FINAL

ENVIRONMENTAL ASSESSMENT

ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN AT LACKLAND AIR FORCE BASE, TEXAS

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14. ABSTRACT

Under the Proposed Action (the Preferred Alternative), Lackland AFB proposes to implement the ADP for the DLIELC and IAAFA academic campus. Implementing the ADP would include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative population. The new facilities and academic campus footprint would be of sufficient size and capacity to accommodate approximately 4,600 students and 1,675 administrative staff. This would be an increase in 3,705 students and 1,096 staff upon full implementation. The total cost for implementation of the ADP is estimated to be approximately $441.8 million. Under the Proposed Action, construction and demolition would begin in 2011 and occur in phases over the next 20 years until 2031. Temporary facilities would be installed immediately and removed upon completion of the facilities that will permanently accommodate the additional students and staff. Siting alternatives assessed in the EA include all of the actions described under the Proposed Action except that facilities and temporary trailers would be installed at various alternative locations within the ADP footprint. The Council on Environmental Quality regulations requires consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the potential impacts of the Proposed Action and other alternatives can be evaluated. Under the No Action Alternative, the USAF would not implement the DLIELC and IAAFA academic campus ADP. The EA evaluates the potential environmental consequences of the Proposed Action, the siting alternatives, and the No Action Alternative on the following general impact topics: noise; air quality; land use; geological resources; water resources; biological resources; health and safety; recreation; utilities and infrastructure, including transportation; hazardous materials and wastes; socioeconomic resources and environmental justice, including public services; and cultural resources.

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Finding of No Significant Impact (FONSI)/
Finding of No Practicable Alternative (FONPA)

Name of the Proposed Action

Environmental Assessment (EA) Addressing the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan (ADP), Lackland Air Force Base, Texas.

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to upgrade and expand the existing DLIELC and IAAFA campus in order to provide both the DLIELC and IAAFA with an academic campus that can accommodate the projected growth of both organizations. The campus is designed to assimilate the students into the American culture, to provide a sense of arrival, and to instill unit integrity. It will be an integrated educational campus that includes the following: academic classrooms, offices, dorms and related supporting facilities; an International Ministries Facility; an International Student Activity Center that will accommodate the foreign student body; an Outdoor Sports Complex equipped with a fitness center, running tracks, soccer and soft-ball fields, and a covered outdoor multi-purpose facility. The Proposed Action includes the construction of new facilities and infrastructure, facility demolition, the installation of temporary trailers, and an increase in student and administrative staff populations. Implementing the DLIELC-IAAFA ADP would create a facility footprint that supports both organizations' increase in mission and would strengthen their joint leadership in building partnership capacity (BPC) with U.S. allies. Although DLIELC and IAAFA have distinctly separate missions and mission requirements as stated above, both organizations fall under the larger security cooperation umbrella of Building Partnerships and BPC with various militaries and civilian defense forces around the globe. The proposed ADP would capture synergies that exist between the two organizations while creating a "Building Partnerships Campus" on Lackland AFB.

Description of the Proposed Action and Alternatives

Proposed Action. Under the Proposed Action, Lackland AFB proposes to implement an ADP to create an academic campus for DLIELC and IAAFA. The ADP proposes a layout consistent with that of an integrated educational campus that includes the following: academic classrooms, offices, dorms, and related supporting facilities; an International Ministries Facility and an International Student Activity Center that will accommodate the foreign student body; and an Outdoor Sports Complex equipped with a fitness center, running tracks, soccer and softball fields, and a covered outdoor multi-purpose facility. The Proposed Action includes new facility and infrastructure construction, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative staff populations. Approximately 450,750 square feet (ft^2) of facilities would be demolished within the ADP and approximately 579,000 ft^2 of new facilities would be constructed within the ADP under the Proposed Action. In summary, the building footprint within the ADP would be increased by a total of approximately 124,000 ft^2

which accounts for both the proposed construction and demolition. The new facilities and campus footprint would be of sufficient size and capacity to accommodate a total of approximately 4,600 students and 1,675 administrative staff from DLIELC, IAAFA, the Air Advisory Academy (AAA) and the Force Support Squadron (FSS). This would be an increase in 3,705 students and 1,096 staff upon full implementation. AAA is currently not located at Lackland AFB but plans to relocate there within the next 5 FYs. DLIELC facilities would be constructed to sufficiently accommodate and host various AAA functions. There will be no facilities constructed that will be solely used by AAA. The total cost for implementation of the ADP is estimated to be approximately $441.8 million. Under the Proposed Action, demolition and construction would begin in 2011 and occur in phases over the next 20 years until 2031. Construction and demolition would occur in phases due to project planning and funding restrictions. The timelines are considered general guidelines and may require adjustment as funding and plans materialize. Temporary facilities would be installed immediately and removed upon completion of the facilities that will permanently accommodate the additional students and staff.

It is intended that the projects contained in this EA will be reviewed prior to implementation, and this document would be updated to accommodate changes in project scope or environmental conditions of the project area. For any project listed in this EA programmed beyond year 5, if the project or affected environment changes by the time of implementation such that they are no longer covered by the analysis provided in this EA, additional EIAP documentation may be required. The collective analysis of all projects within the next 20 years associated with the ADP in a single EA will: eliminate project fractionation and segmentation; facilitate coordination of land use planning; expedite project execution by using early planning; reduce installation, reviewing agency, and major command workloads; provide cost savings; help better evaluate potential cumulative environmental impacts; assist in maintaining a baseline for future analysis; encourage agency coordination; and meet the USAF's EIAP goals.

Site Configuration Alternative. Under this alternative, all of the actions described under the Proposed Action would occur except the facilities to be constructed would be placed in different configurations within the ADP footprint. Specifically, the placement of the tennis courts would be next to the baseball fields in this alternative rather than on the most northern end of the ADP footprint as under the Proposed Action. The same building types would be constructed and demolished, temporary modular facilities would be installed, and the student and administrative staff populations would increase. .

Temporary Trailer Site Alternative 1. Under this alternative, all of the actions described under the Proposed Action would occur, and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, the same type and number of temporary facilities would be installed, and the student population and administrative staff would increase.

Temporary Trailer Site Alternative 2. Under this alternative, all of the actions described under the Proposed Action would occur, and the temporary classroom and administrative trailer would

be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, the same type and number of temporary facilities would be installed, and the student population and administrative staff would increase

No Action Alternative. CEQ regulations require consideration of the No Action Alternative for all proposed actions. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential alternatives can be compared. Consequently, it is carried forward for further evaluation in the EA.

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. Additional students could not be adequately housed or trained at the Lackland AFB DLIELC or IAAFA campus.

Summary of Environmental Effects

The public and regulatory agency scoping process focused the analysis on the following environmental resources: noise, land use, air quality, safety, geology and soils, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, and hazardous materials and wastes. Details of the environmental consequences can be found in the *Environmental Assessment (EA) Addressing the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan (ADP), Lackland Air Force Base, Texas*, which is hereby incorporated by reference.

Notice of Involvement With Potential Wetland

As guided by Executive Order (EO) 11990, *Protection of Wetlands*, and Air Force Instruction (AFI) 32-7064, *Integrated Natural Resources Management*, the USAF hereby provides notice of the potential for water feature impacts. Storm water management improvements under the Proposed Action would include culverting the manmade drainage ditch in the southwest corner of the installation and would require the filling of approximately 593 linear feet of this manmade linear drainage feature. This water feature is not considered a water of the U.S. as determined by a USACE jurisdictional determination in 2008.

As described previously, all practicable alternatives to the Proposed Action are located within the ADP footprint and would require these storm water management improvements. For the reasons stated in the EA, the dismissed alternatives are not practicable alternatives to avoiding the impacts to the water feature.

Conclusion

Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and were coordinated with the appropriate Federal, state, and local agencies. The attached EA and this FONSI/FONPA were made available to the public for a 30-day review period. Agencies were coordinated with throughout the EA development process, and their comments were incorporated into the analysis of potential environmental impacts performed as part of the EA.

Finding of No Significant Impact/Finding of No Practicable Alternative

Based on the information and analysis presented in the EA which was prepared in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality regulations, implementing regulations set forth in 32 Code of Federal Regulations 989 (*Environmental Impact Analysis Process*), as amended, and based on review of the public and agency comments submitted during the 30-day public comment period, I conclude that the environmental effects of implementing the DLIELC and IAAFA ADP are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a FONSI/FONPA is appropriate. Pursuant to Executive Order 11990, *Protection of Wetlands*, Executive Order 11988, *Floodplain Management*, Air Force Instruction 32-7064, *Integrated Natural Resources Management*, and the authority delegated by Secretary of the Air Force Order 791.1, and taking the above information into account, I find that there is no better practicable alternative to this action, and the Proposed Action includes all practicable measures to minimize harm to the wetland and floodplain environments.

21 May 2012

DAVID F. DEMARTINO, Colonel, USAF, P.E. Date
The Civil Engineer
Headquarters Air Education and Training Command

28 May 2012

THERESA C. CARTER Date
Brigadier General, USAF
Commander

Attachment: *Environmental Assessment (EA) Addressing the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan (ADP), Lackland Air Force Base, Texas*

ABBREVIATIONS AND ACRONYMS

318 TRS	318th Training Squadron
37 TW	37th Training Wing
837 TRS	837th Training Squadron
$\mu g/m^3$	microgram per cubic meter
AAA	Air Advisory Academy
ac-ft/yr	acre-feet per year
ACC	Ambulatory Care Center
ACM	asbestos-containing material
ACP	Access Control Point
ADP	Area Development Plan
ADSL	Average Daily Student Load
AEI	Air Emissions Inventory
AETC	Air Education and Training Command
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFMPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
AMIGO	American Members of International Goodwill to Others
AOC	Area of Concern
APE	Area of Potential Effect
AQCR	Air Quality Control Region
AST	aboveground storage tanks
AT/FP	Anti-terrorism/Force protection
bgs	below ground surface
BA	Biological Assessment
BASH	Bird/wildlife Aircraft Strike Hazard
BMP	Best Management Practice
BMT	Basic Military Training
BO	Biological Opinion
BPC	Building Partnership Capacity
BRAC	Base Realignment and Closure
CAA	Clean Air Act
CC	Cadet Center
CE	Civil Engineering
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESQG	conditionally exempt small-quantity generator
CFR	Code of Federal Regulations
CGP	Construction General Permit
CITS	Combat Information Transport System
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
CY	calendar year
dBA	A-weighted decibel
DLIELC	Defense Language Institute English Language Center
DLIFLC	DLI Foreign Language Center
DNL	Day-Night Average Sound Level
DOD	Department of Defense
DSCA	Defense Security Cooperation Agency
EA	Environmental Assessment
ECL	English comprehension level
ECOM	External Combustion Engine
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
ESCP	Erosion-and-Sediment-Control Plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMS	Foreign Military Sales
FONPA	Finding of No Practicable Alternative
FONSI	Finding of No Significant Impact
FOT	follow-on training
FPPA	Farmland Protection Policy Act
FR	Federal Register
FSS	Force Support Squadron
ft^2	square feet
FY	fiscal year
GHG	greenhouse gases
HAP	hazardous air pollutant
HAZMART	hazardous materials pharmacy
HQ	Headquarters
HUD	U.S. Department of Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
IAAFA	Inter-American Air Forces Academy
ICOM	Internal Combustion Engine
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IMET	International Military and Education Training
IMI	Interactive Multimedia Instruction
IOS	International Operations Squadron
ISQ	International Student Quarter
IT	information technology
LBP	lead-based paint

LEA/LEAA	Academics Division CC/Support
LEAG	General English Branch
LEAI	Instructor Development Branch
LEAM	Media and Technology Branch
LEAS	Specialized English Branch
LEAT	Test and Measurement Branch
LEED	Leadership in Energy and Environmental Design
LEF	Field Studies
LEN	Expeditionary Squadron
LEO	Resident Program
LESS/RIM	Book Store/Return
LID	Low-Impact Development
LQG	large-quantity generator
mg/m^3	milligram per cubic meter
MBTA	Migratory Bird Treaty Act
MCF/d	million cubic feet per day
MGD	million gallons per day
MILCON	military construction
MM Btu/hr	million British Thermal Units per hour
MMRP	Military Munitions Restoration Program
MOU	Memorandum of Understanding
MS4	Municipal Separate Storm Sewer Systems
MSA	metropolitan statistical area
MSDS	Material Safety Data Sheets
MSL	mean sea level
MW	mega watts
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NTU	nephelometric turbidity units
O_3	Ozone
OSHA	Occupational Safety and Health Administration
percent g	percent gravity
ppm	parts per million
psi	pounds per square inch
Pb	Lead
PCB	Polychlorinated Biphenyl
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter (including particulate matter equal to or less than 10 microns in diameter)
PSD	Prevention of Significant Deterioration
QD	Quantity-Distance
QDR	Quadrennial Defense Review
RCRA	Resource Conservation and Recovery Act
RH&T	Recruit Housing and Training
RMD	Resource Management Decision
ROI	Region of Influence
SAACC	San Antonio Aviation Cadet Center
SAI	San Antonio Intrastate
SAP	satellite accumulation point
SAWS	San Antonio Water System
SC	Security Cooperation
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Office
SI	Site Investigation
SIP	State Implementation Plan
SO_2	sulfur dioxide
SPCC	Spill Prevention Control and Countermeasure
SQG	small-quantity generator
SSPP	Strategic Sustainability Performance Plan
SWMU	solid waste management unit
SWPPP	Storm Water Pollution Prevention Plan
TAC	Texas Administrative Code
TCEQ	Texas Commission of Environmental Quality
TCP	Traditional Cultural Property
TMDL	Total Maximum Daily Load
TPWD	Texas Parks and Wildlife Department
tpy	tons per year
TPDES	Texas Pollutant Discharge Elimination System
TRADOC	Training and Doctrine Command
TSA	Trade Security Administration
U.S.C.	United States Code
UFC	Unified Facilities Criteria
UM	unit of measure
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	underground storage tanks
VOC	volatile organic compound
WHMC	Wilford Hall Medical Center
WWTP	Waste Water Treatment Plant

COVER SHEET

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN AT LACKLAND AIR FORCE BASE, TEXAS

Responsible Agencies: U.S. Air Force (USAF), Air Education and Training Command (AETC), Lackland Air Force Base (AFB), 802nd Mission Support Group, Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA).

Affected Location: Lackland AFB, Texas.

Report Designation: Final Environmental Assessment (EA) Addressing the DLIELC and IAAFA Area Development Plan (ADP).

Abstract: Under the Proposed Action (the Preferred Alternative), Lackland AFB proposes to implement the ADP for the DLIELC and IAAFA academic campus. Implementing the ADP would include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative population.

The new facilities and academic campus footprint would be of sufficient size and capacity to accommodate approximately 4,600 students and 1,675 administrative staff. This would be an increase in 3,705 students and 1,096 staff upon full implementation. The total cost for implementation of the ADP is estimated to be approximately $441.8 million. Under the Proposed Action, construction and demolition would begin in 2011 and occur in phases over the next 20 years until 2031. Temporary facilities would be installed immediately and removed upon completion of the facilities that will permanently accommodate the additional students and staff.

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The EA evaluates the potential environmental consequences of the Proposed Action, the siting alternatives, and the No Action Alternative on the following general impact topics: noise; air quality; land use; geological resources; water resources; biological resources; health and safety; recreation; utilities and infrastructure, including transportation; hazardous materials and wastes; socioeconomic resources and environmental justice, including public services; and cultural resources.

Inquiries regarding this document should be sent to Mr. Andrew Riley P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236.

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ENVIRONMENTAL ASSESSMENT
ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN AT LACKLAND AIR FORCE BASE, TEXAS

802nd Mission Support Group
802nd Civil Engineer Squadron
1555 Gott Street
Lackland AFB, Texas 78236

JANUARY 2012

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN AT LACKLAND AIR FORCE BASE, TX

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1. Purpose of and Need for the Proposed Action

This Environmental Assessment (EA) addresses Lackland Air Force Base's (AFB) proposal to implement the Defense Language Institute English Language Center (DLIELC) and Inter-American Air Forces Academy (IAAFA) Area Development Plan (ADP). This section presents an introduction to important issues relevant to the project, the purpose of and need for the Proposed Action, the project location, a summary of key environmental compliance requirements, and an overview of the organization of the EA.

1.1 Introduction and Background

1.1.1 Defense Language Institute English Language Center

1.1.1.1 Mission

The DLIELC is a Department of Defense (DOD) agency responsible for the management and operation of the Defense English Language Program. The Program trains international military and civilian personnel to speak and teach English; manages the English as a Second Language Program for the United States military; manages nonresident English training programs; provides for the health, morale, and welfare of the Defense English Language Program's students; and conducts the DOD Field Studies Program (DLIELC undated).

1.1.1.2 General Description

The formal beginning of the DLIELC was in May 1954 at Lackland AFB, when the 3746th Pre-Flight Training Squadron (language) was activated and assumed responsibility for all English language training. The Language School, U.S. Air Force (USAF), activated and assumed the mission in 1960. In 1966, the DOD established the Defense Language Institute English Language School under U.S. Army control, although the school remained at Lackland AFB. In 1976, the DOD appointed the USAF as the executive agent for the school and redesignated it the DLIELC. DLIELC instructors are qualified in English as a Second Language and the school is accredited by the Commission on English Language Program Accreditation, which is certified by the U.S. Department of Education (DLIELC undated).

DLIELC is divided into three resident academic training sections: General English, Specialized English, and Instructor Development. Depending on the needs of the students, training can range from 9 weeks (in Specialized English, for example) to 52 weeks in General English. Some students arrive with limited English capabilities and are placed in a predetermined English comprehension level (ECL) in General English. Others who have achieved their required ECL either in-country or in the DLIELC resident General English program are designated for follow-on training (FOT) within the continental United States and attend Specialized English training. In the Specialized English program, students are taught familiarization with the technical terminology and specific language skills they will use in their careers. In the Instructor Development program, students are trained to become English language instructors or program managers in their respective countries. In addition to DLIELC's mission to train international students, DLIELC is responsible for providing English language training to U.S. military service members whose primary language is not English (DLIELC 2010).

DLIELC also serves as a vital element of U.S. foreign policy, as it supports the larger Security Cooperation (SC) umbrella of Building Partnership Capacity (BPC) with various militaries and civilian defense forces around the globe (Trismen 2010). The concept of BPC was first introduced in the 2006 Quadrennial Defense Review (QDR) Report as a means for the United States to strengthen its freedom of action at the strategic level (DOD 2006). BPC is partially accomplished through SC, which is defined by

DOD as those activities conducted with allies and friendly nations to build relationships that promote specified U.S. interests, build allied and friendly nation capabilities for self-defense and coalition operations, and provide U.S. forces with peacetime and contingency access (DSCA 2007). DLIELC specifically supports the SC and BPC initiatives as students from more than 100 countries annually enroll in the DLIELC resident training programs, building positive relationships between the United States and these countries (DLIELC 2010).

The existing DLIELC campus, located on the southwest quadrant of Lackland AFB (see **Figure 1-2**), provides facilities and equipment that are conducive to effective learning, such as lodging, classrooms within walking distance, a computer-based language laboratory, and a Learning Center that has a variety of multimedia software and includes a library. Students are encouraged to bridge cultural barriers by participating in sports events with each other and with U.S. students. They can also take advantage of tours offered by DLIELC's Field Studies Program. In addition, the DLIELC international student sponsor program, American Members of International Goodwill to Others (AMIGO), provides interaction with volunteer sponsors from both the U.S. military and the local community. Since attendance at DLIELC is frequently the international students' first contact with Americans, the AMIGO program provides the international students with a much-needed opportunity to better understand the American way of life and enables the students to learn about the diversity of American culture and customs (DLIELC 2010).

1.1.2 Inter-American Air Forces Academy

1.1.2.1 Mission

IAAFA is an Air Force agency responsible for the education and training of military, civilian, and national police personnel to foster enduring inter-American engagement among 22 Latin American and Caribbean nations.

1.1.2.2 General Description

IAAFA was founded in March 1943, at the request of Peru's Minister of Aeronautics, General Fernando Melgar. The Academy trained 11 Peruvian students at Albrook Field, Panama Canal Zone, marking the first U.S. aeronautics training in Latin America (IAAFA undated).

In the 1940s and 1950s, the Academy expanded and changed in response to potential conflict in the Western Hemisphere and the world at large. In 1952, the Commandant established the format for today's IAAFA, emphasizing hands-on training, adding officer courses, and creating a Student Section responsible for military and athletic instruction and U.S. cultural awareness. In response to U.S. emphasis in Latin America, the Academy changed its name from the "Central and South American Air School" to the "United States Air Force School for Latin America," to finally the "Inter-American Air Forces Academy" in 1966 (IAAFA undated).

In September 1989, IAAFA moved from Albrook Air Force Station, Panama, to Homestead AFB, Florida, reopening in June 1990. In September 1992, following almost complete destruction by Hurricane Andrew, IAAFA relocated to Lackland AFB, Texas, opening in January 1993.

Similar to DLIELC, IAAFA also plays an integral role in U.S. foreign policy by supporting SC and BPC (Trismen 2010). Specifically, IAAFA supports the SC and BPC initiatives by conducting training activities for allies and friendly nations to build relationships between the United States and Central and South American countries.

IAAFA currently provides education and training to foreign nationals from Central and South America in their native languages in specialized, technical, and academic courses. Today, IAAFA graduates an average of 800 students a year (IAAFA undated).

1.2 Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to upgrade and expand the existing DLIELC and IAAFA campus in order to provide both the DLIELC and IAAFA with an academic campus that can accommodate the projected growth of both organizations. The campus is designed to assimilate the students into the American culture as well as to provide a sense of arrival and instill unit integrity. It will be an integrated educational campus to include academic classrooms, offices, dorms and related supporting facilities; an International Ministries Facility and an International Student Activity Center to accommodate the foreign student body; and an Outdoor Sports Complex to include a fitness center, running tracks, soccer and softball fields, and a covered outdoor multi-purpose facility. The Proposed Action includes the construction of new facilities and infrastructure, facility demolition, the installation of temporary trailers, and an increase in student and administrative staff population. Implementing the DLIELC-IAAFA ADP would create a facility footprint that supports both organizations' increase in mission and would strengthen their joint leadership in BPC with U.S. allies (AFCEE 2010). Although DLIELC and IAAFA have distinctly separate missions and mission requirements, as stated previously, both organizations fall under the larger SC umbrella of Building Partnerships and BPC with various militaries and civilian defense forces around the globe. The proposed ADP would capture synergies that exist between the two organizations, while creating a "Building Partnerships Campus" on Lackland AFB (IAAFA undated).

Certain facility and mission requirements must be present or reasonably attainable to meet the purpose of and need for the Proposed Action. Specifically, the following factors are considered necessary for meeting the purpose of and need for the Proposed Action:

- Ability to physically accommodate a 200 percent increase in DLIELC students and a 30 percent increase in IAAFA students in dining, lodging, fitness, and instructional facilities
- Ability to introduce students to American culture
- Ability to instruct students in accordance with each organizations' mission (i.e., teach English for DLIELC, teach in native language for IAAFA)
- Required relocation of organizations and services
- Strengthen joint leaderships in BPC
- Central location of organizations and services.

DLIELC

DLIELC's need to implement the ADP is based on a projected and validated increase in English training requirements by the Defense Security Cooperation Agency (DSCA). Specifically, Resource Management Decision (RMD) 700 tasked the Air Force to develop a business model for DLIELC. DSCA is the DOD agency that was charged with managing the projected English language training requirement based on current data in the Security Assistance Network and the increases (and projected trend) in Foreign Military Sales (FMS), International Military and Education Training (IMET), and other title 10 and 22 grant programs (Sitterly 2010). DSCA validated and transmitted an increase in English language training to the USAF.

The projected training requirements validated by DSCA are considered the DOD required Average Daily Student Load (ADSL) forecast, and will be used in finalizing fiscal year (FY) 2012 budgets. DLIELC's current ADSL capability is 870 students; therefore, the validated student projections listed as follows represent a need for increased DLIELC ADSL capabilities (Sitterly 2010). The ADSL will increase incrementally up to 1,850 in FY 2012 with a 20 percent surge capacity, or 2,220 students. The administrative population will also increase incrementally to 680 during FY 2012 (LAFB 2010b). The ADSL and administrative staff for DLIELC could reach 4,000 and 1,100, respectively, depending on future and pending FMS transactions (LAFB 2011a).

As stated, DLIELC's current ADSL capacity is less than 50 percent of the FY 2012 projected student population. Therefore, this growth will put a critical strain on existing facilities and infrastructure, including DLIELC's four buildings and Lackland AFB support facilities. Current capacity limits in facilities and infrastructure will not adequately accommodate DLIELC's mission to efficiently provide English language training, feeding, lodging, exercise, and spiritual support to students, nor will it provide an adequate working environment for the faculty and staff (Humphrey 2010). In summary, the DLIELC campus and Lackland AFB need to accommodate a student population of up to 4,000, composed of both international military and U.S. students and a faculty and staff population of up to 1,100 (LAFB 2010b). In order to support this requirement, the DLIELC campus needs additional classrooms and administrative and support spaces to execute its mission (Humphrey 2010).

IAAFA

IAAFA's need to implement the ADP is threefold: DLIELC's pending growth, the need to replace aging facilities, and IAAFA's potential growth in personnel and students (Trismen 2010).

As described, the DLIELC's capabilities are projected to increase over the next several years, putting a critical strain on existing facilities shared by DLIELC and IAAFA. These facilities include the AMIGO Inn Dining Facility, the Chaparral Gym, and International Student Quarters (ISQs). Current capacity limits at these locations will not adequately accommodate IAAFA's mission needs to efficiently feed, lodge, and exercise its students in light of DLIELC's mandated growth. At a minimum, IAAFA will require an additional 80 to 100 dedicated ISQs to meet student lodging needs. In addition, a second or expanded dining facility and an expanded gymnasium will also be required to accommodate mission needs (Trismen 2010).

The IAAFA Headquarters Building (#7355) and 837th Training Squadron (837 TRS) Building (#7353) are vestiges of the Korean War era. A facility condition assessment was completed on these buildings, among others within the ADP, to provide guidance for improving the quality of the DLIELC and IAAFA campus and to create a quantifiable facility condition assessment. The facility condition assessment ranked these facilities with a poor rating and recommended that these buildings be demolished (LAFB 2011c). While the façades of these facilities give the former barracks a modern look from the outside, the interiors have not been modernized and have a hollow, trailer-like feel. The offices are hot during the summer months and cold in the winter due to lack of adequate insulation. Moreover, both facilities have been plagued by mold, most likely due to poor insulation and inadequate heating, ventilation, and air conditioning (HVAC) capabilities. Over the past several years, more than $500,000 in maintenance has been invested in these aging structures. Approximately $200,000 was spent in 2010 to remove moldy wallpaper, replace worn-out bathroom fixtures, and update conference room facilities routinely visited by both foreign and U.S. dignitaries. It is estimated that long-term sustainment costs will quickly outweigh the occupancy or construction of a new facility to house the IAAFA headquarters and 837 TRS operations (Trismen 2010).

Finally, IAAFA is a small academy with potential to expand its scope of operations. IAAFA is currently staffed with 101 permanent personnel. IAAFA expects to add between 15 and 30 permanent party billets. Not only will this relieve a manpower deficiency, but it will also allow the academy to teach more students per year. Currently, the academy graduates approximately 800 students per year. At the same time, more than 150 students per year are turned away due to lack of instructors or facilities. With added permanent staffing, IAAFA has the potential to graduate approximately 1,000 students per year, in keeping with growing demand. Added personnel and students, however, will generate a need for additional office and classroom space (Trismen 2010).

DLIELC's impending growth, at a minimum, also generates an IAAFA need for additional facilities per the scope of the ADP. Moreover, on an installation filled with new construction, IAAFA's aging structures represent an eyesore for distinguished visitors, a financial burden, and a poor quality of life for those who work there. Lastly, IAAFA's potential for growth generates a need for additional and expanded structures to meet mission needs for the forthcoming decades (Trismen 2010).

1.3 Decision to Be Made and Decisionmaker

The Commander, 502nd Air Base Wing will make a decision whether to implement the ADP, and whether or not to sign a Finding of No Significant Impact (FONSI for the Proposed Action, based on the impacts analysis of the alternatives addressed in this EA, among other information. The Civil Engineer of the Air Education and Training Command (AETC) will make a decision whether or not to sign a Finding of No Practicable Alternative (FONPA) for the Proposed Action, based on the impacts analysis of the alternatives addressed in this EA, among other information.

1.4 Project Location

Lackland AFB is in Bexar County, in the south-central portion of Texas, approximately 8 miles southwest of downtown San Antonio, Texas (see **Figures 1-1** and **1-2**). The installation encompasses approximately 9,572 acres. In 1995, the Base Realignment and Closure (BRAC) Commission recommended the closure of the adjacent Kelly AFB and realigned the runway and some USAF functions to Lackland AFB. Subsequently, the main portion of the former Kelly AFB aircraft maintenance depot and logistics functions was closed, and the land and facilities were transferred to the San Antonio Port Authority. In July 2001, selected portions of the former installation were realigned to Lackland AFB as the Kelly Field Annex. Currently, Lackland AFB consists of the Main Base, Kelly Field Annex, and Lackland Training Annex (formerly the Medina Annex). The Kelly Field Annex is one of the busiest airfields in the DOD inventory (DOD 2009, LAFB undated b).

Lackland AFB is one of three installations composing Joint Base San Antonio, as part of the 502nd Air Base Wing. Installation support functions and services are managed by the 802nd Mission Support Group. Lackland AFB is home to more than 120 DOD and associate organizations, including the 37th Training Wing (37 TW), which is the largest training wing in the USAF.

Other major tenants at Lackland AFB include the Air Reserve Command's 433rd Airlift Wing; the Texas Air National Guard 149th Fighter Wing; the 59th Medical Wing; the Air Force Intelligence, Surveillance, and Reconnaissance Agency; and the 67th Network Warfare Wing (LAFB undated b).

There are 18 Air Combat Command units under the Air Force Intelligence, Surveillance, and Reconnaissance Agency and the 67th Network Warfare Wing at Lackland AFB. The remaining units are within the 59th Medical Wing; the Texas Air National Guard's 149th Fighter Wing; and other tenant units, agencies, and centers (DOD 2009).

