Final

BACK-UP GENERATOR FACILITY AND ASSOCIATED PROJECT ENVIRONMENTAL ASSESSMENT

Dyess Air Force Base, Texas

July 2007

Report Documentation Page

Form Approved
OMB No. 0704-0188

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1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
JUL 2007		**00-00-2007 to 00-00-2007**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Back-Up Generator Facility and Associated Project Environmental Assessment 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) **7th Civil Engineer Squadron (CES/CEV),710 Third Street,Dyess AFB,TX,79607**	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

Air Force bases have high energy demands and must maintain a consistent, safe energy system. In recognizing these requirements, the Air Force entered into Energy Savings Performance Contracts wherein an energy service company, like Siemens, finances and develops projects to provide consistent safe energy systems. Improving power and energy capabilities at government-owned facilities form the fundamental purpose behind Energy Savings Performance Contracts. The energy service company provides all the studies, designs, construction labor, materials, and equipment for the project. Cost savings generated over the life of the contract (e.g., 15 to 20 years) repay the investment of the energy service company. The purpose of the proposed action is to implement two energy security and conservation projects at Dyess AFB, Texas. Under this proposal, Dyess AFB would authorize Siemens to construct and operate a back-up power plant using up to five diesel-powered generators capable of producing a nominal 11.25 MW, and install three upgraded/replacement water-pump motors in the base?s existing potable water distribution plant. Under this program, Dyess AFB could pay less for energy than currently because of real-time pricing (using current hourly rates vice fixed price rates) with new back-up generators; and water-pump motor replacements would enhance efficiency and conservation. Under the no-action alternative, the Air Force would not authorize Siemens to construct or operate energy security or conservation projects at the base. Waterpump motors would not be replaced and/or upgraded. In addition, existing sub-standard water-pump motors would continue to be used. This EA analyzed the potential environmental consequences of the proposed action and noaction alternative for air quality, hazardous materials and hazardous waste, soils and water, biological resources, and socioeconomics. On the basis of the analysis in the attached EA, which is hereby incorporated by reference, and after careful review of the potential impacts, findings indicate that the proposed action would not adversely impact any other resource area. For comparison, the criteria air pollutants, NOx and SO2, would represent less than 1.3 percent of the region?s emissions of those pollutants, below the regional significance criteria for areas in nonattainment. The proposed back-up generator facility would be authorized under agreement such that Dyess AFB holds the permits required by the state. Siemens would obtain all required federal, state, and local permits prior to commencement of work on Dyess AFB, including regulatory approval for permitting separately from existing permitting activities. The proposed action would require approximately 2.5 acres of vegetation to be disturbed with potential impacts to wildlife; however, the impact would not be significant and any special-status species identified

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			
unclassified	**unclassified**	**unclassified**	**Same as Report (SAR)**	**101**	

FINAL
FINDING OF NO SIGNIFICANT IMPACT

1.0 NAME OF THE PROPOSED ACTION

Dyess Air Force Base Back-Up Generator Facility

2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The United States Air Force (Air Force) proposes to implement two energy security and conservation projects at Dyess Air Force Base (AFB), Texas. Implementation of these projects would ensure greater energy self-sufficiency and security, and reduce energy costs for Dyess AFB.

Under this proposal, Dyess AFB would authorize Siemens Building Technologies, Inc. (Siemens) to: 1) construct and operate a back-up power plant using up to five diesel-powered generators capable of producing a nominal 11.25 megawatts; and 2) install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

In addition, the Air Force analyzed the no-action alternative. Under the no-action alternative, the Air Force would not authorize Siemens to construct, operate, or install energy security or conservation projects at Dyess AFB. The Air Force would continue to rely on electricity from public utilities for the base's main power source, resulting in continued exposure to higher-priced energy, and existing emergency/back-up generators located at critical facilities. Existing sub-standard water-pump motors would also continue to be used.

3.0 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

This Environmental Assessment (EA) provides an analysis of the potential environmental consequences resulting from implementation of the proposed action. Five resource categories were thoroughly analyzed to identify potential impacts. Analyses indicated that no other resources would be impacted under the proposed action. Accordingly, implementation of the proposed action would not result in significant impacts to any resource category. The following summarizes and highlights the results of the analysis by resource category.

Air Quality. No significant impacts to air quality would occur through implementation of the proposed action. For any of the criteria pollutants analyzed in this EA, none would exceed a regional contribution of more than 1.3 percent, under standard operating conditions. These contributions would remain below the threshold (10 percent) for regional significance and below the Prevention of Significant Deterioration (PSD) limit of 250 tons per year. If, under extreme natural catastrophes, generator use increased to the maximum annual hours, emissions would not account for more than 3 percent of regional totals. In the

local area, emissions would not approach state or federal thresholds. There would be no change to the current baseline emissions and permit requirements under implementation of the no-action alternative.

Hazardous Materials and Hazardous Waste. No adverse impacts would be expected to this resource as no new waste streams would be created and the amounts of waste would be very low. There would be two 20,000 gallon diesel fuel storage tanks installed as part of the proposed action. No environmental restoration program sites would be affected. All materials and waste would be handled in accordance with Air Force and Dyess AFB regulations. Under the no-action alternative, the Air Force would not implement a back-up generator facility; no changes to hazardous materials, hazardous waste, or solid waste management would be expected with implementation of the no-action alternative.

Soils and Water. Impacts to soils and water resources would be negligible. Construction would disturb about 2.5 acres, but best management practices such as silt fencing and soil surface watering would minimize erosion and runoff. Moreover, the site is flat and no drainages lie nearby, so erosion and sedimentation would be negligible. A site-specific stormwater permit and a Stormwater Pollution Prevention Plan would be obtained prior to construction. There would be no change to the current conditions of soil and water resources on Dyess AFB with implementation of the no-action alternative.

Biological Resources. While 2.5 acres of vegetation would be removed for the generator installment, impacts to biological resources would not be adverse. The area is mesquite woodlands and partially disturbed; no wetlands exist in the vicinity of the proposed action. The special-status species, the Texas horned lizard, has been identified in the vicinity of the construction area; however, a certified biologist would conduct a preconstruction survey and relocate any lizard found in the proposed action location to suitable habitat elsewhere on base. Under the no-action alternative, no changes to existing conditions of vegetation, wildlife, wetlands, or special-status species would occur since no construction activities would be implemented.

Socioeconomics. Construction activities would result in minor positive input into the regional economy, employing approximately 25 to 30 workers during construction. Under the no-action alternative, no changes to regional socioeconomics would be expected, and they would remain unchanged from baseline conditions.

Cumulative Impacts. Implementation of the proposed action, when combined with reasonably foreseeable actions would increase air emissions, waste water, solid and liquid wastes, but would not be expected to introduce an adverse impact to human health and the environment. No significant cumulative impacts from the proposed action are anticipated in light of past, present or reasonably foreseeable actions.

4.0 FINDINGS

On the basis of the analysis in the attached EA, which is hereby incorporated by reference, and after careful review of the potential impacts of the proposed action and no-action alternative, I find that there would be no significant impact on the quality of the human or natural environment from implementation of the proposed action or no-action alternative as described in the Dyess AFB Back-Up Generator Facility EA. Therefore, I find there is no requirement to develop an Environmental Impact Statement.

ROBERT S. MCCORMICK, Colonel, USAF
Vice Commander, 7th Bomb Wing

27 July 2007
Date

ACRONYMS AND ABBREVIATIONS

AFB	Air Force Base
AG	Airlift Group
AGE	Aerospace Ground Equipment
Air Force	United States Air Force
BW	Bomb Wing
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
dB	decibel
dscm	dry standard cubic meter
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
hp	horsepower
H_2S	Hydrogen Sulfide
HWSA	Hazardous Waste Storage Areas
I	Interstate
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IWMP	Integrated Waste Management Plan
kW	Kilowatt
MW	Megawatt
MSA	Metropolitan Statistical Area
mg	milligrams
MSW	Municipal Solid Waste
ng	nanograms
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NSPS	New Source Performance Standards
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OSHA	Occupational Safety and Health Act
O_3	Ozone
ppm	parts per million
PBR	Permit By Rule
Pb	Lead
$PM_{2.5}$	Particulate Matter less than 2.5 Microns
PM_{10}	Particulate Matter less than 10 Microns
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Office
Siemens	Siemens Building Technologies, Inc.
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SO_x	Sulfur Oxides
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
tpy	tons per year
U.S.	United States
USACE	United States Army Corps of Engineers
USCB	United States Census Bureau
USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound
WTE	Waste-To-Energy

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Under this proposal, Dyess AFB would authorize Siemens Building Technologies, Inc. (Siemens) to: 1) construct and operate a back-up power plant using up to five diesel-powered generators capable of producing a nominal 11.25 megawatts; and 2) install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

In addition, the Air Force analyzed the no-action alternative. Under the no-action alternative, the Air Force would not authorize Siemens to construct, operate, or install energy security or conservation projects at Dyess AFB. The Air Force would continue to rely on electricity from public utilities for the base's main power source, resulting in continued exposure to higher-priced energy, and existing emergency/back-up generators located at critical facilities. Existing sub-standard water-pump motors would also continue to be used.

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Soils and Water. Impacts to soils and water resources would be negligible. Construction would disturb about 2.5 acres, but best management practices such as silt fencing and soil surface watering would minimize erosion and runoff. Moreover, the site is flat and no drainages lie nearby, so erosion and sedimentation would be negligible. A site-specific stormwater permit and a Stormwater Pollution Prevention Plan would be obtained prior to construction. There would be no change to the current conditions of soil and water resources on Dyess AFB with implementation of the no-action alternative.

Biological Resources. While 2.5 acres of vegetation would be removed for the generator installment, impacts to biological resources would not be adverse. The area is mesquite woodlands and partially disturbed; no wetlands exist in the vicinity of the proposed action. The special-status species, the Texas horned lizard, has been identified in the vicinity of the construction area; however, a certified biologist would conduct a preconstruction survey and relocate any lizard found in the proposed action location to suitable habitat elsewhere on base. Under the no-action alternative, no changes to existing conditions of vegetation, wildlife, wetlands, or special-status species would occur since no construction activities would be implemented.

Socioeconomics. Construction activities would result in minor positive input into the regional economy, employing approximately 25 to 30 workers during construction. Under the no-action alternative, no changes to regional socioeconomics would be expected, and they would remain unchanged from baseline conditions.

Cumulative Impacts. Implementation of the proposed action, when combined with reasonably foreseeable actions would increase air emissions, waste water, solid and liquid wastes, but would not be expected to introduce an adverse impact to human health and the environment. No significant cumulative impacts from the proposed action are anticipated in light of past, present or reasonably foreseeable actions.

4.0 FINDINGS

On the basis of the analysis in the attached EA, which is hereby incorporated by reference, and after careful review of the potential impacts of the proposed action and no-action alternative, I find that there would be no significant impact on the quality of the human or natural environment from implementation of the proposed action or no-action alternative as described in the Dyess AFB Back-Up Generator Facility EA. Therefore, I find there is no requirement to develop an Environmental Impact Statement.

ROBERT S. MCCORMICK, Colonel, USAF
Vice Commander, 7th Bomb Wing

27 July 2007
Date

BACK-UP GENERATOR FACILITY
FINAL ENVIRONMENTAL ASSESSMENT (EA)

Responsible Agency: Dyess Air Force Base

Proposed Action: The Air Force proposes to implement two energy security and conservation projects at Dyess Air Force Base (AFB), Texas. Under the proposed action, Dyess AFB would authorize Siemens Building Technologies, Inc. (Siemens) to: 1) construct and operate a back-up power plant using up to five diesel-powered generators capable of producing a nominal 11.25 megawatts (MW), and 2) install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

Written comments and inquiries regarding this document should be directed to:

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710 Third Street
Dyess AFB, TX 79607
ATTN: Teresa Clouse

Designation: Final Environmental Assessment

Abstract: Air Force bases have high energy demands and must maintain a consistent, safe energy system. In recognizing these requirements, the Air Force entered into Energy Savings Performance Contracts wherein an energy service company, like Siemens, finances and develops projects to provide consistent safe energy systems. Improving power and energy capabilities at government-owned facilities form the fundamental purpose behind Energy Savings Performance Contracts. The energy service company provides all the studies, designs, construction labor, materials, and equipment for the project. Cost savings generated over the life of the contract (e.g., 15 to 20 years) repay the investment of the energy service company. The purpose of the proposed action is to implement two energy security and conservation projects at Dyess AFB, Texas. Under this proposal, Dyess AFB would authorize Siemens to construct and operate a back-up power plant using up to five diesel-powered generators capable of producing a nominal 11.25 MW, and install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant. Under this program, Dyess AFB could pay less for energy than currently because of real-time pricing (using current hourly rates vice fixed price rates) with new back-up generators; and water-pump motor replacements would enhance efficiency and conservation. Under the no-action alternative, the Air Force would not authorize Siemens to construct or operate energy security or conservation projects at the base. Water-pump motors would not be replaced and/or upgraded. In addition, existing sub-standard water-pump motors would continue to be used. This EA analyzed the potential environmental consequences of the proposed action and no-action alternative for air quality, hazardous materials and hazardous waste, soils and water, biological resources, and socioeconomics. On the basis of the analysis in the attached EA, which is hereby incorporated by reference, and after careful review of the potential impacts, findings indicate that the proposed action would not adversely impact any other resource area. For comparison, the criteria air pollutants, NO_x and SO_2, would represent less than 1.3 percent of the region's emissions of those pollutants, below the regional significance criteria for areas in nonattainment. The proposed back-up generator facility would be authorized under agreement such that Dyess AFB holds the permits required by the state. Siemens would obtain all required federal, state, and local permits prior to commencement of work on Dyess AFB, including regulatory approval for permitting separately from existing permitting activities. The proposed action would require approximately 2.5 acres of vegetation to be disturbed with potential impacts to wildlife; however, the impact would not be significant and any special-status species identified would be properly managed by a certified biologist. No significant adverse cumulative impacts would occur from implementing the back-up generator facility at Dyess AFB, when combined with other past, present, or reasonably foreseeable actions.

Final

BACK-UP GENERATOR FACILITY AND ASSOCIATED PROJECTS ENVIRONMENTAL ASSESSMENT

Dyess Air Force Base, Texas

July 2007

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

This Environmental Assessment (EA) analyzed the potential environmental consequences resulting from the United States Air Force (Air Force) proposal to implement two energy security and conservation projects at Dyess Air Force Base (AFB), Texas. Under the proposed action, Dyess AFB would authorize Siemens Building Technologies, Inc. (Siemens) to: construct and operate a back-up power plant using up to five diesel- or biodiesel-powered generators rated for producing 11.25 megawatt (MW); and install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

This EA has been prepared by the Air Force, in accordance with the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 [Code of Federal Regulations] CFR 1500-1508), and Air Force Instruction compliance with NEPA, as promulgated in 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*.

PURPOSE AND NEED FOR DYESS AFB BACK-UP GENERATOR FACILITY

In response to high energy demands and the need to maintain consistent, safe energy systems on Air Force bases, the Air Force entered into Energy Savings Performance Contracts wherein an energy service company, like Siemens, finances and develops these projects. Improving power and energy capabilities at government-owned facilities form the fundamental purpose behind Energy Savings Performance Contracts. The energy service company provides all the studies, designs, construction labor, materials, and equipment for the project. Cost savings generated over the life of the contract (e.g., 15 to 20 years) repay the investment of the energy service company.

