/ CEAN (NEPA Program Manager)
710 3rd Street
Dyess AFB, TX 79607

TEXAS PARKS & WILDLIFE
Based on the project description, the Wildlife Habitat Assessment Program does not anticipate significant adverse impacts to rare, threatened or endangered species, or other fish and wildlife resources.
Signed: Jillie C. Wicker
Date: 6/30/2011
HABH 16212

DAVID E. LAURENCE, P.G.
Chief of Environmental

Attachment
Dyess AFB Draft MHPI EA

Global Power For America

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