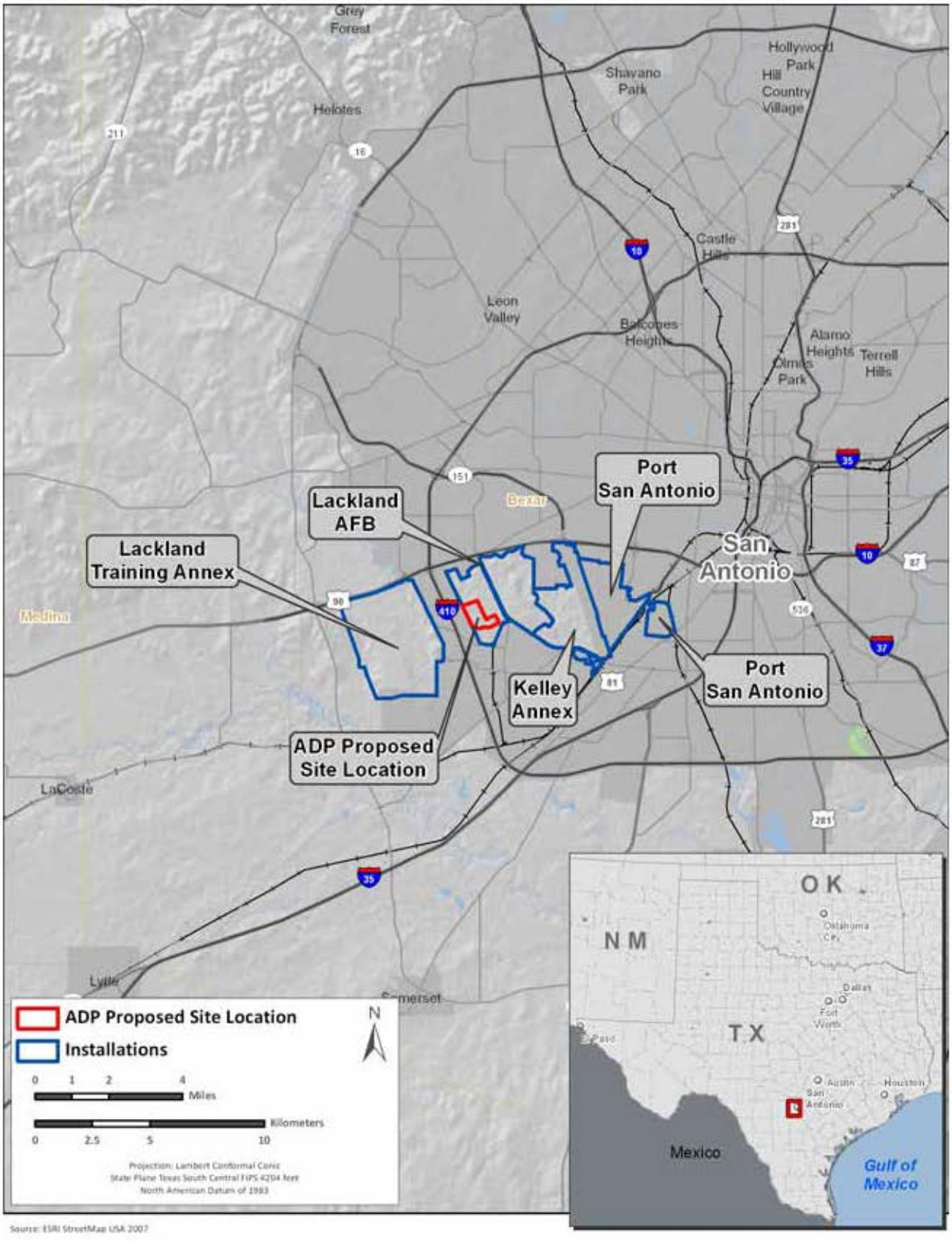

Figure 1-1. Lackland AFB and Surrounding Areas

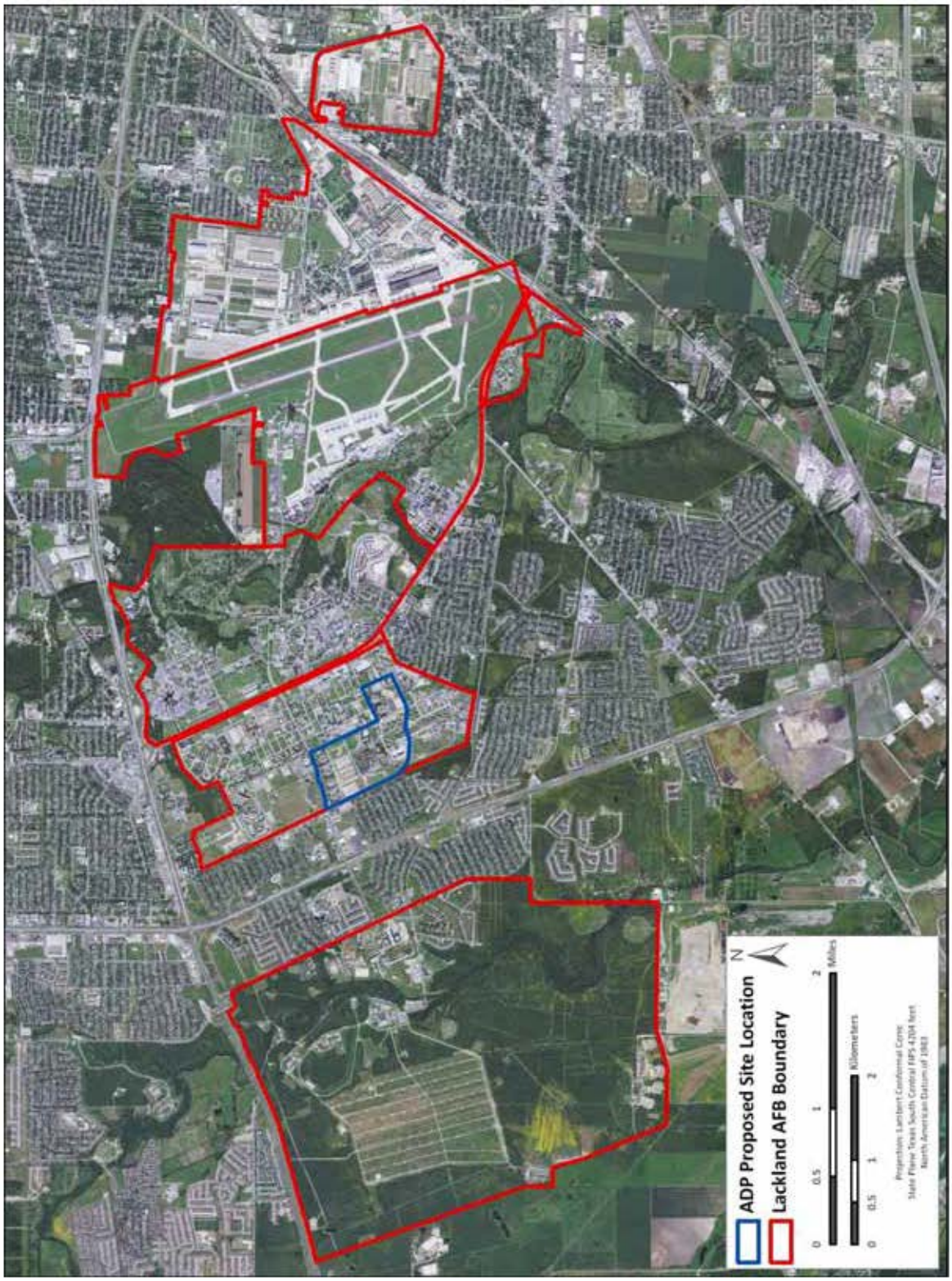

Figure 1-2. Proposed Project Location at Lackland AFB

The proposed DLIELC and IAAFA ADP site is located within the western portion of Lackland AFB. The area is bounded by the installation perimeter to the west, Truemper Street and a portion of Selfridge Avenue to the north, Carswell and Walker avenues to the east, and Gott and Tinker streets to the south (LAFB 2011c).

1.5 Summary of Key Environmental Compliance Requirements

1.5.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C.] Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts associated with proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that was charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA.

The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action.

The process for implementing NEPA is outlined in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a FONSI or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency's compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

Air Force Policy Directive 32-70, *Environmental Quality*, states that the USAF will comply with applicable Federal, state, and local environmental laws and regulations, including NEPA. The USAF's implementing regulation for NEPA is *Environmental Impact Analysis Process* (EIAP), 32 CFR Part 989, as amended.

1.5.2 Integration of Other Environmental Statutes, Regulations, and Executive Orders

To comply with NEPA, the planning and decisionmaking process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decisionmaker to have a comprehensive view of key environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

Executive Order (EO) 13514, *Federal Leadership In Environmental, Energy, and Economic Performance* (October 5, 2009) directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation, and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution

prevention, regional development and transportation planning, and sustainable building design; and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The CEQ regulations at 40 CFR 1502.16(e) direct agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

The proposed project footprint includes a man-made drainage canal that, over time, has taken on wetland characteristics (see photographs in **Appendix C**). Under the Proposed Action, the drainage canal could be redirected and improved with engineered structures to facilitate local drainage and flood control. This structure is considered by the U.S. Army Corps of Engineers (USACE) to be a nonjurisdictional wetland (USACE 2008-Rev. Jan. 2012). Although not subject to Section 404 of the Clean Water Act (CWA), the USAF is required to manage the wetland in accordance with Air Force Instruction (AFI) 32-7064 *Integrated Natural Resources Management*, which includes the USAF guidance for compliance with EO 11990, *Protection of Wetlands*.

EO 11990 states that if the head of an agency finds that the only practicable alternative is construction within a wetland, the agency shall design or modify its action to minimize potential harm to or within the wetland, and prepare and circulate a notice explaining why the action is proposed within the wetland. In accordance with EO 11990 and 32 CFR Part 989, a FONPA must accompany the FONSI (hereafter referred to as a FONSI/FONPA), stating why there are no practicable alternatives to construction within a wetland. Because of the potential impacts on the drainage canal wetland associated with the Proposed Action, whether beneficial or negative, a FONPA would be required. When the only practicable alternative is to construct in a wetland (or site in a floodplain under EO 11988, Floodplain Management), the following eight-step decisionmaking process as described by the Federal Emergency Management Agency (FEMA) is taken:

1. Determine whether the action will occur in, or stimulate development in, a floodplain or wetland.
2. Receive public review/input of the Proposed Action.
3. Identify and evaluate practicable alternatives to locating in the floodplain or wetland.
4. Identify the impacts of the Proposed Action (when it occurs in a floodplain or wetland).
5. Minimize threats to life, property, and natural and beneficial floodplain values, and restore and preserve natural and beneficial floodplain values.
6. Reevaluate alternatives in light of any new information that might have become available.
7. Issue findings and a public explanation.
8. Implement the action.

Because the eight-step process runs parallel to the NEPA process, the USAF will use this EA to satisfy the eight-step decisionmaking process, including public notice. AETC and the Commander, 502nd Air Base Wing would be required to sign the FONSI/FONPA prior to implementing the Proposed Action or alternatives.

This EA examines potential effects of the Proposed Action and alternatives on 12 resource areas: noise; air quality; land use; geological resources (mining/minerals); water resources; biological resources; health and safety; recreation; utilities and infrastructure, including transportation; hazardous materials and wastes, including medical wastes; socioeconomic resources and environmental justice, including public services; and cultural resources. These resources could be affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by EO, regulation, or policy.

Appendix A contains examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. Where useful to better understanding, key provisions of the statutes and EOs described in **Appendix A** will be discussed in more detail in the text of this EA.

1.5.3 Permits, Licenses, and Entitlements Required

The Proposed Action would require Lackland AFB to submit a request for a Construction Waiver to Headquarters (HQ) AETC/Civil Engineering (CE) for review and approval prior to the commencement of the Proposed Action. In addition, the Proposed Action would require the acquisition of the following additional permits:

- Construction Site Notice or Notice of Intent to Construct
- National Pollutant Discharge Elimination System (NPDES) Phase II Storm Water Discharge Permit
- USAF Form 103, Construction/Digging Permit.

As part of the Proposed Action, the construction contractor would be required to comply with all of the requirements in the plans and permits that were developed specifically for Lackland AFB, as follows:

- Storm Water Pollution Prevention Plan (LAFB 2009d)
- Municipal Separate Storm Sewer Systems (MS4) General Permit No. TXR040000 (LAFB 2009e).

1.5.4 Interagency and Intergovernmental Coordination for Environmental Planning

The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs,* require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning* (IICEP), requires the USAF to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements (i.e., to determine the scope of issues to be addressed in detail in this EA). Through the IICEP process, the USAF notifies relevant Federal, state, and local agencies of the Proposed Action and alternatives and provides them sufficient time to make known their environmental concerns specific to the Proposed Action and alternatives.

NEPA requirements also help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if Federal proponents of an action provide information to state and local governments and the public and involve them in the planning process. CEQ guidance in 40 CFR 1501.7 specifically states, "There shall be an early and open process for determining the scope of issues to be addressed and for identifying the significant issues related to proposed actions. This process shall be termed scoping." The public involvement process augments the USAF opportunity to cooperate with and consider state and local views in implementing a Federal proposal.

Through the IICEP process, Lackland AFB notified relevant Federal, state, and local agencies of the Proposed Action and alternatives and provided them sufficient time to make known their environmental concerns specific to the action. Lackland AFB will also provide notice to Indian tribes who might be interested or affected by the Proposed Action. The IICEP process provides Lackland AFB the opportunity to cooperate with and consider state and local views in implementing the Federal proposal.

All IICEP material related to this EA will be included in **Appendix B**, which will be expanded throughout the EA process.

A Notice of Availability (NOA) for the Draft EA was published in the *San Antonio Express News*. The NOA solicited public comments on the Draft EA, but none were received. Agency responses on the Draft EA were considered, and are included in Appendix B.

1.5.5 Organization of this Document

This EA is organized into six sections, plus appendices. **Section 1** of the EA provides the Purpose of and Need for the Proposed Action. **Section 2** contains a Description of the Proposed Action and Alternatives, including the No Action Alternative; and a discussion of other alternatives considered. **Section 3** of the EA contains a general description of the environmental resources and baseline conditions that could potentially be affected by the Proposed Action and alternatives, and presents an analysis of the potential environmental consequences of implementing the Proposed Action and the No Action Alternative. **Section 4** includes an analysis of the potential cumulative impacts at Lackland AFB. **Section 5** lists the preparers of the document. **Section 6** lists the references used in the preparation of the document. **Appendix A** contains applicable laws, regulations, policies, and planning criteria potentially relevant to NEPA analysis. **Appendix B** includes all IICEP materials, agency consultation letters, and public involvement materials.

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2. Description of Proposed Action and Alternatives

This section describes the Proposed Action and alternatives considered. As discussed in **Section 1.5.1**, the NEPA process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. Reasonable alternatives must satisfy the purpose of and need for a proposed action, as defined in **Section 1.2**. In addition, CEQ regulations also specify the inclusion of a No Action Alternative against which potential impacts can be compared. While the No Action Alternative would not satisfy the purpose of or need for the Proposed Action, it is analyzed in detail in accordance with CEQ regulations. Implementation of the Proposed Action, as described in **Section 2.1,** is Lackland AFB's Preferred Alternative.

2.1 Proposed Action – Implement the ADP (Preferred Alternative)

Under the Proposed Action, Lackland AFB proposes to implement an ADP to create an academic campus for DLIELC and IAAFA within the footprint presented in **Figure 2-1**. The ADP proposes a layout consistent with that of an integrated educational campus to include academic classrooms, offices, dorms, and related supporting facilities; an International Ministries Facility and an International Student Activity Center to accommodate the foreign student body; and an Outdoor Sports Complex to include a fitness center, running tracks, soccer and softball fields, and covered outdoor multi-purpose facilities (AFCEE 2010). The Proposed Action includes new facility and infrastructure construction, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative staff population. The new facilities and campus footprint would be of sufficient size and capacity to accommodate approximately 4,600 students and 1,675 administrative staff from DLIELC, IAAFA, the Air Advisory Academy (AAA) and the Force Support Squadron (FSS). This would be an increase in 3,705 students and 1,096 staff upon full implementation. AAA is currently not located at Lackland AFB but plans to relocate there within the next 5 FYs. DLIELC facilities would be constructed to sufficiently accommodate and host various AAA functions, as indicated in **Section 2.1.1.1**; there will be no facilities constructed that will be solely used by AAA. The total cost for implementation of the ADP is estimated to be approximately $441.8 million. Under the Proposed Action, demolition and construction would begin in 2011 and occur in phases over the next 20 years until 2031. Construction and demolition would occur in a phases due to project planning and funding restrictions. The timelines are considered general guidelines and may require adjustment as funding and plans materialize. Temporary facilities would be installed immediately, and removed upon completion of the facilities that will permanently accommodate the additional students and staff.

It is intended that the projects contained in this EA will be reviewed prior to implementation and this document would be updated to accommodate changes in project scope or environmental conditions of the project area. For any project listed in this potential EA programmed beyond year 5, if the project or affected environment changes by the time of implementation, such that they are no longer covered by the analysis provided in this EA, additional EIAP documentation could be required. The collective analysis of all projects within the next 20 years associated with the ADP in a single EA will eliminate project fractionation and segmentation; facilitate coordination of land use planning; expedite project execution by using early planning; reduce installation, reviewing agency, and major command workloads; provide cost savings; help better evaluate potential cumulative environmental impacts; assist in maintaining a baseline for future analysis; encourage agency coordination; and meet the USAF's EIAP goals.

The ADP would be designed and constructed in accordance with Unified Facilities Criteria (UFC) 4-010-01, *DOD Minimum Anti-Terrorism Standards for Buildings*; the Americans with Disabilities Act; Architectural Barriers Act Accessibility Guidelines; and applicable energy conservation requirements.

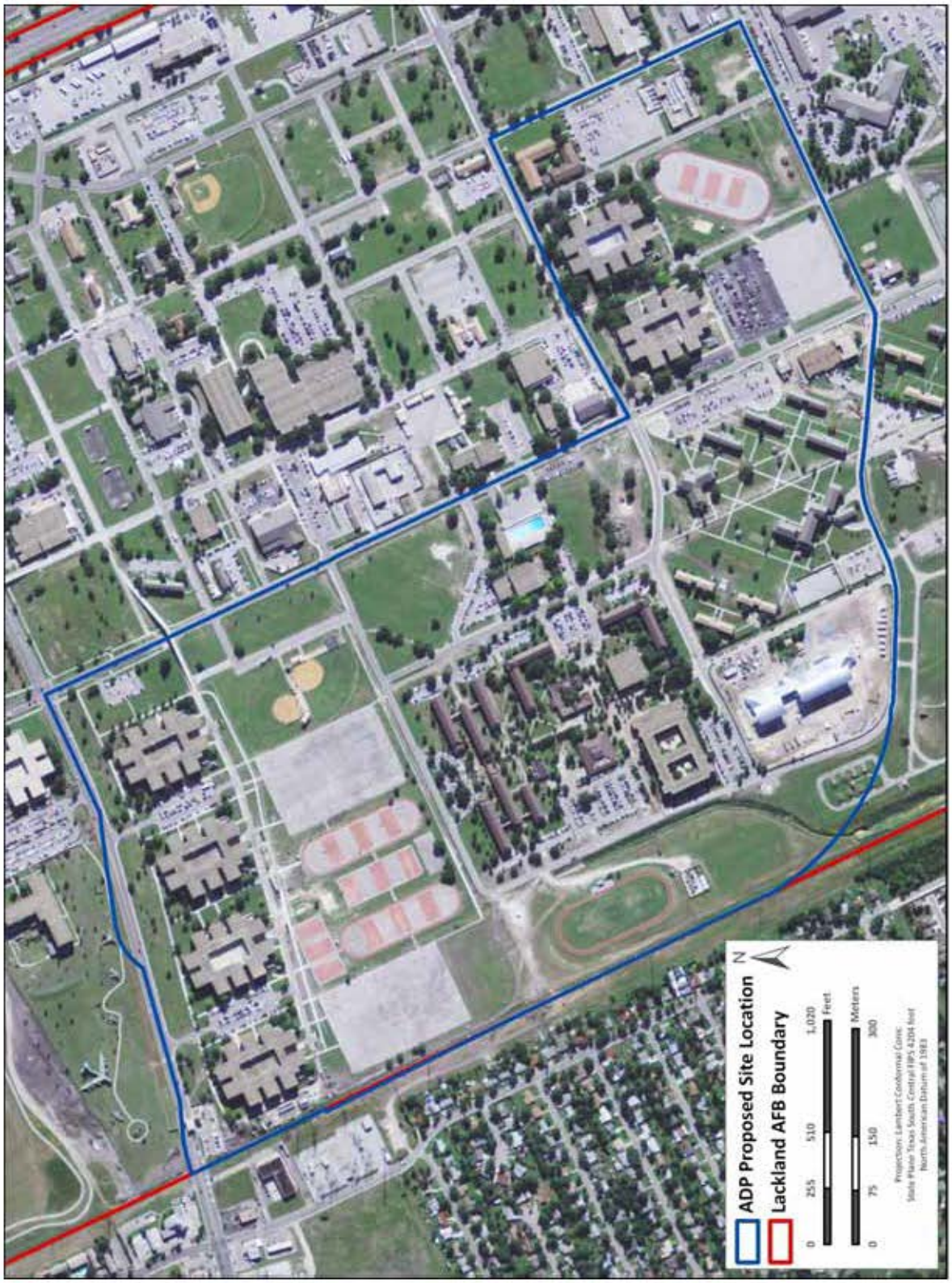

Figure 2-1. Proposed ADP Footprint

Construction and demolition activities would be conducted in accordance with all applicable Federal, state, and local requirements. Construction activities and materials would promote as many Leadership in Energy and Environmental Design (LEED) points as possible to facilitate good environmental stewardship.

2.1.1 Elements of the Proposed Action

Implementation of the academic campus ADP can be divided into four different components: facility and infrastructure construction, facility demolition, installation of temporary modular trailers, and an increase in student and administrative staff population. Approximately 450,750 square feet (ft^2) of facilities would be demolished within the ADP and approximately 579,000 ft^2 of new facilities would be constructed within the ADP under the Proposed Action. In summary, the building footprint within the ADP would be increased by a total of approximately 128,250 ft^2 which accounts for both the proposed construction and demolition. A concept drawing of the finished ADP is presented in **Figure 2-2**.

2.1.1.1 Construction and Renovation

Facility and infrastructure construction and renovation are detailed in **Table 2-1** and summarized as follows. Facility construction and renovation would begin in 2011 and occur in phases over the next 20 years until 2031. Projects are listed below according to phase and organizational needs.

Phase I: Current Projects (0–5 years)

DLIELC Projects

- ***DLIELC Logistics Center.*** A new DLIELC Logistics Center would be constructed to house the DLIELC Headquarters and DLIELC Administrative Support. Construction of the new logistics center would also include the construction of parking facilities and sidewalks to provide access to the new logistics center.
- ***DLIELC Academic Center.*** The Academic Center would be renovated and would contain the Academics Division CC/Support (LEA/LEAA) and the General English branch, Interactive Multimedia Instruction (IMI) labs, the Media and Technology branch, the Test and Measurement branch, the medical section, and a snack bar. Renovations to the Academic Center will include additional parking and sidewalks.

Joint-Use Projects (Force Support Squadron and Services)

- ***Visiting Quarters.*** Because there will be additional students attending DLIELC and IAAFA, three new visiting quarters would also be constructed to accommodate the associated increase in visitors. Construction of the Visiting Quarters would also include the construction of parking facilities and sidewalks to provide access to the visiting quarters.
- ***AMIGO Inn Expansion.*** As with the visiting quarters, because there will be additional students attending DLIELC and IAAFA, the AMIGO Inn would be expanded and renovated to accommodate the associated increase in students.
- ***Dining Hall.*** A new dining hall would be constructed to accommodate the increase in DLIELC and IAAFA students.
- ***International Student Ministries Facility.*** The current fitness center would be renovated and converted into an International Student Ministries Facility and would hold Muslim and Catholic services. The Ministries Facility would also house the International Student Activity Center and the International Family Support Facility.

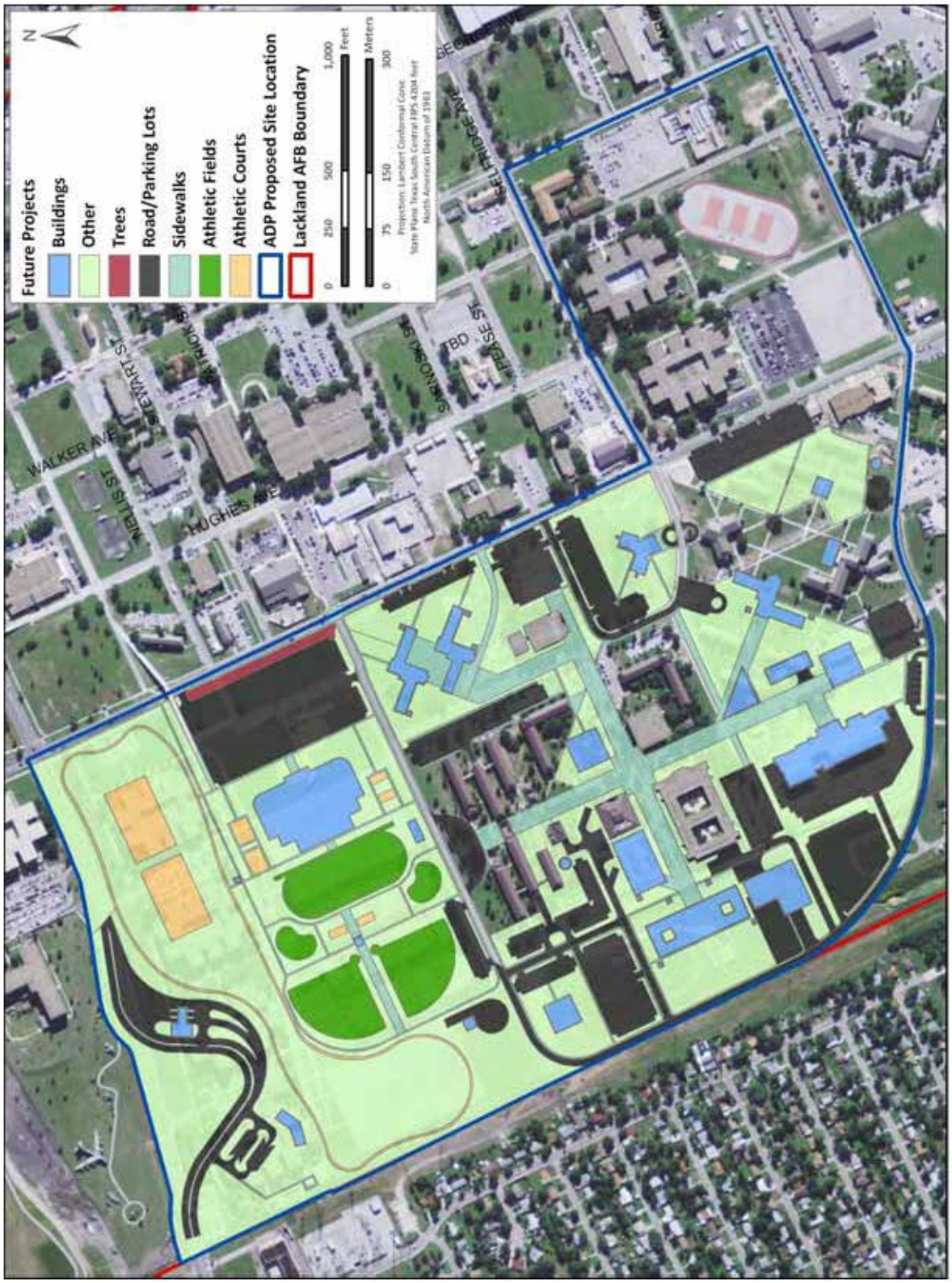

Figure 2-2. Proposed Action Concept Drawing

Table 2-1. Summary of the Proposed Action

Facility	Project Title	Scope		Unit of Measure	Cost ($1,000)	Phase
		Renovation	Major Construction			
Defense Language Institute English Language Center Projects						
	DLIELC Operations Center • International Operations Squadron (IOS) • Resident Program (LEO) • Expeditionary Squadron (LEN)	N/A	21,000	ft^2	$6,300	Short Range
	DLELC Operations Center Sidewalks	N/A	4,722	yd^2	$283	Short Range
7445	Sebille Hall – Student Union Center • Learning Resource Center/Library • Bookstore/Return (LESS/RIM) • Field Studies (LEF) • Information Technology (IT) • Cyber Café	46,237	N/A	ft^2	$6,936	Short-Range
7447	DLIELC Conference Center	2,017	N/A	ft^2	$303	Short-Range
7535	DLIELC Academic Center Renovation • Academics Division CC/Support (LEA/LEAA) • General English Branch (LEAG) • Interactive Multimedia Instruction (IMI) Labs • Media and Technology Branch (LEAM) • Test and Measurement Branch (LEAT) • Medical Section • Snack Bar	30,000	N/A	ft^2	$4,500	Current
	DLIELC Academic Center Parking Addition	1,666	N/A	yd^2	$116	Current
	DLIELC Academic Center Sidewalks	1,666	N/A	yd^2	$100	Current
	DLIELC Academic Center Annex • Specialized English Branch (LEAS) • Instructor Development Branch (LEAI) • AAA	N/A	82,000	ft^2	$24,600	Short-Range
	DLIELC Academic Center Annex Parking and Circulation	N/A	12,777	yd^2	$894	Short-Range

Facility	Project Title	Scope		Unit of Measure	Cost ($1,000)	Phase
		Renovation	Major Construction			
Defense Language Institute English Language Center Projects (continued)						
	DLIELC Academic Center Annex Sidewalks	N/A	977	yd^2	$58	Short-Range
	DLIELC Logistics Center • DLIELC Headquarters Administrative Support	N/A	40,000	ft^2	$12,000	Current
	DLIELC Logistics Center Parking and Circulation	N/A	18,750	yd^2	$1,313	Current
	DLIELC Logistics Center Sidewalks	N/A	1,055	yd^2	$63	Current
	DLIELC Headquarters • DLIELC Headquarters Administrative Support • AAA Headquarters	N/A	23,000	ft^2	$6,900	Long-Range
	DLIELC Headquarters Parking and Circulation	N/A	9,833	yd^2	$688	Long-Range
	DLIELC Headquarters Sidewalks	N/A	1,638	yd^2	$98	Long-Range
	Temporary Classroom and Administrative Facility	N/A	50,000	ft^2	$15,000	Current
Inter American Air Forces Academy Projects						
7356	IAAFA Headquarters • IAAFA CC • 318 TRS CC • 837 TRS CC	26,070	N/A	ft^2	$3,911	Short-Range
	IAAFA Open Bay Dormitory	N/A	10,000	ft^2	$3,00	Short-Range
	Pedestrian Spine	N/A	N/A	N/A	$N/A	N/A
7460	International Student Management Flight Center Expansion	N/A	10,000	ft^2	$3,000	Short-Range
	837 TRS Training Center	N/A	30,000	ft^2	$9,000	Short-Range
	837 TRS Training Center Parking and Circulation	N/A	1,388	yd^2	$97	Short-Range
	837 TRS Training Center Sidewalks	N/A	416	yd^2	$24	Short-Range
	318 TRS Operations Flight Training Center	N/A	50,000	ft^2	$15,000	N/A
	318 TRS Operations Flight Training Center Sidewalks	N/A	50,000	ft^2	$15,000	N/A