The purpose of the proposed action is to implement two energy security and conservation projects at Dyess AFB, Texas. Under this program, Dyess AFB could pay less for energy by taking advantage of real-time pricing (i.e., current hourly rates vice fixed price rates) with the back-up generators; thereby, avoiding the price spikes experienced by the military. Additionally, if biodiesel is used as fuel for the back-up generators, they could be considered a renewable power project and may provide credits to Dyess AFB toward meeting its energy reduction goals. Water-pump motor replacement would also enhance power efficiency and conservation at the base.

PROPOSED ACTION AND NO-ACTION ALTERNATIVE

Under this proposal, Dyess AFB would authorize Siemens to construct and operate a back-up power plant using up to five diesel- or biodiesel-powered generators capable of producing a nominal 11.25 MW, including electrical switching/administration facility, distribution lines, and two 20,000-gallon fuel storage tanks; and install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

In addition to the proposed action, the Air Force analyzed the no-action alternative. Under the no-action alternative, the Air Force would not authorize Siemens to construct or operate energy security or conservation projects at the base. Water-pump motors would not be replaced and/or upgraded. Dyess AFB would continue to rely on the local electrical company for its main power requirements, and existing emergency generators currently limited to support of critical facilities. In addition, existing sub-standard water-pump motors would continue to be used.

MITIGATION MEASURES

In accordance with 32 CFR Part 989.22, the Air Force must indicate if any mitigation measures would be needed to implement the proposed action under this environmental assessment. For implementing the proposed action to construct and operate a back-up power generator facility capable of producing 11.25 MW and installing three upgraded/replacement water-pump motors in the base's existing potable water distribution plant as described in this EA, no mitigation measures are anticipated to be needed to arrive at a finding of no significant impact if the proposed action were selected for implementation.

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

According to the analysis in this EA, implementation of the proposed action would not result in significant impacts to any resource category. Implementing the proposed action would not significantly affect existing conditions at Dyess AFB or the surrounding environs. Table ES-1 summarizes the potential impacts for the proposed action and the no-action alternative.

Table ES-1. Summary of Potential Environmental Impacts		
Resource	***Energy Security and Conservation Projects***	***No-Action Alternative***
Air Quality	The criteria air pollutants, nitrogen oxides (NO_x) and sulfur dioxide (SO_2), would represent less than 1.3 percent of the region's emissions of those pollutants, below the regional significance criteria of 10 percent and the Prevention of Significant Deterioration (PSD) limit of 250 tons per year. Local emissions would not approach state or federal thresholds. The proposed facility would be authorized under agreement such that Dyess AFB holds the permit but Siemens is responsible for the compliance to all permits for the facility.	Baseline emissions would remain unchanged and Dyess AFB would continue to operate under 30 TAC 122.122.
Hazardous Materials and Hazardous Waste	Construction debris would be disposed in appropriately permitted sites off base. Maintenance waste (e.g., oily rags, adhesives) would be generated but handled in accordance with the existing Dyess AFB *Integrated Waste Management Plan.* No change in their generator status would be required. No new waste streams would be created. No environmental restoration program (ERP) sites on the base would be affected.	Existing procedures for the management, procurement, handling, storage, and disposal of hazardous materials used on Dyess AFB would remain unchanged. Hazardous materials and hazardous waste procedures would remain unchanged under baseline conditions.
Soils and Water	Impacts to soils would be negligible, as would water resource impacts. Only 2.5 acres would be disturbed for construction and no additional personnel would be added to the base by the proposed action. A site specific stormwater permit and a Stormwater Pollution Prevention Plan would be obtained prior to construction to minimize impacts to water quality.	There would be no change to the current conditions of soil and water resources on Dyess AFB with implementation of the no-action alternative.
Biological Resources	Approximately 2.5 acres of vegetation and habitat would be disturbed. The area is mesquite woodlands and does not support any special-status plant species or critical habitat. No wetlands exist in the vicinity of the proposed action. A preconstruction survey would find and relocate any Texas horned lizards; therefore, no adverse impacts to biological resources would be expected.	No changes to existing conditions of vegetation or wildlife would occur since no construction activities would occur. No wetlands are found in the existing area, thus no impacts to wetland resources would occur. No changes to existing conditions of special-status species would occur.
Socioeconomics	Construction activities would result in minor positive input into the regional economy, employing approximately 25 to 30 workers during construction.	Under the no-action alternative, no changes to regional socioeconomics would be expected as conditions would remain unchanged from existing conditions.

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PURPOSE AND NEED FOR THE PROPOSED ACTION

CHAPTER 1
PURPOSE AND NEED FOR THE PROPOSED ACTION

1.1 INTRODUCTION

The United States Air Force (Air Force) proposes to implement two energy security and conservation projects at Dyess Air Force Base (AFB), Texas, under contract to Siemens Building Technologies, Inc. (Siemens). Under this proposal, Dyess AFB would authorize Siemens to: 1) construct and operate a back-up power plant using up to five generators fueled by diesel or biodiesel producing 11.25 megawatts (MW); and 2) install three upgraded/replacement water-pump motors in the base's existing potable water distribution plant.

Implementation of these projects would ensure greater energy self-sufficiency and security, and could reduce energy costs. Utilizing back-up generators would also provide Dyess AFB with a reliable on-base source of electrical energy. Under this program, Dyess AFB could pay less for energy by being able to take advantage of real-time pricing due to the back-up generators, thereby avoiding the price hikes experienced during high-demand periods. Water-pump motor replacement would also enhance power efficiency and conservation at the base and is considered an energy conservation project.

In addition to the proposed action, the Air Force analyzed the no-action alternative. Under the no-action alternative, the Air Force would not authorize Siemens to construct, operate, or install energy security or conservation projects at Dyess AFB. The Air Force would continue to rely on electricity from public utilities for all of the base's power, resulting in continued exposure to higher priced energy. Existing sub-standard water-pumps would continue to be used.

This environmental assessment (EA) has been prepared in accordance with the requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] Part 1500-1508, and Air Force compliance with NEPA, as promulgated in 32 CFR Part 989, *Environmental Impact Analysis Process (EIAP)*.

1.2 BACKGROUND

Dyess AFB is located near the southwest edge of the city Abilene in Taylor County, Texas, about 180 miles west of Dallas (Figure 1-1). Interstate 20 (I-20) and United States Highway 83/84 (U.S. 83/84) lie just north of the base, and to the east and south is U.S. 277. Dyess AFB occupies 6,432 acres and includes the airfield (runway and flightline), aircraft maintenance and industrial areas adjacent to the airfield, administrative buildings and housing accommodations, recreational areas, and open space.

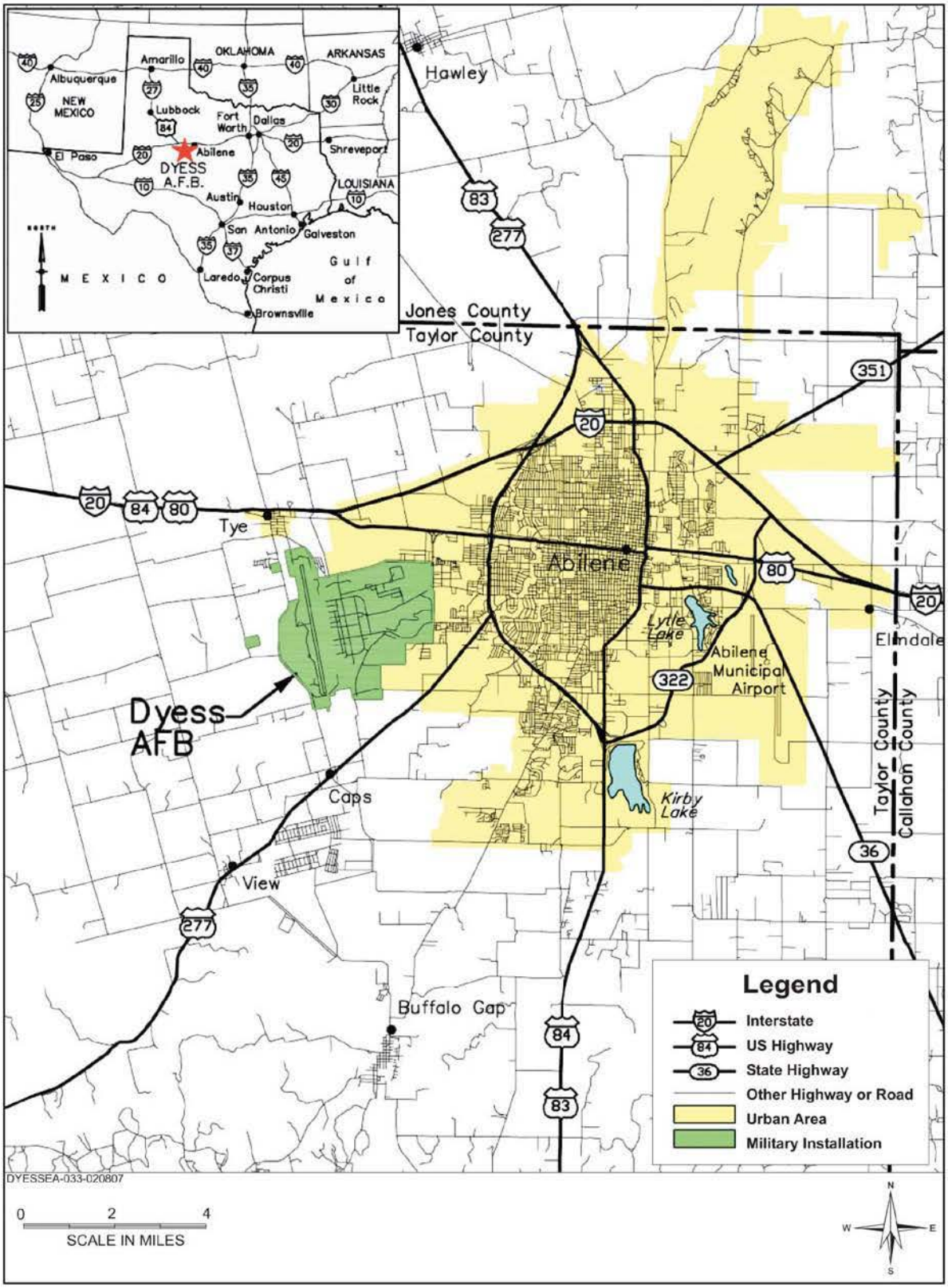

Figure 1-1
Regional Location of Dyess AFB

The eastern section of the base is primarily bordered with residential development, while the southern and western sections are adjacent to agricultural land. Mixed agricultural and residential land uses characterize the area bordering the northern portion of the base.

Dyess AFB hosts the 7th Bomb Wing (7 BW) Air Combat Command, which operates the B-1B Lancer. This wing serves important Air Force training and combat roles. The 317th Airlift Group (317 AG) of Air Mobility Command represents the major tenant organization, which operates C-130H Hercules transport aircraft to support airlift requirements worldwide.

1.3 PURPOSE AND NEED FOR DYESS AFB BACK-UP GENERATOR FACILITY AND ASSOCIATED PROJECTS

1.3.1 Purpose of the Proposed Action

The overall purpose of the proposed action is to provide Dyess AFB with a secure and reliable supply of electrical energy, capable of meeting the entire emergency base load, while reducing operating costs. As described in Section 1.3.2, Air Force bases have high energy demands and must maintain a consistent, safe energy system. Currently, Dyess AFB purchases up to 78,000 MW hours of energy annually from off-base public utilities. This quantity represents 100 percent of the total annual usage for Dyess AFB, making the base's energy vulnerable to security risks and price increases. In recognizing these requirements, the Air Force entered into Energy Savings Performance Contracts wherein an energy service company, like Siemens, finances and develops these projects. Improving power and energy capabilities at government-owned facilities form the fundamental purpose behind Energy Savings Performance Contracts. The energy service company provides all the studies, designs, construction labor, materials, and equipment for the project. Cost savings generated over the life of the contract (e.g., 15 to 20 years) repay the investment of the energy service company. Dyess AFB would attain these energy security and cost savings objectives by implementing two actions. First, installation of back-up generators producing up to 11.25 MW would ensure a consistent supply of power to base facilities during peak periods of energy consumption or during power outages. Extreme weather conditions (i.e., hot summers and cold winters) in the region of Dyess AFB create peak demands on energy resources which could affect the energy supply to the base. In addition, the base must pay for energy at a higher rate during these peak periods. Installing the back-up generators, therefore, would ensure a sufficient, secure, and consistent supply of energy while reducing operating costs. Replacement of outdated water-pump motors would also ensure greater energy efficiency. The pump motors would improve the capability to distribute water while reducing maintenance labor and costs.

1.3.2 Need for the Proposed Action

Five factors dictate the need for the proposed action:

- energy security,
- energy conservation and management,
- reduction in maintenance activities and cost,
- reduction in power costs, and
- attainment of energy goals.

Energy Security. The diverse mission of Dyess AFB in the global theater drives the need for the proposed action. In the event of a national emergency, Air Force response time is critical. To ensure that mission services and response systems flow efficiently, the base needs a consistent, uninterrupted source of power – it needs energy security. To rely on an outside power source involves the risk of power outages during peak periods, system failure, and/or major maintenance activities that can reduce or shut down power to the base. Beyond natural events and demand crises, terrorist events also pose a threat to energy supplies. Any or all of these risks could greatly reduce the responsiveness of the 7 BW and 317 AG during a period of global need. Responsiveness to mission requirements is paramount for Dyess AFB, which supports the majority of the United States' long-range, supersonic B-1B bombers. Maintenance, fueling, armament, communications, and a myriad other essential functions for the B-1Bs rely on electrical energy. As such, Dyess AFB needs a proven, secure, and consistent energy supply.

Energy Conservation and Management. The back-up generators serve important energy security functions; the water-pump motors provide for energy reduction and savings due to their increased efficiency. In accordance with Executive Order (E.O.) 13123 (June 1999), *Greening the Government Through Efficient Energy Management*, all federal agencies must implement energy efficiency improvements, reducing energy consumption by up to 35 percent by 2010. This E.O. also provides for Energy Savings Performance Contracts, such as that used at Dyess AFB. Replacing the water-pump motors would assist in fulfilling the requirements of this E.O. and other federal policies for conservation. While the back-up generators would not, in and of themselves, conserve energy, they would reduce manpower demands by eliminating manpower expenditures in the start-up of existing emergency generators at critical base facilities.

Reduction in Maintenance Activities and Cost. Three water-pump units targeted for replacement in the proposed action involve equipment in various states of disrepair due to age and other economic pressures. The replacement of the potable water supply pump motors would alleviate an ongoing maintenance concern while improving reliability.

Reduction in Power Costs. Energy costs can be extremely high. In today's Air Force, cost reductions are being exercised from the ground up, and challenging every installation and command to reduce costs

while maintaining mission readiness. Consistent power is necessary, as power outages at Dyess AFB can be frequent and costly. Currently, the base contains three substations, which can be switched off manually in case of an outage. However, manually switching increases power costs because the utilities charge the base a higher rate during periods of peak power demand. Since the utility charges are based on absolute peak draw of each substation, Dyess AFB consistently pays for over 20 to 25 MW, even though actual consolidated demand remains less that 16 MW. Using new back-up generators during these high demand periods would provide Dyess AFB the ability to avoid such costly and unnecessary energy expenditures. Real-time pricing provides energy customers hour-to-hour electricity pricing to help them manage their energy consumption and lower their monthly bills. This differs from fixed price rates which are a flat monthly average price for a total monthly consumption of electricity. The advantage of real-time pricing is Dyess AFB could potentially save money by reducing their electric consumption during high hourly price periods. Typically, during the summer months the highest electrical demands are between 4 p.m. and 6 p.m. and the associated cost per kilowatt (kW) is at its highest. In addition, the new pump motors are high efficiency motors and would contribute to energy reduction costs.

Attainment of Energy Goals. Under the Energy Policy Act of 2005, several provisions dictate that federal facilities like Dyess AFB must implement energy conservation and achieve energy goals. Section 102 of the Act specifically establishes energy efficiency goals of "an annual 2 percent reduction in energy use per gross square foot of buildings." Such reductions would culminate in a 20 percent decrease in use by 2015. Implementation of the proposed action water-pump replacement would help meet these goals for Dyess AFB.

Implementing these projects at Dyess AFB would ensure the base has the energy required to meet the mission, reduce maintenance and energy costs, and conserve electricity. For these reasons, Dyess AFB needs to implement the proposed action.

CHAPTER 2

DESCRIPTION OF THE PROPOSED ACTION AND NO-ACTION ALTERNATIVE

CHAPTER 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Air Force proposal to implement two energy security and conservation projects on Dyess AFB. Under this proposal, Dyess AFB would authorize Siemens to install a back-up power plant using generators fueled by diesel or biodiesel for electricity generation. Siemens would also install upgraded/replacement water-pump motors in the potable water plant. In compliance with NEPA and CEQ regulations (40 CFR 1500-1508), this EA also evaluated the no-action alternative. For the no-action alternative, no new or upgraded facilities would be constructed. As a result, Dyess AFB would not realize enhanced energy security conditions or achieve energy conservation goals.

2.1 ALTERNATIVE IDENTIFICATION PROCESS

Alternatives form the core of the NEPA process. In compliance with NEPA, 32 CFR 989, which implements the Air Force's EIAP process, and CEQ regulations, the Air Force must consider reasonable alternatives to the proposed action. Only those alternatives determined as reasonable relative to their ability to fulfill the need for a proposed action warrant detailed analysis. To be considered reasonable, an alternative must not only fulfill the purpose and need for the action, it must be technically and fiscally feasible. It must also involve an action that is reasonably foreseeable. Through rigorous evaluation, an agency needs to examine a range of alternatives, determining those deemed reasonable and those not carried forward for detailed analysis.

In the process of considering potential alternatives to the proposed action, Dyess AFB examined optional means of implementing energy security and conservation enhancements necessary to fulfilling the purpose and need. These options included relocating the generator project elsewhere on Dyess AFB, while the water-pump motors would be a direct replacement and cannot be moved.

As demonstrated below, neither of these options yielded reasonable alternatives. Each option either failed in some manner to meet the purpose and need or proved infeasible. As a result, this EA evaluated only the proposed action and no-action alternative.

Relocating the Projects. Several limitations preclude relocating the projects to sites different than those defined in the proposed action. For energy security purposes, the projects must occur within the confines of Dyess AFB. Placing any of the projects outside the perimeter of the base would not guarantee energy security. The generators need to be located outside of explosive safety arcs, and airfield clearance criteria areas such as clear zones and accident potential zones. Additionally, the site requires relatively close proximity to an existing substation.

To identify a potential location, the back-up generators needed an area within Dyess AFB that afforded a secure location, lay near an existing power substation, offered access to existing power and water lines, and was sited on-base to ensure security. The base contains three major substations. Substation A is located in the on-base housing area, precluding it as an ideal location for the generator facility. Substation C is located well inside the interior of the base but does not provide the necessary space for the project. Further examination led to the area near the Tye Gate on the northern edge of the installation. The Tye Gate area lies near Substation B and offers access to both water and wastewater lines, and permits fencing to ensure installation security. The location cannot extend into the quantity distance safety arcs that start about 3,900 feet east of the gate. These arcs mark zones that preclude development because of ordnance safety requirements. For these reasons, a location abutting Military Drive and starting 2,600 feet east of the Tye Gate comprised the selected location (Figure 2-1).

Replacement of the pump motors would occur within Building 8215, the Water Plant. Since these motors represent replacements, they would be installed in the same facility as the original pump motors (Figure 2-1).

As a result of this alternative identification process, only the proposed action and no-action alternative are carried forward for detailed analysis in the EA. The following describes the proposed action and no-action alternative.

2.2 PROPOSED ACTION

The proposed action would include two projects, a back-up generator facility and water-pump motor replacement, each involving two elements: components/equipment and operation. In addition to the back-up generator facility, the project would involve emplacement of power poles, distribution lines, natural gas lines, ancillary equipment, and other similar items in support of back-up energy generation.

2.2.1. Back-up Generator Plant

The back-up generator facility site would occupy about 2.5 acres with its northern end adjoining Military Drive. Chain link fencing (8 feet high) topped by protective barbed/razor wire would surround the site and link to existing security fencing for the base. A technical building for the electrical switchgear and administrative offices would also be located in the vicinity (Figure 2-2). Two 20,000-gallon diesel and/or biodiesel fuel tanks would be installed on site. The last major component on site would be the electrical equipment and power lines required to tie the generators into the base's electrical grid. It would also include the emergency disconnect capabilities as required by the local power company. Connection into the base electrical grid would occur at the existing Substation B near the Tye Gate.

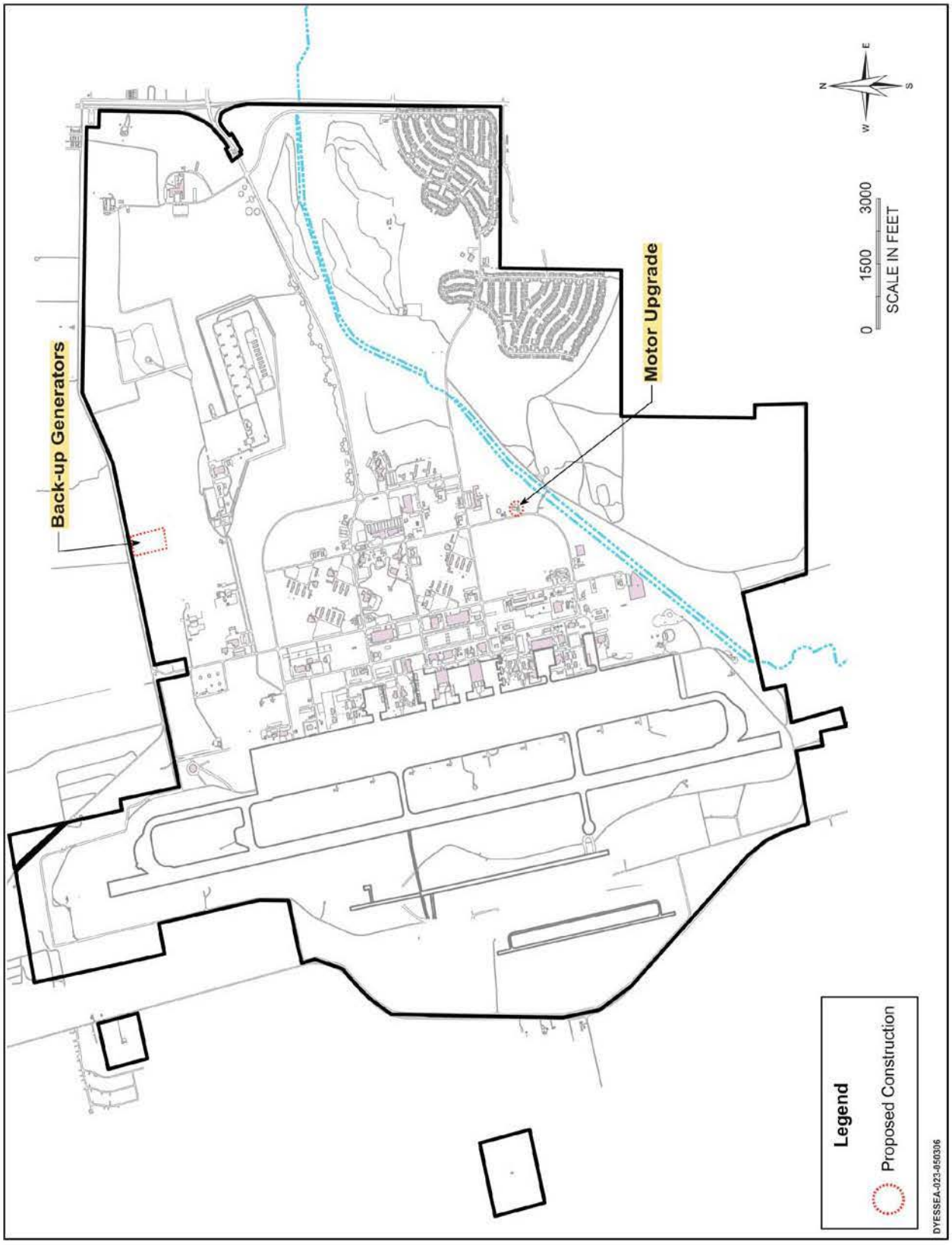

Figure 2-1

Proposed Project Locations, Dyess AFB

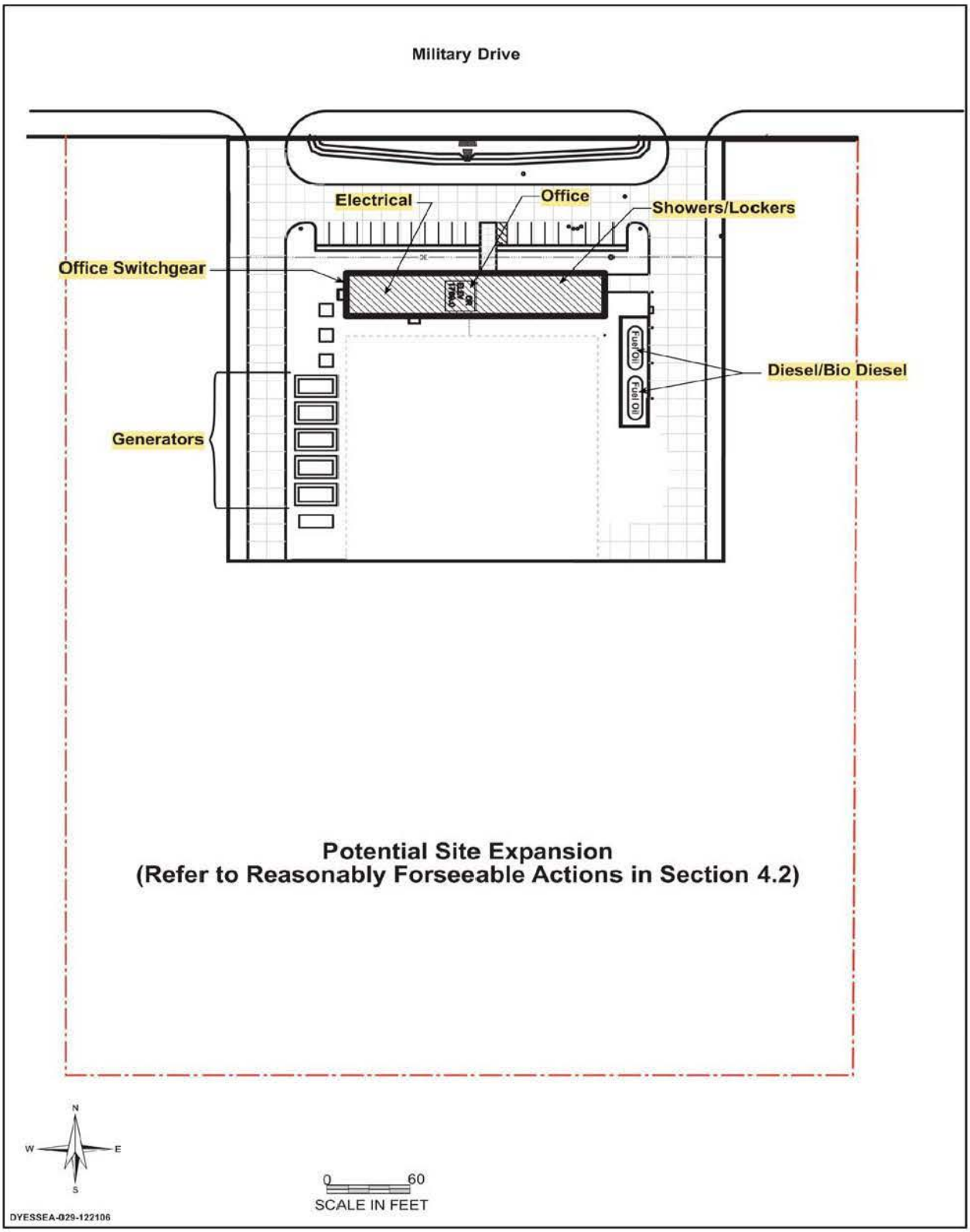

Figure 2-2
Generator Facility

Components

Five 2,250 kW back-up generators would be installed, totaling 11.25 MW. An administrative facility would also be constructed on site (see Figure 2-2). The total area of disturbance covering about 2.5 acres, the generators, switching facilities, with an administration facility, and parking area would total approximately 7,000 square feet (0.16 acre). The diesel-powered generators would have two 20,000-gallon main fuel storage tanks installed. The tanks would be above ground with secondary containment, and would comply with all federal, state, local, and Air Force regulations. In addition to the main fuel storage tanks, each generator would have a 5,000-gallon tank installed at the base of the generator. Biodiesel, a renewable fuel derived from vegetable oil, could also be used for the generators. It would require either an additional 20,000-gallon storage tank or conversion of one or both tanks to biodiesel storage. An additional 10,000 feet of new distribution line connecting Substation C to Substation B near the Tye Gate would be installed. Through an electrical switching station, the generators would be tied into the new distribution line. The distribution line would run on new and existing overhead poles.

Caterpillar 3516 Generator

Operations

The generators would be permitted to operate 300 hours per generator annually for supplemental energy production, including maintenance. Another important function of the generators would be to provide electricity during power outages. Power outages at Dyess AFB average about 10 to 20 hours per year. Although unlikely, extreme natural catastrophes could require operation of the generators for a maximum of 876 hours in a year with permission of the Texas Commission on Environmental Quality (TCEQ).

2.2.2 Water-Pump Motor Replacement

Three 100-horsepower (hp) high-efficiency pump motors would replace older water-pump motors in the Water Plant (Building 8215). The current main potable water-pump motors serving Dyess AFB are reaching the end of their effective lifespan, are inefficient, and require extensive maintenance. The new water-pumps would be installed at the same location as the existing pump motors and little, if any, other modifications would be necessary. There would be no additional water requirements for the pump motor replacement.

Operations of the new pumps would be identical to those being replaced. The new motors are high efficiency, and maintenance requirements would lessen with the new units. With the installation of the new motors there would be no change to existing storage capacity, nor would there be a need to apply for additional water rights.

2.3 NO-ACTION ALTERNATIVE

Under the no-action alternative, Dyess AFB would not authorize Siemens to construct or operate a back-up generator facility at the base. Dyess AFB would continue to rely on the local electrical company for its main power requirements, and existing emergency generators currently limited to support of critical facilities. Manual switching between sub-stations would continue to occur. In addition, main potable water-pump motors would not be replaced and/or upgraded. Existing sub-standard water-pump motors would continue to be used.

2.4 ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This EA examines the affected environment for Dyess AFB, considers the potential effects of the proposed action, and compares those to current conditions under the no-action alternative. The steps involved in the environmental impact analysis process used to prepare this EA are outlined below.