Facility	Project Title	Scope		Unit of Measure	Cost ($1,000)	Phase
		Renovation	Major Construction			
Echo Company Projects						
	Recruits Dormitory	N/A	59,975	ft^2	$13,800	Long-Range
	Recruits Dormitory Parking and Circulation	N/A	3,333	yd^2	$233	Long-Range
	Recruits Dormitory Sidewalks	N/A	211	yd^2	$12	Long-Range
Chaplain/Defense Language Institute English Language Center/ Inter American Air Forces Academy Project						
7346	International Student Ministries Facility (Muslim and Catholic Services), International Student Activity Center and International Family Support Facility	39,769	N/A	ft^2	$5,965	Current
Force Support Squadron/Services						
	Thermal Energy Storage System Facility (2)	2	N/A	EA	N/A	Current
	Leadership Reaction Course	1	N/A	EA	$250	Short-Range
	Visiting Quarters	N/A	210,000	ft^2	$63,000	Current
	Visiting Quarters	N/A	210,000	ft^2	$63,000	Current
	Visiting Quarters	N/A	210,000	ft^2	$63,000	Current
	Visiting Quarters Parking and Circulation	N/A	5,000	yd^2	$350	Current
	Visiting Quarters Sidewalks	N/A	12,527	yd^2	$751	Current
7532	AMIGO Inn Renovation	N/A	17,360	ft^2	$5,208	Current
	Dining Hall	N/A	49,727	ft^2	$23,200	Current
	Softball Fields	2	N/A	EA	$400	Long-Range
	Children's Playground	1	N/A	EA	$180	Long-Range
	Concession Stand/Latrine	4,000	N/A	ft^2	$600	Long-Range
	1.5-Mile Running Track	1	N/A	EA	$277	Short-Range
	Maintenance Facilities/Storage Yard	4,166	N/A	yd^2	$292	Current
	Skateboard Park	12,000	N/A	ft^2	$273	Long-Range

Facility	Project Title	Scope		Unit of Measure	Cost ($1,000)	Phase
		Renovation	Major Construction			
Force Support Squadron/Services						
	Fitness Center • 0.25-Mile Running Track (1) • Multi-Use Soccer/Flag Football Field (1) • Tennis Courts (4) • Basketball/Multi-Use Covered Court • Indoor Pool	N/A	130,000	ft^2	$39,000	Long-Range
	Fitness Center Parking	N/A	37,222	yd^2	$2,605	Long-Range
	Fitness Center Sidewalks	N/A	54,500	yd^2	$3,270	Long-Range
Infrastructure Improvements						
	Carswell Avenue Project	348,480	N/A	ft^2	N/A	Short-Range
	Waterline Improvements- Loop Water Main	5,000	N/A	LF	$350	Short-Range
	Relocate Lift Station	1	N/A	EA	$500	Short-Range
	Carswell Avenue Mill and Overlay Curb and Drainage Phase I	2,200	N/A	LF	$750	Short-Range
	Carswell Avenue Mill and Overlay Curb and Drainage Phase II	2,200	N/A	LF	$750	Short-Range
	Stormwater Management Improvements	N/A	N/A	ft^2	N/A	Short-Range
	"Pole Away"	9,400	N/A	LF	$250	Short-Range
	Airman's Gate • Guard Shack • Visitors Center • Denial Barriers	N/A	35,000	ft^2	$10,500	Current
	Airman's Gate Paving	N/A	26,944	yd^2	$1,886	Current

Key:
EA: each
ft^2: feet squared
LF: linear feet
N/A: not applicable
yd^2: yards squared

Current Project: Constructed within 5 years
Short-Range Project: Constructed within the next 6 to10 years
Long-Range Project: Constructed with the next 10 to 20 years

Infrastructure Improvements

- ***Airman's Gate.*** An Airman's Gate would be constructed and would include a guard shack, visitor's center, and denial barriers. This construction would also include some additional paving. The Airman's Gate would replace the existing Valley High Visitors Center and gate with higher capacity, modern, anti-terrorism/force protection (AT/FP) compliant Access Control Point (ACP).
- ***Two Thermal Energy Storage System Facilities.*** The Thermal Energy Storage Systems will be used to store chilled water for use in heating and cooling. The storage systems are insulated storage tanks that would be situated near the existing central plant.

Phase 2: Short-Term Projects (5–10 years)

DLIELC Projects

- ***DLIEILC Operations Center.*** A new DLIELC Operations Center would be constructed and would replace the existing operations center. The new operations center would house the International Operations Squadron (IOS), the Resident Program (LEO), and the Expeditionary Squadron (LEN). Construction of the new operations center would also include the construction of additional sidewalks on the DLIELC campus to provide access to the new center.
- ***DLIELC Academic Center Annex.*** A new DLIELC Academic Center Annex would be constructed to house the Specialized English Branch (LEAS), Instructor Development Branch (LEAI), and the AAA Headquarters. Construction of the new academic center annex would also include the construction of parking facilities and sidewalks to provide additional access to the academic center.
- ***Sebille Hall Student Union Center.*** The Student Union Center would be renovated and would contain the Learning Resource Center and library, the bookstore (LESS/RIM), the field studies (LEF) department, the information technology (IT) department, and a cyber café.
- ***DLIELC Conference Center.*** The DLIELC Conference Center would be renovated to improve facility conditions.

IAAFA Projects

- ***IAAFA Open Bay Dormitory.*** A new IAAFA dormitory would be constructed to accommodate the increase in IAAFA students.
- ***International Student Management Flight Center Expansion.*** The International Student Management Flight Center would be expanded accommodate the increase in IAAFA students.
- ***837 TRS Training Center.*** Construction of the 837 Training Center would also include the construction of parking facilities and sidewalks to provide access to the new center.
- ***IAAFA Headquarters.*** The IAAFA Headquarters would be renovated and contains IAAFA Cadet Center (CC), 318 TRS CC, and 837 TRS CC.

Joint-Use Projects (Force Support Squadron and Services)

- ***Leadership Reaction Course.***

Infrastructure Improvements

- ***Storm Water Management Improvements.*** This project would reduce the lifecycle costs of required storm-water quantity, rate, and quality measures for future MILCON projects. It would include culverting the drainage ditch in the southwest corner of the installation. However, a small

portion of identified wetlands that are incorporated into the overall site drainage in this area would be preserved.

- ***Carswell Avenue Signalization.*** Development of the sports complex in the southwest corner of the Truemper/Carswell intersection would require signalization of the Patrick/Carswell intersection. The volume of traffic generated by the sports complex combined with the volume of pedestrian traffic generated by the AAFES mini-mall would require a signalized intersection to maintain safe movement of vehicles and pedestrians.
- ***Loop Water Main Improvements.*** A water main would be added along Randolph, Patrick, and Tinker streets to increase capacity and improve reliability of domestic water and fire demands.
- ***Relocate Lift Station.*** Relocation of the existing sanitary sewer lift station west of the DLIELC campus would be required for the construction of the proposed DLIELC Academic Facility. The project would require relocation of some existing gravity and force mains in the area.
- ***Carswell Avenue Mill and Overlay Curb and Drainage, Phases I and II.*** To improve drainage on Carswell Avenue, curb and gutter segments would be added for the full length of the boulevard south of Truemper Street. Additional improvements would include underground storm drainage to replace the existing county road/bar ditch road section. This project is intended to be accomplished in two phases for programming purposes.
- ***"Pole Away."*** All above electric services on the DLIELC and IAAFA campus would be buried in accordance with an installationwide initiative.

Phase 3: Long-Term Projects (10–20 years)

DLIELC Projects

- ***DLIELC Headquarters.*** A new DLIELC Headquarters building would be constructed to house additional DLIELC Headquarters Administrative Support and the AAA Headquarters. Construction of the DLIELC headquarters would also include the construction of parking facilities and sidewalks to provide access to the new headquarters.

IAAFA Projects

- ***318 TRS Operations Flight Training Center.*** Construction of the 318 TRS Operations Flight Training Center would also include the construction of sidewalks to provide access to the new center.

ECHO Company Projects

- ***Recruits Dormitory.*** A new dormitory would be constructed to accommodate ECHO company students attending DLIELC. Construction of the Recruits Dormitory would also include the construction of parking facilities and sidewalks to provide access to the new dormitory.

Joint-Use Projects (Force Support Squadron and Services)

- ***Fitness Center.*** A new fitness center would be constructed and would include a 0.25-mile running track, a multi-use soccer and flag football field, four tennis courts, a basketball and multi-use covered court, and an indoor pool. Construction of the Fitness Center would also include the construction of parking facilities and sidewalks to provide access to the center.

Additionally, the campus grounds would be renovated to contain softball fields, a children's playground, a concession stand and bathroom, a 1.5-mile running track, maintenance facilities and a storage yard, and a skateboard park for DLIELC and IAAFA use.

2.1.1.2 Demolition

Facility demolition would begin in 2011 in order to clear and level areas of the footprint where new facilities would be constructed. The facilities being demolished are provided in **Table 2-2**.

Table 2-2. Facilities to be Demolished under the Proposed Action

Facility	Unit	Project Title	Scope	Unit of Measure	Phase
7305	FSS	Latrine	551	ft^2	Long-Range
7357	Detachment 2-22 TRS	I Dormitory	13,839	ft^2	Short-Range
7342	FSS	Pool House	5,152	ft^2	Long-Range
7344	FSS	Swimming Pool	9,010	ft^2	Long-Range
7345	FSS	Recreation Facility	877	ft^2	Long-Range
7353	IAAFA and 837 TRS	I Dormitory	14,048	ft^2	Current
7355	IAAFA	I Dormitory	13,839	ft^2	Short-Range
7358	Marine Corps Detachment	I Dormitory	13,839	ft^2	Short-Range
7437	ATC	ATC Technical Training Support	15,247	ft^2	Short-Range
7448	TSA	I Dormitory	13,643	ft^2	Current
7450	Security Forces "Return to Duty"	I Dormitory	13,643	ft^2	Current
7452	802 MSG	Mosque	13,643	ft^2	Current
7537	CE	Troop Shelter	2,805	ft^2	Current
7539	CE	Troop Shelter	2,805	ft^2	Current
7620	FSS	Latrine	448	ft^2	Short-Range
9110	BMT	BMT Dormitory	215,824	ft^2	Current
9210	BMT	BMT Dormitory	215,824	ft^2	Current
9310	BMT	BMT Dormitory	215,824	ft^2	Current
9410	BMT	BMT Dormitory	215,824	ft^2	Current

Current Project: Constructed within 5 years
Short-Range Project: Constructed within the next 6 to10 years
Long-Range Project: Constructed with the next 10 to 20 years

2.1.1.3 Temporary Facilities

Temporary modular facilities (e.g., trailers) would be installed in the ADP footprint immediately to accommodate the gradual increase in student population before facility construction is completed. Trailers would be used for classroom and administrative facilities and a ministry facility; there would be no temporary facilities installed for housing. Additional students and administration would occupy approximately 45,000 ft^2 of temporary modular facilities, 30,000 ft^2 would be devoted to interim classroom space, and 15,000 ft^2 would be devoted to interim administrative space. A 10,000 ft^2 temporary student dining hall would be constructed in the footprint for the proposed Visiting Quarters. The temporary ministries center would also be constructed temporarily on the existing campus. These facilities would temporarily increase impervious surface as follows: administrative and classroom facilities- 85,000ft^2, dining facility- 27,000ft^2, and ministries facility- 12,000ft^2. These facilities are

expected to consist of trailers with full utility hook-ups (drinking water, wastewater, and electricity). Installation of utilities for all three temporarily facilities would require approximately 10,000 linear feet of trenching and would be refilled upon removal. At least one construction equipment/material laydown area would be required (LAFB 2010b).

2.1.1.4 Student and Staff Population Increase

The ADSL within the ADP is expected to increase from 895 students to a maximum of 4,600 students within the next 5 FYs. Specifically, the DLIELC ADSL is expected to increase gradually from 750 students currently and could reach 4,000 students by FY 2016 depending on future and pending Foreign Military Sales transactions. At the same time, IAAFA's ADSL could increase from 145 students to 400 students by FY 2016 (HQ IAAFA 2011). Further, AAA's ADSL could increase from none to 200 students by FY 2016 (LAFB 2011a). However, their facilities would be shared with the DLIELC facilities. It is assumed that all new students would be housed on the academic campus and would not commute to Lackland AFB.

The administrative staff population within the ADP is expected to increase from 579 personnel to a maximum of 1,675 personnel within the next 5 FYs. Specifically, the DLIELC staff population is expected to increase gradually from 314 personnel currently and could reach 1,100 personnel by FY 2016 depending on future and pending Foreign Military Sales transactions (LAFB 2010b). At the same time, IAAFA's staff population could increase from 105 personnel to 175 personnel by FY 2016. Further, AAA's staff population could increase from none to 50 personnel by FY 2016. In response, FSS would increase their administrative staff from 160 personnel to 350 personnel in order to support the aforementioned ADSL and administrative staff increases (LAFB 2011a). It is assumed that the additional personnel would commute to and from Lackland AFB.

2.2 Alternatives to the Proposed Action

2.2.1 Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Specifically, the placement of the tennis courts would be next to the baseball fields in this alternative, rather than on the most northern end of the ADP footprint as under the Proposed Action. The same building types would be constructed and demolished, temporary modular facilities would be installed, and the student and administrative staff populations would increase. The alternate ADP configuration is shown in **Figure 2-3**. The same permits and plans described under the Proposed Action would be required for this alternative (see **Section 2.1.2**).

2.2.2 Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**) and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The temporary trailer site alternative 1 configuration is shown in **Figure 2-4.** The same permanent building types would be constructed and demolished in the same locations, the same type and number of temporary facilities would be installed, and the student population and administrative staff would increase. The same permits and plans described under the Proposed Action would be required for this alternative (see **Section 2.1.2**).

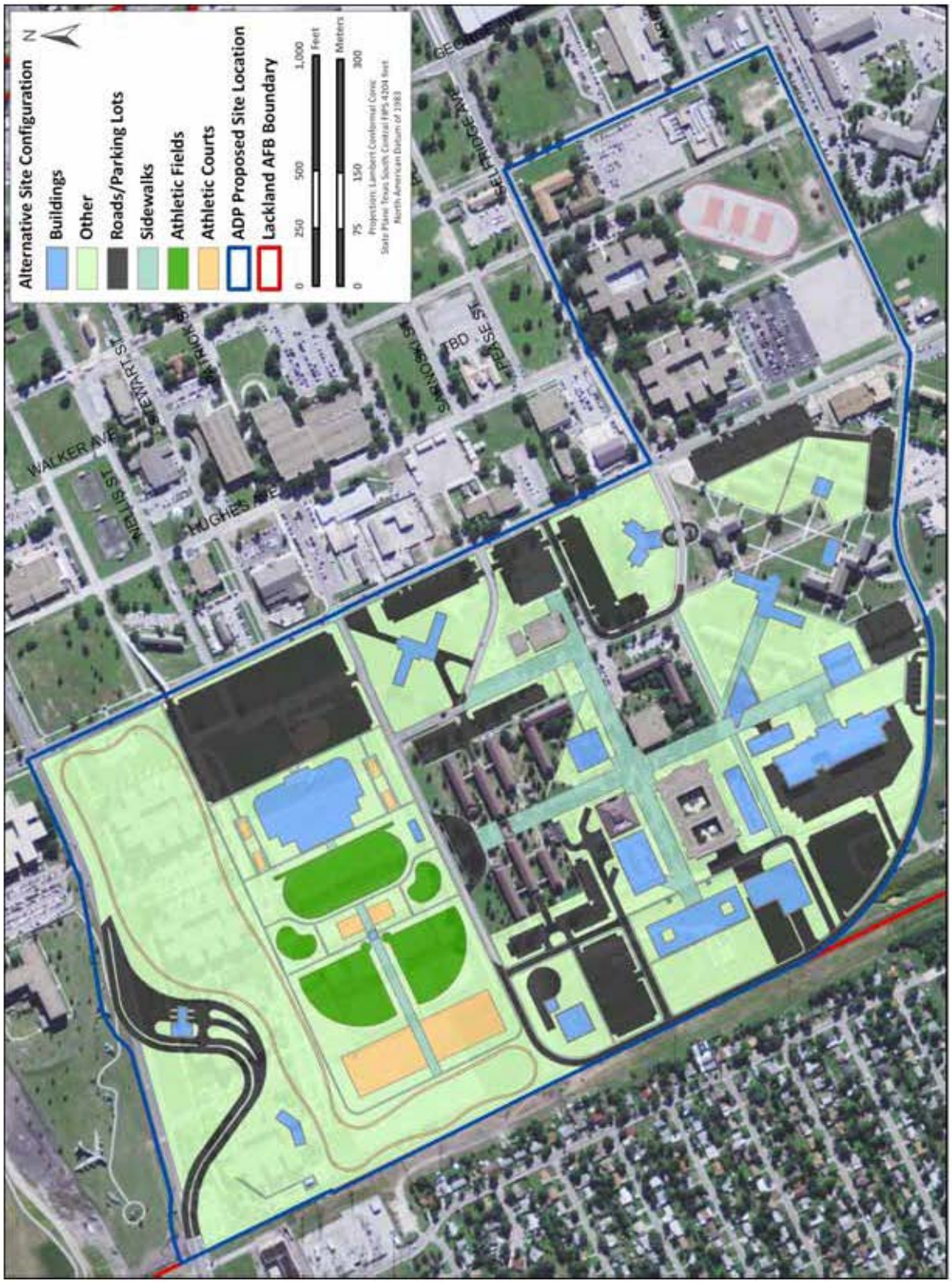

Figure 2-3. Site Configuration Alternative Concept Drawing

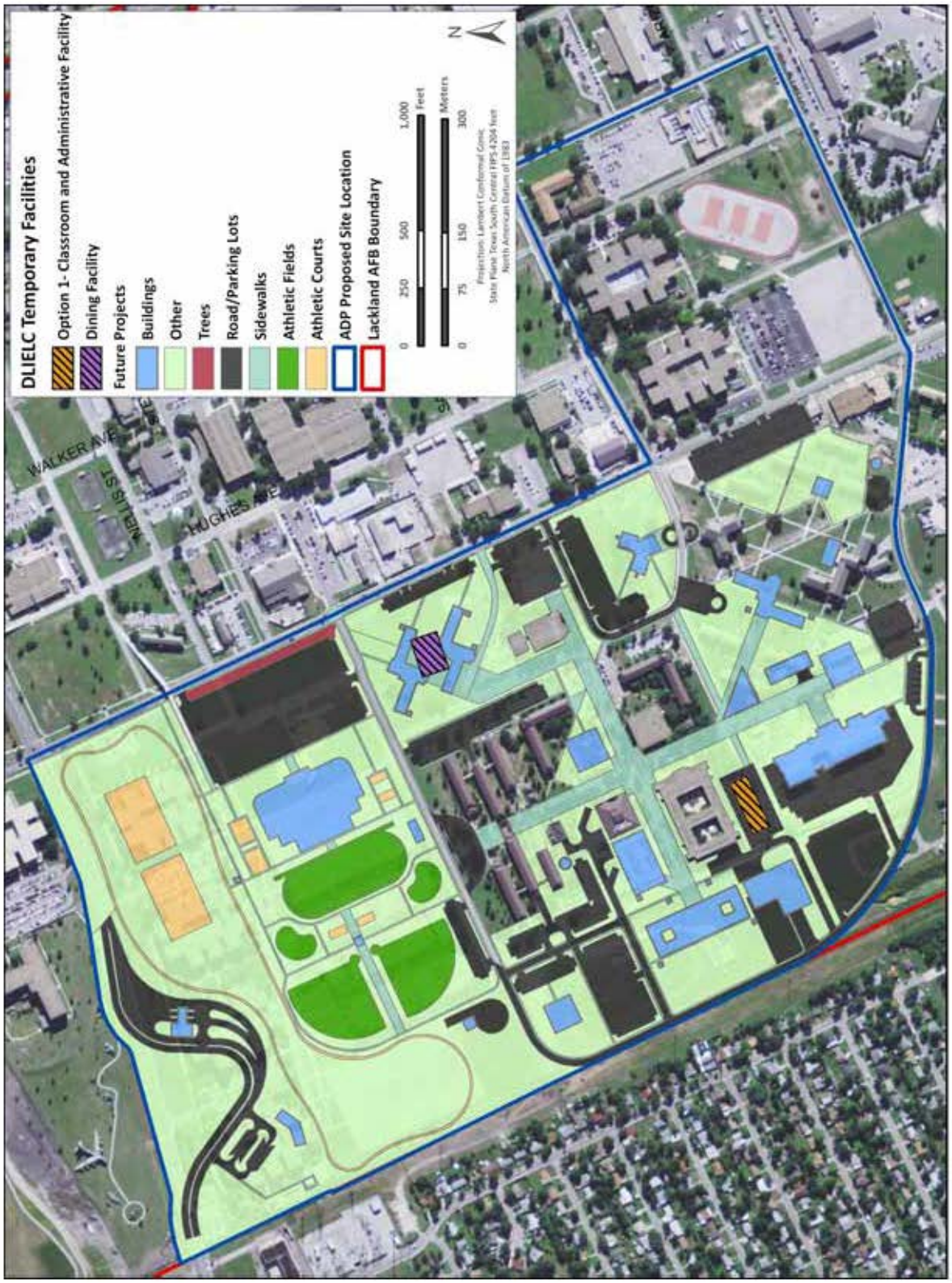

Figure 2-4. Temporary Trailer Site Alternative 1 for the Proposed ADP

2.2.3 Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The temporary trailer site alternative 2 configuration is shown in **Figure 2-5.** The same permanent building types would be constructed and demolished in the same locations, the same type and number of temporary facilities would be installed, and the student population and administrative staff would increase. The same permits and plans described under the Proposed Action would be required for this alternative (see **Section 2.1.2**).

2.2.4 No Action Alternative

CEQ regulations require consideration of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and other potential action alternatives can be evaluated. Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, although the increase in student population would still take place. As a result, additional students could not be adequately housed or trained at the Lackland AFB DLIELC or IAAFA campus.

Currently, DLIELC and IAAFA have failing utility and infrastructure systems and a footprint that is incompatible with their projected growth and missions. DLIELC has been required to approximately double in size, at a minimum, per DSCA projections and IAAFA has the potential to grow by 30 percent. The DLIELC and IAAFA campus would not be able to accommodate these students and could not foster a positive learning environment. This would greatly hinder the ability of both organizations to grow BPC with our allies.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

Under NEPA, consideration and analysis of reasonable alternatives to the Proposed Action are required in an EA. Considering alternatives helps to avoid unnecessary impacts and allows for an analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable. To be considered reasonable, an alternative must be suitable for decisionmaking (i.e., any necessary preceding events have taken place), capable of implementation, and satisfactory with respect to meeting the purpose of and need for the action.

As stated in **Section 1.2**, certain facility and mission requirements must be present or reasonably attainable to meet the purpose of and need for the Proposed Action. The following factors were considered in evaluating alternatives to the Proposed Action:

- Ability to physically accommodate a 200 percent increase in DLIELC students and a 30 percent increase in IAAFA students in dining, lodging, fitness, and instructional facilities
- Ability to introduce students to American culture
- Ability to instruct students in accordance with each organizations' mission (i.e., teach English for DLIELC, teach in native language for IAAFA)
- Required relocation of organizations and services
- Strengthen joint leaderships in BPC
- Central location of organizations and services.

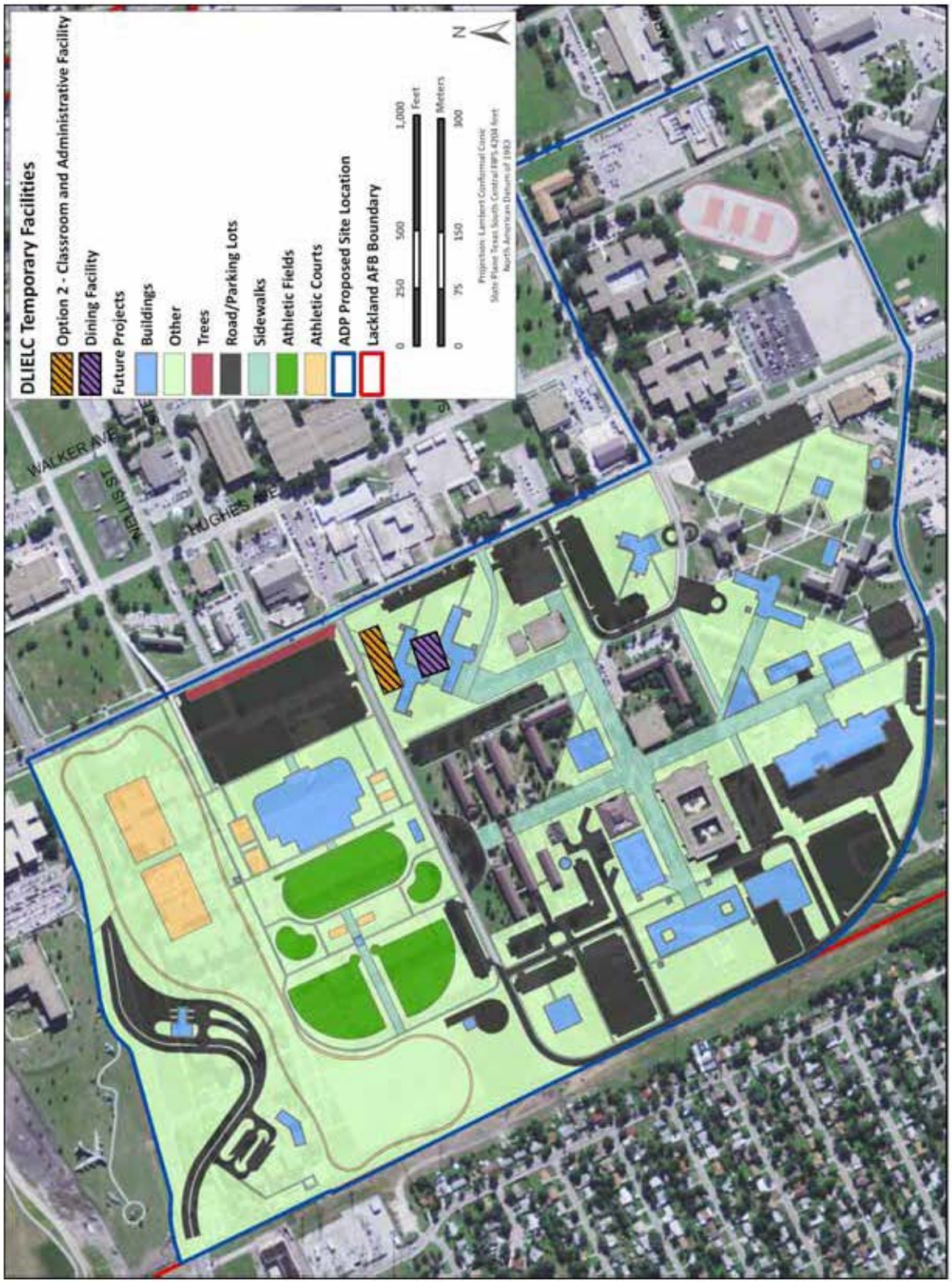

Figure 2-5. Temporary Trailer Site Alternative 2 for the Proposed ADP

Based on these factors, the following alternatives were considered but eliminated from further detailed analysis in this EA.

2.3.1 Send Additional Students to the DLI in Monterey, California

Under this alternative, the additional students would not attend the DLI campus at Lackland AFB, but rather, would attend DLI in Monterey, California. However, the DLI in Monterey, California, is the DLI Foreign Language Center (DLIFLC), whose mission is to teach solely foreign languages to U.S. students, and falls under the purview of the Army Training and Doctrine Command (TRADOC). Therefore, the DLIFLC falls under a different command and under a different mission than the DLIELC. To meet the DLIELC mission requirements at a minimum, English instructors would have to be moved to or hired at the DLIFLC. In summary, to meet DLIELC facility and mission requirements to train foreign students in the English language, this alternative would require the relocation of the entire DLIELC program, as well as personnel and student relocation. Additionally, a joint academic campus between DLIELC and IAAFA geared towards BPC would not be possible. Therefore, this alternative is not considered to be reasonably attainable and was eliminated from further detailed analysis in this EA.

2.3.2 Send Instructors Overseas

Under this alternative, additional students would not travel to the United States for English instruction; rather the instructors would travel overseas to teach the students in their native countries. Available facilities for student instruction and teacher lodging and dining would need to be identified or constructed. Additionally, DLIELC's mission encompasses assimilating foreign students into American culture; this part of the mission would not be met if the students did not attend DLIELC in the United States. Additionally, a joint campus geared towards BPC would not be possible. In summary, this alternative would fail to meet mission requirements of assimilating students into the American culture. Therefore, this alternative is not considered to be reasonably attainable and was eliminated from further detailed analysis in this EA.

2.3.3 Develop the DLIELC Campus at Another Lackland AFB Location or JBSA Installation

Under this alternative, the existing DLIELC and IAAFA campus would not be expanded and upgraded to accommodate the existing students. Rather, the additional students would be sent to other JBSA installations, or additional infrastructure could be built elsewhere on Lackland AFB. Students would be accommodated in spare housing and buildings that could function as classrooms. However, this alternative would not meet the purpose and need of the Proposed Action to upgrade and expand the existing campus at Lackland AFB. In addition, this alternative would not be consistent with current master planning initiatives at Lackland AFB that maintain an overall policy of keeping functions collocated on one campus if the campus area can still support the mission of the units (LAFB 2011d). Also, locating the projected increase in student population apart from the current DLIELC-IAAFA campus would not meet the operational criteria of centralized locations and services. Finally, a joint campus geared towards BPC would not be possible. Therefore, this alternative was eliminated from further detailed analysis in this EA.

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3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP 32 CFR Part 989 guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes noise; air quality; land use and aesthetics; geological resources; water resources; biological resources; health and safety; utilities and infrastructure, including transportation; hazardous materials and wastes; socioeconomic resources and environmental justice, including public services; and cultural resources. Some environmental resources that are often analyzed in an EA have been omitted from this analysis. The basis for such exclusions is given below:

- ***Coastal Zone Management.*** Lackland AFB is not within a coastal zone and, therefore, implementation of the Proposed Action would not alter coastal zone resources. Accordingly, the USAF has omitted detailed examination of coastal zone management.
- ***Airspace Management.*** None of the activities associated with the Proposed Action are within designated airspace. The Proposed Action does not involve any activities that would impact designated airspace or military aircraft operations conducted within designated airspace. Accordingly, the USAF has omitted detailed examination of airspace management in this EA.