1. *Conduct Interagency and Intergovernmental Coordination for Environmental Planning (IICEP).* IICEP requires comments to be solicited from local governments as well as federal and state agencies to ensure their concerns and issues about the proposed energy security and conservation projects at Dyess AFB are included in the analysis. It also requires that the public in the region local to the proposed action be solicited for their comments. In May 2006, the Air Force sent IICEP letters to these agencies requesting their input on Dyess AFB's proposal. Chapter 6 provides the list of people and agencies contacted and Appendix A provides copies of IICEP correspondence.

2. *Prepare a draft EA.* The first comprehensive document for public and agency review is the draft EA. This document examines the environmental impacts of the proposed action and no-action alternative.

3. *Announce that the draft EA has been prepared.* An advertisement was posted in the *Abilene Reporter-News* on February 16, 2007, notifying the public as to the draft EA's availability for review in a local library.

4. *Provide a public comment period.* The goal during this process was to solicit comments concerning the analysis presented in the draft EA. A 30-day public comment period began on the date of notification of the document availability in the *Abilene Reporter-News*. No public or agency comments on the EA were received during the comment period.

5. *Prepare a final EA.* Following the public comment period, this final EA was prepared. This document is a revision (if necessary) of the draft EA, includes consideration of public comments

(if any), and provides the decisionmaker with a comprehensive review of the proposed action and no-action alternatives and the potential environmental impacts of implementing either action. No substantive changes were made between the draft and final documents.

6. *Issue a Finding of No Significant Impact (FONSI).* The final step in the process is either a FONSI, if the analysis supports this conclusion, or a determination that an EIS would be required for the proposal.

2.5 OTHER REGULATORY AND PERMIT REQUIREMENTS

This EA has been prepared in compliance with the NEPA, other federal statutes, such as the Clean Air Act (CAA), the Clean Water Act, Endangered Species Act, and the National Historic Preservation Act, Executive Orders, and other applicable statutes and regulations.

2.6 MITIGATION MEASURES

In accordance with 32 CFR 989.22, the Air Force must indicate if any mitigation measures would be needed to implement the proposed action or any alternative selected as the preferred alternative under this environmental assessment. However, no mitigation measures are anticipated to be needed to arrive at a FONSI if the proposed action were implemented at Dyess AFB.

2.7 SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS

According to the analysis in this EA, implementation of the proposed action or alternative would not result in significant impacts to Air Quality; Hazardous Materials and Hazardous Waste; Soils and Water; Biological Resources; Socioeconomics; or Cumulative resources. Implementing the proposed action would not significantly affect existing conditions at Dyess AFB. Table 2-1 summarizes and highlights the result of the analysis by resource category.

Table 2-1. Summary of Potential Environmental Impacts

Resource	***Energy Security and Conservation Projects***	***No-Action Alternative***
Air Quality	The criteria air pollutants, nitrogen oxides (NO_x) and sulfur dioxide (SO_2), would represent less than 1.3 percent of the region's emissions of those pollutants, below the regional significance criteria of 10 percent and the Prevention of Significant Deterioration (PSD) limit of 250 tons per year. Local emissions would not approach state or federal thresholds. The proposed facility would be authorized under agreement such that Dyess AFB holds the permit but Siemens is responsible for the compliance to all permits for the facility.	Baseline emissions would remain unchanged and Dyess AFB would continue to operate under 30 TAC 122.122.

Table 2-1. Summary of Potential Environmental Impacts (con't)		
Resource	***Energy Security and Conservation Projects***	***No-Action Alternative***
Hazardous Materials and Hazardous Waste	Construction debris would be disposed in appropriately permitted sites off base. Maintenance waste (e.g., oily rags, adhesives) would be generated but handled in accordance with the existing Dyess AFB *Integrated Waste Management Plan.* No change in their generator status would be required. No new waste streams would be created. No environmental restoration program (ERP) sites on the base would be affected.	Existing procedures for the management, procurement, handling, storage, and disposal of hazardous materials used on Dyess AFB would remain unchanged. Hazardous materials and hazardous waste procedures would remain unchanged under baseline conditions.
Soils and Water	Impacts to soils would be negligible, as would water resource impacts. Only 2.5 acres would be disturbed for construction and no additional personnel would be added to the base by the proposed action. A site specific stormwater permit and a Stormwater Pollution Prevention Plan would be obtained prior to construction to minimize impacts to water quality.	There would be no change to the current conditions of soil and water resources on Dyess AFB with implementation of the no-action alternative.
Biological Resources	Approximately 2.5 acres of vegetation and habitat would be disturbed. The area is mesquite woodlands and does not support any special- status plant species or critical habitat. No wetlands exist in the vicinity of the proposed action. A preconstruction survey would find and relocate any Texas horned lizards; therefore, no adverse impacts to biological resources would be expected.	No changes to existing conditions of vegetation or wildlife would occur since no construction activities would occur. No wetlands are found in the existing area, thus no impacts to wetland resources would occur. No changes to existing conditions of special-status species would occur.
Socioeconomics	Construction activities would result in minor positive input into the regional economy, employing approximately 25 to 30 workers during construction.	Under the no-action alternative, no changes to regional socioeconomics would be expected as conditions would remain unchanged from existing conditions.

CHAPTER 3

DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

CHAPTER 3
DESCRIPTION OF THE AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 ANALYSIS APPROACH

The NEPA requires focused analysis of the areas and resources potentially affected by an action or alternative. It also indicates that an EA should consider, but not analyze in detail, those areas or resources not potentially affected by the proposal. Therefore, an EA should not be encyclopedic; rather, it should be succinct. NEPA also requires a comparative analysis that allows decision makers and the public to differentiate among the alternatives. This EA, therefore, focuses on those resources that would be affected by the proposed construction and operation of the back-up generators project at Dyess AFB, TX. The water-pumps would replace existing systems and would not introduce any additional impacts to the human and natural environment. Therefore, this activity will not be evaluated further in the analysis.

CEQ regulations (40 CFR Parts 1500-1508) for NEPA also require an EA to discuss impacts in proportion to their significance and present only enough discussion of other than significant issues to show why more study is not warranted. The analysis in this EA considers the current conditions of the affected environment and compares those to conditions that might occur should either the proposed action or no-action alternative be implemented.

Resources Analyzed

Table 3-1 presents the results of the process of identifying resources considered in this EA. This assessment evaluates air quality, hazardous materials and hazardous waste, soils and water, biological resources, and socioeconomics. These resources have shown to be potentially affected by implementation of the proposed action. Each resource area is laid out as follows: a discussion of the resource, including the region of influence and the applicable regulations; a discussion of the existing environmental conditions to provide a context of the impacts; a discussion of the threshold criteria for evaluating impact significance; and the environmental consequences of the action of that particular resource being discussed.

Resources Eliminated from Further Analysis

The Air Force assessed numerous resources (Table 3-1) that, in accordance with CEQ regulations, warranted no further examination in the EA. The following describes the rationale for this approach.

Table 3-1. Resources Analyzed in the Environmental Impact Analysis Process				
Resource	***Potentially Affected by Energy Security and Conservation Projects***		***Analyzed in this EA***	
	Construction	*Operations*	*Yes*	*No*
Physical Resources				
Air Quality	✓	✓	✓	
Hazardous Materials and Hazardous Waste	✓	✓	✓	
Soils and Water	✓	✓	✓	
Biological Resources				
Vegetation, Wildlife, Wetlands and Special-Status Species	✓	✓	✓	
Human Resources				
Socioeconomics	✓	✓	✓	
Airspace				✓
Cultural and Traditional Resources				✓
Land Management, Use, and Recreational Resources				✓
Health and Safety				✓
Transportation				✓
Noise				✓
Visual				✓
Environmental Justice				✓

Airspace. Airspace management and air safety are interrelated topics. Airspace management addresses how, and in what airspace, aircraft fly. Air safety evaluation criteria include airspace operations and traffic management, as well as aircraft systems reliability. Since the activities associated with the construction and operation of the proposed back-up power generators would not have an impact on either the management of the airspace or operations within the airspace, this resource was eliminated from further analysis.

Cultural and Traditional Resources. No known cultural or traditional resources occur in the proposed action construction area. Based on conclusions reached in consultation with the State Historic Preservation Office (SHPO), National Park Service, Abilene Preservation League, and City of Abilene, and presented in the Dyess AFB Integrated Cultural Resource Management Plan, there are currently no known or suspected cultural or historical resources of significance on the base (Dyess AFB 2001). Therefore, an analysis of cultural and traditional resources has been eliminated from further discussion.

Land Management, Use, and Recreational Resources. The base includes developed and undeveloped lands. Main categories of developed land uses include airfield and flightline, industrial areas, administrative facilities, housing, recreation sites, and medical facilities. Undeveloped lands are commonly called open space in planning documents and may include natural resource habitat, golf courses, safety buffers, or other similar land uses. The location of the proposed action is in an open space area adjacent to land designated for industrial purposes. No recreation currently takes place in this parcel.

Future planning would have to address this minor change to land designation but construction of the back-up generators would not be inconsistent with adjacent land uses. Nor would it change management of the surrounding lands if the proposed action were implemented. Therefore, implementation of the proposed action would not affect or conflict with current land management and use, or recreational resources and does not require further analysis is this EA.

Health and Safety. Effects to human health and safety related to construction, as well as operation and maintenance, would be minimal and no different from standard, on-going activities occurring at Dyess AFB. During construction, prescribed industrial safety standards and best management practices would be followed. Operations and maintenance activities would be performed in accordance with all applicable safety directives. There are no other specific aspects of generator operation and maintenance activities that would create any unique or extraordinary safety issues. Since no aspect of the proposal would alter the safety conditions for the base, this resource has been eliminated from further analysis.

Transportation. The proposed action would minimally increase traffic at Dyess AFB. Construction-related traffic would be temporary and the existing road system can accommodate the anticipated level of traffic associated with construction equipment and employees. Transportation onto the base by approved personnel for refueling of the generator diesel or biodiesel storage tanks would occur; however, this refueling would be limited to a maximum of 12 times per year and would not adversely impact existing transportation patterns or resources. No increase of personnel is anticipated by the proposed action. Effects of the proposed action on existing transportation resources would not be measurable or noticeable. Since transportation resources impacts would be insignificant, this resource has been eliminated from further analysis.

Noise. While the generators would produce noise, several factors demonstrate that they would not produce a perceptible change in the noise environment on-base or at off-base residences in the area. First, based on the generator specifications, exhaust noise levels would be 98 decibels (dB) at a distance of 50 feet; mechanical noise would reach 101 dB. Noise levels for each generator would be 101 dB, whereas the combined total for all generators would be 108 dB at 50 feet. The proposed generators would be located approximately 3,700 feet from the nearest off-base residence, and the dB level of a sound attenuates exponentially as the distance from the source increases. For a point source such as the generators, the noise level decreases by 6 dB for each doubling of distance from the source. The distance to the residence from the generators would be doubled six times (i.e., 50 x 2 = 100, 100 x 2 = 200, 200 x 2 = 400, and so forth) with an additional 500 feet. In total, distance attenuation would reduce generator noise levels to 71 dB while operating.

Second, the proposed back-up generators would be located in a portion of the base currently experiencing aircraft noise levels of over 75 dB (day-night average sound level or DNL). These noise levels, which represent the product of aircraft take-offs, landings, and other operations, reflect the day-night average

sound level, or DNL, for 24 hours. As such, these aircraft activities generate noise levels higher than 75 dB many times during any 24-hour period. For example, during takeoffs and landings, B-1B aircraft (the primary aircraft at Dyess AFB) produce noise levels as high as 117 dB. While these are short-term noise levels, the average day-night noise level is 75 dB DNL. More importantly, the residence nearest the generators (3,700 feet) also lies within 1,000 to 2,000 feet from the flight path of Dyess AFB. During takeoffs and landings, B-1B aircraft subject the residence to noise levels ranging from 98 to 106 dB, or 85 dB DNL over a 24 hour period.

Since this average is substantially greater than the noise produce by the generators over a few hours of operation in any given day, the generator noise would not contribute perceptibly to the off-base noise environment. Other noise sources would include common neighborhood machinery such as a lawnmower or grass trimmer, both of which operate over a period of time, and produce higher noise levels (75 to 94 dB at 100 feet) than the generators (71 dB at 3,700 feet).

Lastly, the greatest demand for the supplemental power would generally be during late afternoons during the hot summer months. At this time of day, most residents have their windows shut and the air conditioning running. Walls and windows typically reduce interior noise levels in residences by 17 dB to 25 dB (USEPA 1972). Such reductions would limit the noise levels from the generators to 46 to 54 dB, well within acceptable standards and not considered an adverse impact. Due to this and the other factors described above, noise levels resulting from generator use would be inconsequential and, therefore, the topic does not warrant further detailed discussion.

Visual. The proposed location for the back-up generators project would be in an area without any unique, distinctive, or aesthetically exceptional qualities. While the proposed energy conservation facilities would be visible from off-base, the proposed action is not expected to adversely impact the visual environment of the base or its surrounding area or require further analysis.

Environmental Justice. Environmental justice addresses the disproportionate effect a federal action may have on low-income or minority populations. E.O. 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* ensures the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The existence of disproportionately high and adverse impacts depends on the nature and magnitude of the effects identified for each of the individual resources. The affected area includes the proposed site within the confines of Dyess AFB and the region affected by noise and air emissions from the generators. Noise from construction would be temporary and operation of the generators would produce noise sporadically, about 25 percent of a year or less. As described above, distance and other factors would attenuate (i.e., lessen) sound from the generators, reducing noise levels at the nearest off-base residence to between 46 and 54 dB. These levels are considered acceptable by the U.S. Environmental Protection Agency

(EPA) for residences, and would be inconsequential relative to other noise sources (e.g., aircraft) in the area. Similarly, local emissions from the generators would not approach any state or federal thresholds for the protection of human health and safety (see Section 3.3.1, Air Quality). Most concentrations would comprise just a small percentage of the allowable standards and no adverse impacts to the local area would occur. For these reasons, the proposed action would not pose a risk to communities or population centers nor disproportionately impact low income or minority populations. Therefore, since no minority or low-income groups would be affected disproportionately or placed at risk by implementing the proposed action or no-action alternative, environmental justice as a resource was eliminated from further analysis.

3.2 PHYSICAL RESOURCES

This section includes discussions of air quality; hazardous materials and hazardous waste; and soils and water resources. Physical resources are also known as media resources because the contaminant affects the physical media without changing the general physical characteristics of the media. Media resources are also some of the most regulated resources because contaminants present can move with the media, spreading the contamination to other locations. The region of influence for physical resources usually extends beyond the project boundary for this reason. Because these resources are so highly regulated, the significance criteria are often based on regulatory limits.

3.2.1 Air Quality

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. A region's air quality is influenced by many factors including the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

The 1970 CAA and its subsequent amendments (CAAA) established the National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns (PM_{10} and $PM_{2.5}$), and lead (Pb). These standards, presented in Table 3-2, represent the maximum allowable atmospheric concentrations that may occur while ensuring protection of public health and welfare, with a reasonable margin of safety. Short-term standards (1-, 8-, and 24-hour periods) are established for pollutants contributing to acute health effects, while long-term standards (quarterly and annual averages) are established for pollutants contributing to chronic health effects. The federal 1-hour ozone standard continues to apply in areas that violated the standard; however, Taylor County, in which Dyess AFB is located, has not violated this standard. Texas has adopted the national standards.

Table 3-2. State and National Ambient Air Quality Standards					
	Texas Standards			***National Standards***	
POLLUTANT	AVERAGING TIME	PRIMARY	SECONDARY	PRIMARY	SECONDARY
Ozone (O_3)*	1 Hour	235 $\mu g/m^3$ (0.12 ppm)	Same as Primary	235 $\mu g/m^3$ (0.12 ppm)	Same as Primary
	8 Hours	0.08 ppm	Same as Primary	0.08 ppm	Same as Primary
Carbon Monoxide (CO)	1 Hour	40 mg/m^3 (35 ppm)	--	40 mg/m^3 (35 ppm)	--
	8 Hours	10 mg/m^3 (9.0 ppm)	--	10 mg/m^3 (9.0 ppm)	--
Nitrogen Dioxide (NO_2)	Annual Average	100 $\mu g/m^3$ (0.053 ppm)	Same as Primary	100 $\mu g/m^3$ (0.053ppm)	Same as Primary
	24 Hours	--	--	--	--
Sulfur Dioxide (SO_2)	Annual Average	80 $\mu g/m^3$ (0.03 ppm)	--	80 $\mu g/m^3$ (0.03 ppm)	--
	24 Hours	365 $\mu g/m^3$ (0.14 ppm)	--	365 $\mu g/m^3$ (0.14 ppm)	--
Particulate Matter PM_{10}	Annual Arithmetic Mean	50 $\mu g/m^3$	Same as Primary	50 $\mu g/m^3$	Same as Primary
	24 Hours	150 $\mu g/m^3$	Same as Primary	150 $\mu g/m^3$	Same as Primary
Particulate Matter* $PM_{2.5}$	Annual Arithmetic Mean	15 $\mu g/m^3$		15 $\mu g/m^3$	
	24 Hours	65 $\mu g/m^3$		65 $\mu g/m^3$	
Lead (Pb)	Calendar Quarter	1.5 $\mu g/m^3$	Same as Primary	1.5 $\mu g/m^3$	Same as Primary

* EPA promulgated new federal 8-hour ozone and fine particulate matter standards on July 18, 1997. The federal 1-hour ozone standard continues to apply in areas that violated the standard and PM 2.5 has not been officially regulated.

Pollutants considered in the analysis for this EA include the criteria pollutants measured by state and federal standards. These include volatile organic compounds (VOCs), which are precursors to (indicators of) O_3, nitrogen oxides (NO_x), which are also precursors to O_3 and include NO_2 and other compounds (CO and PM_{10}). Airborne emissions of hydrogen sulfide (H_2S) are not addressed because the affected areas contain no significant sources of this criteria pollutant nor is it associated with the proposed action and no-action alternative. In addition, since $PM_{2.5}$ has not been regulated, nor is Taylor County anticipated to lie within a nonattainment area for this pollutant, it was not specifically evaluated in this EA.

Based on measured ambient criteria pollutant data, the EPA designates all areas of the U.S. as having air quality better than (attainment) or worse than (nonattainment) the NAAQS. The CAA requires each state to develop a State Implementation Plan (SIP) that is its primary mechanism for ensuring that the NAAQS are achieved and maintained within that state. According to plans outlined in the SIP, designated state and local agencies implement regulations to control sources of criteria pollutants. The CAA provides that federal actions in nonattainment and maintenance areas do not hinder future attainment with the NAAQS and conform to the applicable SIP (i.e., Texas SIP).

The CAA also establishes a national goal of preventing degradation or impairment in any federally-designated Class I area. As part of the Prevention of Significant Deterioration (PSD) program, mandatory Class I status was assigned by Congress to all national parks, national wilderness areas, memorial parks greater than 5,000 acres and national parks greater than 6,000 acres. In Class I areas, visibility

impairment is defined as a reduction in visual range and atmospheric discoloration. Stationary sources, such as industrial complexes, are typically an issue for visibility within a Class I PSD area. For new sources that may impair visibility or degrade air quality, applicants may be required to analyze potential impacts to Class I areas within 100 kilometers (62 miles) of the source.

Affected Environment

Air quality relative to the proposal has two regions of influence. Regionally, the EPA and Texas Commission on Environmental Quality (TCEQ) monitor and report emission levels by county in this part of Texas; therefore, regional area of influence would be Taylor County, TX. Localized area of influence would be the neighborhoods nearest to the proposal, in this case, the city of Tye, TX. Dyess AFB is located within the attainment area of Taylor County, Texas, and its air quality is under the jurisdiction of the TCEQ. Emissions at the base are permitted under 30 TAC 122.122 (TCEQ 2001). Federal and Texas regulations also allow permitting of emission sources under Permit By Rule (PBR). Stationary source emissions at Dyess AFB include jet engine testing, external and internal combustion sources, degreasing operations, storage tanks, fueling operations, solvent usage, surface coating, firefighter training, and miscellaneous general process operations. Mobile source emissions include aircraft operations, (takeoff and landings), aerospace ground equipment (AGE), and ground support equipment. Emissions from aircraft takeoff and landing operations, as well as other flight operations at the base include both based and transient aircraft. Total emissions at the base are presented in Table 3-3. CAA regulation 40 CFR 51.82 defines a federal action as being regionally significant in a nonattainment or maintenance area as a source which contributes greater than 10 percent of the region's emissions. Taylor County is in attainment and this regulation does not apply, but Taylor County data are presented in Table 3-3 for comparison purposes.

There are no PSD Class 1 areas or protected vistas within a 100-kilometer (standard review distance) radius of Dyess AFB. Therefore, visibility impairment due to base-generated emissions from the proposed action is not a concern.

Table 3-3. Baseline Emissions for Dyess AFB Affected Environment

	Pollutants (Tons/Year)				
	CO	*VOCs*	*NO_X*	*SO_2*	*PM_{10}*
Total Base Emissions[1]	15.72	14.23	19.32	1.20	2.42
Taylor County Emissions[2]	46,137	8,686	5,481	328	11,070

Sources: [1] Dyess AFB – 2003a Air Emission Inventory.
[2] USEPA AirData Emissions by Category Report 2006
Note: this report uses 2001 data

Region of Influence

As indicated above, the area comprising the regional of influence consists of Taylor County. However, more localized affects are assessed also.

Environmental Consequences

Significance Criteria

Criteria used to determine the significance of increases in air emissions are based on federal, state, and local air pollutant standards and regulations. From a regional point of view, significance would be whether the action exceeds 10 percent of the total regional emissions and/or whether the action exceeds the PSD limits of 250 tons per year. Local significance would be whether the nearest receptors would be adversely affected by the proposed action with exceedences of ambient air quality standards for criteria air pollutants.

Proposed Action

The proposed action would produce air emissions from temporary construction activities, and permanent operational emissions of the back-up generators.

Construction Activities. Construction emissions associated with the proposed action include fugitive dust (PM_{10}) from grading and combustion (primarily CO and NO_x, and smaller amounts of VOCs, SO_2, and PM_{10}) from heavy-duty diesel construction equipment exhaust. Construction emissions estimates were based on conservative assumptions and assumed that site grading activities (generating fugitive dust) would occur on 25 percent of the affected acreage on any working day, throughout the 6-month construction period. These estimations also assumed that grading activities would occur on 1 acre. Site controls would include soil stocking and watering to reduce fugitive dust. Exhaust emissions from heavy-duty diesel construction equipment were based on a mix of typical construction equipment for the project. Appendix B provides more specific emission calculation data.

Back-Up Generators. The five back-up generators would be 2,250 kW Caterpillar Model 3516 BDITA diesel engines with 2,500 kilovolt-ampere generators or equivalent. The generators would be used for two purposes: as a supplemental energy source for energy production, and for emergency power in the event of a power outage. For the purposes of calculating air emissions and permitting requirements, these generators are assumed to operate as follows: each generator would supplement power during peak times for 300 hours per year and, during power outages, each generator could operate up to 10 to 20 hours per year.

Power outages are impossible to predict accurately so several scenarios are presented in this EA. These include recent historical data, expected usage, calculated usage for emissions, and extreme disaster case. The analysis also considers local emissions. Historical data for power outages over the past few years indicate only about 5 to 10 hours without power per year. As stated before, the expected use would be 10 to 20 hours per year. The calculations presented in this EA represent a "realistic worst case" scenario of 120 hours per year. The resulting emissions under the supplemental power and 120 hour per year emergency generation are listed in Table 3-4. The generators would require a permit for supplemental power but can operate under a PBR for emergency power generation.

Caterpillar Generator Model 3516 BDITA

Table 3-4. Projected Pollutant Emissions

	Pollutants (Tons/Year)					
	CO	*VOCs*	*NO_X*	*SO_2*	*PM_{10}*	*$PM_{2.5}$*[4]
Construction[1]	0.17	1.28	0.45	0.05	4.03	0.43
Generators: 300 hr/yr[2]	7.0	0.74	49.5	0.84	0.41	0.41
Generators: emergency use[3]	2.87	0.31	19.8	0.34	0.16	0.16
Total for Proposed Action	**10.04**	**2.33**	**69.75**	**1.23**	**4.6**	**1.0**
Taylor County Emissions	46,137	8,686	5,481	328	11,070	NA
Percent of Proposed Emissions to Taylor County	0.02%	0.03%	1.27%	0.38%	0.04%	NA

[1] Includes site preparation, foundations and buildings, and asphalt areas.
[2] The generators would operate for supplemental energy generation for 300 hours per year.
[3] Historic power outages average about 10-20 hours per year, 120 hours were used in the calculation to allow for the "worst case" scenario.
[4] $PM_{2.5}$ considered predominant fraction of tailpipe emissions; assume 100 percent $PM_{2.5}$

Another scenario, although very unlikely, is under extreme natural catastrophes, permission by TCEQ could be granted to operate up to 876 hours per year under the same PBR. If the emergency generators operated at the maximum 876 hours per year PBR level, the amount of emissions would be 20.44 tons per year (tpy) for CO, 2.12 tpy for VOCs, 144.5 tpy for NO_x, 2.45 tpy for SO_2, and 1.20 tpy for PM_{10}. The likelihood of this occurring during the lifecycle of the generators is remote. Even under this extreme operating scenario for the generators, emission levels would still be under PSD thresholds and would not account for more than 3 percent of regional emissions.

The Caterpillar engines used on the generators could also be operated using biodiesel. Biodiesel is a domestic, renewable fuel for diesel engines derived from natural oils such as soybeans, and which meets the specifications of American Standard of Testing Materials D 6751. Biodiesel can be used in any concentration with petroleum-based diesel fuel in existing diesel engines with little or no modification.

Biodiesel is not the same thing as raw vegetable oil. It is produced by a chemical process which removes the glycerin from the oil.

Local Emissions. Given the nature of the proposed action and the proximity of the generators to the edge of the base, the effects of emissions on the local area warrant assessment. Comparison to Texas and federal emission thresholds (refer to Table 3-2) provides the means to determine the potential impact of the emissions.

To determine the potential effects of local emissions, the analysis used wind data, identified the distance and direction of possible receptors, determined emission concentrations, and calculated dispersion. Wind rose data provided the basis for calculating the average wind direction and speed for a given area. Such data indicate the percentage of time the wind blows in a given direction throughout the year. The nearest receptors (i.e., people) relative to the source of the emissions (generators) live in the City of Tye, located 0.7 to 1.1 miles west-northwest of the proposed generator site. The data indicate that, on average, the wind blows in this direction towards Tye 15 percent of the time over a year. Average wind speed is 9 miles per hour.

To evaluate impacts, the emissions concentrations that would affect the nearest residence situated 3,700 feet from the proposed generators were calculated. Using a standard Gaussian distribution model populated with the total tons per year of emissions for each criteria pollutant; an assumed stack height of 10 feet for exhaust; average wind speed and direction; and the distance to the residence, the model calculated the dispersed concentrations of each pollutant. The generators would operate 300 hours per year plus about 120 hours if an emergency arose, thereby limiting the potential exposure of the off-base residents. As shown in Table 3-5, the emissions for each pollutant were averaged over the applicable time standard under federal and state regulations. These averaging times range from 8 hours to a year. For that reason, NO_x was averaged over an entire year using both a 300/120 hour scenario and the unlikely 300/876 hour scenario for emergency power generation. The regulations provide no standards for VOCs.

Table 3-5. Projected Local Criteria Air Pollutant Concentrations

	Pollutants (micrograms per cubic meter - µg/m^3)				
	CO	***VOCs***	***NO_X***[1]	***SO_2***	***$PM_{10/2.5}$***
Emissions Concentration at Nearest Residence	58.1	6.1	19.7/55.2	7.0	3.4
NAAQS	10,000	NS[2]	100	365	65
Percent of NAAQS	0.581%	NS[2]	19.7%/55.2%	1.92%	5.23%
Averaging Time	8 Hours	NS[2]	Annual	24 Hours	24 Hours

[1] 300 hours plus 120 emergency use/300 hours plus 876 hours emergency use
[2] No published standard

These concentrations would not approach the NAAQS thresholds for emissions. Most would comprise just a small percentage of the allowable standard. While NO_x could account for 55 percent of the NAAQS, that level would occur only under the rarest of situations. Since the emissions potentially affecting local residents would fall below the NAAQS standards, no adverse impacts would result.

Conclusion. Under the proposed action, emissions from construction and permanent operations represent less than 1.3 percent of the region's emissions for any of the criteria air pollutants. These levels would be well below the regional significance criteria thresholds for the Clean Air Act. The highest emissions are NO_X at 1.27 percent and the other four of the five criteria pollutants would account for less than 1 percent of total emissions for Taylor County. For the local area, emissions would not approach federal or state thresholds for human health and safety.

Impacts to air quality associated with the construction activities under the proposed action would be short term. Long-term emissions would occur from the permanent operation of the facility and permitted accordingly. Under an agreement between Dyess AFB, Siemens, and TCEQ, permits associated with the proposed action would be obtained and held by Dyess AFB but operated by Siemens. Siemens would be primarily responsible for all TCEQ compliance and enforcement activities associated with the permit.

No-Action Alternative

Under the no-action alternative, the Air Force would not implement the back-up generator project. Baseline emissions would remain unchanged and Dyess AFB would continue to operate under 30 TAC 122.122.

3.2.2 Hazardous Materials and Hazardous Waste

Hazardous materials are identified and regulated under the Comprehensive Environmental Response, Compensation and Liability Act; the Occupational Safety and Health Act (OSHA); and the Emergency Planning and Community Right-to-Know-Act. The Resource Conservation and Recovery Act (RCRA) defines hazardous waste as any solid, liquid, contained gaseous or semisolid waste, or any combination of waste that could pose a substantial hazard to human health or the environment. Hazardous materials are identified in Air Force Instruction 32-7086, *Hazardous Materials Management* (Air Force 2004), as any substance with special characteristics that could harm people, plants, or animals when released. Waste may be classified as hazardous because of its toxicity, reactivity, ignitability, or corrosiveness. In addition, certain types of waste are listed or identified as hazardous in 40 CFR 261.

Affected Environment

Operations at Dyess AFB require the use and storage of many hazardous materials. These materials include flammable and combustible liquids, acids, corrosives, caustics, anti-icing chemicals, compressed gases, solvents, paints, paint thinners, pesticides, petroleum hydrocarbons, batteries, hydraulic fluids, fire

retardant, and photographic chemicals. The Dyess AFB *Integrated Material Management Plan* describes the requirements for acquisition, storage, and use of hazardous materials (Dyess AFB 2006).

The Dyess AFB *Integrated Waste Management Plan* (IWMP) specifies protocols for accumulation locations on the base and proper handling procedures for all hazardous wastes (Dyess AFB 2005). Protocols described in the IWMP include spill detection, spill reporting, spill containment, decontamination, and proper cleanup and disposal methods. Hazardous waste is generated at Dyess AFB from a variety of activities, including aircraft maintenance, soil and groundwater remediation, training exercises, civil engineering projects, printing, medical facility, services, and security. Aircraft support functions are a major source of hazardous waste at Dyess AFB. These functions include corrosion control, fuels management, hydraulics, structural maintenance, aerospace ground equipment, painting, munitions maintenance, and wheel and tire maintenance. Hazardous waste generated by the proposed action would be fluids and oily rags from generator maintenance.