This section presents an analysis of the potential direct and indirect impacts that each alternative would have on the affected environment. Each alternative was evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with CEQ guidelines at 40 CFR 1508.8.

The following discussion elaborates on the nature of the characteristics that might relate to various impacts:

- ***Significant.*** Significant impacts are those that, in their context and due to their intensity (severity), would meet the threshold for significance and result in substantial changes to the environment (as defined by 40 CFR 1508.27).
- ***Short-term or long-term.*** These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- ***Direct or indirect.*** A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct effect of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.
- ***Negligible, minor, moderate, or major.*** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.
- ***Adverse or beneficial.*** An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on

the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

- ***Context.*** The context of an impact can be localized or more widespread (e.g., regional).
- ***Intensity.*** The intensity of an impact is determined through consideration of several factors, including whether an alternative might have an adverse impact on the unique characteristics of an area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered or threatened species or designated critical habitat. Impacts are also considered in terms of their potential for violation of Federal, state, or local environmental laws; their controversial nature; the degree of uncertainty or unknown impacts, or unique or unknown risks; if there are precedent-setting impacts; and their cumulative impacts (see **Section 4**).
- ***No impact.*** This designation is made when it is determined that a proposed action would not have a favorable, unfavorable, direct, or indirect effect of any kind on the man-made or natural environment.

The impact analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The Site Configuration Alternative (described in **Section 2.2.1**)
- The Temporary Trailer Site Alternative 1 (described in **Section 2.2.2**)
- The Temporary Trailer Site Alternative 2 (described in **Section 2.2.3**)
- The No Action Alternative (described in **Section 2.2.4**).

Sections 3.1 through **3.12** discuss potential environmental and socioeconomic impacts on the affected environment.

3.1 Noise

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. A-weighted decibel (dBA) is used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. The threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region of 135 dBA

(USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981a).

Table 3-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying; Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981b and *HDR extrapolation

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed to is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits (29 CFR 1910.95).

Sound levels, resulting from multiple single events, are used to characterize noise effects from aircraft or vehicle activity and are measured in Day-Night Average Sound Level (DNL). The DNL noise metric incorporates a "penalty" for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging sound exposure levels over a given 24-hour period. DNL is the designated noise metric of the Federal Aviation Agency (FAA), U.S. Department of Housing and Urban Development (HUD), U.S. Environmental Protection Agency (USEPA), and DOD for modeling airport environments.

According to the USAF, the FAA, and the HUD criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the noise exposure exceeds 75 dBA DNL, "normally unacceptable" in regions exposed to noise between 65 and 75 dBA DNL, and "normally acceptable" in areas exposed to noise of 65 dBA DNL or under. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of a DNL sound level (FICON 1992). For outdoor activities, the USEPA recommends 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment. **Table 3-2** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3-2. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

Source: USEPA 1971

3.1.2 Description of the Affected Environment

The ambient noise environment at Lackland AFB is affected mainly by military aircraft operations and automobile traffic. Flying units at Lackland AFB include the 433rd Airlift Wing (Air Force Reserve Command) and the 149th Fighter Wing (Texas Air National Guard). Aircraft assigned to these units include the C-5A *Galaxy* and the F-16 *Fighting Falcon* aircraft. The 65 dBA DNL noise contour from aircraft operations at Lackland AFB is approximately 0.35 miles west of the proposed ADP footprint. The noise contours from aircraft operations extend roughly north and south of the runway centerline at Kelly Field (LAFB 2008b).

Vehicle use associated with military operations at Lackland AFB consists of passenger and military vehicles, and delivery and fuel trucks. Passenger vehicles compose most of the traffic present at Lackland AFB and the surrounding community roadways. Roadways around the installation include U.S. Highway 90 to the north, Interstate 35 to the east and south, and Interstate 410 to the west. Interstate 410 is the closest roadway to the project area and is approximately 0.5 miles to the west. The proposed ADP footprint is bordered by several main roadways through the installation, including Truemper Street and a portion of Selfridge Avenue to the north, Carswell and Walker avenues to the east, and Gott and Tinker streets to the south. The installation boundary composes the western boundary of the proposed ADP footprint.

Considering the military aircraft operations and vehicle traffic at and adjacent to Lackland AFB, the ambient sound environment around the proposed ADP footprint is likely to resemble a noisy urban residential area.

3.1.3 Environmental Consequences

3.1.3.1 Significance Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the alternatives considered.

3.1.3.2 Proposed Action

The sources of noise under the Proposed Action that could impact populations include installation, construction, and demolition activities, collectively referred to as "construction" hereinafter. These sources are addressed as follows.

Construction Activities. The project components of the Proposed Action consist of construction of new facilities and infrastructure, facility demolition, and the installation of temporary modular trailers as described in **Section 2.1**. Installation of the temporary trailers would include ground-breaking activities (e.g., installing foundations, sidewalks, and trenching for utility hook-ups); these activities would require the use of construction equipment. Noise from construction activities varies depending on the type of construction equipment being used, the area that the action would occur in, and the distance from the noise source. To predict how construction activities would impact adjacent populations, noise from the probable construction was estimated. For example, as shown in **Table 3-3**, construction usually involves several pieces of equipment (e.g., trucks and bulldozers) that can be used simultaneously. Under the Proposed Action, the cumulative noise from the construction equipment, during the busiest day, was estimated to determine the total impact of noise from construction activities at a given distance. Examples of expected cumulative construction noise during daytime hours at specified distances are shown in **Table 3-3**. These sound levels were predicted at 50, 100, 200, 400, 800, and 1,200 feet from the source of the noise.

Table 3-3. Predicted Noise Levels from Construction Activities

Distance from Noise Source	Predicted Noise Level
50 feet	89 dBA
100 feet	83 dBA
200 feet	77 dBA
400 feet	71 dBA
800 feet	65 dBA
1,200 feet	61 dBA

The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy construction equipment would be used periodically during construction; therefore, noise levels from the equipment would fluctuate throughout the day. The proposed construction would be expected to result in noise levels comparable to those indicated in **Table 3-3**.

Populations potentially affected by increased noise levels from construction activities would include DLIELC and IAAFA students and staff; and off-installation populations adjacent to the installation boundary (which also composes the western border of the proposed ADP footprint). As discussed in **Section 2.1.1.3**, DLIELC and IAAFA personnel would continue to use the existing and temporary facilities during construction of the permanent facilities. Also, the Heather's Cove Subdivision is directly west of the proposed ADP footprint (City of San Antonio 2011). The closest residence is approximately 150 feet west of the proposed ADP footprint boundary. These populations would be expected to experience noise levels comparable to those indicated in **Table 3-3**, depending on their proximity to construction activities. However, noise generation would last only for the duration of construction activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). Construction noise would diminish as construction activities moved farther away from the receptor. Consequently, construction activities associated with the Proposed Action would result in short-term, direct, minor, adverse impacts on the ambient noise environment in the vicinity of construction activities.

Construction workers would be working in close proximity to construction equipment and could be exposed to noise levels above 90 dBA. This is above the permissible noise exposure level as defined by OSHA. These levels would be reduced to permissible levels through feasible methods or the use of Best Management Practices (BMPs) such as the use of hearing protection equipment. Therefore, noise impacts to construction workers would be in compliance with applicable OSHA standards.

Construction Vehicular Noise. Short-term, direct, minor, adverse impacts on the ambient noise environment are anticipated as a result of the increase in construction vehicle traffic under the Proposed Action. Construction traffic would be expected to access the proposed ADP footprint from the north, via U.S. Highway 90 to West Military Drive; or from the west via Interstate 410 to Truemper Street through the proposed Airmen's Gate (the existing Valley High Visitors Center) onto Carswell Avenue. The additional traffic resulting from construction vehicles would likely cause short-term, direct, minor, adverse increases in noise levels on noise-sensitive populations adjacent to these roadways.

Operational Vehicular Noise. As discussed in **Section 2.1.1.4**, the ADSL within the ADP is expected to increase from 895 students to a maximum of 4,600 students within the next 5 FYs. It is assumed that the new students would be housed on the academic campus and would not commute to Lackland AFB. However, students would exit the installation to conduct off-installation activities (e.g., shopping, dining). The administrative staff within the ADP is expected to increase from 579 personnel to a maximum of 1,675 personnel within the next 5 FYs. It is assumed that the additional personnel would commute to and from Lackland AFB. Student and staff traffic would be expected to use the same roadways to access the academic campus as the construction traffic discussed above. The additional traffic resulting from student and staff vehicles would likely cause long-term, direct, minor, adverse increases in noise levels on noise-sensitive populations adjacent to these roadways.

3.1.3.3 Alternative to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on the ambient noise environment under this alternative would be expected to be the same as those identified in **Section 3.1.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed as under the Proposed Action. Installation of the temporary facilities would include ground-breaking activities (e.g., installing foundations, sidewalks, and trenching for utility hook-ups); these activities would require the use of construction equipment. Therefore, short-term and long-term impacts on the ambient noise environment under this alternative would be expected to be the same as those identified in **Section 3.1.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed as under the Proposed Action. Installation of the temporary facilities would include ground-breaking activities (e.g., installing foundations, sidewalks, and trenching for utility hook-ups); these activities would require the use of construction equipment. Therefore, short-term and long-term impacts on the ambient noise environment under this alternative would be expected to be the same as those identified in **Section 3.1.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.1.2**, would remain the same. No impacts on the ambient noise environment would be expected from implementation of the No Action Alternative.

3.2 Air Quality

3.2.1 Definition of the Resource

In accordance with Federal Clean Air Act (CAA) requirements, the air quality in a given region or area is measured by the concentration of various pollutants in the atmosphere. The measurements of these "criteria pollutants" in ambient air are expressed in units of parts per million (ppm), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu g/m^3$). The air quality in a region is a result not only of the types and quantities of atmospheric pollutants and pollutant sources in an area, but also surface topography, the size of the topological "air basin," and the prevailing meteorological conditions.

The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter

[$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. The State of Texas has adopted the NAAQS for criteria pollutants (TNRCC 2001). **Table 3-4** presents the primary and secondary USEPA NAAQS.

Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions involving sunlight and previously emitted pollutants or "O_3 precursors." These O_3 precursors consist primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2.

As authorized by the CAA, USEPA has delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O_3, $PM_{2.5}$, and regional haze standards that were promulgated in that year. The 1-hour O_3 standard will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O_3 NAAQS. The effective designation date for most areas was 15 June 2004. USEPA designated $PM_{2.5}$ nonattainment areas in December 2004, and finalized the $PM_{2.5}$ implementation rule in January 2005. No county in the State of Texas was identified as being nonattainment for the $PM_{2.5}$ standard. On 27 May 2008 the USEPA lowered the NAAQS primary standard for O_3 to 0.075 ppm from the 1997 standard of 0.08 ppm. On 19 January 2010 the USEPA proposed revisions to the 2008 NAAQS primary standard for O_3 to within a range of 0.06 and 0.07 ppm (USEPA 2010).

On 10 March 2009 the Governor of the State of Texas sent a letter to the USEPA, Region 6 Acting Regional Administrator recommending Bexar County be designated non-attainment for not meeting the revised 2008 NAAQS for 8-hour O_3 of 0.75 parts per million (Perry 2009). As of 1 August 2011, Bexar County has not been designated as a nonattainment area by the USEPA. In the event Bexar County is designated as a nonattainment (marginal and moderate non-attainment inside an O_3 transport region) the threshold for VOC's would be lowered to the USEPA General Conformity *de minimis* level of 50 tpy and all other criteria pollutants would stay at a 100 tpy threshold (USEPA 2002b). Lackland AFB will also be required to follow the revised state implementation plan.

On 22 September 2009, the USEPA issued a final rule for mandatory greenhouse gas (GHG) reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO_2) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO_2 equivalent per year. The first emissions report is due in 2011 for 2010 emissions. GHG emissions would become factors in PSD and Title V permitting and reporting, according to a USEPA rulemaking issued on 3 June 2010 (75 Federal Register [FR] 31514). GHG emissions thresholds of significance for permitting of stationary sources are 75,000 tons CO_2 equivalent per year and 100,000 tons CO_2 equivalent per year under these permit programs. GHG became regulated pollutants under the CAA for purposes of air permitting in January 2011.

Table 3-4. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour (1)	9 ppm (10 mg/m^3)	Same	None
	1-hour (1)	35 ppm (40 mg/m^3)	Same	None
Pb	Quarterly average	1.5 µg/m^3	Same	Same as Primary
	Rolling 3-Month Average	0.15 µg/m^3 (2)	Same	Same as Primary
NO_2	Annual Arithmetic Mean	53 ppb (3)	Same	Same as Primary
	1-hour	100 ppb (4)	Same	None
PM_{10}	Annual Arithmetic Mean	--	--	Same as Primary
	24-hour (5)	150 µg/m^3	Same	Same as Primary
$PM_{2.5}$	Annual Arithmetic Mean (6)	15 µg/m^3	Same	Same as Primary
	24-hour (7)	35 µg/m^3	Same	Same as Primary
O_3	8-hour (8)	0.075 ppm (2008 Standard)	Same	Same as Primary
	8-hour (9)	0.08 ppm (1997 Standard)	Same	Same as Primary
	1-hour (10)	0.12 ppm	Same	Same as Primary
SO_2	Annual Arithmetic Mean	0.03 ppm	Same	0.5 ppm (3-hour) (1)
	24-hour (1)	0.14 ppm	Same	0.5 ppm (3-hour) (1)
	1-hour	75 ppb (11)	Same	None

Sources: USEPA 2008, TAC 2011

Notes: Parenthetical values are approximate equivalent concentrations.

1. a. Not to be exceeded more than once per year.
2. Final rule signed 15 October 2008.
3. The official level of the annual NO_2 standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
4. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective 22 January 2010).
5. Not to be exceeded more than once per year on average over 3 years.
6. To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
7. To attain this standard, the 3-year average of the weighted annual of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective 17 December 2006).
8. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective 27 May 2008).
9. a. To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.
   b. The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
   c. USEPA is in the process of reconsidering these standards (set in March 2008).
10. a. USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard (anti-backsliding).
    b. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.
11. Final rule signed on 2 June 2010. To attain this standard, the 3-year average of the 99th percentile of daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Key: ppm = parts per million; mg/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance,* was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to identify, among other things, "agency activities, policies, plans, procedures, and practices" and "specific agency goals, a schedule, milestones, and approaches for achieving results, and quantifiable metrics" relevant to the implementation of EO 13514. On 26 August 2010, DOD released its SSPP to the public.

This implementation plan describes specific actions the DOD will take to achieve its individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. All SSPPs segregate GHG emissions into three categories: Scope 1, Scope 2, and Scope 3 emissions. Scope 1 GHG emissions are those directly occurring from sources that are owned or controlled by the agency. Scope 2 emissions are indirect emissions generated in the production of electricity, heat, or steam purchased by the agency. Scope 3 emissions are other indirect GHG emissions that result from agency activities but from sources that are not owned or directly controlled by the agency. The GHG goals in the DOD SSPP include reducing Scope 1 and Scope 2 GHG emissions by 34 percent by 2020, relative to FY 2008 emissions, and reducing Scope 3 GHG emissions by 13.5 percent by 2020, relative to FY 2008 emissions. The first GHG air quality emissions report is due in 2011 for 2010 emissions.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, installation, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs.

Federal Prevention of Significant Deterioration (PSD) regulations apply in attainment areas to major stationary sources (e.g., sources with the potential to emit 250 tpy of any criteria pollutant) and significant modifications to major stationary sources (e.g., change that adds 0.6 tpy for lead, or 10 tpy to 100 tpy depending on the criteria pollutant, to the facility's potential to emit). Additional PSD permitting thresholds apply to increases in stationary source GHG emissions, as discussed previously. PSD permitting can also apply to a proposed project that is a modification with a net emissions increase to an existing PSD major source and (1) the proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas) , and (2) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1$\mu g/m^3$ or more (40 CFR 52.21[b][23][iii]). PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's class designation (40 CFR 52.21[c]). The closest Class I area is Big Bend National Park, approximately 350 miles west of the Proposed Action. Because Lackland AFB is not within 10 kilometers of a Class I area, is not an existing PSD major source, and there are only minor stationary source emissions increases under the Proposed Action, PSD regulations do not apply and are not discussed further in this EA (USEPA 2011b).

3.2.2 Description of Affected Environment

Lackland AFB and the site of the Proposed Action are located in Bexar County, which is within Metropolitan San Antonio Intrastate (SAI) Air Quality Control Region (AQCR) 217 (USEPA 2002d). The region of influence from the Proposed Action would be the San Antonio Metropolitan Statistical Area (SA/MSA). The SA/MSA consists of Bexar County, Comal County, Guadalupe County, and Wilson County, Texas. As defined in 40 CFR 81.344, Bexar County is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2002c).

The most recent emissions inventories for Bexar County and SA/MSA are shown in **Table 3-5**. Bexar County is considered the local area of influence, and SA/MSA is considered the regional area of influence for the air quality analysis.

Table 3-5. Local and Regional Air Emissions Inventories for Areas Impacted by the Proposed Action (2002)

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Bexar County, TX	64,989	59,819	377,889	35,779	71,270	10,180
SA/MSA	81,631	73,199	451,770	38,175	109,981	15,737

Source: USEPA 2002a

The U.S. Department of Energy, Energy Information Administration, estimates that gross CO_2 emissions in the State of Texas were 660 million metric tons in 2002 and 623 million metric tons in 2008 (DOE/EIA 2008).

The Texas Commission on Environmental Quality (TCEQ) regulates air quality air permits for stationary air pollution sources in the State of Texas. Lackland AFB is classified as a major source of emissions and has an Air Pollution Control Title V Permit to Operate (LAFB 2009c). In addition, Lackland AFB holds three New Source Review Permits, as well as numerous sources registered under Permit-By-Rule requirements. As required by the TCEQ, 30 Texas Administrative Code (TAC) §101.10, Lackland AFB calculates annual criteria pollutant emissions from stationary sources and provides this information to the TCEQ. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, hot water heaters, fuel storage tanks, gasoline service stations, surface coatings/paint booths, and miscellaneous chemical usage. Texas has specific rules for control of visible emissions and particulate matter on roads, streets, and alleys; from parking lots; and during material handling, construction, and demolition activities (30 TAC §§ 111.143-149). Lackland AFB is required to prepare an Air Emissions Inventory (AEI) each year. The inventory and records of calculations are maintained and are made available to TCEQ each year. Lackland AFB's calendar year (CY) 2008 (LAFB 2008a), 2009 (LAFB 2009a) and 2010 (LAFB 2010a) Stationary Source Air Emissions Inventories are presented in **Table 3-6**.

Table 3-6. Lackland AFB Air Emissions Inventories for Calendar Years 2008 to 2010

Calendar Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2008	170.77	12.8	65.64	.89	29.66	29.7
2009	338.74	18.3	73.16	1.73	30.1	29.26
2010	421.58	31.49	71.75	2.24	17.65	16.95

Source: LAFB 2008a, LAFB 2009a, LAFB 2010a

3.2.3 Environmental Consequences

3.2.3.1 Significance Criteria

The environmental consequences to local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment" areas would be

considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Exceed any Evaluation Criteria established by a SIP or permit limitations/requirements
- Emissions representing an increase of 100 tpy for any attainment criteria pollutant (NO_x, VOCs, CO, PM_{10}, $PM_{2.5}$, SO_2), unless the proposed activity qualifies for an exemption under the Federal General Conformity Rule.

Although the 100 tpy threshold is not a regulatory driven threshold, it is being applied as a conservative measure of significance in attainment areas. The rationale for this conservative threshold is that it is consistent with the highest General Conformity *de minimis* levels for nonattainment areas and maintenance areas. In addition, it is consistent with Federal stationary source major source thresholds for Title V permitting which formed the basis for the nonattainment *de minimis* levels.

The Federal *de minimis* threshold emissions rates were established by the USEPA in the General Conformity Rule to focus analysis requirements on those Federal actions with the potential to substantially affect air quality. **Table 3-7** presents these thresholds by regulated pollutant. As shown in **Table 3-7**, *de minimis* thresholds vary depending on the severity of the nonattainment area classification.

Table 3-7. Conformity *de minimis* Emissions Thresholds

Pollutant	Status	Classification	*de minimis* Limit (tpy)
O_3 (measured as NO_x or VOCs)	Nonattainment	Extreme	10
		Severe	25
		Serious	50
		Moderate/marginal (inside ozone transport region)	50 (VOCs)/ 100 (NO_x)
		All others	100
	Maintenance	Inside ozone transport region	50 (VOCs)/100 (NO_x)
		Outside ozone transport region	100
CO	Nonattainment/ maintenance	All	100
PM_{10}	Nonattainment/ maintenance	Serious	70
		Moderate	100
		All maintenance areas	100
$PM_{2.5}$ (measured directly, as SO_2, or as NO_x)	Nonattainment/ maintenance	All	100
SO_2	Nonattainment/ maintenance	All	100
NO_x	Nonattainment/ maintenance	All	100
Pb	Nonattainment/ maintenance	All	25

Source: 40 CFR 93.153

The impact in NAAQS "nonattainment" areas are considered significant if the net changes in project-related pollutant emissions result in any of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Increase the frequency or severity of a violation of any ambient air quality standard
- Delay the attainment of any standard or other milestone contained in the SIP or permit limitations.

With respect to the General Conformity Rule, effects on air quality would be considered significant if the proposed Federal action would result in an increase of a nonattainment or maintenance area's emissions inventory above the *de minimis* threshold levels established in 40 CFR 93.153(b) for individual nonattainment pollutants or for pollutants for which the area has been redesignated as a maintenance area. 40 CFR 93.153(c) exempts certain federal actions from a general conformity determination. However, these exemptions do not apply to this Proposed Action.

3.2.3.2 Proposed Action

Construction and Demolition Emissions. Short-term, minor, adverse impacts would be expected from demolition and construction emissions and land disturbance. The Proposed Action would result in minor impacts on regional air quality during demolition and construction activities, primarily from site-disturbing activities, operation of construction equipment, evaporative emissions from architectural coatings, and concrete and asphalt paving operations. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. All emissions associated with construction operations would be temporary in nature. The Proposed Action would occur over a 20-year time period (2011 to 2031) and occur in three phases. The three phases are: Phase 1 (Current Projects, 2011 to 2015), Phase 2 (Short-Range Projects, 2016 to 2020) and Phase 3 (Long-Range Projects, 2021 to 2031). It is not expected that emissions from demolition and construction of the projects associated with the Proposed Action would contribute to or affect local or regional attainment status with the NAAQS. Emissions from the construction and demolition activities associated with the Proposed Action are summarized in **Table 3-8**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix D**. As stated in **Section 2.1**, it is intended that the projects contained in this EA will be reviewed prior to implementation and this document would be updated to accommodate changes in project scope or environmental conditions of the project area, including changes in local or regional attainment status.

The Proposed Action would generate both temporary and long-term air pollutant emissions. The construction and demolition projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, demolition, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite effects.

Construction operations would result in short-term emissions of criteria pollutants as combustion products from construction equipment, and as evaporative emissions from architectural coatings and asphalt paving operations. Emissions of all criteria pollutants would result from construction and demolition activities including combustion of fuels from on-road haul trucks transporting materials and as construction commuter emissions.

Construction, demolition, and infrastructure projects would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during initial site-preparation activities and would vary from day to day depending on the construction phase, level of

Table 3-8. Estimated Air Emissions Resulting from the Proposed Action Construction and Demolition Activities (2011 – 2031)

Construction/ Demolition Emissions by Calendar Year	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tons)
2011	13.59	5.93	48.1	0.51	21.45	2.33	1249.96
2012	13.59	5.93	48.1	0.51	21.45	2.33	1249.96
2013	13.59	5.93	48.1	0.51	21.45	2.33	1249.96
2014	13.59	5.93	48.1	0.51	21.45	2.33	1249.96
2015	13.59	5.93	48.1	0.51	21.45	2.33	1249.96
2016	5.24	0.81	3.24	0.39	6.35	0.76	129.48
2017	5.24	0.81	3.24	0.39	6.35	0.76	129.48
2018	5.24	0.81	3.24	0.39	6.35	0.76	129.48
2019	5.24	0.81	3.24	0.39	6.35	0.76	129.48
2020	5.24	0.81	3.24	0.39	6.35	0.76	129.48
2021	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2022	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2023	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2024	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2025	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2026	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2027	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2028	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2029	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2030	5.20	0.68	3.23	0.38	7.12	0.97	64.48
2031	5.20	0.68	3.23	0.38	7.12	0.97	64.48
SA/MSA(2002)[1]	81,631	73,199	451,770	38,175	109,981	26,668	625,172,824*
Percent of SA/MSA Inventory (Highest Years – 2011and 2015)	0.017%	0.0081%	0.0106%	0.0013%	0.020%	0.015%	0.017%

Notes:

1. SA/MSA = San Antonio Metropolitan Statistical Area

* State of Texas CO_2 emissions (DOE/EIA 2008).

** Percent of State of Texas CO_2 emissions.

activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity. Appropriate fugitive dust-control measures would be employed during construction and demolition activities to suppress emissions.

Operational Emissions. Operational emissions associated with the Proposed Action would not be expected to result in adverse effects on air quality. Day-to-day operations associated with the Proposed Action would generate emissions of criteria pollutants as combustion products from the burning of natural gas by boilers used to provide comfort heating and by the combustion of fuel oil by emergency generators to produce electrical power, but these emissions would offset by the removal of older and more emissive equipment. In addition, local and regional pollutant effects resulting from direct and indirect emissions from stationary emissions sources under the Proposed Action would result in no new impacts on air quality as the quantities of hazardous chemicals emitted by new facilities and procedures is estimated to be only slightly higher than existing procedures.

Under the Proposed Action, demolition activities would remove 9 external combustion equipment (boilers < 2.0 million British Thermal Units per hour [MM Btu/hr]) and 9 external combustion equipment (boilers > 2.0 MM Btu/hr and < 10 MM Btu/hr). Existing buildings scheduled for renovation under the Proposed Action have a total of 12 pieces of external combustion equipment (11 boilers < 2.0 MM Btu/hr and 1 boiler between 2.0 MM Btu/hr and 10 MM Btu/hr), and 2 pieces of internal combustion equipment. There is no information at this time as to whether the existing operational equipment due to renovation activities in the Proposed Action would be replaced, stay as-is, or if new equipment would be added. New operational equipment added as a result of new construction in the Proposed Action has not been defined. Looking at the types and size of the facilities to be constructed it is estimated that 18 pieces of external combustion equipment (boilers < 2.0 MM Btu/hr), 5 pieces of external combustion equipment (boilers > 2.0 MM Btu/hr and < 10 MM Btu/hr) and 5 pieces of internal combustion equipment could be added. All relocation and obtaining of new stationary sources would be coordinated with TCEQ and would comply with all Title V permit operating conditions. Therefore it is expected that emissions from the Proposed Action would minimally affect local and regional attainment status and comply with NAAQS requirements. Emissions from the operational activities associated with the Proposed Action are summarized in **Table 3-9**.

Table 3-9. Estimated Delta Change in Permitted Operational Air Emission Equipment from the Proposed Action Existing Permits Obtained from LAFB AEI (2002)

Proposed Action	ECOM (< 2.0 MM Btu/hr)	ECOM (> 2.0 MM Btu/hr and < 10 MM Btu/hr)	ICOM
Demolition Activities	-9	-9	-0
New Construction	18	5	5
Renovation*	11	1	2

Source: Baseline emission estimates were obtained from the Final 2002 Air Emissions Inventory (LAFB 2002a)

Notes: * ECOM and ICOM equipment from renovation activities might or might not be replaced and there is a potential for new ECOM and ICOM equipment to be added.

Key: ECOM = External Combustion Engine, ICOM = Internal Combustion Engine

Commuter Emissions. The Proposed Action would result in a net increase of 1,096 faculty and administrative personnel spread over Phase I. All faculty and administrative staff were assumed to travel an average of 40 miles round-trip each working day. Therefore, a minor increase in the Proposed Action's emissions from the increase of 1,096 personnel and their associated commuter vehicles would result in negligible adverse impact on regional air quality.

Summary. As shown in **Table 3-7**, the Proposed Action would generate emissions well below 100 tons for all criteria pollutants, the emissions would be short-term, and all criteria pollutant emissions are well below significant criteria thresholds described in **Section 3.2.3**. Therefore, the construction and

operational activities associated with the Proposed Action would not have significant effects on air quality at Lackland AFB or on regional or local air quality.

If the SA/MSA is designated as a nonattainment area for 8-hour O_3, General Conformity Rule requirements would be applicable to the Proposed Action. As shown in **Table 3-7**, the Proposed Action would generate emissions well below *de minimis* levels. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventories for the SA/MSA AQCR (USEPA 2002a). Therefore, the construction and operational activities associated with the Proposed Action would not have significant effects on regional or local air quality.

3.2.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on air quality under this alternative would be expected to be the same as those identified in **Section 3.2.3.2**.

If the SA/MSA is designated as a nonattainment area for 8-hour O3, General Conformity Rule requirements would be applicable to the Site Configuration Alternative. As shown in **Table 3-7**, the Site Configuration Alternative would generate emissions well below de minimis levels. In addition, this alternative would generate emissions well below 10 percent of the emissions inventories for the SA/MSA AQCR (USEPA 2002a). Therefore, the construction and operational activities associated with the Site Configuration Alternative would not have significant effects on regional or local air quality.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on air quality under this alternative would be expected to be the same as those identified in **Section 3.2.3.2**.

If the SA/MSA is designated as a nonattainment area for 8-hour O_3, General Conformity Rule requirements would be applicable to the Temporary Trailer Site Alternative. As shown in **Table 3-7**, the Temporary Trailer Site Alternative would generate emissions well below *de minimis* levels. In addition, this alternative would generate emissions well below 10 percent of the emissions inventories for the SA/MSA AQCR (USEPA 2002a). Therefore, the construction and operational activities associated with the Temporary Trailer Site Alternative would not have significant effects on regional or local air quality.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on air quality under this alternative would be expected to be the same as those identified in **Section 3.2.3.2**.