The EPA designates facilities as large quantity generators of hazardous waste when wastes generated exceed 2,200 pounds any month during the year. Dyess AFB is designated as a large quantity generator of hazardous wastes. In keeping with the requirements outlined in the Dyess AFB IWMP, hazardous waste is properly segregated, accumulated, characterized, labeled, and packaged for collection at a designated initial accumulation point. Dyess contracts out responsibility for removing hazardous waste and non-hazardous waste from the on-base initial accumulation points. The waste is then transferred to one of two designated 90-day accumulation sites located in buildings 5205 and 4313. Accumulated wastes gathered at a 90-day site are analyzed, characterized, prepared for shipment, and the contractor arranges for permanent disposal. A third facility (building 9150) is available for emergency backup when buildings 5205 and 4313 are full (Dyess AFB 2005).

The environmental restoration program (ERP) is the process by which contaminated sites and facilities are identified and characterized and by which existing contamination is contained, removed, and disposed of to allow for beneficial reuse of the property. Examples of ERP sites include landfills, underground waste fuel storage areas (e.g., oil/water separators), and maintenance-generated wastes. Compliance activities for ERP sites address underground storage tanks, hazardous materials management, closure of active sites, polychlorinated biphenyls, water discharges, and other compliance projects that occur on or near ERP sites.

Region of Influence

The region of influence for the proposed action would be the generator facility and accumulation sites. All hazardous materials and wastes would be located on-base unless being disposed of in approved manners.

Environmental Consequences

Significance Criteria

The significance of potential impacts associated with hazardous materials and hazardous wastes is based on the toxicity, transportation, storage, and disposal of these substances. Hazardous materials and hazardous waste impacts are considered significant if the storage, use, transportation, or disposal of these substances substantially increases the human health risk or environmental exposure. An increase in the quantity or toxicity of hazardous materials and/or hazardous waste handled by a facility may also signify a potentially significant impact, especially if a facility was not equipped to handle the new waste streams. Hazardous materials and hazardous waste are very highly regulated and rarely reach the threshold of significance because of the manner in which they are regulated. There are some exceptions, such as highly toxic or reactive gases or liquids stored or used in large quantities, but for the proposed action this would not be the case. Proposed increased use of hazardous materials and operations can dictate the type of waste that occurs and can breach thresholds of regulatory requirements. The requirements can have a significant impact on the operation of a facility in terms of how waste is reported, classified, and disposed. Normally, the procedures developed in response provide sufficient safeguards to prevent significant releases to the environment. So while having a potential impact on operations, the classification often would not necessarily impact the environment.

Proposed Action

Fuel for the proposed generators would come from two 20,000 gallon diesel or biodiesel tanks installed on site. Each generator would have its own 5,000 gallon tank mounted at the base of the generator. The base's hazardous material inventory would be updated to include the diesel fuel.

Waste that could be generated from the proposed action would be construction debris during construction, and wastes generated from maintenance activities of the back-up generators and the water-pumps. Construction debris would normally be disposed in accordance with standard construction practices and as required by the Dyess AFB IWMP. Maintenance activities would generate small amounts of waste, typically oily rags, adhesives, coolant, etc. However, the wastes are expected to be in very low quantities. Again, all waste would be handled in accordance with the Dyess AFB IWMP. No change to Dyess AFB's generating status would result from the proposed action.

The proposed project would be located well away from the nearest ERP site. There would be no impacts to the facility or to any ERP site as a result of implementing the proposed action.

No-Action Alternative

Under the no-action alternative, the Dyess AFB Energy Security and Conservation Projects would not occur. Existing procedures for the management, procurement, handling, storage, and disposal of

hazardous materials used on Dyess AFB would remain unchanged. Dyess ERP sites would remain unchanged under baseline conditions.

3.2.3 Soils and Water

Earth resources include soil (unconsolidated) and bedrock (consolidated) materials. The analysis in this EA will address soil and soil erosion. Potential adverse effects to soils could result from ground disturbance leading to soil erosion, fugitive dust propagation, and sedimentation. Water resources analysis focuses on an evaluation of surface water, water use, and wastewater. Adverse effects to water resources could result from erosion, runoff, and surface contamination. Effects to soils and water are most likely to occur from construction activities.

Affected Environment

Dyess AFB is located within the Rolling Plains ecological region of Texas and consists of nearly level to gently sloping upland flats. Slopes generally range from 0 to 3 degrees. Elevation on the base ranges from approximately 1,730 feet to approximately 1,800 feet (Dyess AFB 2004). Geology at Dyess AFB can be divided into two groups: the Permian Clear Fork Group and Quaternary Alluvium. The Permian Clear Fork Group consists mostly of silty mudstones, thin to very thinly bedded, with some blue-gray shale near the base, and a few fossil plant fragments. The Quaternary Alluvium consists of floodplain deposits of low terraces and bedrock located in stream channels with a thickness up to 25 feet (SCS 1976). The soils of Dyess AFB are composed primarily of deep, noncalcareous to calcareous clay loams. The high shrink-swell characteristic of the clays permits rapid absorption of water after extended dry periods, followed by heavy run-off when saturated (Dyess AFB 2004).

Low-lying portions of Dyess AFB, including the golf course area, sit within the 100-year floodplain. The floodplain is associated with two features on the base – two diversion ditches and Little Elm Creek. Little Elm Creek, a tributary of the Clear Fork of the Brazos River, divides the base from its entry point at the southern end of the runway to its exit point on the east side of the base. The creekbed has been channelized to divert stormwater flow on the base into two drainage ditches (north and south) and ultimately to two outfalls on the east side of the base. Outfall 1 receives stormwater runoff from most of the industrialized portion of the base, while Outfall 2 receives stormwater from a small portion of the base, including the golf course and housing areas. The discharged water flows into Little Elm Creek, continues off-base to join Elm Creek and eventually Fort Phantom Hill Lake, the principal source of potable water supply for Abilene and Dyess AFB (Dyess AFB 2003b).

Environmental Consequences

Significance Criteria

Soil resources are not regulated to any detail so significance criteria are based on the nature, degree, and duration of impacts to those resources. Loss of substantial quantities of soils, or degradation of the quality of soils used for agriculture or similar functions would potentially result in significant impacts. Moreover, creation of quantities of fugitive dust during construction requires analysis. In terms of water resources, significant impacts may result from erosion and sedimentation into surface water bodies and degradation of their function and values. Other effluent caused by proposed activities that adds hazardous or toxic wastes above allowable regulatory thresholds associated with the Clean Water Act would be significant. Additionally, demand for potable water from the proposed action that exceeds available amounts or precludes other necessary base functions would constitute a significant impact.

Proposed Action

Under the proposed action, impacts to soils would be negligible, differing little from existing conditions at the site. The area is not located on any seismic faults, has little erosional characteristics, and would not suffer from expansive soils (Dyess AFB 2004). The location for the proposed back-up generator facility would not require a change in the existing grade. The construction site is a flat, partially disturbed portion of the base lying outside the 100-year floodplain. Erosion during construction and subsequent sedimentation in down-gradient drainages could have an impact in the immediate area; however, erosion control and sediment retention measures and silt fencing would minimize erosion and prevent adverse effects to drainages. Sedimentation into any water resources would be negligible. The Texas Commission on Environmental Quality General Stormwater Permit covers all stormwater discharges. A site specific stormwater permit would be obtained and a Stormwater Pollution Prevention Plan developed prior to construction.

The local drainage system diverts stormwater runoff from the base through diversion ditches; the area of the proposed action is not located in a floodplain, therefore, impacts to surface waters would be negligible. No changes in base personnel numbers or operations are expected; therefore, impacts to water use would not be expected.

No-Action Alternative

There would be no change to the current conditions of soils and water resources on Dyess AFB with implementation of the no-action alternative. Existing conditions as described under the affected environment would remain unchanged.

3.3 BIOLOGICAL RESOURCES

Biological resources encompass plant and animal species and the habitats within which they occur. Plant species are often referred to as vegetation and animal species are referred to as wildlife. Habitat can be defined as the area or environment where the resources and conditions are present that cause or allow a plant or animal to live there (Hall *et al*. 1997). Wetlands are considered special-category sensitive habitats. Biological resources for this EA include vegetation, wildlife, wetlands, and special-status species occurring on Dyess AFB in the vicinity of the proposed action.

Vegetation includes all existing terrestrial plant communities with the exception of special-status species. The affected environment for vegetation includes only those areas subject to ground disturbance.

Wildlife includes all vertebrate animals with the exception of those identified as endangered or sensitive. Wildlife includes fish, amphibians, reptiles, birds, and mammals. Wildlife also includes those bird species protected under the federal Migratory Bird Treaty Act. Assessment of a project's effects on migratory birds places an emphasis on "Species of Concern" as defined by E.O. 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds.* Additional assessment of potential impacts to migratory birds that are regionally rare occurs under the special-status category.

Wetlands are subject to regulatory authority under Section 404 of the Clean Water Act and E.O. 11990 *Protection of Wetlands.* They include jurisdictional and non-jurisdictional wetlands. Jurisdictional wetlands are those defined by the U.S. Army Corps of Engineers (USACE) and EPA as those areas that meet all the criteria defined in the USACE's *Wetlands Delineation Manual* (USACE 1987) and under the jurisdiction of the USACE. The affected environment for wetlands includes those areas that may be potentially affected by construction and operation activities.

Special-Status Species are defined as those plant and animal species listed as threatened, endangered, or proposed as such, by the USFWS. The federal Endangered Species Act (ESA) protects federally listed, threatened, and endangered plant and animal species. Species of concern are not protected by the ESA; however, these species could become listed and therefore, protected at any time. Their consideration early in the planning process may avoid future conflicts that could otherwise occur. The discussion of special-status species focuses on those species with the potential to be affected by construction and construction-related noise.

Affected Environment

The affected environment for the proposed action is located in a partially disturbed portion of the base.


Generator Facility Site Vegetation

Developed areas include semi-improved (i.e., graveled or mowed grass) grounds adjacent to runways, taxiways, aprons, runway clear zones, etc. where periodic maintenance is performed generally for operational and aesthetic reasons, such as erosion and dust control, bird control, and visual clear zones (Dyess AFB 2004). Potential habitat for wildlife is categorized as agricultural, wetland, developed, and undeveloped. Because natural vegetation such as grasslands, woodlands, and forests is undeveloped, it has a higher potential to support wildlife habitat. Urban, residential, and commercial areas are considered developed, providing a lower wildlife habitat potential. The area considered for the proposed action construction is in mesquite woodland and has a low potential to support diverse wildlife habitat, wetlands, and special-status species.

Vegetation. The long-term effects of cultivation and urbanization have altered the regional vegetation so that the current plant community bears little resemblance to the historical vegetation communities (Dyess AFB 2004). Dyess AFB consists of four distinct habitats: grassland, mesquite woodlands, marsh habitat, and disturbed (developed) habitat. Grassland species include silver bluestem, perennial threeawn, buffalograss, curly mesquite, sideoats grama, and cane bluestem. Mesquite woodlands are honey mesquites which grow in dense even-aged stands. Shade-tolerant Texas wintergrass or speargrass is the dominant groundcover within the mesquite woodlands. Red-berry juniper is sparsely scattered within the mesquite-grasslands in the northeaster portion of the base (Dyess AFB 2004). The location of the proposed generator facility consists of partially disturbed mesquite woodland.

Wildlife. Native mammalian fauna present on Dyess AFB are typical of urban environments. Mammals include cottontail, coyote, fox squirrel, black-tailed jackrabbit, and gray woodrat. A wide array of birds have been observed on the base, including red-tailed hawk, Swainson's hawk, vesper sparrow, Mourning dove, northern bobwhite, wild turkey, golden-fronted woodpecker, ladder-backed woodpecker, scissor-tailed flycatcher, and red-winged blackbird. Low habitat diversity and availability preclude a high diversity and abundance of reptiles and amphibians. Those species with relatively wide niche breadth such as red-eared sliders and bullfrogs are abundant. Other species observed on Dyess AFB include the common snapping turtle, diamondback watersnake, western diamondback rattlesnake, bullsnake, Texas rat snake, and pallid spiny softshell turtle (Dyess AFB 2004).

Wetlands. There are 12 areas on Dyess AFB currently delineated as jurisdictional wetlands. Two of them are naturally occurring playas (small depressions sometimes temporarily covered with water). Of

the remaining ten, seven are the result of soil manipulation or were dug as stock watering tanks by ranchers prior to existence of the base (Dyess AFB 2004). No wetlands occur on or near the proposed site.

Special-Status Species. One state-listed species, the Texas horned lizard, is known to occur at Dyess AFB. Texas Parks & Wildlife has not designated any critical habitat on base for this species, but the lizard has been observed and photographed by base personnel within a few hundred meters of the proposed site. The federally-listed threatened bald eagle and federally-listed endangered interior least tern may potentially migrate through or seasonally visit the base during wet seasons, when preferred habitat is available. No federally-listed bird species is known to nest at the base, nor are federally-listed mammals known to occur on the base (Dyess AFB 2004).

Region of Influence

Although the discussion above describes the base as a whole for the affected environment, it is intended only to provide a context of biological resources in the general area of the proposed action. The region of influence potentially affected by the proposed action is limited to the proposed generator facility site and its immediate vicinity.

Environmental Consequences

Significance Criteria

Determination of the significance of potential impacts to biological resources is based on: 1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource; 2) the proportion of the resource that would be affected relative to its occurrence in the region; 3) the sensitivity of the resource to proposed activities; and 4) the duration of ecological ramifications. Impacts to biological resources are significant if species or habitats of concern are adversely affected over relatively large areas or disturbances cause reductions in population size or distribution of a species of concern. Analysis of potential on-base impacts focuses on whether and how ground-disturbing activities may affect biological resources.

Proposed Action

Under the proposed action, approximately 2.5 acres of vegetation and habitat would be disturbed. The area is mesquite woodlands and has been previously disturbed to some degree. No adverse impacts to special-status species would be expected. A preconstruction survey by a qualified biologist would be performed and any Texas horned lizards found would be relocated without impacting the species. No wetlands exist in the vicinity of the proposed action and none would be affected. Therefore, no impact to biological resources would occur.

No-Action Alternative

No changes to existing conditions of vegetation, wildlife, or special-status species would occur through implementation of the no-action alternative since no construction activities would occur related to the back-up generator project. Since no wetlands are found in the existing area, no impacts to wetland resources would occur.

3.4 HUMAN RESOURCES

Human resources for this EA focus on the general features of the local economy that could be affected by the proposed action or no-action alternative. Socioeconomics comprise the basic attributes of population and economic activity within an affected environment and typically encompasses population, employment, income, and industrial/commercial growth. Socioeconomic data provided in this section consist primarily of county-level data for Dyess AFB and the cities and towns adjacent to the base in Taylor County.

3.4.1 Socioeconomics

Affected Environment

The affected environment for this action includes the cities of Abilene and Tye, as well as Taylor County (refer to Figure 1-1). Together, these communities comprise the Abilene Metropolitan Statistical Area (MSA) (USCB 2006). The analysis focuses on this region because it is the area in which most of the socioeconomic effects would be experienced due to construction and generator operation activities.

Population. U.S. Census Bureau (USCB) data indicate that the City of Abilene and Taylor County experienced an 8.6 and 5.8 percent population increase, respectively, between 1990 and 2000 (Table 3-6).