If the SA/MSA is designated as a nonattainment area for 8-hour O_3, General Conformity Rule requirements would be applicable to the Temporary Trailer Site Alternative 2. As shown in **Table 3-7**, the Temporary Trailer Site Alternative 2 would generate emissions well below *de minimis* levels. In addition, this alternative would generate emissions well below 10 percent of the emissions inventories for the SA/MSA AQCR (USEPA 2002a). Therefore, the construction and operational activities associated with the Temporary Trailer Site Alternative 2 would not have significant effects on regional or local air quality.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.2.2**, would remain the same. No impacts on air quality would be expected from implementation of the No Action Alternative.

3.3 Land Use and Aesthetics

3.3.1 Definition of the Resource

3.3.1.1 Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, "labels," and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. USAF installation land use planning commonly uses 12 general land use classifications: airfield, aircraft operations and maintenance, industrial, administrative, community (commercial), community (service), medical, housing (accompanied), housing (unaccompanied), outdoor recreation, open space, and water (USAF 1998).

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning within the civilian sector include written master plans/management plans, policies, and zoning regulations. According to Air Force Pamphlet (AFPAM) 32-1010, *Land Use Planning*, land use planning is the arrangement of compatible activities in the most functionally effective and efficient manner (USAF 1998). The USAF comprehensive planning process also uses functional analysis, which determines the degree of connectivity among installation land uses and between installation and off-installation land uses, to determine future installation development and facilities planning (USAF 1998).

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential impacts on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its "permanence."

3.3.1.2 Aesthetics

Aesthetics includes the natural and man-made physical features that give a particular landscape its character and that influence the visual appeal of an area for residents and visitors. The features that form the overall visual impression a viewer receives include landforms, vegetation, water, color, adjacent scenery, scarcity, and man-made modifications. Resources such as designated scenic rivers, roads, recreational areas, or other public lands create important visual aesthetic features for the public. In general, a feature observed within a landscape can be considered as "characteristic" (or character defining) if it is inherent to the composition and function of the landscape. Landscapes do change over time, so the assessment of the environmental impacts of a proposed action on a given landscape area must be made relative to the "characteristic" features currently composing the landscape or area.

3.3.2 Description of the Affected Environment

3.3.2.1 Land Use

On-Installation Land Use. Lackland AFB encompasses approximately 9,572 acres and consists of 2,105 facilities on three installations: Main Base, Kelly Field Annex, and Lackland Training Annex (LAFB 2009b). The Main Base is divided into four development plan areas; North West, Central West, South West, and South East. The DLIELC and IAAFA ADP is located in the South West portion of the Lackland Main Base (LAFB 2002b). The ADP area is bounded by the installation boundary to the west and by on-installation roadways to the north, east, and south, including Truemper Street and a portion of Selfridge Avenue to the north, Carswell Avenue and Walker Avenue to the east, and Gott and Tinker streets to the south.

Lackland AFB has 14 land use designations: administrative, airfield, airfield runway/taxiway/apron, aircraft operations and maintenance, community–commercial, community–service, housing-accompanied, housing–unaccompanied, industrial, medical, open space, outdoor recreation, training–indoor, and training–outdoor (LAFB 2002b). As shown in **Figure 3-1**, the existing land use categories within the ADP boundary are training-indoor, training-outdoor, industrial, administrative, community-commercial, housing-unaccompanied, outdoor recreation, and open space. The largest area of these land use categories within the ADP is housing-accompanied, followed by training-outdoor and training-indoor. The housing-accompanied area includes the Basic Military Training (BMT) facilities and the DLIELC and IAAFA housing facilities. The training-outdoor areas are associated with the BMT facilities; however, the existing exercise track located within the western portion of the area is used by multiple organizations. The training-indoor land use mainly denotes facilities dedicated to DLIELC and IAAFA academic functions, and facilities occupied by the Marines, Transportation and Security Administration (TSA), and the Detachment 2, 22nd Training Squadron. The other land uses throughout the area include the dining facility, fitness center, CE functions, mosque, recreation facilities, and land currently unused as open space (LAFB 2011c).

Surrounding Off-Installation Land Use. Lackland AFB is in Bexar County in south-central Texas, approximately 8 miles southwest of downtown San Antonio (see **Figure 1-1**). The Main Base and Kelly Field Annex are surrounded by the City of San Antonio, while Lackland Training Annex is in an unincorporated portion of Bexar County. Lackland AFB is surrounded by developed land on all sides. Most of the land is composed of established residential areas; however, there are pockets of commercial, industrial, transportation, and service uses interspersed within these residential areas.

Figure 3-1. Existing Land Use Designations for the DLIELC and IAAFA ADP at Lackland AFB

Single-family residential is the primary land use to the south and west of the Main Base with pockets of multi-family residential, open space, commercial, and community uses. Commercial uses (as strip malls) are along U.S. Highway 90 to the north with single-family residential areas farther north (LAFB 2002b). The DLIELC and IAAFA academic campus is in the western portion of the Main Base. The majority of the area is bounded by roads within the installation boundary. The installation boundary composes the western boundary of the ADP footprint. The Heather's Cove Subdivision is directly west of the campus; the closest residence is approximately 150 feet west of the ADP boundary. This subdivision is zoned for residential uses (R-6 Residential Single-Family District) by Bexar County (City of San Antonio 2011). The land along the northwestern border of the ADP footprint is zoned for commercial uses (C-3 General Commercial District) (City of San Antonio 2011).

3.3.2.2 Aesthetics

As previously described, the DLIELC and IAAFA area is dominated by training-related academic buildings, housing, recreational areas, and open space. The ADP footprint does not include any national, state, or local parks or public recreation areas. The recreational areas within the academic campus are only for use by DLIELIC and IAAFA students and staff.

Lackland AFB is delineated into 11 distinct visual districts (LAFB 2011c). The DLIELC and IAAFA academic campus is within the training visual district. The training district was designed to achieve the following goals (LAFB 2011c):

- Create a sense of arrival
- Instill unit integrity
- Create distinct centers
- Emphasize pedestrian spaces
- Incorporate the natural environment into site plans.

The training district is characterized as the most visually diverse, with a number of different architectural styles present. Typically, academic campus development reflects the traditions of institutional design and is characterized by the architecture of the surrounding buildings. The existing facilities that best represent the architecture style of the academic campus are buildings 7437, 7460, 7532, and 7535, as shown in **Figure 3-2**. These facilities are used as the architectural standard for the proposed facilities in the ADP (LAFB 2011c).

A military installation conveys a visual image established by the physical condition, arrangement, and architectural character of its facilities. A Facility Condition Assessment was conducted to provide guidance for improving the quality of the DLIELC and IAAFA academic campus environment. The assessment included not only the aesthetic qualities of the facilities, but also life/safety, building lifespan, feasible additions/alternations, and major impact of future projects on the total built and natural environment (LAFB 2011c). Only the aesthetic portion of the assessment is discussed in this section.

The Facility Condition Assessment rated the existing facilities on a scale of 1 to 6, with condition codes 1 to 3 being the facilities that are in good or adequate condition and are recommended to be retained; condition codes 4 and 5 being that the facility is in adequate condition but is recommended for demolition as replacements are already planned; and condition code 6 being that the interior and exterior of the facility is in extreme disrepair and is recommended for demolition due to the current condition of the facility (LAFB 2011C). The facilities that were assessed as condition code 5 or 6 are from the Cold War era. These facilities do not meet the criterion for "importance" for properties 50 years or older or "exceptional importance" for properties less than 50 years of age as defined by the Lackland AFB Integrated Cultural Resources Management Plan.

Building 7437
Operations/Student Management/ Country Liaison Offices

Building 7460
Visiting Airman's Quarters

Building 7532
Base Chapel

Building 7535
Academic Facility

Source: LAFB 2011c

Figure 3-2. Examples of Existing DLIELC and IAAFA Architecture

The following condition codes for the 35 facilities were provided in the assessment (no facilities were assessed as condition code 4) (LAFB 2011c):

- 2 facilities were assessed as condition code 1
- 14 facilities were assessed as condition code 2
- 6 facilities were assessed as condition code 3
- 9 facilities were assessed as condition code 5
- 4 facilities were assessed as condition code 6.

3.3.3 Environmental Consequences

3.3.3.1 Significance Criteria

Land Use. The significance of potential land use impacts is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. In general, a land use impact would be significant if it were to cause the following:

- Be inconsistent or in noncompliance with existing land use plans or policies
- Preclude the viability of existing land use
- Preclude continued use or occupation of an area
- Be incompatible with adjacent land use to the extent that public health or safety is threatened
- Conflict with planning criteria established to ensure the safety and protection of human life and property.

Aesthetics. In general, an impact on aesthetics resources would be significant if it were to cause the following:

- Adversely influence a national, state, or local park or recreation area
- Degrade or diminish a Federal, state, or local scenic resource
- Create adverse visual intrusions or visual contrasts affecting the quality of a landscape.

As previously discussed, the ADP footprint does not include any national, state, or local parks or recreation areas. The existing and proposed recreational areas within the academic campus would only be available to DLIELIC and IAAFA students and staff. Therefore, only the potential impacts due to visual intrusion or contrast that would affect the quality of landscape are discussed in this section.

3.3.3.2 Proposed Action

Land Use

The existing land use for the DLIELC and the IAAFA Academic Campus ADP would change under the Proposed Action. These adjustments would include the changes related to the demolition of the four BMT facilities just south of Truemper Street. Removal of the facilities would allow space for the proposed gate and the fitness center complex, which would change the current housing-unaccompanied land use to administrative and recreation. Additional adjustments include the expansion of the housing-unaccompanied land use and an additional industrial land use for the new maintenance facilities/storage yard. In addition, there would be an expansion of the administrative land use for the new headquarters facility and the conversion of building 5570 from a BMT asset to administrative functions.

This change in land use would consolidate the multiple smaller parcels of existing training-indoor, training-outdoor, industrial, administrative, community-commercial, housing-unaccompanied, outdoor recreation, and open space land use describe in **Section 3.3.2.1** into larger, less fragmented parcels of the same land uses (see **Figure 3-3)**. Therefore, the proposed ADP would be compatible with the Lackland AFB 2002 *General Plan.* In addition, the change in land use would allow the DLIELC and the IAAFA organizations to work together more effectively. Therefore, long-term, direct, beneficial impacts on land use would be expected under the Proposed Action.

Aesthetics

Building Construction and Demolition. During the building demolition and construction process, each project site would have little aesthetic appeal. Construction and demolition equipment (e.g., bulldozers, backhoes, front-end loaders, dump trucks, and tractor-trailers) would be visible from the areas adjoining the project sites. Construction and demolition wastes temporarily stored for disposal would be visible in piles and in dumpsters at the projects sites and wastes would be visible in trucks on installation and public roadways during transport to landfills. Although the construction and demolition process would impact

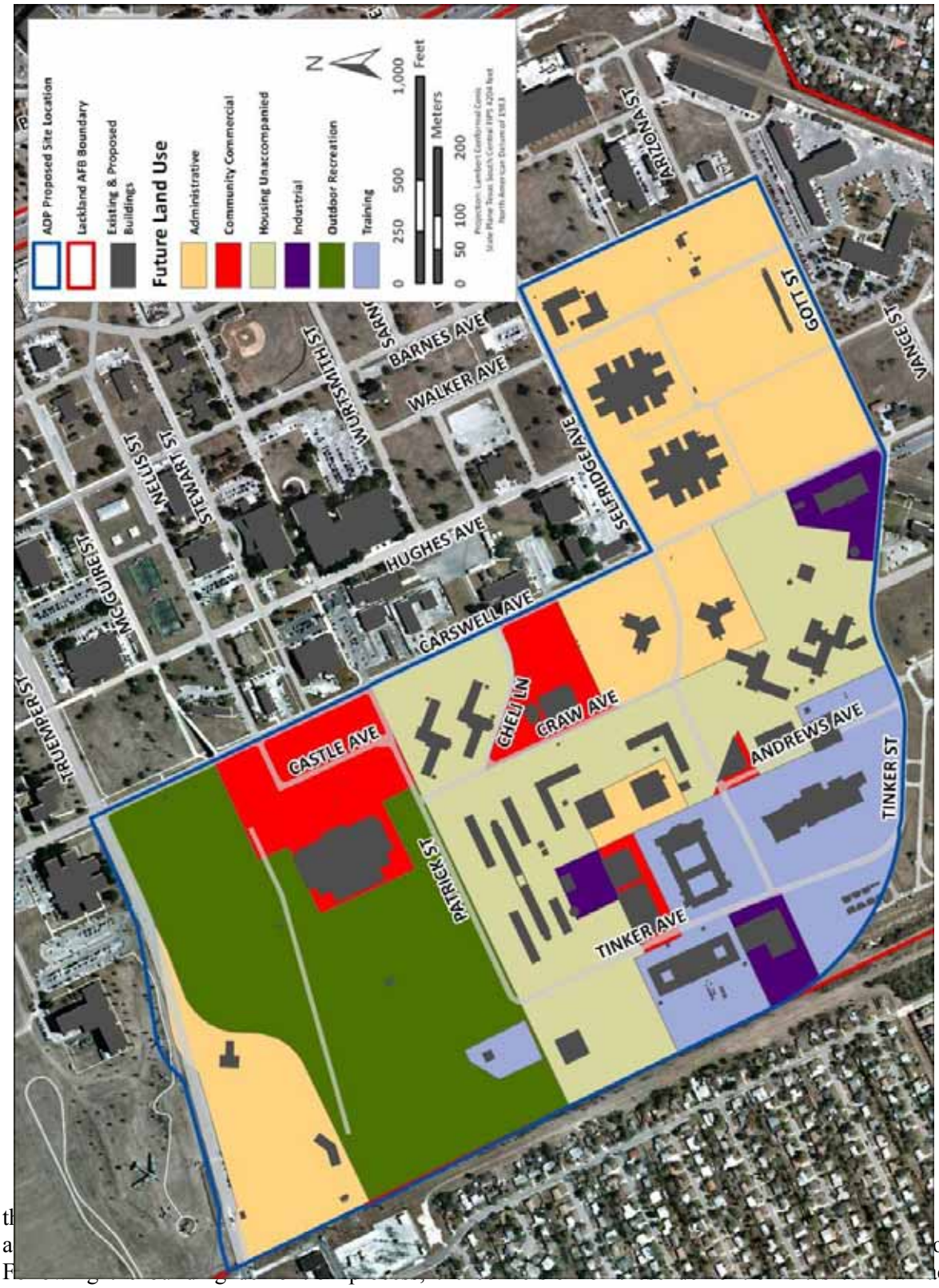

Figure 3-3. Future Land Use Designations for the DLIELC and IAAFA ADP at Lackland AFB

direct, a olition. F cilities would enhance the overall visual conditions of the installation. As discussed in **Section 3.3.2.2**, the facilities proposed for demolition or renovation are in disrepair, and detract from the overall aesthetic

appearance of the installation. Therefore, their removal or renovation would enhance the aesthetics of the installation. In addition to the building removal, overhead electricity and communications utility wires would be buried as part of the Proposed Action. Their burial would further enhance the aesthetic appearance of the academic campus. Therefore, long-term, direct, beneficial impact on aesthetic resources would be expected upon completion of the building demolition, renovation, and construction activities under the Proposed Action.

Proposed Planning and Design Elements. As shown in **Figure 3-4** the proposed ADP includes several urban planning and design elements that are intended to enhance the aesthetic qualities of the academic campus. Site amenities would be designed to enhance the visual appeal of the academic campus and to complete the overall aesthetic goals for the training district, which are described in **Section 3.3.2.2**. Site amenities, landscape materials, and signage would be selected to create a collegiate academic appearance. New facilities would be sited and designed to complement the existing architectural style of the training district (shown in **Figure 3-2**) (LAFB 2011c). The outdoor areas would include scenic features that enhance the aesthetic quality of the area, such as walkways, site lighting, landscaping, pavilions, and low walls to screen dumpster enclosures. Outdoor spaces would be designed with walkways that connect the housing and academic areas and pavilions adjacent to dining facilities. Pavilions would be constructed using materials and an architectural style similar to those of the existing and proposed academic facilities. The pavilions would also be equipped with barbecue grills, tables, and benches to encourage personnel to enjoy the scenic quality of the academic campus (LAFB 2011c). The LEED system would also be used to facilitate good environmental stewardship (see **Section 3.8.3.2**). Therefore, long-term, direct, beneficial impacts on aesthetic resources would be expected under the Proposed Action.

3.3.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on land use and aesthetics under this alternative would be expected to be the same as those identified in **Section 3.3.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on land use and aesthetics under this alternative would be expected to be the same as those identified in **Section 3.3.3.2**.

The proposed central plaza that connects the two campuses would provide students a place to congregate, study, and socialize.

Small pavilions are provided within the academic campus for small gatherings.

Pavilions will be equipped with barbecue grills and seating.

Source: LAFB 2011C

Figure 3-4. Proposed Urban Design Planning Elements under the Proposed Action

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on land use and aesthetics under this alternative would be expected to be the same as those identified in **Section 3.3.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.3.2**, would remain the same. Because demolition activities would not take place and the deteriorating buildings would continue to detract from

the installation's overall current aesthetic appearance, long-term, direct, minor adverse impacts on the aesthetic quality of the academic campus would be expected under the No Action Alternative.

3.4 Geological Resources

3.4.1 Definition of the Resource

Geological resources consist of the Earth's surface and subsurface materials. Within a given physiographic province, these resources typically are described in terms of topography and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

Geology. Geology is the study of the Earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information is derived from field analysis based on observations of the surface and borings to identify subsurface composition.

Topography. Topography and physiography pertain to the general shape and arrangement of a land surface, including its height and the position of its natural and human-made features.

Soils. Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are described in terms of their complex type, slope, and physical characteristics. Differences among soil types in terms of their structure, elasticity, strength, shrink-swell potential, and erosion potential affect their abilities to support certain applications or uses. In appropriate cases, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime Farmland. Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to economically produce sustained high-quality crops when treated and managed according to acceptable farming methods. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA, administered by the Natural Resources Conservation Service (NRCS), require Federal agencies to evaluate the adverse impacts (direct and indirect) of their activities on prime and unique farmland, and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse impacts. For areas where prime farmland soils occur, the preparation of the Farmland Conversion Impact Rating Form AD-1006 assists the NCRS in determining whether an area is considered prime or unique farmland and the potential impacts associated with a proposed action. This is accomplished by applying criteria established in Section 658.5 of the FPPA (7 CFR Part 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, 5 July 1984).

Geologic Hazards. Geologic hazards are defined as a natural geologic event that can endanger human lives and threaten property. Examples of geologic hazards include earthquakes, landslides, rock falls, ground subsidence, and avalanches.

3.4.2 Description of the Affected Environment

Geology. Lackland AFB is situated on the Edwards Plateau, which is part of the Great Plains physiographic province. A vast, faulted limestone known as the Balcones Escarpment forms the southern and eastern portions of the Edwards Plateau. Surficial geology consists of gravelly terrace deposits with valleys cut by stream deposits (LAFB 2007d).

Mining, production, and processing of mineral resources occur in Bexar County. Currently, asphalt-bearing limestone, sand, and gravel are mined. Mineral resources that are processed in Bexar County include asphalt, lime, cement, and perlite. Vermiculite is processed in San Antonio but is mined outside of Texas (TSHA 2011).

Topography. Lackland AFB lies at the base of the escarpment in the Blackland Prairie physiographic area. Blackland Prairie is characterized by undulating hills with elevations that range from 700 to 1,000 feet above mean sea level (MSL). Whereas most of the installation is generally flat with slopes ranging from 1 to 3 percent, a precipitous drop in elevation occurs at Leon Creek along the eastern boundary of the installation. Elevations on Lackland AFB range from approximately 790 feet in the northwestern corner to 630 feet along Leon Creek (LAFB 2007d).

Soils. Soils mapped at Lackland AFB are primarily composed of Houston Black series. The Houston Black series consists of deep, calcareous clayey soils and range from level to sloping. When slopes are greater than 1 percent, runoff and subsequent erosion can occur. Other soils at the installation include the Trinity, Frio, Venus, and Patrick (LAFB 2007d).

Soils at the Proposed Action site are mapped as the Houston Black gravelly clay, 1 to 3 percent slopes; Houston Black gravelly clay, 3 to 5 percent slopes; and Branyon clay, 0 to 1 percent slopes. Houston Black gravelly clay and Branyon clay are all moderately well-drained. The Houston Black gravelly clay, 1 to 3 percent and 3 to 5 percent slopes are the primary soil types within the proposed project area. The Branyon clay, 0 to 1 percent slopes is mapped near the BMT Campus, which is proposed for demolition under the Proposed Action (NRCS 2011).

Soil limitations were determined based on data available in the NRCS's web soil survey (NRCS 2011). Engineering limitations were considered for shallow excavations, construction of small commercial buildings, and construction of roads. Engineering limitations for shallow excavations were examined primarily for utility work. All soils mapped at the site were rated as very limited for shallow excavations due to cutbank caving. The Houston Black gravelly clay, 1 to 3 percent slopes and 3 to 5 percent slopes were rated as very limited for small commercial building construction due to the presence of shrink-swell clays. All soils mapped at the site were rated as very limited for road construction due to the presence of shrink-swell clays and low strength.

Prime Farmland. Two of the three soils mapped at the site of the Proposed Action are considered to be prime farmland soils. The Houston Black gravelly clay, 1 to 3 percent slopes and the Houston Black gravelly clay, 3 to 5 percent slopes are considered to be prime farmland soils. However, current land use precludes future agricultural use of soils, so these soils are not available and would not be considered prime farmland soils.

Geological Hazards. Although the installation is underlain by limestone, which could be subject to solution weathering, karst features such as sinkholes, caves, and formation fractures are not present at Lackland AFB (LAFB 2007d). The greatest geologic hazard that could be present at Lackland AFB would be the possibility of erosion. Because erosion potential increases with slope, the soil mapped with the greatest slope, the Houston Black gravelly clay (3 to 5 percent slopes), would be considered to have

moderate erosion potential. The other soils mapped at the site of the Proposed Action are considered to have a slight erosion potential.

The potential for damaging seismic activity at the installation is fairly low. The U.S. Geological Survey (USGS) has produced seismic hazards maps based on current information about the rate at which earthquakes occur in different areas and on the distance that severe shaking extends from the quake source. The hazard maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The 2008 United States National Seismic Hazards Map shows that the region of Lackland AFB has a seismic hazard rating of approximately 2 to 4 percent g (USGS 2008).

3.4.3 Environmental Consequences

3.4.3.1 Significance Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating the potential impacts of a proposed action on geological resources. Generally, adverse impacts can be avoided or minimized if proper construction techniques, erosion-control measures, and structural engineering design are incorporated into project development.

Geological impacts would be significant if they would substantially alter the geology that controls groundwater quality, distribution of aquifers and confining beds, and groundwater availability. Soil impacts would be significant if they would change the soil composition, structure, or function (including prime farmland and other unique soils) within the environment.

3.4.3.2 Proposed Action

The Proposed Action would be expected to result in short- and long-term, minor, adverse impacts on geology and soils. No significant adverse impacts would be expected as impacts would not substantially alter the geology that controls groundwater quality, distribution of aquifers and confining beds, and groundwater availability, nor change the soil composition, structure, or function within the environment.

Construction activities would involve grading, recontouring, paving, and removal of vegetation. An AF Form 103 Construction/Digging permit would be required prior to implementing the Proposed Action. Construction vehicles would compress soils, decreasing permeability and rates of storm water runoff infiltration. The primary impacts would be soil compaction and erosion.

Clearing of vegetation would increase erosion and sedimentation potential. An Erosion-and-Sediment-Control Plan (ESCP) would be developed and implemented both during and following site development to contain soil and runoff on site, and would reduce potential for adverse impacts associated with erosion and sedimentation, and transport of sediments in runoff. Erosion potential would be greatest in the southwestern portion of the site, where the Houston Black gravelly clay has slopes up to 5 percent.

Site-specific soil surveys should be conducted prior to implementing the Proposed Action because the soils mapped have been determined to be very limited for shallow excavations, road development, and construction of small commercial buildings. Engineering design and BMPs would be developed to address and minimize identified limitations based on site-specific soil characteristics,

Temporary modular trailers with paved parking spaces would be installed during construction activities. There is the potential for storm water runoff, containing pollutants from parking areas, to enter the storm water system. Appropriate storm water management BMPs could retain runoff within the parking areas and minimize the potential for adverse impacts on adjacent and downstream water bodies. It is possible that a spill or leak of vehicle or other fluids could occur during construction. In the event of a spill, the installation's SPCC Plan would be followed to quickly contain and clean up a spill. There remains the possibility that a spill or leak could occur, but implementation of the BMPs identified in the SPCC plan would minimize the potential for and extent of associated contamination.

Long-term, minor, adverse impacts could occur from the increase in impervious surfaces. Although demolition sites would be restored (i.e., revegetated), total permanent impervious surfaces would increase. Increased impervious surfaces could result in increased soil erosion and sedimentation. However, implementation of sustainable design techniques such as green roofs, bioswales, and retention ponds would offset the increase in erosion, sedimentation, and storm water runoff volume and velocity, resulting from the increased impervious surfaces (see **Section 3.8.4**). By implementing sustainable design techniques, erosion and sedimentation rates would be expected to be maintained at pre-construction levels.

As a result of implementing the Proposed Action, soils would be compacted, and soil structure disturbed and modified. Loss of soil structure due to compaction from foot and vehicle traffic could result in changes in drainage patterns. These impacts would be considered minor as the majority of soils at the site of the Proposed Action that would be developed have been previously disturbed or modified. Soil erosion- and sediment-control measures would be included in site plans to minimize long-term erosion and sediment production at each site. New structures would be constructed with storm water controls favoring methods that allow for storm water to reenter the groundwater system rather than leaving the site as surface flow. Use of storm water control measures that favor reinfiltration in this way would minimize the potential for erosion and sediment production as a result of future storm events. No mining activities would be affected by the Proposed Action.

3.4.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on geological resources and soils under this alternative would be expected to be similar to those identified in **Section 3.4.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on geological resources and soils under this alternative would be expected to be similar to those identified in **Section 3.4.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on geological resources and soils on under this alternative would be expected to be similar to those identified in **Section 3.4.3.2**

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.4.2**, would remain the same. No impacts on geological resources or soils would be expected from implementation of the No Action Alternative.

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to the Project include groundwater, surface waters, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes. Hydrology concerns the distribution of water to water resources through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from (1) temperature and total precipitation that determine evapotranspiration rates, (2) topography that determines rate and direction of surface flow, and (3) soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir.

Groundwater. Groundwater is water that exists in the saturated zone beneath the earth's surface, and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Groundwater quality and quantity are regulated under several programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contribution to the economic, ecological, recreational, and human health of a community or locale. Waters of the United States are defined within the CWA, as amended, and jurisdiction is administered by the USEPA and the USACE. These agencies assert jurisdiction over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries. Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief

of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires permits from both the state and the Federal government. **Section 3.6** provides a discussion of wetland habitat occurring within the action areas and adjacent wetlands that might be affected by the actions being considered.

The CWA requires that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the source(s) causing the impairment. A TMDL is a calculation of the maximum amount of a pollutant that can be assimilated by a water body without causing impairment. A water body can be deemed impaired if water quality analyses determine exceedances of standards established by the CWA. The CWA also mandated the NPDES program, which regulates the discharge of point (end of pipe) and nonpoint (storm water) sources of water pollution and requires a permit for any discharge of pollutants into waters of the United States.

Storm water (water from precipitation events) is an important component of surface water systems because of its potential to introduce sediments and other contaminates that could degrade surface waters. Proper management of storm water flow, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the protection of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and increased impervious surfaces has the potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting. Storm water management systems are typically designed to contain runoff on site during construction, and to maintain predevelopment storm water flow characteristics following development through either the application of infiltration or retention practices.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category (74 FR 62996-63058). All NPDES storm water permits issued by the USEPA must incorporate requirements established in the Final Rule. USEPA requirements are implemented through the TCEQ storm water discharge program. Specifically, actions associated with the proposed action and alternatives would fall under the jurisdiction of the Texas Pollution Discharge Elimination System General Permit No. TXR150000 Relating to Storm Water Discharges Associated with Construction Activities, issued February 15, 2008.

As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and to design, install, and maintain effective erosion and sediment controls, including the following:

- Control storm water volume and velocity to minimize erosion
- Control storm water discharges including both peak flow rates and total storm water volume
- Minimize the amount of soil exposed during construction activities
- Minimize the disturbance of steep slopes
- Minimize sediment discharges from the site using controls that address factors such as the amount, frequency, intensity, and duration of precipitation; the nature of resulting storm water runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site
- Provide and maintain natural buffers around surface waters and direct storm water to vegetated areas to increase sediment removal and maximize storm water infiltration, where feasible

- Minimize erosion at outlets and downstream channel and streambank erosion
- Minimize soil compaction and preserve topsoil where feasible.

Since the adoption of this rule, the USEPA has stayed the numeric effluent limit for turbidity of 280 nephelometric turbidity units (NTU) until it can make a correction to the limitation. The USEPA had intended to publish the proposed corrected final rule by May 30, 2011, so that the revised limit can be effective by June 29, 2011. The USEPA also plans to issue a final NPDES CGP by June 30, 2011, that will incorporate the new rule requirements, including the turbidity limit. At the time of the writing of this report, the USEPA had yet to publish a revised rule.

Section 438 of the Energy Independence and Security Act (EISA) (42 U.S.C. 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 ft^2. EISA Section 438 requirements are independent of storm water requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible (DOD 2010). Post-construction analyses would be conducted to evaluate the effectiveness of the as-built storm water reduction features (DOD 2010). These regulations were incorporated into applicable DOD UFC in April 2010, which stated that low-impact development (LID) features would need to be incorporated into new construction activities to comply with the restrictions on storm water management promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LIDs can manage the increase in runoff between pre- and post-development conditions on the project site through interception, infiltration, storage, or evapotranspiration processes before the runoff is conveyed to receiving waters. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act.*

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that supports it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body.

Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding typically hinges on local topography, the frequency of precipitation events, and the size of the watershed above the floodplain. Flood potential is evaluated by FEMA, which defines the 100-year floodplain. The 100-year floodplain is the area that has a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings for irreplaceable records. Federal, state, and local regulations often limit floodplain development to passive uses, such as recreational and preservation activities, to reduce the risks to human health and safety.

EO 11988, Floodplain Management, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of FEMA Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative.

3.5.2 Description of the Affected Environment

Groundwater. Groundwater within San Antonio is found in a shallow alluvial aquifer and the underlying Edwards Aquifer. The shallow alluvial aquifer is found at depths between 5 and 15 feet below ground surface (bgs) and is primarily recharged through precipitation and irrigation. The Edwards Aquifer is separated from the shallow alluvial aquifer by the low-permeability Del Rio clay. The confining layers range from depth of 25 to more than 1,200 feet bgs (LAFB 2006a). The Edwards aquifer is predominantly recharged by drainage basins on the Edwards Plateau, which lies northwest of San Antonio (SAWS 2010).