Table 3-6. Population within the Dyess AFB Affected Environment

Area	*1990 Census*	*2000 Census*	*% Change*
City of Abilene	106,707	115,930	8.6
Taylor County[1]	119,655	126,555	5.8
Total	**119,655**	**126,555**	**5.8**

Source: USCB 2006

[1]Includes Abilene, Tye, as well as other communities within Taylor County.

Employment and Earnings. As of April 2006, the unemployment rate in the Abilene MSA was 4.1 percent (Texas A&M University 2006). During the period April 2005 to April 2006, the construction sector in the Abilene MSA experienced a 10.7 percent increase. Employment in the region is primarily dominated by service, retail trade, local government, and manufacturing. Dyess AFB is the largest employer in Taylor County with 5,810 employees, followed by Hendrick Health System (2,761

employees), Abilene Independent School District (2,698 employees), Abilene State School (1,230 employees), and the City of Abilene (1,197 employees) (Texas A&M University 2006).

In 2004, Abilene MSA had a total personal income of over $4 billion, with an average per capita income of $26,432 according to the Bureau of Economic Analysis (BEA 2006).

Region of influence

The region of influence for socioeconomics are the cities of Abilene and Tye and Dyess AFB. These are the areas most likely to receive any socioeconomic benefits from the proposed action.

Environmental Consequences

Significance Criteria

NEPA requires agencies to look at the socioeconomic impacts of their actions, but there is no threshold for when a socioeconomic impact becomes significant. However, a major and substantial change in socioeconomics would be required to warrant a subjective finding of significance.

Proposed Action

Long-term socioeconomic effects of the proposed action would occur primarily due to increased energy savings for the base. The surrounding communities of Tye and Abilene could experience short-term beneficial impacts during facility construction; construction activities could take about 6 months. Approximately 25 to 30 workers would be employed at any one time during the construction period. Workers would likely commute from the surrounding area to Dyess AFB on a short-term temporary basis. Local construction companies would most likely be contracted to build the generator facility with the majority of the construction materials purchased outside the local region and transported to the site. Construction activities would result in minor, short-term beneficial impacts to the local economy and would easily be absorbed within the Abilene MSA. The back-up generators would save the base about $1.9 million in energy costs with minor savings from the installation of the high efficiency water-pump motors (Siemens 2004). Overall, the effects would be neither major nor substantial.

No-Action Alternative

Under the no-action alternative, no changes to regional socioeconomics would be expected as conditions would remain unchanged from existing conditions.

CHAPTER 4

CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

CHAPTER 4
CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

4.1 CUMULATIVE EFFECTS

CEQ regulations stipulate that the cumulative effects analysis within an EA 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). Assessing cumulative effects involves defining the scope of the other actions and their interrelationship with the proposed action and alternatives, if they overlap in space and time.

Cumulative effects are most likely to arise when a proposed action is related to other actions that occur in the same location or at a similar time. Actions geographically overlapping or close to the proposed action and alternative would likely have more potential for a relationship than those farther away. Similarly, actions coinciding in time with the proposed action and alternative would have a higher potential for cumulative effects.

To identify cumulative effects, three fundamental questions need to be addressed:

1. Does a relationship exist such that affected resource areas of the proposed action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If one or more of the affected resource areas of the proposed action and another action could be expected to interact, would the proposed action affect or be affected by impacts of the other action?
3. If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the proposed action is considered alone?

4.2 SCOPE OF CUMULATIVE EFFECTS ANALYSIS

The scope of the cumulative effects analysis involves both the geographic extent of the effects and the time in which the effects could occur. Public documents prepared by federal, state, and local government agencies were the primary sources of information for identifying past, present and reasonable foreseeable actions.

Past and Present Actions

No past and/or present actions were identified, that when combined with the proposed energy security and conservation projects at Dyess AFB, would result in any measurable cumulative effects.

Reasonable Foreseeable Actions

In 2003, Dyess AFB approved the Dyess AFB General Plan, which identified areas on the base where existing missions could be expanded and where new missions could be located (Dyess AFB 2003b). Various military construction and other projects are proposed and would require environmental analysis if undertaken. Examples of these projects include providing new housing; administration, operations, and support facilities; and utility system upgrades.

As another energy security and conservation project, Siemens and Dyess AFB could construct and operate a Waste to Energy (WTE) plant on base. This project would greatly enhance the amount of energy savings that Dyess AFB could realize by supplying up to 50 percent of the base energy needs. The WTE plant electrical output would further reduce Dyess AFB's reliance on external energy sources. Additionally, municipal solid waste from Dyess AFB and the cities of Abilene and Tye would supply the fuel needed to run the WTE. Besides cutting down on waste in landfills, it would save the base money on tipping fees paid to contractors for disposal of this solid waste. Although the WTE proposal is still in the developmental stage, the preliminary results of the analysis are presented for cumulative impacts. The WTE would be built such that about 250 tons per day of municipal solid waste would be burned. The air emissions associated with this type of facility would require monitoring in accordance with 40 CFR Part 60 Subpart AAAA for New Source Performance Standards (NSPS) such that the air emissions would not exceed the limits shown in Table 4-1.

Table 4-1. Dyess AFB WTE Project Air Emission Test Requirements				
Pollutant	***NSPS AAAA Limit***	***Averaging Time***	***Compliance Method***	***Notes***
Volatile Organic Compounds	--	3-run average (min. 1-hr run)	Stack Test	Total VOC.
Nitrogen Oxides	--	3-run average (min. 1-hr run)	Stack Test	
Particulate Matter per TCEQ (Front and Back Half)	--	3-run average (min. 1-hr run)	Stack Test	EPA Method 5 modified to include both the "front half" and "back half" catch.
Sulfur Dioxide	30 ppm (24 hr block) or 80% reduction	3-run average (min. 1-hr run)	Stack Test	The 24-hr value is determined as a geometric mean.
Carbon Monoxide	150 ppm (24 hr daily)	3-run average (min. 1-hr run)	Stack Test	
Dioxins/Furans (total mass basis)	13 ng/dscm	3-run average (min. 4-hr run)	Stack Test	Must operate at full load. Emission limit corrected to 7% O_2. Must also speciate all 2, 3, 7 & 8 laterally substituted isomers.
Cadmium	0.02 mg/dscm	3-run average (run duration specified in test method)	Stack Test	Must operate at full load. Emission limit corrected to 7% O_2.
Lead	0.2 mg/dscm	3-run average (test method specifies duration)	Stack Test	Must operate at full load. Emission limit corrected to 7% O_2.
Mercury	0.08 mg/dscm or 85% reduction	3-run average (run duration specified in test method)	Stack Test	Must operate at full load. Emission limit corrected to 7% O_2.
Opacity	10%	3-hour observation period	Stack Test	Thirty 6-minute averages
Particulate Matter per NSPS Subpart AAAA	24 mg/dscm	3-run average (run duration specified in test method)	Stack Test	Min. sample vol. must be 1 m^3. Heating systems in sample train must be set to provide a gas temp. < 160 +/- 14^{O}C. Must operate at full load. Emission limit corrected to 7% O_2.
Hydrogen Chloride (HCL)	25 ppm or 95% reduction of HCl	3-run average (min. 1-hr run)	Stack Test	Must operate at full load. Emission limit corrected to 7% O_2.

There would be waste water associated with the project, but the current plan would be to use effluent water for cooling and little, if any, potable water would be required. While the project would reduce the volume of municipal solid waste, there would be wastes generated by the proposal. In addition to the waste water, there would be approximately 5,000 tons per year of solid, liquid, and recyclable wastes and about 20 tons per year household hazardous waste generated during the sorting process prior to burning. There would be about 6,000 tons per year of combustion ash and about 3,000 tons per year of post-process liquid waste. The wastes would be tested using the EPA approved Toxic Characteristic Leaching Procedure to determine whether it is hazardous and then disposed according to applicable laws and regulations. TCEQ has provided a letter stating that this waste would not cause Dyess AFB to be considered an industrial waste generator.

Based on available information, the potential for significant cumulative impacts from the proposed action when combined with past, present, or reasonably foreseeable actions is not anticipated. Implementation of the back-up generator facility when combined with any future construction, operations, or utilities upgrade would increase air emissions, waste water, solid and liquid wastes, but would not be at levels to introduce an adverse impact to human health or the environment.

Conclusion

Cumulative emissions from the base and the back-up generators would not exceed any regional thresholds for criteria pollutants. Cumulatively, hazardous materials and waste would not be significantly increased to create an adverse impact to the region. Soils, water, or biological resources would not be adversely impacted. The minimal acreage disturbed and water used would not create a significant adverse impact to the regional environment. The regional economy would experience a temporary, positive impact during the construction period. There would be no cumulative impacts to any resource category associated with the no-action alternative.

4.3 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis include identification of any irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects this use could have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action (e.g., extinction of a threatened or endangered species or the disturbance of a cultural resource).

Implementation of the proposed energy security and conservation projects at Dyess AFB would not result in an irreversible or irretrievable commitment of resources. Generators would consume fuel, oil, and lubricants; however, the amount of these materials used would not be considered irreversible, particularly if biodiesel is used. Prior to construction, Texas horned lizards would be relocated within the base to avoid depredation of a native wildlife species.

CHAPTER 5

REFERENCES CITED

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CHAPTER 6

PERSONS AND AGENCIES CONTACTED

CHAPTER 6
PERSONS AND AGENCIES CONTACTED

Armstrong, Jim. 7 CES/CEVC. Dyess AFB, Texas. 2007.

Burling, Gary. 7 CES/CEVP. Dyess AFB, Texas. 2007.

Clouse, Teresa. 7 CES/CEV. Dyess AFB, Texas. 2007.

Danko, Brian. 7 CES/CEVC. Dyess AFT, Texas. 2006.

Denslow, Tom. 7 CEO/EF. Dyess AFB, Texas. 2007.

Foreman, Bryan. 7 CES/CEVA. Dyess AFB, Texas. 2007.

Koehler, Eric. Siemens Building Technologies, Inc. 2007.

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Laurence, David. 7 CES/CEVC. Dyess AFB, Texas. 2006.

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McMillon, Larry. 7 CES/CEVC. Dyess AFB, Texas. 2006.

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Overbey, Judy. 7 CES/CEV. Dyess AFB, Texas. 2006.

Parker, Sheryl. ACC/A7ZP. Langley AFB, Virginia. 2007.

Robertson, Jim. 7 CES/CEVA. Dyess AFB, Texas. 2007.

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Stewart, Robert. Kelly Hart. 2006.

Walton, Kim. 7 CES/CEVA. Dyess AFB, Texas. 2007.

CHAPTER 7

LIST OF PREPARERS AND CONTRIBUTORS

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LIST OF PREPARERS AND CONTRIBUTORS

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Years of Experience: 29

Kathy L. Rose, *Quality Control*
B.A., Political Science/German, University of Massachusetts/Amherst, 1980
M.A., International Relations, George Washington University, 1983
M.S., Forest Resource Management, University of Idaho, 1996
Years of Experience: 12

APPENDIX A

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET, SUITE 123
DYESS AIR FORCE BASE TEXAS 79607-1670

MAY 25 2006

MEMORANDUM FOR Texas Historical Commission
P.O. Box 12276
Austin TX 78711-2276
Attn: F. Lawerence Oaks, SHPO

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

SUBJECT: Proposed Energy Security and Conservation Projects at Dyess Air Force Base (AFB), TX

1. Dyess AFB is in the process of preparing an Environmental Assessment (EA) for a proposal to enhance its energy security and conservation. Under the proposed action, Dyess AFB would permit Siemens Building Technologies, Inc. to implement four projects on-base. These projects would involve construction and operation of a 5.4 megawatt (MW) waste to energy (WTE) plant, a backup power plant using diesel-powered generators, a thermal storage plant, and installation of replacement water pump motors. Household waste from the base and the City of Abilene would be used to generate energy through gasification and heat exchange process to power turbines, and Siemens would provide the resultant energy to the base. The WTE plant would be constructed along Military Road on the northern boundary of the installation and fenced to preclude entrance onto the base. The 6-acre WTE plant would represent the most extensive project; the other projects would occur within the interior of the base. The attached map provides the location of the approximate site for the WTE plant construction and operation.

2. The EA will be prepared to evaluate potential environmental and mission impacts resulting from implementation of the proposed action while examining the potential for cumulative impacts when combined with past, present, and any future proposals. In accordance with Section 106 of the National Historic Preservation Act, we will consider the proposal's potential impacts on historic or culturally significant properties, and we will coordinate related information to your office according to the steps outline in 36 CFR 800.3 through 36 CFR 800.7.

3. As part of the environmental analysis, Dyess AFB or its contractor, TEC Inc. may contact you during data collection efforts. In advance, we thank you for your assistance in this activity. If you have any specific questions relative to the proposal, we would like to hear from you. Please contact me at (325) 696-5619.

Teresa A. Clouse

TERESA A. CLOUSE
Chief, Environmental Flight

Attachment
Map of Dyess AFB

Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET, SUITE 123
DYESS AIR FORCE BASE TEXAS 79607-1670

MAY 25 2006

MEMORANDUM FOR U.S. Fish and Wildlife Service
Ecological Services Field Office
711 Stadium Drive, Suite 252
Arlington TX 76011
Attn: Tom Cloud, Field Supervisor

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

SUBJECT: Proposed Energy Security and Conservation Projects at Dyess Air Force Base (AFB), TX

1. Dyess AFB is in the process of preparing an Environmental Assessment (EA) for a proposal to enhance its energy security and conservation. Under the proposed action, Dyess AFB would permit Siemens Building Technologies, Inc. to implement four projects on-base. These projects would involve construction and operation of a 5.4 megawatt (MW) waste to energy (WTE) plant, a backup power plant using diesel-powered generators, a thermal storage plant, and installation of replacement water pump motors. Household waste from the base and the City of Abilene would be used to generate energy through gasification and heat exchange process to power turbines, and Siemens would provide the resultant energy to the base. The WTE plant would be constructed along Military Road on the northern boundary of the installation and fenced to preclude entrance onto the base. The 6-acre WTE plant would represent the most extensive project; the other projects would occur within the interior of the base. The attached map provides the location of the approximate site for the WTE plant construction and operation.

2. The EA will be prepared to evaluate potential environmental and mission impacts resulting from implementation of the proposed action while examining the potential for cumulative impacts when combined with past, present, and any future proposals.

3. The EA will analyze the potential effects of this proposed action on environmental resources. Pursuant to the Endangered Species Act and the National Environmental Policy Act, we are requesting information regarding federally listed or proposed species that may be present in the potentially affected areas. Until the extent of the potential impact to listed species is determined, we will make no decision regarding the need for a Section 7 consultation.

4. As part of the environmental analysis, Dyess AFB or its contractor, TEC Inc. may contact you during data collection efforts. In advance, we thank you for your assistance in this activity. If you have any specific questions relative to the proposal, we would like to hear from you. Please contact me at (325) 696-5619.