Groundwater movement is generally from the southwest to the northeast. Lackland AFB is in the artesian zone of the Edwards Aquifer where groundwater is confined by the Glen Rose formation beneath and the Del Rio clay above. Springs occur where hydraulic pressure is sufficient to force water up through faults to the surface. Enough water is pumped from the aquifer for consumption that two artesian springs in San Antonio (the San Antonio Springs and San Pedro Springs) are generally dry (Eckhardt 2010).

The Edwards Aquifer has been designated a sole-source aquifer pursuant to the SDWA. The USEPA defines a sole-source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. The Edwards Aquifer is considered highly susceptible to contamination through its recharge zone from a number of sources, including chemical spills, leachate from landfills, and storm water runoff (LAFB 2007d). Lackland AFB obtained access to recycled water from the San Antonio Water System to supplement the installation's water supply to provide nonpotable water uses for activities such as irrigation of the golf courses and the parade field (LAFB 2007d).

Surface Water. Lackland AFB is within the San Antonio River Basin with the San Antonio River acting as the principal water source. The river drains southeasterly from San Antonio for about 240 miles to the Guadalupe River, which drains 10 miles farther into the Gulf of Mexico. Surface water on the installation includes Leon Creek, Medio Creek, Long Hollow Creek, golf course ponds, seasonal ponds, and water hazards developed for the Basic Trainee Confidence Course. **Figure 3-5** shows water resources in the vicinity of the Proposed Action. Leon Creek is a southeastern-flowing, 36-mile-long intermittent stream that flows through the Main Base and Kelly Field Annex into the Medina River in southern Bexar County and eventually flows into the San Antonio River. Leon Creek serves as water hazards for the golf course and as a recreational feature of Stillman Park in the northeastern corner of the installation.

Storm water runoff on Lackland AFB is conveyed through a series of natural drainages, open ditches, and underground storm drainages to outfalls with Leon Creek, Indian Creek, and Medio Creek (LAFB 2006a). The installation has developed a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the Texas Storm Water Multi-Sector General Permit to minimize storm water pollution and implement sampling and monitoring programs (LAFB 2007d). Lackland AFB maintains a Texas Pollutant Discharge Elimination System MS4 General Permit (i.e., Permit No. TXR040068) (LAFB 2009e). An MS4 is a storm water conveyance or system of conveyances that is owned by a state, city, town, village, or other public entity that discharges to waters of the United States; is designed or used to collect or convey storm water including storm drains, pipelines, and ditches; is not a combined sewer; and is not part of a Publicly Owned Treatment Works (USEPA 2011c).

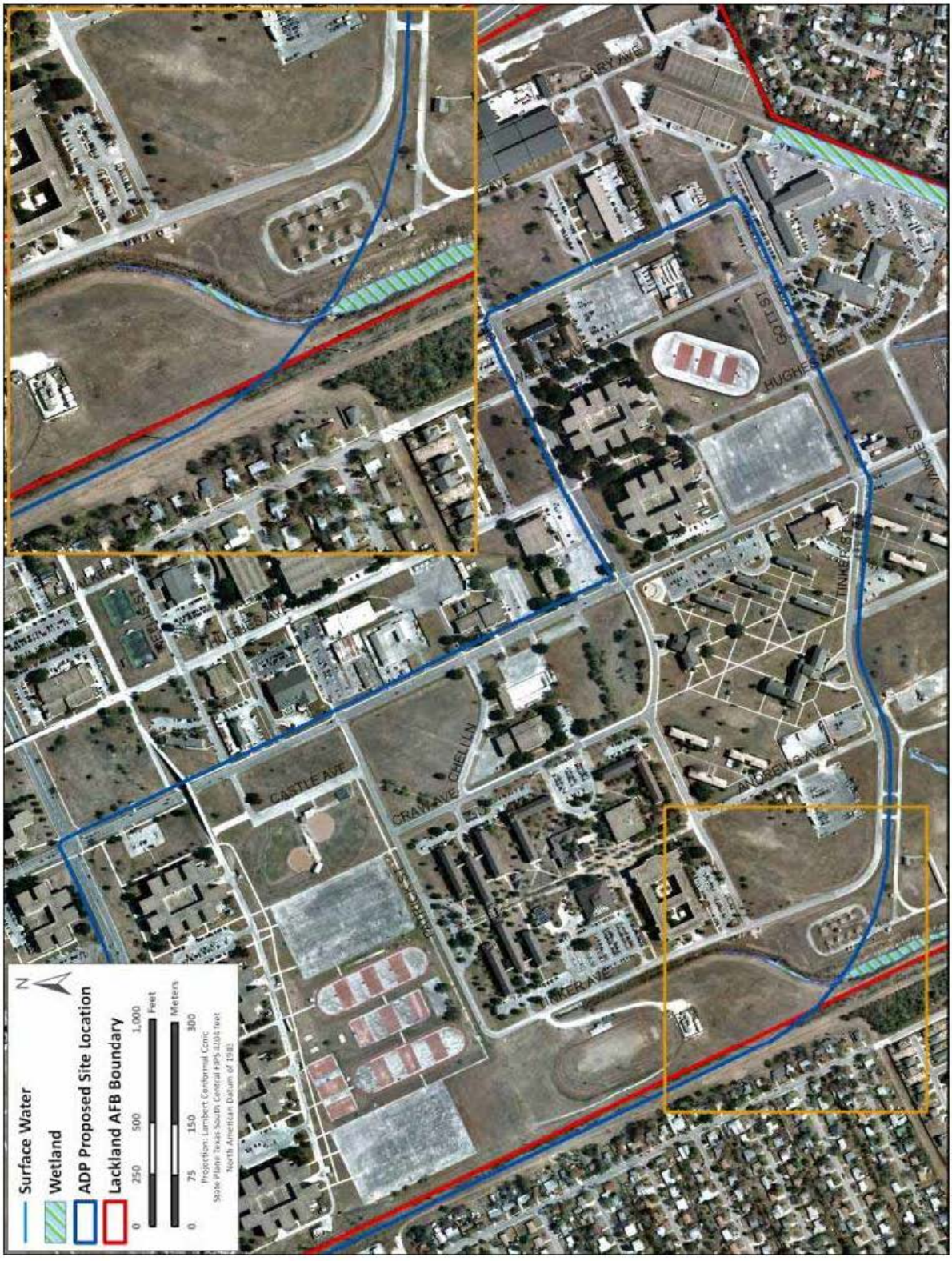

Figure 3-5. Water Resources Located Within the ADP

Leon Creek is the main discharge point for the installation and is listed by the TCEQ as an impaired water body (TCEQ 2008). The lower Leon Creek is considered impaired because of decreased levels of dissolved oxygen and increased levels of bacteria. The TCEQ has initiated a project to verify and develop information necessary to support a bacterial TMDL in the lower Leon Creek. No TMDLs currently exist for dissolved oxygen or bacteria (SARA undated).

Floodplains. The 100-year floodplain corresponds with low-lying areas along the banks of natural waterways. The January 4, 2002, FEMA FIRM Panel No. 48029C0438 for Bexar County, Texas, shows that the proposed project area is within Zone X (unshaded). Zone X is the area determined to be outside the 500-year floodplain and protected by levees from a 100-year flood. Zone X indicates an area of minimal flooding potential. There is no designated 100-year floodplain contained within the boundaries of the proposed project area (FEMA 2002).

3.5.3 Environmental Consequences

3.5.3.1 Significance Criteria

Impacts on water resources are based on water availability, quality, and use; floodplains; and regulations. A proposed action would have significant impacts on water resources if it were to do one or more of the following:

- Reduce substantially water availability or supply to existing users
- Create or contribute to overdraft of groundwater basins
- Exceed safe annual yield of water supply sources
- Cause a violation of water quality standards or increase the magnitude or frequency of an existing water quality violation
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources.

The potential impact of flood hazards on a proposed action is important if such an action occurs in an area with a high probability of flooding

3.5.3.2 Proposed Action

No significant impacts on water resources would be expected from the Proposed Action as it would not substantially reduce water availability or supply to existing users, create or contribute to overdraft of groundwater basins, exceed safe annual yield of water supply sources, cause a violation of water quality standards or increase the magnitude or frequency of an existing water quality violation, endanger public health by creating or worsening health hazard conditions, threaten or damage unique hydrologic characteristics, or violate established laws or regulations adopted to protect water resources.

Short-term, direct, minor, adverse impacts could be expected from the removal of vegetation and excavation of soil for construction of the various facilities and installation of utility lines. This could result in erosion of disturbed soils and transport of sediment and other pollutants into nearby water bodies during storm water flow events. Storm water runoff velocity and volume would increase. Implementing onsite storm water controls would ensure infiltration during construction activities would allow groundwater to recharge and minimize storm water runoff.

Runoff from construction could flow into an unnamed tributary to Leon Creek, located near the southwest corner of the Project area. This could result in increased turbidity within the stream system. Implementation of the Proposed Action would require an NPDES Phase II Storm Water Discharge Permit. Short-term, direct, minor, adverse impacts from construction activities would be minimized with implementation of BMPs including wetting of soils and implementation of erosion and storm water management practices to contain soil and runoff on site. The Proposed Action would be required to comply with TCEQ requirements for construction activities, including obtaining the necessary permits (see **Section 2.1.1**).

It is possible that construction equipment could leak or hazardous material spills could occur during demolition activities. There could be short-term, minor, adverse impacts on the receiving water bodies in the event of a spill or fuel or other contaminants leak. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures identified in the installation's SPCC Plan would be followed to quickly contain and clean up a spill. There remains the possibility that a spill or leak could occur, but implementation of the BMPs identified in the SPCC Plan would minimize the potential for and extent of contamination.

Long-term impacts would be expected to be minor and adverse. A decrease in soil permeability and water infiltration associated with compaction can reduce the rate and volume of groundwater recharge in the affected area. Decreased soil permeability would alter natural storm water flow regimes. While the reduction in soil permeability and water infiltration rates as a result of soil compaction is an adverse impact, the reduction of recharge area and rate of recharge for the groundwater basins would be negligible when compared with the total recharge area that is available (Eckhardt 2010).

Construction activities associated with the proposed action would require the filling of approximately 593 linear feet of stream bed of the unnamed tributary to Leon Creek. This tributary is defined as a man-made drainage ditch and is not considered a water of the United States and is therefore not considered a significant impact (USACE 2008-Rev. Jan. 2012).

Additional square footage of impervious surfaces would be created within the Project area by the Proposed Action (see **Table 2-1** in **Section 2.1**). Where impervious surfaces would be removed and revegetated, storm water infiltration and groundwater recharge would occur, resulting in local beneficial impacts. In addition, the increase in impervious surfaces would be offset by implementation of storm water management techniques such as bioswales and storm water retention ponds. This would bring post-construction storm water runoff volumes to pre-construction levels, which would offset any potential impacts associated with the increased impervious surfaces.

Long-term, adverse impacts would result from increased storm water runoff velocity and volume from increased impervious surfaces within the Project area. These increases would contribute to changes in streambank morphology of the unnamed tributary. Water supplied at a faster rate and greater volume due to the increase in impervious surface would cause erosion within the streambank and the eroded material would be deposited downstream when velocity levels drop. An increase in storm water velocity could contribute to slightly higher dissolved oxygen levels within the water column as aeration rates increase. However, BMPs and an ESCP would be developed and implemented to minimize the adverse impact of the Proposed Action on water resources. The Proposed Action would not be expected to adversely affect the levels of dissolved oxygen or bacteria that are currently being investigated for development of TMDLs within Leon Creek. The Proposed Action would not occur in a designated 500- or 100-year floodplain; therefore, no impacts associated with floodplains would be expected. Water supply would not be expected to be significantly affected. There would be a slight long-term increase in potable water demand associated with the new buildings upon completion of the Proposed Action.

3.5.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. The total amount of impervious surface created under this alternative would be less than the amount created by the Proposed Action; however, short-term and long-term impacts on water resources under this alternative would be expected to be the same as those identified in **Section 3.5.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. The total amount of impervious surface created under this alternative would be less than the amount created by the Proposed Action; however, short-term and long-term impacts on water resources under this alternative would be expected to be the same as those identified in **Section 3.5.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. The total amount of impervious surface created under this alternative would be less than the amount created by the Proposed Action; however, short-term and long-term impacts on water resources under this alternative would be expected to be the same as those identified in **Section 3.5.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.5.2**, would remain the same. No impacts on water resources would be expected from implementation of the No Action Alternative.

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands, forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally listed (endangered or threatened), proposed, and candidate species designated by the U.S. Fish and Wildlife Service (USFWS). Federal species of concern (proposed and candidate species) are not protected by law; however, these species could become listed, and therefore are given consideration when addressing biological resource impacts of an action. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the Endangered Species Act (ESA) and sensitive ecological

areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

In 1973, the Texas legislature authorized the Texas Parks and Wildlife Department (TPWD) to establish a list of endangered animals in the state. Endangered species are those species which the Executive Director of the TPWD has named as being "threatened with statewide extinction." Threatened species are those species that are likely to become endangered in the future. Laws and regulations pertaining to endangered or threatened animal species are contained in Chapters 67 and 68 of the Texas Parks and Wildlife Code and Sections 65.171–65.176 of Title 31 of the TAC. TPWD regulations prohibit the taking, possession, transportation, or sale of any of the animal species designated by state law as endangered or threatened without the issuance of a permit.

Biological resources also include wetlands, which are important natural systems and habitats because they perform diverse biological and hydrologic functions. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, unique plant and wildlife habitat provision, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of waters of the United States under Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 329).

3.6.2 Description of the Affected Environment

Vegetation. Lackland AFB is in the southern extent of the Blackland Prairie vegetation area within the Texan Biotic Province. Blackland Prairie grasslands would have originally prevailed throughout much of this area (LAFB 2002b). Three general plant communities occur at Lackland AFB: (1) mostly deciduous shrublands or woodlands on slopes and in upland areas; (2) deciduous riparian woodlands in well-watered soil on creek terraces; and (3) nonnative grassland patches over almost all areas of the AFB, but only where mowing occurs on a regular basis. Presently, no special plant species or natural communities are known to occur on Lackland AFB (LAFB 2006a).

The vegetation at Lackland AFB is either established through plantings of trees, shrubs, ground cover, vines, and grasses or it occurs naturally in the non-built areas of the installation (LAFB 2007d). The dominant vegetation type is grassland with a small amount of scattered savanna or forest vegetation limited to small remnant areas adjacent to Leon Creek. Due to development, the majority of Lackland AFB contains urban type vegetation with regularly mowed lawns, scattered shade trees, and ornamental landscaping. Non-maintained vegetation areas or unimproved grounds support more native types of vegetation and are typically located on the eastern third of the installation, away from the Project area. Areas of the installation classified as unimproved grounds consist of brushy shrublands, honey mesquite (*Prosopis glandulosa*), hackberry (*Celtis occidentalis*), and Eve's necklace (*Sophora affinis*), all of which have replaced the original native grassland vegetation (LAFB 2006a).

Wildlife. While Bexar County and the Texas Biotic Province are rich in faunal diversity, Lackland AFB is a highly urbanized environment and undeveloped areas on the installation are small in size and isolated, and have typically been subjected to various past or ongoing disturbance regimes. Wildlife species that occur on the installation are generally urban-adapted and disturbance-tolerant (LAFB 2006a). Adjacent habitats, however, include scattered patches of wooded areas, a wooded riparian corridor to the east, and open fields, which provide higher value habitat for wildlife.

At least 49 species of mammals have been recorded in the Texan Biotic Province in which Lackland AFB is located (LAFB 2006a). Common mammals potentially occurring on the installation include Virginia opossum (*Didelphis virginiana*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), gray fox (*Urocyon cinereoargenteus*), common raccoon (*Procyon lotor*), ringtail (*Bassariscus astutus*), long-tailed weasel (*Mustela frenata*), mink (*mustela vison*), American badger (*Taxidea taxus*), western spotted skunk (*Spilogale gracilis*), eastern spotted skunk (*Spilogale putorius*), striped skunk (*Mephitis mephitis*), common hog-nosed skunk (*Conepatus mesoleucus*), and bobcat (*Lynx rufus*) (LAFB 2007d). Of these species, the Virginia opossum, common raccoon, and striped skunk would be the most common mammalian species found within the Project area.

Approximately 339 bird species have been recorded occurring somewhat regularly in Bexar County. Bexar County is situated along the central migration flyway and at the divide between eastern and western North American bird populations. Common native birds potentially occurring on the installation include the red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*), ring-billed gull (*Larus delawarensis*), rock pigeon (*Columba livia*), mourning dove (*Zenaida macroura*), common nighthawk (*Chordeiles minor)*, chimney swift (*Chaetura pelagica*), western kingbird (*Tyrannus verticalis*), blue jay (*Cyanocitta cristata*), American crow (*Corvus brachyrhynchos*), barn swallow (*Hirundo rustica*), northern mockingbird (*Mimus polyglottos*), house finch (*Carpodacus mexicanus*), common grackle (*Quiscalus quiscula*), great-tailed grackle (*Quiscalus mexicanus*), and brown-headed cowbird (*Molothrus ater*) (LAFB 2007d).

At least 39 species of snakes, 5 species of salamanders, and 18 species of anurans (e.g., frogs and toads) have been recorded in the Texan Biotic Province (LAFB 2006a). Most reptiles and amphibians would likely not occur within the Project area. The majority of reptiles and amphibians that might occur on the Main Base would be associated with woodland habitat or riparian habitat along Leon Creek to the east of the Project area.

Protected and Sensitive Species. Thirty-three species listed as threatened or endangered on either the state or Federal lists are known to occur in Bexar County (USFWS 2011b, TPWD 2011). The USFWS has determined that there are no federally listed threatened or endangered species on Lackland AFB (LAFB 2002b). The TPWD has determined that there are presently no known special species or natural communities on the installation based on a search of the Texas Natural Heritage Program Information system (LAFB 2002b). The area surrounding the installation might provide habitat for federally listed threatened or endangered species. However, there are no known occurrences of these species within Lackland AFB (LAFB 2007d).

Although there are no known occurrences of any state or Federal listed species, the Lackland AFB *Integrated Natural Resources Management Plan* lists 8 of these 33 species as having possibility to utilize the Main Base or Lackland Training Annex (LAFB 2007d). These species are shown in **Table 3-10**.

The project area is highly developed so it does not provide desirable habitat to threatened and endangered species. The potential of threatened and endangered species occurring in the Project area is unlikely.

The water usage of the installation drawn from the Edwards Aquifer has an indirect impact on endangered species found in the Comal Springs and San Marcos Springs areas (LAFB 2002b). Comal and San Marcos Springs are artesian outflows from the Edwards Aquifer approximately 35 and 50 miles northeast of the City of San Antonio, respectively (LAFB 2006a). Water levels in these springs lower during periods of low rainfall. The springs provide habitat for the following eight federally listed threatened and endangered species (LAFB 2006a):

- San Marcos salamander (*Eurycea nana*), threatened
- San Marcos gambusia (*Gambusia georgei*), endangered

Table 3-10. Threatened or Endangered Species Potentially Using Lackland AFB Main Base or Training Annex

Common Name	Scientific Name	Federal Status	State Status
Birds			
Black-capped vireo	*Vireo atricapillus*	Endangered	Endangered
Golden-cheeked warbler	*Dendroica chrysoparia*	Endangered	Endangered
White-faced ibis	*Plegadis chihi*	None	Threatened
Reptiles			
Cagle's map turtle	*Graptemys caglei*	Candidate	Threatened
Texas horned lizard*	*Phrynosoma cornutum*	None	Threatened
Texas indigo snake	*Drymarchon corais erebennus*	None	Threatened
Texas tortoise	*Gopherus berlandieri*	None	Threatened
Timber rattlesnake	*Crotalus horridus*	None	Threatened

Sources: LAFB 2007d, TPWD 2011, USFWS 2011b

Note: * The confirmed resident status is based on historic sightings in Bexar County.

- Fountain darter (*Etheostoma fonticola*), endangered
- Texas blind salamander (*Typhlomolge rathbuni*), endangered
- Texas wild rice (*Zizania texana*), endangered
- Comal Springs riffle beetle (*Heterelmis comalensis*), endangered
- Comal Springs dryopid beetle (*Stygoparnus comalensis*), endangered
- Peck's Cave amphipod (*Stygobromus pecki*), endangered.

The USAF began consultation with the USFWS in 1997 and completed a Biological Assessment (BA) for the proposed closure of Kelly AFB, and the USFWS issued a Biological Opinion (BO) in the same year. The USAF completed a separate BA in 1998 to determine the impact of DOD water withdrawal on the Edwards Aquifer and the USFWS subsequently issued a BO in 1999. The 1999 BO concluded that ongoing and proposed actions at the DOD installations (former Kelly AFB, Lackland AFB, Randolph AFB, and Fort Sam Houston) were not likely to jeopardize the continued existence of threatened and endangered species of the Comal and San Marcos spring systems. The USFWS stated in the BO that it was providing DOD with an incidental take statement for the Texas blind salamander, San Marcos salamander, Comal Springs dryopid beetle, and Peck's Cave amphipod (USFWS 1999, LAFB 2006a). Since the 1999 BO, the installations have abided by all the USFWS' prudent and reasonable measures and have maintained water use levels at or below prescribed limits (LAFB 2006a).

A new BA was submitted to the USFWS in early 2005. It documented that the current and future DOD water withdrawal from the Edwards Aquifer constituted a maximum of 2.1 percent of the overall withdrawal from the aquifer rather than the 2.63 percent determined by USFWS in the 1999 BO. USFWS completed a BO on January 11, 2008, that covered the DOD for impacts on listed aquatic species of the Edwards Aquifer resulting from water withdrawal from wells on Lackland AFB, Fort Sam Houston, and Randolph AFB through 2012. Conservation recommendations in the BO included expanding DOD participation in the Edwards Aquifer Recovery Implementation Program (USFWS 2008). The DOD maximum annual withdrawal from the Edwards Aquifer is presently 8,400 acre-feet per year (ac-ft/yr) based on the current DOD allocation of 2.1 percent of the fiscal-year aquifer limit of 400,000 ac-ft/yr (USFWS 2008). Lackland AFB has been allocated approximately 4,100 ac-ft/yr of the DOD withdrawal, although forecasted usage would be substantially lower than the allocated amount (LAFB 2006a).

Migratory birds are protected under the Migratory Bird Treaty Act of 1918 and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. Approximately 339 bird species have been recorded as occurring somewhat regularly in Bexar County. Bexar County is situated along the central migration flyway (USFWS 2011a). The vast majority of birds occurring on Lackland AFB are migratory birds. Although the project area does not contain high-value habitat, several migratory bird species could use structures or landscaping for nesting or roosting (e.g., barn swallow, chimney swift, common nighthawk, killdeer, house finch, grackles).

Wetlands. Wetland delineation reports were prepared for Lackland AFB in 2009 (USACE 2008-Rev. Jan. 2012). One small wetland is located within a manmade drainage feature in the southwest section of the project area (see **Figure 3-5**). The wetland feature consists of a palustrine emergent wetland that is not a water of the United States (USACE 2008-Rev. Jan. 2012). Approximately 0.115 acres of the 1.12 acre wetland occurs within the Project area. The dominant vegetation includes narrow leaf cattail (*Typha latifolia*) and dotted smartweed (*Polygonum punctatum*). The wetland feature occurs within a man-made drainage ditch that exhibits no hydrologic connection to any waters of the United States (USACE 2008-Rev. Jan. 2012).

3.6.3 Environmental Consequences

3.6.3.1 Significance Criteria

The significance of impacts on 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 effects. A habitat perspective is used to provide a framework for analysis of general classes of effects (e.g., noise, human disturbance). Impacts on biological resources would be considered significant if the Proposed Action would result in any of the following:

- Substantial adverse effects (either directly or through habitat modifications) on migratory birds; critical habitat; or any species identified in local or regional plans, policies, or regulations, or by the wildlife agencies as a Federal- or state-listed endangered or threatened, candidate, sensitive, or species of concern
- Substantial adverse effects on riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the wildlife agencies
- Substantial adverse effects on federally protected waters or wetlands, as defined by Section 404 of the CWA, through the direct removal, filling, hydrological interruption, or other means
- Substantial interference with the movement of native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites
- Conflict with local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance
- Conflict with the provisions of a National Wildlife Refuge, state park, or an adopted Habitat Conservation Plan; Natural Communities Conservation Plan; or other approved local, regional, or state Habitat Conservation Plan.

Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals, render habitat unsuitable, or reduce reproductive output within certain ecological settings.

Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction.

3.6.3.2 Proposed Action

Vegetation. Long-term, direct, negligible, adverse impacts on vegetation would be expected from the Proposed Action during construction and demolition activities and through the conversion of vegetated areas to build sites and paved areas. However, these impacts would not be considered significant as the areas of the proposed building locations and paved areas are considered landscaped areas. Several mature ornamental trees could be removed due to construction of the proposed Project resulting in a long-term, adverse impact. Although trees can be replanted throughout the Project area, it is anticipated that it would take a relatively long time for these trees to reach maturity.

Long-term, negligible, beneficial impacts on vegetation would also be expected from the Proposed Action once construction and demolition activities have been completed through revegetation of cleared areas.

Wildlife. The Proposed Action would have short-term, negligible to minor, adverse impacts on wildlife due to disturbances from noise, demolition and construction activities, and heavy equipment use. No significant impacts on wildlife would be expected. High noise events could cause wildlife to engage in escape or avoidance behaviors resulting in short-term, negligible, adverse impacts. The areas of disturbance would be relatively small and generally within developed areas where disturbances are common (e.g., vehicular traffic, landscaping, aircraft). Most wildlife species in the proposed Project area would be expected to quickly recover once the construction or demolition noise and disturbances have ceased for the day or project period; therefore, no long-term, adverse impacts on wildlife would be expected as a result of temporary construction and demolition disturbances.

Short-term, negligible, adverse impacts on wildlife would be expected from the loss of wildlife habitat from the Proposed Action. The project area is not a high-value habitat to most species; however, several species, particularly birds, could use structures or landscape for nesting or cover. Long-term, negligible, beneficial impacts on wildlife would be expected from the revegetation of former building sites and other impervious surfaces that will be removed through the Proposed Action, particularly if areas are revegetated with native plant species and diverse landscaping.

Protected and Sensitive Species. No federally or state-listed threatened or endangered species are known to occur on Lackland AFB (LAFB 2002b). Although several federally and state-listed species could potentially occur on or near the installation, the type of habitat in the project area would not be suitable to those species. Therefore, no direct significant adverse impacts on threatened or endangered species would be expected from the Proposed Action.

Short-term, indirect, negligible to minor, adverse impacts on threatened and endangered species on adjacent lands, off-installation, could occur from the Proposed Action as a result of noise and visual disturbances from construction and demolition activities; however, these impacts would not be considered significant. These species, if any, would be expected to quickly recover once the construction or demolition noise and disturbances have ceased for the day or project period; therefore, no long-term, adverse impacts on threatened and endangered species would be expected.

Short-term and long-term, negligible, indirect, adverse impacts on threatened and endangered species in the Comal and San Marcos spring systems could occur from the use of water from the Edwards Aquifer during construction and demolition activities (e.g., dust suppression) and from operation of the DLIELC and IAAFA. However, the USFWS's 2008 BO concluded that ongoing and proposed actions at the DOD installations (Lackland AFB, Randolph AFB, and Fort Sam Houston) were not likely to jeopardize the

continued existence of threatened and endangered species of the Comal and San Marcos spring systems. The USFWS also provided DOD with an incidental take statement for the Texas blind salamander, San Marcos salamander, Comal Springs dryopid beetle, and Peck's Cave amphipod. Since the 1999 BO, the installations have abided by all the USFWS' prudent and reasonable measures and have maintained water use levels at or below prescribed limits. It is anticipated that the Proposed Action would not cause Lackland AFB to exceed its prescribed water use level and Lackland AFB would comply with the water conservation measures outlined in its Water Conservation Plan; therefore, indirect impacts would not be considered significant (LAFB 2008e).

The Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703–712) as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. The MBTA is not limited to only living migratory birds, but also includes the presence of feathers, nesting materials (including parts of nests), and eggs (i.e., hatched or unhatched nonviable or unhatched viable) or parts of eggs. To ensure compliance with the MBTA, any control measures (including destruction of nesting materials) directed at any bird species must be coordinated with the Lackland AFB Natural Resources Program Manager. However, pigeons, house or English sparrows, and European starlings are local bird species that are excluded from the MBTA because they are nonnative, introduced species. If design and implementation of a Federal action cannot avoid measurable negative impacts on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the USFWS that shall promote the conservation of migratory bird populations.

Lackland AFB currently maintains a Migratory Bird Depredation Permit from the USFWS, issued for the following species for bird/wildlife aircraft strike hazard (BASH) prevention: American crow, barn swallow, boat-tailed grackle (*Quiscalus major*), brown-headed cowbird, cattle egret (*Bubulcus ibis*), chimney swift, eastern meadowlark (*Sturnella magna*), European starling (*Sturnus vulgaris*), house finch, killdeer, mourning dove, common nighthawk, red-winged blackbird (*Agelaius phoeniceus*), rock pigeon, western meadowlark (*Sturnella neglecta*), and white-winged dove (*Zenaida asiatica*). The Permit ensures that bird/wildlife control operations on Lackland AFB are conducted properly using methods and practices prescribed by the Lackland Natural Resources Manager and in the Lackland AFB BASH Plan. The Permit allows for the controlled shooting of only those bird species listed on the Lackland AFB Bird Depredation List, which are identified by the Lackland Natural Resources Manager, Wing Safety, or designated representative. Controlled shooting is limited to designated zones (e.g., airfields) based on documented hazards and there is no controlled shooting in the direction of the Main Base if within 300 yards of buildings and 500 yards of aircraft in all directions, or within 1,250 feet of the munitions storage area (LAFB 2007a).

Demolition and construction activities associated with the Proposed Action during nesting season could result in destruction of nests of migratory birds if BMPs are not implemented. For example, barn swallows and chimney swifts might nest on buildings or within chimneys, killdeer might nest on rooftops or parking lots, common nighthawks might nest on rooftops, and several other species (e.g., grackles, house finch, and northern mockingbird) might nest in the trees or shrubs that would be removed during construction. No significant impacts on migratory birds would be expected with implementation of the Proposed Action.

The following BMPs are recommended for reduction or avoidance of impacts on migratory birds that could occur within the project area:

- If any groundbreaking construction activities are required, they should be performed before migratory birds return to Lackland AFB or after all young have fledged.