TERESA A. CLOUSE
Chief, Environmental Flight

Attachment
Map of Dyess AFB

Global Power For America

DEPARTMENT OF THE AIR FORCE
7TH CIVIL ENGINEER SQUADRON (ACC)
710 3RD STREET, SUITE 123
DYESS AIR FORCE BASE TEXAS 79607-1670

MAY 25 2006

MEMORANDUM FOR Budget Planning and Policy Office
1100 San Jacinto
Austin TX 78701
Attn: Wendy Wyman, Environmental Policy Director

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

SUBJECT: Proposed Energy Security and Conservation Projects at Dyess Air Force Base (AFB), TX

1. Dyess AFB is in the process of preparing an Environmental Assessment (EA) for a proposal to enhance its energy security and conservation. Under the proposed action, Dyess AFB would permit Siemens Building Technologies, Inc. to implement four projects on-base. These projects would involve construction and operation of a 5.4 megawatt (MW) waste to energy (WTE) plant, a backup power plant using diesel-powered generators, a thermal storage plant, and installation of replacement water pump motors. Household waste from the base and the City of Abilene would be used to generate energy through gasification and heat exchange process to power turbines, and Siemens would provide the resultant energy to the base. The WTE plant would be constructed along Military Road on the northern boundary of the installation and fenced to preclude entrance onto the base. The 6-acre WTE plant would represent the most extensive project; the other projects would occur within the interior of the base. The attached map provides the location of the approximate site for the WTE plant construction and operation.

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Teresa A. Clouse

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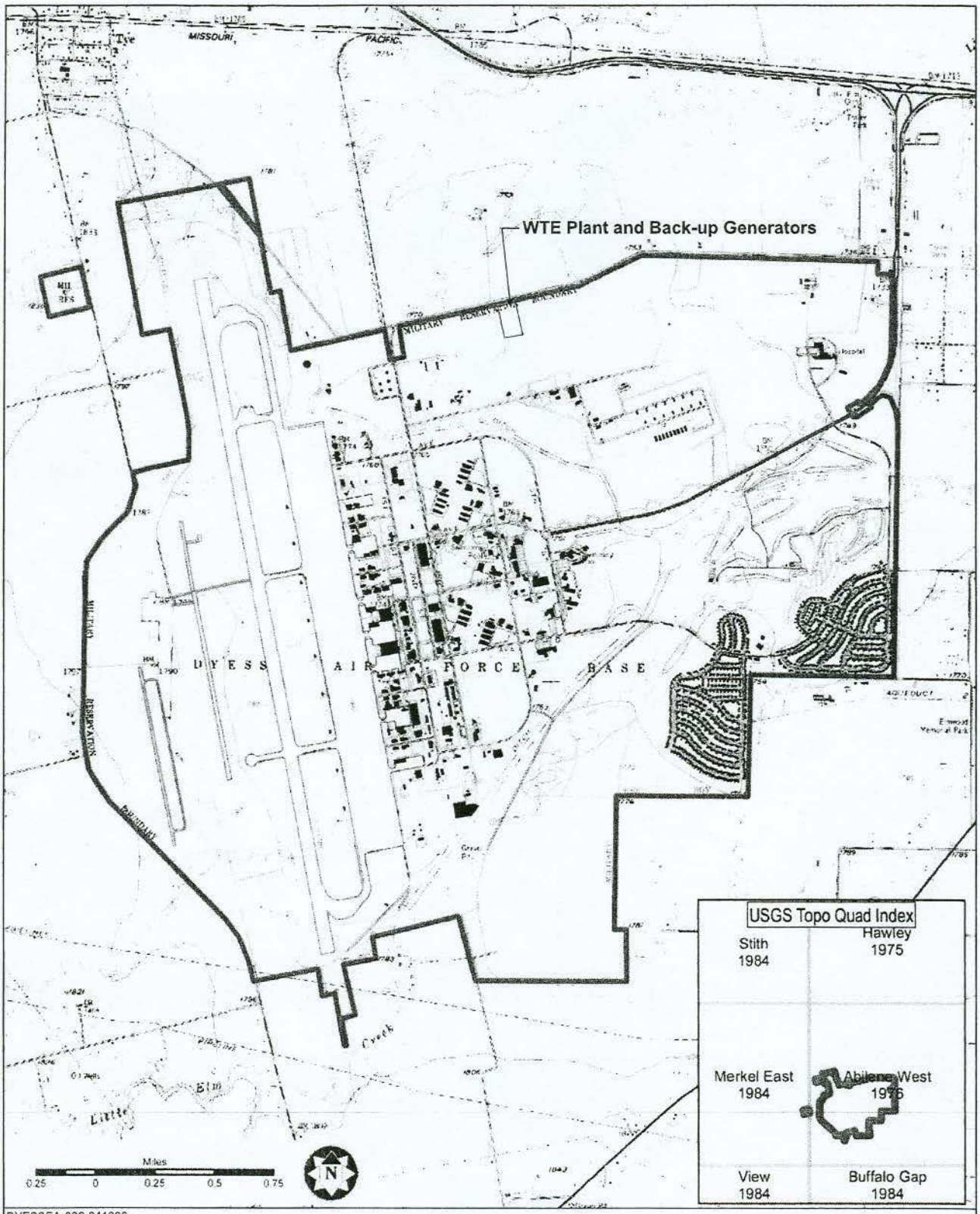
Chief, Environmental Flight

Attachment
Map of Dyess AFB



DYESSEA-022-041906

Proposed WTE Project Location

Dyess Air Force Base Energy Security and Conservation Projects
IICEP Distribution List

The preceding letters was also sent to the following agencies or individuals:

Richard Green
Regional Administrator
U.S. EPA Region VI
Dallas TX

Robert L. Cook
Executive Director
Texas Parks and Wildlife
Austin TX

Winona Henry
Regional Director
Texas Commission on Environmental Quality
Abilene TX

Celeste Brancel
Environmental Review Coordinator
Texas Parks and Wildlife Department
Austin TX

Mayor Norm Archibald
Abilene TX

Abilene City Council Members
Abilene, TX

Tye City Council Members
Tye TX

Troy Fraser
State Senator
District 24
Austin TX

Robert L. Duncan
State Senator
District 28
Lubbock TX

Bob Hunter
State Representative
District 71
Abilene TX

James “Pete” Laney
State Representative
District 85
Hale Center TX

The Honorable John Cornyn
Washington DC

The Honorable Kay Bailey Hutchinson
Washington DC

The Honorable William Thornberry
Washington DC

The Honorable Randy Neugebauer
Washington DC

APPENDIX B

AIR QUALITY CALCULATIONS

Dyess AFB Construction Air Emission Calculations for Back up Generator Facility

Site prep (grading, drainage, utilities etc.) 2.5 acre

	Equipment	Number	Hr/day	# days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Tier 0	Dozer	1	6	2	90	0.59	0.99	3.49	6.9	0.93	0.722	1.39	4.90	9.69	1.31	1.01
Tier 1	Skid steer loader	2	4	6	67	0.23	0.5213	2.3655	5.5988	0.93	0.473	0.85	3.86	9.13	1.52	0.77
Tier 0	Backhoe/loader	2	6	6	98	0.21	0.99	3.49	6.9	0.85	0.722	3.23	11.40	22.54	2.78	2.36
Tier 1	Small generator	1	4	4	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	0.12	0.62	0.79	0.14	0.07
Tier 0	Dump truck	20	1	6	275	0.21	0.68	2.7	8.38	0.89	0.402	10.39	41.25	128.03	13.60	6.14
											Subtotal	15.98	62.04	170.19	19.34	10.35

Foundations (slabs) 7000 sq ft

	Equipment	Number	Hr/day	# days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Tier 1	Skid steer loader	2	4	8	67	0.23	0.5213	2.3655	5.5988	0.93	0.473	1.13	5.14	12.17	2.02	1.03
Tier 0	Concrete truck	13	2	8	250	0.21	0.68	2.7	8.38	0.89	0.402	16.37	65.00	201.75	21.43	9.68
Tier 0	Dump truck	15	1	2	275	0.21	0.68	2.7	8.38	0.89	0.402	2.60	10.31	32.01	3.40	1.54
Tier 0	Delivery truck	6	6	6	180	0.21	0.68	2.7	8.38	0.89	0.402	12.24	48.60	150.84	16.02	7.24
Tier 0	Backhoe/loader	2	8	10	98	0.21	0.99	3.49	6.9	0.85	0.722	7.19	25.34	50.09	6.17	5.24
Tier I	Small generator	2	2	10	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	0.29	1.56	1.98	0.35	0.17
											Subtotal	39.82	155.95	448.84	49.39	24.89

Structures (1-story, 7000 sq ft)

	Equipment	Number	Hr/day	# days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Tier 1	Small generator	2	4	1	10	0.43	0.7628	4.1127	5.2298	0.93	0.4474	0.06	0.31	0.40	0.07	0.03
Tier 0	Delivery truck	1	2	4	180	0.21	0.68	2.7	8.38	0.89	0.402	0.45	1.80	5.59	0.59	0.27
Tier 1	Skid steer loader	2	4	8	67	0.23	0.5213	2.3655	5.5988	0.93	0.473	1.13	5.14	12.17	2.02	1.03
Tier 1	Crane	1	8	2	120	0.43	0.3384	0.8667	5.6523	0.93	0.2799	0.62	1.58	10.29	1.69	0.51
											Subtotal	2.26	8.83	28.44	4.38	1.84

Asphalted areas 1.5

	Equipment	Number	Hr/day	# days	Hp	LF	VOC g/hp-hr	CO g/hp-hr	NOx g/hp-hr	SO2 g/hp-hr	PM g/hp-hr	VOC lb	CO lb	NOx lb	SO2 lb	PM lb
Tier 0	Grader	1	4	2	150	0.59	0.68	2.7	8.38	0.93	0.402	1.06	4.21	13.08	1.45	0.63
Tier 0	Roller	1	4	2	30	0.59	1.8	5	6.9	1	0.8	0.56	1.56	2.15	0.31	0.25
Tier 0	Paver	1	8	2	107	0.59	0.68	2.7	8.38	0.93	0.402	1.51	6.01	18.66	2.07	0.90
Tier 0	Dump truck	16	1	2	275	0.21	0.68	2.7	8.38	0.89	0.402	2.77	11.00	34.14	3.63	1.64
Tier 0	Concrete truck	4	2	2	250	0.21	0.68	2.7	8.38	0.89	0.402	1.26	5.00	15.52	1.65	0.74
Tier 0	Delivery truck	1	2	2	180	0.21	0.68	2.7	8.38	0.89	0.402	0.23	0.90	2.79	0.30	0.13
											Subtotal	7.39	28.69	86.35	9.41	4.29

Asphalt paving operations - VOC emissions from coatings

Area to be covered =	6,000	sq m
tack coat application rate =	0.08	l/sq m
prime coat application rate =	1.59	l/sq m
density of medium cure cutback =	2.06	lb/l
max VOC content =	12%	by wt

VOC emissions from tack coat application = 118.66 lb
VOC emissions from prime coat application = 2358.29 lb

Fugitive dust emissions:

PM_{10} tons/acre/mo	acres	days of disturbance	controls reduction	Uncontrolled Total in lb	Uncontrolled Total in T	$PM_{2.5}/PM_{10}$ Ratio	$PM_{2.5}$ Total Tons
1.2	2.50	40	0%	8000	4.00	0.1	0.4

	VOC	CO	NOx	SO2	PM_{10}	$PM_{2.5}$
TOTAL IN POUNDS	2563	335	892	103	8055	855
TOTAL IN TONS/YR	1.28	0.17	0.45	0.05	4.03	0.43

References

EPA Report No. NR-005c, *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling, April 2004*
EPA Report No. NR-009c, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling—Compression-Ignition*, April 2004
EPA 460/3-91-02, *Nonroad Engine and Vehicle Emission Study--Report*, November 1991
EPA Report No. NR-010d, *Exhaust Emission Factors for Nonroad Engine Modeling—Spark-Ignition*, April 2004.
Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources, Chapter 13, *Miscellaneous Sources,* Section 13.2.3, *Heavy Construction Operations,* January 1995.

ATMOSPHERIC DISPERSION MODEL USING GAUSSIAN DISTRIBUTION

INPUT	Description	Entry
	Not used	
	Percent towards receptor	100
	Wind Speed, mph	5
	Emmission Height, feet	10

CO [lb/hr]	*VOCs* [lb/hr]	NO_X [lb/hr]	SO_2 [lb/hr]	PM_{10} [lb/hr]
46.65	4.9	330	5.61	2.7

Variable Name	Constants Used In Calculation	
u	Wind Speed, meters/sec	1.5
H	Emmission Height, meters	3.048
	Input concentration grams/second	
		5.88
		0.62
		2.00
		0.71
		0.34

			Air Pollutant Concentration		
			Ground Level Release	Release at Height H	Center of Plume
X meters	σ_y meters	σ_z meters	χ gm/m^3	χ gm/m^3	χ gm/m^3
1130	172	125	5.81E-05	5.81E-05	5.81E-05
1130	172	125	6.10E-06	6.10E-06	6.10E-06
1130	172	125	1.97E-05	1.97E-05	1.97E-05
1130	172	125	6.99E-06	6.99E-06	6.99E-06
1130	172	125	3.36E-06	3.36E-06	3.36E-06

Output concentration at dist x	
µg/m^3	milligm/m^3
58.1	0.0581
6.1	0.0061
19.7	0.0197
7.0	0.0070
3.4	0.0034

Engine Generator Emissions

Table B.1 Engine Generator Parameters

Service	Peaking
Number of Engine Gen Sets	5
Power Rating per Gen Set (MW)	2.25
Horsepower Rating per Gen Set	3286
Hours of operation/year	300

Table B.2 Emissions From Each Engine Generator

Gen Set Power, MW	NOx			VOC			PM/PM_{10}			CO		
	lb/MW-hr	lb/hr	tpy	lb/MW-hr	lb/hr	tpy	lb/MW-hr	lb/hr	tpy	lb/MW-hr	lb/hr	tpy
2.25	29	66	9.90	0.44	0.98	0.15	0.24	0.54	0.08	4.1	9.33	1.40
						SO_2						
						Fuel Consumption (gal/hr)	Fuel Density (lb/gal)	Fuel Consumption (lb/hr)	Sulfur Content (Wt % S)	SO_2 Conversion (lb SO_2 / lb S)	lb/hr SO_2	tpy SO_2
						158	7.1	1,122	0.05%	2	1.12	0.17

(1) Emission rates for NOx, VOC, PM/PM_{10}, and CO are based on vendor supplied data.

(2) Emissions of SO_2 are based on a diesel sulfur content of 0.05 wt% sulfur.

Table B.3 Emissions From All Engine Generators Combined

Air Contaminant	lb/hr	tpy
PM/PM_{10}	2.70	0.41
VOC	4.90	0.74
CO	46.65	7.00
NOx	330.00	49.50
SO_2	5.61	0.84

APPENDIX C

FINAL ENVIRONMENTAL ASSESSMENT DISTRIBUTION LIST

Back-Up Generator Facility and Associated Project
Final Environmental Assessment
Distribution List

Demetria Fairley
Budget Planning and Policy Office
Office of State-Federal Relations
1100 San Jacinto, 4th Floor
Austin, TX 78701

Winona Henry
Texas CEQ
1977 Industrial Blvd.
Abilene, TX 79602

Tom Cloud
U.S. Fish and Wildlife Service
Texas Ecological Services Field Office
711 Stadium Drive, Suite 252
Arlington, TX 76011

Robert L. Cook
Texas Parks and Wildlife Dept.
4200 Smith School Road
Austin, TX 78744

Celeste Brancel
Texas Parks and Wildlife Dept.
3000 IH-35 South, Suite 100
Austin, TX 78704

F. Lawrence Oaks
Texas Historical Commission
P.O. Box 12276
Austin, TX 78711

Norm Archibald
Mayor of Abilene
717 Byrd Drive
Abilene, TX 79601

Tye City Council
205 North Street
Tye, TX 79563

Abilene Public Library
1401 S. Danville Drive
Abilene, TX 79605

Dyess AFB Library
349 Third Ave. (Bldg. 6142)
Dyess AFB, TX 79607