- If construction is scheduled to start during the period when migratory birds could be nesting, a site-specific survey for nesting migratory birds should be performed starting no more than 2 weeks prior to demolition or construction activities begin.
- If construction or demolition is scheduled to start during the period in which nesting migratory bird species could be present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures, use of various excluders (e.g., noise), and removing nesting material as birds attempt to build nests. Birds can be harassed to prevent them from nesting within the project area. Once a nest is established (with eggs), they should not be harassed until all young have fledged and are capable of leaving the nest site.
- If nesting birds are found during the survey, buffer areas should be established around nests. Construction should be deferred from buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

If the Proposed Action cannot be implemented outside of the nesting season, or if measures cannot be taken to avoid take of migratory bird nests during the nesting season, then Lackland AFB would be required to develop and implement, within 2 years, an MOU with the USFWS that would promote the conservation of migratory bird populations. Additionally, if bat colonies are identified in the roof structures of buildings to be renovated or demolished, Lackland AFB would comply with the 2006 MOU between DOD and Bat Conservation International.

Wetlands. Direct adverse impacts on wetlands would occur as a result of the Proposed Action. Approximately 0.115 acres of the 1.12 acre wetland feature that is located in the southwest portion of the Project area would be culverted by the Proposed Action in order to improve storm water management. These impacts are not considered significant because the wetland occurs within a man-made drainage feature and is not considered a jurisdictional feature by the USACE (USACE 2008-Rev. Jan. 2012).

Lackland AFB has determined that culverting this non-jurisdictional wetland would be required under all alternatives being considered for implementation due to the need to expand existing facilities into this area of the campus, and the need for improved storm water management facilities. Because the only alternatives to avoiding this non-jurisdictional wetland include those that were dismissed from further analysis due to their not meeting the stated purpose and need for action, there is no practicable alternative to avoiding impacts to the wetland.

3.6.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on biological resources under this alternative would be expected to be the same as those identified in **Section 3.6.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of

temporary facilities would be installed. Therefore, short-term and long-term impacts on biological resources under this alternative would be expected to be the same as those identified in **Section 3.6.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on biological resources under this alternative would be expected to be the same as those identified in **Section 3.6.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.6.2**, would remain the same. No impacts on biological resources would be expected from implementation of the No Action Alternative.

3.7 Human Health and Safety

3.7.1 Definition of the Resource

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. Human health and safety addresses both workers' health and public safety during facility construction, and during subsequent operations of those facilities.

Construction site safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with standards issued by OSHA and USEPA. These standards specify the amount and type of training required for industrial workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Safety and accident hazards can often be identified, and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the location of the hazard to the population. Activities that can be hazardous include transportation, maintenance and repair activities, and the creation of extremely noisy environments. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and availability of Material Safety Data Sheets (MSDS). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operations; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous

materials), physical hazards (e.g., noise propagation, falls), and biological agents (e.g., infectious waste, wildlife, poisonous plants); to recommend and evaluate controls (e.g., prevention, administrative, engineering) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

AFI 91-301, Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program, implements Air Force Policy Directive (AFPD) 91-3, Occupational Safety and Health, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

Explosive safety clearance zones must be established around facilities used for the storage, handling, or maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based upon Quantity-Distance (QD) criteria or the category and weight of the explosives contained within the facility. Areas that require QD safety zones include munitions facilities, firing ranges, and FAA restricted area.

Another safety concern affecting military facilities is the consideration of AT/FP requirements. These requirements include mandated setback of parking areas from buildings, increased security measures such as barricades at military facility entrances and exits, and AT/FP-compliant perimeter fences. Requirements also include mandates regarding emergency notification systems and procedures. The USAF Installation Force Protection Guide contains information on installation planning, engineering design, and construction techniques that can preclude or minimize the impacts of terrorist attacks upon existing and future facilities. Additional criteria are available in UFC 4-010-01, DOD Minimum Antiterrorism Standards for Buildings.

3.7.2 Description of the Affected Environment

Compliance with UFC 4-010-01, *DOD Minimum Antiterrorism Standards for Buildings* requires minimum setbacks of various distances, including an 82-foot standoff between unsecured parking and inhabited structures and a 33-foot object-free area with limited development around structures.

Three designated holding and inspection areas, and two aircraft loading areas that require QD safety zones are on the Main Base at Lackland AFB. The two QD arcs associated with these areas are (1) approximately 2 miles east of the southeastern boundary of the Proposed Action area, which is associated with the holding/inspection and aircraft explosive loading areas; and (2) approximately 0.6 miles east of the southeastern boundary of the Proposed Action area, which is associated with a firing range. Another QD arc, approximately 0.25 miles north of the northern boundary of the Proposed Action area, is associated with the FAA Building restricted area. Additionally, six QD arcs cover the majority of the Lackland Training Annex Munitions Storage Area, which is approximately 1.35 miles west of the northwestern boundary of the Proposed Action area (LAFB 2002b).

Safety transportation routes are used by military vehicles transporting Class/Division 1.1 and 1.2 explosives between the explosives holding area on the airfield and the 651st Munitions Squadron's Munitions Storage Area. Lackland AFB and the Lackland Training Annex have three major safety routes in place, (1) primary explosive safety route, (2) alternate explosive safety route, and (3) emergency safety route, which are used to transport munitions from the Munitions Storage Area on the Lackland Training Annex to Kelly Field Annex and the flightline. Class/Division 1.3 and 1.4 munitions can be transported

on either the primary route or the alternate route. The emergency route is used when real world intelligence indicates possible terrorist activity in the San Antonio area (LAFB 2002b).

3.7.3 Environmental Consequences

3.7.3.1 Significance Criteria

Any increase in safety risks would be considered an adverse impact on health and safety. An impact would be considered significant if the Proposed Action or alternatives to the Proposed Action would result in the following:

- Substantially increase risks associated with the safety of construction personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

The construction and demolition contractors would be required to comply with the following requirements of Lackland AFB to minimize potential adverse impacts and ensure the safety of the contractors working on site:

- Notify the 59th Medical Wing Safety Office in writing as to who the contracting officer and Quality at Entry representatives are in order to report any OSHA and USEPA violations and hazards, in accordance with AFI 91-202, *USAF Mishap Prevention Program*, Paragraph 3.5
- Notify the 59th Medical Wing Safety Office of any impending preconstruction meetings as it relates to the Proposed Action, in accordance with AFI 91-202, Paragraph 7.9
- Immediately notify the 59th Medical Wing Safety Office of any injuries relating to USAF personnel, or USAF property damage, in accordance with AFI 91-202, Paragraph 1.6.14.9
- Construction and demolition contractors must adhere to all traffic laws while on Lackland AFB.

3.7.3.2 Proposed Action

No significant impacts would be expected, as the Proposed Action would not substantially increase risks associated with the safety of construction and demolition personnel, contractors, or the local community; substantially hinder the ability to respond to an emergency; or introduce new health or safety risks for which the installation is not prepared or does not have adequate management and response plans in place.

Short-term, negligible, adverse impacts on health and safety would be expected from the implementation of the ADP. Construction of new facilities and associated infrastructure and the demolition of existing facilities would increase the health and safety risk to contractors performing work at the project sites during the normal workday because the level of such activity would increase. However, this level of risk would be managed by adherence to established Federal, state, and local safety regulations. Workers would be required to wear protective gear such as ear protection, steel-toed boots, hard hats, gloves, and other appropriate safety gear. Construction and demolition areas would be fenced and appropriately marked with signs to prevent trespassing. Construction and demolition equipment and associated trucks transporting material to and from the sites would be directed to roads and streets that carry minimum vehicles. Contractors would be required to establish and maintain health and safety programs for their employees. Short-term, adverse impacts would be expected on contractor safety during construction activities; however, these impacts would be expected to be negligible with proper implementation of

effective health and safety programs. No long-term, adverse impacts on contractor health and safety from the facility operations would be expected.

Projects associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. The Proposed Action would enable the DLIELC and IAAFA to meet future mission objectives at the installation and conduct or meet mission requirements in a safe operating environment. No long-term, adverse impacts on safety would be expected.

It is assumed, due to their age, that some of the facilities to be renovated or demolished contain asbestos-containing material (ACM) and lead-based paint (LBP). During renovation and demolition activities, short-term, negligible to minor, adverse impacts on health and safety would be expected from the removal, handling, and disposal of ACM and LBP. However, with adherence to all Federal, state, and local regulations and Lackland AFB management plans, impacts on safety during renovation and demolition activities would be expected to be negligible. Renovation and demolition plans would be reviewed by Lackland AFB civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, asbestos and lead from LBP. Lackland AFB would follow its current practices for removal of ACM and LBP associated with the implementation of the ADP. Overall, long-term, beneficial impacts on health and safety would be expected from the removal of ACM and LBP materials, thus reducing exposure to personnel.

Because there are no munitions stored or handled in the immediate vicinity of the proposed project area, no impacts on explosives and munitions safety would be expected. Furthermore, munitions transport would not occur during demolition or construction activities, which would minimize contractors' exposure to explosive safety hazards.

3.7.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on human health and safety under this alternative would be expected to be the same as those identified in **Section 3.7.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on human health and safety under this alternative would be expected to be the same as those identified in **Section 3.7.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be

installed. Therefore, short-term and long-term impacts on human health and safety under this alternative would be expected to be the same as those identified in **Section 3.7.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.7.2**, would remain the same. No impacts on human health and safety would be expected from implementation of the No Action Alternative.

3.8 Utilities, Infrastructure, and Transportation

3.8.1 Definition of the Resource

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function and includes utility lines. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to the economic growth of an area. Utilities and infrastructure generally include water supply, sanitary sewer and wastewater systems, storm drainage systems, power supply, natural gas supply, solid waste management, heating and cooling systems, and communications systems.

The transportation resource is defined as the system of roadways, highways, and other transportation facilities and systems that are in the vicinity of a project site and could be affected by a proposed action. The resource also includes parking, access to the installation, and vehicular movement within the installation. Transportation represents the movement of humans and commodities from one place to another. It is directly related to areas of production and habitation and to the system of vehicle access roads and alternative forms of travel, including rail and air. Primary roadways (e.g., major interstates) are principal routes designed to move traffic efficiently to adjacent areas. Secondary roadways or arterials (e.g., major surface streets) are designed to provide access to residential, commercial, and parking areas and access points for the installation.

3.8.2 Description of the Affected Environment

Water Supply. Potable water is supplied to Lackland AFB by six Edwards Aquifer wells (LAFB 2006a). The wells have a total designed withdrawal capacity of 13.22 million gallons per day (MGD). The potable water system at Lackland AFB is composed of more than 60 miles of water mains and four elevated storage tanks that provide a total storage capacity of 1.28 MGD. During historical peak withdrawal conditions, the wells operated at 36 percent (4.76 MGD) of the total design capacity. In August 2003 and July 2005, during peak withdrawal conditions, the wells operated at 19 percent (2.54 MGD) and 16 percent (2.08 MGD) of the total design capacity, respectively. Peak withdrawals were triggered by seasonal and operational demands; however, the peak withdrawal conditions were not sustained over the course of the year. Potable water obtained from the Edwards Aquifer is a limited resource that is subject to withdrawal regulation and drought restrictions (LAFB 2006a).

The proposed ADP site is on a looped water line system within approximately 2,000 feet of an elevated storage tank. Along the eastern side of the proposed site is a 6-inch water line that follows Carswell Avenue to an elevated troop crossing. The water line then turns east to a T-connection with a 12-inch water line, which originates at the elevated storage tank. To the south is an 8-inch water line that parallels

Tinker Street. The 8-inch water line connects to a 10-inch water line at Gott Street, west of Barnes Avenue. West of the DLIELC is an 8-inch water line that generally follows the eastern edge of pavement of Tinker Street. The 8-inch water line turns east at Patrick Street, where it is reduced to a 6-inch line. It follows the northern edge of pavement until it reaches a T-connection with the 6-inch water line that follows Carswell Avenue (LAFB 2011c).

New water lines serving the 5000- to 7000-series buildings were installed during the FY 2009 American Recovery and Reinvestment Act project. The water line project included replacing the existing water lines and fittings in-kind (i.e., if an 8-inch pipe were removed then an 8-inch pipe was installed to replace it) with new polyvinyl chloride pipes (LAFB 2011c).

Sanitary Sewer and Wastewater System. San Antonio Water System (SAWS) provides wastewater collection and treatment services to Lackland AFB. The wastewater system is composed of approximately 44 miles of sewer mains. The system operates by gravity flow; however, lift stations and force mains are used to connect individual facilities to the main system. Wastewater from Lackland AFB enters the SAWS sewer line along the northern and eastern boundaries of the installation at Five Palms Street and eventually discharges off site to the Leon Creek Waste Water Treatment Plant (WWTP). The designed daily average throughput capacity of the Leon Creek WWTP is 46 MGD; however, the permitted daily average and daily maximum flows are 36.5 MGD and 92 MGD, respectively. The rated capacity of Lackland AFB sewer mains is 9.79 MGD. The estimated daily wastewater discharge volume from Lackland AFB (including the Main Base, Lackland Training Annex, and Kelly Field Annex) is 1.6 MGD (Riley 2011).

A number of pipes composing the sewer and wastewater collection system at the ADP proposed site are made up of day pipe and brick manholes. Collapsed day pipe and brick manholes can present an environmental concern because untreated waste could enter nearby soils and contaminate groundwater. According to Lackland AFB, there is a project underway to televise the sanitary sewer lines in the 5000- and 7000-series buildings area. Any collapsed pipe segments are being replaced or lined and the brick manholes are being rebuilt or sealed. All of the existing buildings within the DLIELC/IAAFA academic campus area are served by gravity sewer. A majority of the mains serving the facilities within the campus terminate in a lift station located on the western edge of the area (LAFB 2011c).

Storm Drainage System. Storm water systems convey precipitation away from developed sites to appropriate receiving surface waters. Storm water systems can employ a variety of devices to slow the rapid movement of runoff and provide the benefit of reducing sediment transport into surface waters. The northeastern portion of Lackland AFB drains into Leon Creek. The southwestern portion of Lackland AFB flows into Indian Creek. Leon Creek and Indian Creek flow into the Medina River, which ultimately flows into the San Antonio River. Underground storm water collection systems serve the developed portions of the installation (LAFB 2006a).

Lackland AFB currently operates under two types of storm water programs to regulate and manage various discharges.

- **Multi-Sector General Permit –** Lackland AFB operates under Texas Pollutant Discharge Elimination System (TPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activities (Permit Number TXR050000), effective until August 2011. This permit is in the process of being renewed (TCEQ 2011). The TPDES program implements the Federal NPDES program in the State of Texas. Lackland AFB has prepared an SWPPP in accordance with the permit requirements for the identification and management of industrial activities at the installation (LAFB 2002c).

- **Municipal Separate Storm Sewer System Permit –** The TCEQ has determined that Lackland AFB should be regulated as a small MS4. The MS4 permit requires implementation of BMPs, development schedules and measurable goals, establishment of a Stormwater Management Program, and submission of Annual Reports. Lackland AFB currently operates under MS4 Permit TXR040068, which expires in August 2012 (USEPA 2011a).

Storm water from the proposed ADP site generally drains northeast to southwest using underground storm drainage. To the west is an open channel that conveys storm water collected from north of the proposed site to the west into an open channel maintained by the City of San Antonio. This storm drainage outfall is referred to as Outfall A. Outfall A also receives discharge from the existing DLIELC buildings and open space. The storm drain along the north-south roadway one block west of Carswell Avenue drains the existing Chaparral Athletic Center as well as half of the block it occupies. The storm drain system from the Chaparral Athletic Center daylights into a bar ditch that parallels Selfridge Avenue. The ditch joins discharge from a small portion of the southeast corner of the DLIELC. The combined drainage turns south, along the unnamed north-south roadway toward Tinker Street. Ultimately, this ditch daylights into an open channel within the South Campus of the 37th Training Wing. This storm drainage outfall is referred to as Outfall B. Outfall B also ends up in an open channel maintained by the City of San Antonio. There is no detention, retention, or other storm water quality features within the proposed ADP site (LAFB 2006a).

Electrical System. CPS Energy, the City of San Antonio's municipally owned natural gas and electric company, provides electrical service to Lackland AFB. Lackland AFB operates a substation (the Valley Hi Substation) on the western side of the installation, just off Valley Hi Road. Three incoming feeders from the on-installation substation provide power to the Main Base Switching Station. These primary feeders have load ratings of 20.4 mega watts (MW), 17.8 MW, and 18.2 MW. Feeder Circuit 8 from CPS Energy enters Lackland AFB in the northwest corner of the ADP proposed site boundary. The current capacity of Feeder Circuit 8 is a maximum of 7MW and an average of 5MW (Riley 2011).

Natural Gas System. CPS Energy provides natural gas to Lackland AFB through an 8-inch pipeline that enters on the south end of the installation. The natural gas system at Lackland AFB is composed of a combination loop and radial distribution system that includes approximately 41 miles of pipeline. There is a high-pressure (48 pounds per square inch [psi]) distribution loop that circles the western half of Lackland AFB and a low-pressure (18 psi) distribution loop on the eastern side of Lackland AFB. In addition to CPS Energy-supplied pipelines, there is an 8-inch, 250-psi, United Gas-supplied pipeline that runs along the northern boundary of Lackland AFB. Lackland AFB has contracted with United Gas to supply up to 4.93 million cubic feet per day (MCF/d) for the 250-psi pipeline. A regulator station provides a second (emergency) feed to the installation distribution system. The combined natural gas line capacity for Lackland AFB is 9.254 MCF/d. In 2010, the total annual and peak natural gas usage for Lackland AFB were 1,077.45 million cubic feet and 4.468 MCF/d (36 percent of the total capacity), respectively (Riley 2011).

Solid Waste. AFI 32-7042, *Solid and Hazardous Waste Compliance*, incorporates the requirements of Subtitle D, 40 CFR Parts 240 through 244, 257, and 258; applicable Federal regulations; AFIs; and DOD Directives. It also establishes the requirement for installations to have a solid waste management program that incorporates a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention. Source reduction, resource recovery, and recycling of solid waste are addressed in AFI-32-7080, *Pollution Prevention Program*.

Nonhazardous solid waste at Lackland AFB is collected by a private contractor and disposed of off-installation at the Covel Gardens and Tessman Roads landfills. The landfill opened in 1981 and

receives 2,115 tons of municipal solid waste per day. The Tessman Road Landfill is scheduled for closure in 2052. The landfill opened in 1993 and is composed of 783 acres in total, of which 480 acres are available for waste disposal (Waste Management 2011). The Covel Gardens Landfill receives an average of 5,000 tons of municipal solid waste per day (approximately 1.6 million tons of solid waste per year) and has a current life expectancy of 17 years at the current disposal rate (LAFB 2006a). In 2009, Lackland AFB generated approximately 50,000 tons of solid waste, which included 11,500 tons that were disposed of in the Covel Gardens Landfill, 36,000 tons that were reused, and 2,500 tons that were recycled.

Communications Systems. Lackland AFB uses a multimode fiber optic cable system to serve as the main data transport system. In addition, Lackland AFB uses the Lackland Installation-Wide Network, which enables individual building networks to exchange information and electronic email, and provides access to off-installation locations through the Defense Data Network (ARC 2005).

Within the proposed ADP site, the Combat Information Transport System Program (CITS) has resulted in expanded and reliable underground fiber optic lines (LAFB 2011c).

Transportation. Lackland AFB is in the southwestern corner of the San Antonio Metropolitan Area. The nearest major highway interchange to Lackland AFB is U.S. Highway 90 and Interstate 410, northwest of the installation. Interstate 410 is a beltway around San Antonio that connects major interstates, U.S. highways, and state highway arteries. There are approximately 75 miles of asphalt roads within Lackland AFB. The primary north-south routes are Bong Road on the eastern side of the installation and Carswell Avenue on the western side of the installation. Military Drive (State Highway 13) also passes through Lackland AFB dividing into an east and west half. The primary east-west routes are Truemper, Luke, and Selfridge roads (LAFB 2010a).

Lackland AFB has nine access control points that provide ingress and egress for the installation. The majority of these access control points connect from Military Drive (State Highway 13) (LAFB 2009a). In 2005, a traffic study was conducted at seven gates across the installation. Peak traffic volume counts were taken on Tuesday and Wednesday between 6 a.m. and 12 p.m. During the 6-hour period, approximately 14,000 vehicles were counted entering Lackland AFB daily (LAFB 2005). The predominant mode of travel on Lackland AFB is by private automobile. Lackland AFB also maintains a comprehensive shuttle bus system, which provides access to most areas of the installation (LAFB 2006a).

The existing roadways surrounding the proposed ADP site consists of primary and secondary roads. The primary roads are Truemper Street and Selfridge Avenue to the north and Carswell Avenue to the east. Secondary roads include Patrick Street to the north and west and Tinker Street to the south. The closest access control point is the Truemper Street gate, which is currently being redesigned to accommodate high traffic volumes. There are several tertiary roads along the ADP site boundaries that are connected to facility parking lots. The parking lots serving the area are often full during peak hours (LAFB 2011c).

3.8.3 Environmental Consequences

3.8.3.1 Significance Criteria

Impacts on utilities would be considered significant if the Proposed Action would result in any of the following:

- Substantially disrupt existing utility systems or cause a collocation accident

- Require the construction of new major public service facilities or require the substantial expansion of existing facilities to accommodate an increased need for utilities.

The analysis to determine the magnitude of potential impacts on infrastructure and infrastructure systems considers primarily whether a proposed action would exceed existing capacity or place substantial demand on a specific utility. Sustainable design techniques, such as LEED, would be incorporated where practicable to reduce demand (see **Section 3.8.4**). The construction contractor would coordinate with the Civil Engineering staff at Lackland AFB and local utility companies prior to commencement of any construction or demolition activities to determine the utility locations, such as sewer, telephone, fuel, electric, water lines, or any other underground utilities that could be encountered during excavation and trenching activities. Any permits required for excavation and trenching would be obtained prior to the commencement of construction or demolition activities.

Impacts on transportation would be considered significant if the Proposed Action would result in any of the following:

- Require the temporary closure of a roadway, which would result in a temporary but substantial disruption to traffic flow or increased traffic congestion
- Restrict the movements of emergency vehicles (e.g., police, fire, ambulances) with no reasonable alternative access routes available
- Increase vehicle trips associated with construction worker commutes or equipment transportation that would result in unstable flow; fluctuations in volumes of traffic, which temporarily restrict flow; or cause substantial drops in operating speeds that lead to an unacceptable reduction in level of service on any roadways along the project area
- Substantially disrupt bus or rail transit service with no suitable alternative routes or stops
- Temporary, but substantial, disruption of rail traffic
- Impede pedestrian movements or bike trails with no suitable alternative pedestrian or bicycle access routes
- Increase the demand for or reduce the supply of parking spaces with no provisions for accommodating the resulting parking deficiencies
- Conflict with planned transportation projects in the project area
- A noticeable increase in deterioration of roadway surfaces used for the project area as a result of construction equipment movements.

The analysis to determine the magnitude of potential impacts on transportation considers primarily whether a proposed action would result in a substantial increase in traffic on local roadways. Project trip generation is based on an estimate of the number of equipment and crew members that would be present during construction activities.

3.8.3.2 Proposed Action

Water Supply. Short-term, minor, adverse effects on water supply would be expected. During construction and demolition activities, water demand would be expected to increase slightly; however, potential increases in water demand associated with construction and demolition activities would be temporary and would not be anticipated to exceed existing capacity. To accommodate for increased water demand, a new water main would be added along Randolph, Patrick, and Tinker streets to increase capacity and improve reliability of domestic water and fire demands. Additionally, new water lines have

been recently installed near the 5000- and 7000-series buildings. In FY 2011, the 802nd Civil Engineer Squadron is planning a project to complete a comprehensive installationwide water model. If the updated model shows inadequate pressures and velocities, then upgrades to the adjoining water distribution system could be required (LAFB 2011c). There would be a long-term increase in water demand associated with the increased students and staff on the installation upon completion of the Proposed Action. However, the implementation of sustainable design techniques and the recent upgrade of existing infrastructure would help to offset that increase in demand. Therefore, long-term, direct or indirect, minor, adverse impacts on water supply would be expected.

Sanitary Sewer and Wastewater System. Short-term, negligible, adverse impacts on sanitary sewer and wastewater systems would be expected. There would be a slight increase in wastewater due to construction and demolition activities associated with the Proposed Action. Potential increases in wastewater associated with construction and demolition activities would be temporary and are not anticipated to exceed existing capacity.

Wastewater generated at the new DLIELC/IAAFA academic campus would be treated at the Leon Creek WWTP. Development of the site would require realignment of the gravity and force mains on the west side of the ADP. Relocation of the existing sanitary sewer lift station west of the site would be required for the construction of the proposed DLIELC Academic Facility. The gravity main currently serving the Military Working Dog Complex would need to be routed around the proposed building sites. Realignment of the main should include a stub for future expansion to the east and north. Sanitary sewer services to existing buildings might need to be redirected or enlarged to accommodate changes to existing facilities. Future analysis would be required at the time of design to assess any potential impacts on changes in sanitary sewer loading (LAFB 2011c). Implementation of sustainable design techniques would further reduce the demand on sanitary sewer and wastewater systems and minimize adverse impacts (see **Section 3.8.4**). Therefore, long-term, direct or indirect, minor, adverse impacts on sanitary sewer and wastewater systems would be expected.

Storm Drainage System. Short-term, negligible to minor, adverse impacts on the storm drainage system would be expected. Ground disturbance from construction and demolition activities would temporarily increase the potential for soil erosion and sediment transport during sheet flow runoff. An NPDES construction permit would be required prior to commencement of trenching and excavation activities. The identification and implementation of standard BMPs to minimize erosion for storm water runoff would be required as part of the NPDES permit.

Based on recent studies completed at the installation, it was determined that the existing storm draining systems have a capacity between a 2- and 5- year event. Therefore, the expected increase in impervious surface area could affect existing infrastructure. Infrastructure improvement projects such as regional storm water ponds and storm water management improvements are planned and would include culverting the drainage ditch in the southwest corner of the installation. Development on the west side of the site would require changes to the existing storm drainage infrastructure. The open channel would need to be placed underground where it would terminate into a regional storm water facility. To improve drainage on Carswell Avenue, a curb and gutter segments would be added for the full length of the boulevard south of Truemper Street. Additional improvements would include underground storm drainage to replace the existing county road/bar ditch road section (LAFB 2011c). New storm water infrastructure would be constructed to include several sustainable design features (e.g., green rooftops, bioswales, storm water retention ponds) that would improve storm water management at Lackland AFB (see **Section 3.8.4**). Therefore, long-term, direct or indirect, minor, adverse impacts on the storm drainage system would be expected. However, this would lead to long-term beneficial impacts on regional storm water management. No off-installation drainage issues would be expected from implementation of the Proposed Action.

Electrical System. Short-term, minor, adverse, impacts and long-term, beneficial impacts on the electrical system would be expected. Electricity demand would increase slightly during the construction and demolition phases of the Proposed Action; however, the increases in electricity demand associated with construction and demolition activities would be temporary and are not anticipated to exceed existing capacity.

As part of the Proposed Action, all aboveground electric services on the DLIELC and IAAFA campus would be buried in accordance with a Lackland AFB initiative called the "pole away" program. The program requires that military construction (MILCON) projects pay for the burial of existing overhead electrical services. Additional electrical capacity is expected to be required to support the DLIELC/IAAFA academic campus. The substation, west of Building 9410, would be demolished. A new circuit, Circuit 3, serving the 5000- and 7000-series buildings would be expanded and made available for additional capacity. Should additional capacity be required in addition to Circuits 8 and 3, the switch at the southwest corner of the installation could be upgraded (LAFB 2011c). Due to an overall increase in the building footprint on Lackland AFB, a long-term increase in electricity demand would be expected. Therefore, long-term, direct or indirect, minor, adverse effects would be expected. The incorporation of sustainable design techniques in accordance with LEED, would help to minimize these effects.

Natural Gas System. No short-term impacts on the natural gas system would be expected as construction and demolition activities would not require the use of natural gas. To support the proposed DLIELC campus, a new natural gas main would need to be extended to the western part of the installation. No other upgrades to the natural gas system have been identified (LAFB 2011c). Overall, a long-term increase in natural gas demand would be expected as a result of the increase in students and staff on Lackland AFB. However, this increase would not be expected to exceed capacity. Therefore, long-term, direct or indirect, minor, adverse effects would be expected.

Solid Waste. Short-term, negligible, direct and indirect, adverse impacts on solid waste management would be expected from implementing the Proposed Action. Any increases in solid waste associated with demolition and construction activities would be minimal and temporary in nature, and would be disposed of in accordance with relevant Federal, state, and local regulations. Construction and demolition debris that could not be recycled or reused would be taken off-installation to an approved construction and demolition landfill within the vicinity of Lackland AFB. **Tables 3-11** and **3-12** summarize the estimate of debris that could be generated from construction and demolition activities (to include renovations), respectively, associated with implementation of the ADP. Implementation of sustainable design techniques would further reduce the demand on solid waste disposal and limit adverse impacts (see **Section 3.8.4**). Depending on remaining capacity of the landfill where the construction and demolition debris would be taken, long-term impacts could be expected. Debris would be generated in phases over a period of 20 years and additional solid waste would be generated from operation of the DLIELC/IAAFA academic campus. Therefore, long-term, direct and indirect, minor, adverse effects could be expected.

Communications Systems. Short-term, negligible to minor, adverse effects could be expected if there were a temporary disruption in services during construction and demolition activities. Long-term, beneficial impacts would be expected as the CITS Program would build reliable and extensive cable and duct bank infrastructure for expansion of the system. Further, the DLIELC/IAAFA academic campus would be served by a wireless networking system. This system would be separate from the Non-Secure Internet Protocol Router Network (LAFB 2011c).

Transportation. Short-term, minor to moderate, and long-term, minor, adverse impacts on transportation would be expected from implementing the Proposed Action. A potential increase in traffic volume from construction vehicles would be expected. Temporary construction staging areas for construction

machinery, parking areas for construction vehicles, and access roads would be used on site during demolition and construction activities of the Proposed Action. Appropriate signage would be installed to direct construction traffic.

Transportation improvement projects are planned as part of the Proposed Action to address the increase in traffic volume anticipated with the Proposed Action. Overall, the current internal transportation network would remain. Carswell Avenue is proposed to be upgraded to a four-lane boulevard to accommodate for the anticipated increase in traffic volume associated with the proposed DLIELC/IAAFA academic campus. A central landscaped island and pedestrian crossings would be added. An updated crosswalk and traffic light would be installed at the intersection of Patrick Street and Carswell Avenue to maintain safe movement of vehicles and pedestrians. In addition, a new perimeter road and updated intersection would be constructed to accommodate for the anticipated increase in traffic from the proposed new fitness

Table 3-11. Estimate of Debris Generated from Construction Activities[1]

Project	Square Footage	Total Debris (tons)[2]
DLIELC Operations Center	21,000	46
Sebille Hall – Student Union Center	46,237	100
DLIELC Conference Center	2,017	4
DLIELC Academic Center Renovation	30,000	65
DLIELC Academic Center Annex	82,000	178
DLIELC Logistics Center	40,000	87
DLIELC Headquarters	23,000	50
Temporary Classroom and Administrative Facility	50,000	109
IAAFA Headquarters	26,070	57
IAAFA Open Bay Dormitory	10,000	22
International Student Management Flight Center Expansion	10,000	22
837 TRS Training Center	30,000	65
318 TRS Operations Flight Training Center	50,000	109
Recruits Dormitory	59,975	130
International Student Ministries Facility (Muslim and Catholic Services), International Student Activity Center and International Family Support Facility	39,769	86
Visiting Quarters	210,000	456
Visiting Quarters	210,000	456
Visiting Quarters	210,000	456
AMIGO Inn Renovation	17,360	38
Dining Hall	49,727	108
Concession Stand/Latrine	4,000	9
Maintenance Facilities/Storage Yard	37,494	81

Skateboard Park	12,000	26
Fitness Center	130,000	282
Carswell Avenue Project	348,480	756
Airman's Gate	35,000	76
Airman's Gate Paving	242,946	527
Sidewalks, Parking, and Circulation	1.5 million	3,255
TOTAL	**3.52 million**	**7,656**

Notes:

1. Information in this table is provided only for infrastructure where square footage or square yards were known.
2. The estimated total construction debris was used calculating a generation factor of 4.34 lb/ft^2, which is the average waste generation rate of nonresidential new construction documented by the USEPA in the *Estimated 2003 Building-Related Construction and Demolition Materials Amounts* (USEPA 2003).

Table 3-12. Estimate of Debris Generated from Demolition Activities[1]

Facility	Project	Square Footage	Total Debris (tons)[2]
7305	Latrine	551	44
7357	I Dormitory	13,839	1,094
7342	Pool House	5,152	407
7344	Swimming Pool	9,010	712
7345	Recreation Facility	877	69
7353	I Dormitory	14,048	1,109
7355	I Dormitory	13,839	1,094
7358	I Dormitory	13,839	1,094
7437	ATC Technical Training Support	15,247	1,204
7448	I Dormitory	13,643	1,077
7450	I Dormitory	13,643	1,077
7452	Mosque	13,643	1,077
7537	Troop Shelter	2,805	222
7539	Troop Shelter	2,805	222
7620	Latrine	448	35
9110	BMT Dormitory	215,824	17,050
9210	BMT Dormitory	215,824	17,050
9310	BMT Dormitory	215,824	17,050
9410	BMT Dormitory	215,824	17,050
TOTAL		**996,585**	**78,737**

Notes:

1. Information in this table is provided only for infrastructure where square footage or square yards were known.
2. The estimated total debris was used calculating a generation factor of 158 lb/ft^2, which is the average waste generation rate of nonresidential demolition documented by the USEPA in the *Estimated 2003 Building-Related Construction and Demolition* Materials *Amounts* (USEPA 2003).

center. The perimeter road would be an extension of Patrick Avenue to the installation boundary and would connect to Tinker Street. This would provide motorists another route through the DLIELC/IAAFA academic campus. An Airman's Gate would also be constructed and would include a guard shack, visitor's center, and denial barriers. This construction would also include some additional paving. The Airman's Gate would replace the existing Valley High Visitors Center and gate with higher capacity, modern access control point (LAFB 2011c). This would increase traffic flow entering and exiting the installation.

3.8.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on utilities, infrastructure, and transportation under this alternative would be expected to be the same as those identified in **Section 3.8.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on utilities, infrastructure, and transportation under this alternative would be expected to be the same as those identified in **Section 3.8.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on utilities, infrastructure, and transportation under this alternative would be expected to be the same as those identified in **Section 3.8.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.8.2**, would remain the same. No impacts on utilities, infrastructure, and transportation would be expected from implementation of the No Action Alternative.

3.8.4 Sustainable Design Techniques

EO 13154, *Federal Leadership in Environmental, Energy, And Economic Performance*, dated October 5, 2009, directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation, and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings.* The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation (USDOE 2007). Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

One mechanism for measuring the sustainability of a proposed project is LEED, developed by the Green Buildings Council. The LEED Green Buildings Rating System is organized into seven major credit categories (1) sustainable sites, (2) water efficiency, (3) energy and atmosphere, (4) materials and resources, (5) indoor environmental quality, (6) innovation and design processes, and (7) regional priority. Most credit categories have both prerequisites and credits. Credits can be pursued to achieve points, and depending on the points a project earns, there are four levels of certification under the LEED Rating System including Certified (lowest level), Silver, Gold, and Platinum (highest level). The Air Force Sustainable Design and Development policy, dated July 31, 2007, states that beginning in FY 2009, all of each Major Command's MILCON vertical construction projects, with climate control, shall be designed so that it is capable of achieving LEED Silver certification. The LEED credit categories and specific strategies related to those categories regarding infrastructure include the following:

- *Sustainable Sites.* The intent of the sustainable sites credit category is to encourage the reuse of existing buildings and sites, protect the land use, and reduce the adverse environmental impact of new developments. The specific strategies include reduction of the heat island effect and implementation of green roofs and efficient storm water design.
- *Water Efficiency.* The intent of the water efficiency credit category is to encourage water use reduction. The specific strategies include the use of innovative wastewater technologies and highly efficient plumbing fixtures and water use reduction.
- *Energy and Atmosphere.* Energy efficiency, renewable energy, and ozone protection are the main goals of this credit category. The specific strategies include energy-efficient building systems (i.e., centralized heating and cooling systems), onsite renewable energy, and green power.
- *Materials and Resources.* The intent of the materials and resources credit category is to encourage reducing the life cycle environmental impact of materials. The specific strategies include the use of recycled materials and local/regional materials.

Heat Island Effect. "Heat island" refers to built up areas that have hotter surface and air temperatures than nearby rural areas. Heat island effect occurs when impermeable surfaces such as buildings, roads, parking lots, and other infrastructure replace open land and vegetation (USEPA 2009b).

Green Roofs. Green roofs are vegetative layers grown on a rooftop that provide shade and remove heat from the air through evapotranspiration, reducing temperatures of the roof surface and surrounding air. Green roofs provide added insulation for buildings, help reduce storm water runoff, improve storm water runoff quality, and minimize heat island effect (USEPA 2009a).

Storm Water Design. Design could include the use of a variety of techniques to control the quantity and quality of storm water being released. Specifically, storm water retention ponds could be developed to capture and filter runoff. Bioswales and rain gardens could be used to help channel runoff and filter water before it is released to bodies of water off site. Bioswales are storm water runoff conveyance systems that absorb low flows or carry runoff from heavy rains and snowmelt to storm sewer inlets or surface waters. Rain gardens are small gardens that are designed to withstand the extremes of moisture and concentrations of nutrients, particularly nitrogen and phosphorus that are found in storm water runoff. Rain gardens are ideally sited close to the source of the runoff and serve to slow the storm water as it travels downhill, giving the storm water more time to infiltrate (LIDC 2007).

Innovative Wastewater Technologies. The intent of the innovative wastewater technologies strategy is to reduce the generation of wastewater and potable water demand, while increasing the local aquifer recharge. This strategy could be implemented by using graywater (wastewater generated from activities such as dishwashing, laundry, and bathing) to flush toilets, harvesting water from roofs, installing low-flow features and automatic controls, and treating wastewater on site to tertiary standard (USGBC 2002).

Water Use Reduction. The intent of the water use reduction strategy is to maximize water efficiency within buildings to reduce the burden on municipal water supply and wastewater systems. This strategy could be implemented by reducing water use by 20 to 30 percent by installing energy-efficient, low-flow or no-flow fixtures such as water closets, urinals, lavatory faucets, showers, kitchen or break room sinks, dishwashers, clothes washers, or mechanical equipment (Starr and Nicolow 2007).

Energy-Efficient Building Systems. The intent of the energy-efficient building systems strategy is to establish energy efficiency for buildings and systems, reduce ozone depletion, and achieve increasing levels of energy performance to reduce excessive energy use. This strategy could be implemented by orientating facilities to maximize passive solar heating and daylighting (using the sun to brighten the interior of a building) to help lower energy costs and reduce lighting needs or installing daylight sensors in facilities, which could also help reduce energy use by dimming interior lights on sunny days. Energy-efficient building systems include the following (USGBC 2002):

- Energy-efficient lighting fixtures
- High-efficiency HVAC systems with variable speed motors, fans, and pumps
- Cogeneration systems that use waste heat from one system/process to power or heat other systems
- Highly insulated and efficient building envelopes
- Centralized heating and cooling systems.

Onsite Renewable Energy and Green Power. The intent of the onsite renewable energy strategy is to encourage and recognize onsite renewable energy supply to reduce effects associated with fossil fuel energy use. This strategy could be implemented by considering the feasibility of incorporating solar, wind, geothermal, low-impact hydroelectric, biomass, or bio-gas renewable energy. This could include the installation of photovoltaic systems and solar hot water heaters on rooftops or over parking structures.

It could also include the application of integrated solar photovoltaics on building façades. Incorporation of renewable energy on site would not only help to offset rising energy bills, it might present opportunities to test and advance new energy technologies (USGBC 2002).

Recycled Materials. The intent of the recycled materials strategy is to reuse building materials and products in order to reduce demand for virgin materials and to reduce waste, thereby reducing effects associated with the extraction and processing of virgin resources. This strategy could be implemented by using salvaged, refurbished, or reused materials, products, and furnishings for at least 5 to 10 percent of building materials. Salvaged materials could include bricks, beams, posts, flooring, paneling, doors, doorframes, cabinetry, furniture, and decorative items. This strategy could also be implemented by using building materials that incorporate recycled content. Materials with high recycled content include steel, ceiling panels, gypsum wallboard, and glass (USGBC 2002).

Local/Regional Materials. The intent of the local/regional materials strategy is to increase the demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental effects resulting from the transport of the materials. To implement this strategy, materials used for construction would be manufactured, harvested, extracted, or processed within 500 miles of the project area (USGBC 2002).

Under the Proposed Action, the USAF would incorporate sustainable design measures where practicable to reduce use and demand. Additionally, construction activities and materials would incorporate as many LEED criteria as possible to demonstrate good environmental stewardship. Examples of LEED criteria include the installation of energy-efficient, low-flow or no-flow fixtures to reduce water consumption, use of energy-efficient building systems such as lighting fixtures and high-efficiency HVAC systems, and implementation of storm water design features such as bioswales and rain gardens to help channel runoff and filter water before it is released to receiving waters.

3.9 Hazardous Materials and Wastes

3.9.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C.§9601(14)), is defined as: "(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. §6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any HAP listed under section 112 of the CAA (42 U.S.C. §7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas)."

Hazardous materials are defined by 49 CFR 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions" in 49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste in 42 U.S.C. §6903, as "a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

3.9.2 Description of the Affected Environment

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards governing procurement, issuance, use, or disposal of hazardous materials and tracking and record-keeping for public safety and for compliance with all laws and regulations. AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations, AFIs, and DOD Directives for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution Control Standards*, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility activities. Lackland AFB maintains a *Source Reduction and Waste Minimization Plan* that requires pollution prevention compliance by all Lackland AFB activities (LAFB 2006a). Lackland AFB also maintains a *Hazardous Material Emergency Planning and Response Plan* (LAFB 2001) that provides guidance, information, and direction to ensure the proper oil, hazardous substance, and hazardous waste spill prevention actions are taken to minimize the chances of such materials entering the navigable waters of the United States.

Lackland AFB has established a hazardous materials pharmacy (HAZMART) to promote pollution prevention through monitoring of all hazardous materials. The HAZMART uses decentralizing field offices to record and track all hazardous materials that are purchased, distributed, used, and disposed of. This information is entered into a computer database system, which is maintained by the HAZMART's centralized office in the Civil Engineering Building at Lackland AFB (LAFB 2002b). Hazardous and toxic material procurements are approved and tracked by the Environmental Management office at Lackland AFB.

Hazardous Wastes. AFI 32-7042, *Solid and Hazardous Waste Compliance*, directs roles and responsibilities with waste stream management including planning, training, emergency response, and pollution prevention. The management of hazardous waste is governed by the RCRA Subtitle C (40 CFR Parts 260 through 270) regulations, which are administered by the USEPA. The USEPA has subsequently delegated regulatory authority to the State of Texas. The regulations require hazardous waste to be handled, stored, transported, disposed of, or recycled in compliance with applicable regulations (LAFB 2006a). Lackland AFB maintains a *Hazardous Waste Management Plan* (LAFB 2007c), as directed by AFI 32-7042, that provides guidance, information, and direction for the proper management of hazardous waste generated on the installation, in accordance with all applicable state and Federal regulations.

Each of the noncontiguous properties under the purview of Lackland AFB generates varying amounts of hazardous waste under all three generator sizes: large-quantity generator (LQG), small-quantity generator (SQG), and conditionally exempt small-quantity generator (CESQG). The Main Base, including the Kelly Field Annex, is categorized as an LQG; the Lackland Training Annex is classified as a separate LQG; two buildings (Buildings 1610 and 1530) within the Lackland Leaseback Area are classified as SQGs; and nine facilities within the Lackland Leaseback Area are classified as CESQGs.

There are currently 222 satellite accumulation points (SAPs) at Lackland AFB. A SAP is an area at or near the point of waste generation where the user accumulates small quantities of "total regulated

hazardous waste" up to 55 gallons or up to 1 quart of "acutely hazardous waste." When the volume exceeds these limits, the user must place the volume in excess of the limit in another container and transfer the full container to a 90-day accumulation site within 72 hours for a maximum of 90 days. There are three 90-day accumulation sites at Lackland AFB. A 90-day accumulation site is a designated area at or near the worksite where hazardous waste accumulates before being transported off-installation for ultimate disposal. A SAP can also accumulate nonhazardous waste and universal wastes. Regulatory accumulation limits are not imposed on nonhazardous wastes; however, there are accumulation time limits for universal waste. Universal waste generators are allowed to accumulate universal waste at their location for no more than 9 months from the accumulation start date. Once the 9-month time limit has been reached, the universal waste must be moved to its designated waste accumulation site (LAFB 2007c).

Hazardous wastes generated at Lackland AFB include medical waste, LBP-contaminated materials, cleaning solvents, and hazardous mixed liquids. Significant quantities of hazardous wastes are also generated at Lackland AFB by the handling of spent or off-specification fuels (LAFB 2002b). In addition to hazardous waste, Lackland AFB generates universal wastes and waste streams that are regulated as "nonhazardous" by the TCEQ.

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, identifies requirements for aboveground storage tanks (ASTs), underground storage tanks (USTs), and associated piping that store petroleum products and hazardous substances at USAF facilities.

There are 19 ASTs and 5 USTs on Main Base Lackland AFB. Lackland AFB has developed an Underground Storage Tank Management Plan in accordance with Federal and state regulations. The installation has been aggressively removing substandard USTs and replacing them with upgraded USTs, vaulted USTs, or ASTs (LAFB 2002b). Although the USAF generally discourages new construction of USTs, where USTs are necessary, their design and construction must meet Federal Code technical standards. All ASTs must have secondary containment structures and appropriate leak detection systems per AFI 32-7044.

Lackland AFB maintains a Spill Prevention, Control and Countermeasure (SPCC) Plan (LAFB 2006b) that was developed per 40 CFR Part 112, *Oil Pollution Prevention* and DOD Directive 5030.41, *Oil and Hazardous Substances Pollution Prevention Contingency Program*. The plan establishes the procedures, methods, equipment, and other criteria to prevent and respond to discharges of oil products from nontransportation-related onshore and offshore facilities into or upon navigable waters of the United States or adjoining shorelines.

There are no historic USTs or ASTs in the vicinity of the proposed project area (Riley 2011).

Environmental Restoration Program. The DOD developed the Environmental Restoration Program (ERP) to facilitate thorough investigation and cleanup of contaminated sites on military installations (active installations, installations subject to BRAC, and formerly used defense sites). The Installation Restoration Program and the Military Munitions Response Program (MMRP) are components of the ERP. The Installation Restoration Program requires each DOD installation to identify, investigate, and clean up hazardous waste disposal or release sites. The MMRP addresses nonoperational rangelands that are suspected or known to contain unexploded ordnance, discarded military munitions, or munitions constituent contamination.

Sixty-seven ERP sites have been identified on Lackland AFB. Of the 67 sites, 29 have a no further action status and 38 remain active. Installationwide Preliminary Assessments have also identified 26 Areas of Concern (AOCs). Some of these AOCs require further studies to determine the nature and extent of

contamination. In addition to ERP sites and AOCs, Lackland AFB also has 14 MMRP sites (LAFB 2006a).

There is only one ERP site (TU-42) within the immediate vicinity of the footprint of the ADP; this ERP site is adjacent to the ADP boundary. Additionally, there is one AOC, AOC-15, which is within 0.1 mile of the ADP. There are no other ERP sites, AOCs, or MMRP sites within the immediate vicinity of the ADP footprint (LAFB undated a).

Site TU-42 was caused by an UST that was used for storage of waste oil from a nearby automobile hobby shop. The leaking UST system was removed on March 28, 1990. Excavated soils were treated on site using bioremediation and transported to a licensed landfill. All objectives of the remedial actions were achieved and a Record of Decision was issued for the Site Closeout of ERP Site TU-42 in January 2007 (USAF 2006).

In 2007, a site investigation (SI) was conducted at 15 AOCs at Lackland AFB, including AOC-15. Sampling was conducted during the SI to identify contaminant sources or contaminated soil at the AOCs. Visual inspections, electromagnetic and magnetic surveys, and test trenching were also performed during the SI to identify potential locations of buried waste or contaminated source areas. Accordingly, based on the SI results, no evidence of a release due to past USAF activities was identified; therefore, site closure with No Further Action was warranted for the 15 AOCs at Lackland AFB, including AOC-15 (LAFB 2008d, LAFB 2008c).

There are 10 solid waste management units (SWMUs) at Lackland AFB. Of the 10 SWMUs, 9 currently have operational facilities within them: Building 876 (433rd Airlift Wing), Building 5074 (90-day Hazardous Waste Storage Facility), Building 918 (149th Fighter Wing), Building 876 (433rd Airlift Wing), Building 7385 (90-day Hazardous Waste Storage Facility), Building 238 (90-day Hazardous Waste Storage Facility), Building 5015 (Antifreeze Recycling Unit), Building 1610 (Leaseback Facility), and Building 1530 (Leaseback Facility). There was previously an SWMU within the Wilford Hall Medical Center (WHMC) (Building 4550); however, this facility is no longer used (LAFB 2007c).

Asbestos-Containing Materials. AFI 32-1052, *Facilities Asbestos Management*, provides the direction for asbestos management at USAF installations. This instruction incorporates by reference applicable requirements of 29 CFR Part 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.3.80, Section 112 of the CAA, and other applicable AFIs and DOD Directives. AFI 32-1052 requires installations to develop an asbestos management plan for the purpose of maintaining a permanent record of the status and condition of ACM in installation facilities, and documenting asbestos management efforts. In addition, the instruction requires installations to develop an asbestos operating plan detailing how the installation accomplishes asbestos-related projects.

Asbestos is regulated by the USEPA under the CAA, TSCA, and CERCLA. USEPA has established that any material containing more than 1 percent asbestos by weight is considered ACM.

Lackland AFB manages asbestos in accordance with the *Asbestos Management Plan*, which specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects. The plan is also designed to protect personnel who live and work on Lackland AFB from exposure to airborne asbestos fibers and to ensure the installation remains in compliance with Federal, state, and local regulations regarding ACM.

Minor abatement of asbestos is accomplished during renovation or repair of facilities and on an as-needed basis by trained installation personnel at Lackland AFB. A State of Texas-licensed and trained contractor is used for large abatement projects. All asbestos abatements are recorded and tracked using a computer

database. More than 75 percent of the buildings that contained asbestos at Lackland AFB have been abated and demolished as part of an extensive facility demolition program. The majority of the remaining asbestos at Lackland AFB is found throughout the installation housing units (LAFB 2002b). Several of the buildings within the ADP that would be demolished or renovated are assumed or identified as containing ACM because of their age.

Lead-Based Paint. USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR 1910.120, 29 CFR Part 1926, 40 CFR 50.12, 40 CFR Parts 240 through 280, the CAA, and other applicable Federal regulations. In addition, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X), passed by Congress on October 28, 1992, regulates the use and disposal of LBP at residential areas on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards.

In 1992, an installationwide LBP survey was conducted at Lackland AFB. The survey indicated that LBP was widely used on buildings prior to 1980 (LAFB 2006a). In 1994, a comprehensive LBP survey was conducted and LBP was discovered in the majority of the facilities tested. Most of the LBP was found in exterior paint on trim, doors, baseboards, and door and window frames. Abatement of LBP at Lackland AFB is managed in place through the installation's Lead-Based Paint Management Program. The program specifies partial removal and encapsulation. Complete removal of LBP is conducted during major renovation projects. Buildings that are scheduled for removal are demolished without abatement of LBP. The LBP-contaminated debris is disposed of as special waste at the municipal landfill. More than 75 percent of the buildings that contained LBP at Lackland AFB have been demolished as part of an extensive facility demolition program. The majority of the remaining LBP at Lackland AFB is found throughout the installation housing units (LAFB 2002b). Only one building within the ADP, the IAAFA Headquarters Building, has been identified as containing LBP.

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCBs can be present in products and materials manufactured before the 1979 ban. Common products that might contain PCBs include electrical equipment (e.g., transformers and capacitors), fluorescent light ballasts, and hydraulic systems.

Lackland AFB is considered to be PCB-free; however, fluorescent light ballasts throughout the installation are assumed to be PCB-contaminated, unless they are labeled PCB-free. As facility repairs and renovations occur, the ballasts are removed and disposed of as hazardous waste (LAFB 2002b).

Radon. Lackland AFB is in Federal USEPA Radon Zone 3, or the lowest priority zone, where the predicted average indoor radon screening level is less than 2 picoCuries per liter (USEPA 2009c).

Pesticides. Lackland AFB's Pest Management Plan is based on AFI 32-1053, *Pest Management Program*, and DOD Instruction 4150.07, *DOD Pest Management Program*. The plan addresses the control of pest organisms in the context of their life cycle stage and their environment. Nonchemical approaches, which stress biological and mechanical control means (e.g., pruning, using groundcovers, increasing biodiversity), is favored over chemical control means. When chemical control is necessary, low-toxic (i.e., products that have a USEPA "CAUTION" designation) and target-specific (selective) pesticides are required before the use of higher-toxic (i.e., products that have a USEPA "WARNING" or "DANGER-POISON" designation) or nonselective pesticides (LAFB 2007d).

The pest management program at Lackland AFB includes inspection and as-needed control of a wide variety of pests and monitoring of pest control contracts. Pest management records, including self-help, golf course, and contractor application records are maintained in the Integrated Pest Management Information System. Detailed procedures relative to pesticide usage and application are found in the Pest Management Plan, which is kept in the pest management shop. The pest management shop is in the Installation Civil Engineer complex and is in compliance with the appropriate Federal, state, and local regulations and guidelines. Lackland AFB does not have any significant pest problems, other than the occasional control of ants, mice, roaches, bats, pigeons, and scorpions (LAFB 2002b).

3.9.3 Environmental Consequences

3.9.3.1 Significance Criteria

Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current Lackland AFB waste management procedures and capacities. Impacts on the ERP would be considered significant if a proposed action disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if a proposed action made it more difficult or costly to remediate existing contaminated sites.

3.9.3.2 Proposed Action

Because the Proposed Action would not result in noncompliance with applicable Federal or state regulations, increase the amount of hazardous materials and wastes generated or procured beyond current Lackland AFB hazardous material management procedures and capacities, disturb or create contaminated sites resulting in negative effects on human health or the environment, or make it more difficult or costly to remediate existing contaminated sites, no significant impacts on hazardous materials or wastes, ACM, LBP, PCB, radon, pesticides, ASTs, USTs, or the ERP would be expected.

Hazardous Materials. Short-term, minor, adverse impacts would be expected. Construction activities for permanent facilities and possibly the temporary trailers would require the use of certain hazardous materials such as fuels, oils, paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during the Proposed Action would be minimal and their use would be of short duration. Therefore, no long-term, direct or indirect, adverse impacts would be expected.

Hazardous Wastes. Short-term, minor, adverse impacts would be expected. The quantity of hazardous wastes generated from proposed construction and demolition activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. Hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Prior to commencement of construction and demolition activities, the contractor would be required to obtain the necessary construction and demolition permits. No long-term, direct or indirect, adverse impacts would be expected.

Asbestos-Containing Material. Short-term, negligible to minor, adverse, and long-term, beneficial impacts would be expected. It is anticipated that the demolition of the several facilities within the ADP footprint and associated infrastructure (i.e., old water mains) would generate ACM wastes. Any ACM encountered during building demolition and cleanup would be handled in accordance with established USAF policy and the *Asbestos Management Plan.* USAF regulations prohibit the use of ACM for new construction, and therefore would not result from the installation of the temporary trailers or permanent

buildings. Demolition plans would be reviewed by Lackland AFB civil engineering personnel to ensure appropriate measures are taken to reduce potential exposure to, and release of, asbestos. Lackland AFB would follow its current practices for removal of friable asbestos and other ACM associated with the facility demolition. If friable ACM would need to be removed, an asbestos removal permit would be obtained prior to initiation of construction activities. Friable ACM would be removed and disposed of at an asbestos-permitted landfill. The removal of ACM during demolition activities would result in long-term, beneficial impacts by reducing exposure to personnel.

Lead-Based Paint. Short-term, negligible to minor, adverse, and long-term, beneficial impacts would be expected. It is anticipated that the renovation of the IAAFA Headquarters would generate LBP wastes. Any LBP encountered during building renovation and cleanup would be handled in accordance with established USAF policy and the *Lead-Based Paint Management Plan.* Renovation plans would be reviewed by Lackland AFB civil engineering personnel to ensure appropriate measures are taken to reduce potential exposure to, and release of, lead from LBP. Lackland AFB would follow its current practices for removal of LBP associated with the IAAFA Headquarters. LBP would be removed and disposed of at a LBP-permitted landfill. The removal of LBP during renovation activities would result in long-term, beneficial impacts by reducing exposure to personnel. LBP would not be used during the installation of the temporary trailers or permanent buildings.

Polychlorinated Biphenyls. Short-term, negligible, adverse impacts could be expected. Lackland AFB is considered to be PCB-free; however, fluorescent light ballasts throughout the installation are assumed to be PCB-contaminated, unless they are labeled PCB-free. If fluorescent light ballasts that do not have a PCB-free label are encountered during demolition, the ballasts would be removed and disposed of as hazardous waste. No long-term, direct or indirect, adverse impacts would be expected.

Radon. No impacts would be expected.

Pesticides. No impacts would be expected. Lackland AFB does not have any significant pest problems. All pesticides and herbicides would be handled and applied according to Federal, state, and local regulations and the installation's Pest Management Plan and Pest Management Program.

Aboveground and Underground Storage Tanks. No impacts would be expected as there are no historic USTs or ASTs within the immediate vicinity of the project area.

Environmental Restoration Program. No impacts would be expected from MMRP sites, AOCs, or ERP sites as there are no active sites within the project area.

3.9.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on hazardous materials and wastes under this alternative would be expected to be the same as those identified in **Section 3.9.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility

would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on hazardous materials and wastes under this alternative would be expected to be the same as those identified in **Section 3.9.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on hazardous materials and wastes under this alternative would be expected to be the same as those identified in **Section 3.9.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.9.2**, would remain the same. No impacts on hazardous materials and wastes would be expected from implementation of the No Action Alternative.

3.10 Socioeconomics and Environmental Justice

3.10.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly characteristics of population and economic activity. Regional birth and death rates and immigration and emigration affect population levels. Economic activity typically encompasses employment, personal income, and industrial or commercial growth. Changes in these two fundamental socioeconomic indicators are typically accompanied by changes in other components, such as housing availability and the provision of public services. Socioeconomic data at county, state, and national levels permit characterization of baseline conditions in the context of regional, state, and national trends.

Data in three areas provide key insights into socioeconomic conditions that might be affected by a proposed action. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region. In appropriate cases, data on an installation's expenditures in the regional economy help to identify the relative importance of an installation in terms of its purchasing power and jobs base.

Demographics identify the population levels and changes to population levels of a region. Demographics data might also be obtained to identify, as appropriate to evaluation of a proposed action, a region's characteristics in terms of race, ethnicity, poverty status, educational attainment level, and other broad indicators.

Socioeconomic data shown in this section are presented at county, metropolitan statistical area (MSA), and state levels to characterize baseline socioeconomic conditions in the context of regional and state

trends. Data have been collected from previously published documents issued by Federal, state, and local sources.

The geographical area in which a majority of the socioeconomic effects of the action and alternatives would occur is defined as the Region of Influence (ROI). The ROI is considered a primary impact area because it receives direct and indirect economic benefits from installation operations due to residency distribution of installation employees, commuting distances and times, and the locations of businesses providing goods and services to installation personnel and their dependents. Other criteria include regional economic activity, population, housing, and schools.

Environmental Justice. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (11 February 1994) requires that Federal agencies' actions substantially affecting human health or the environment not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was created to ensure 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. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies.

Children's Environmental Health and Safety Risks. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each Federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

The environmental justice ROI is considered to have a higher percentage of low-income or minority residents if the percentage of persons characterized as a low-income or minority population within the ROI is either greater than 50 percent, or is disproportionately higher than the encompassing county.

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

- *Minority Population.* Black or African Americans, American Indians and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, or some other minority race. The U.S. Census Bureau considers race and Hispanic origin (ethnicity) as two separate concepts, and these data are recorded separately. For the purposes of this analysis, the total minority population would include racial minority populations and Hispanic or Latino populations within the ROI.
- *Low-income Population.* Persons living below the poverty level, according to income data estimates provided in the 2009 American Community Survey (Census Bureau 2009).

3.10.2 Description of the Affected Environment

Lackland AFB, which includes the Main Base, Kelly Field Annex, and Lackland Training Annex, encompasses 9,572 acres in the City of San Antonio in Bexar County, Texas. For the purposes of this EA, the San Antonio MSA, defined by the U.S. Census Bureau as Bexar, Comal, Guadalupe, and Wilson

counties, was selected as the ROI for socioeconomic resources and environmental justice. Additionally, although the ADP would be implemented on Lackland AFB Main Base only, socioeconomic data in this EA are provided for all of Lackland AFB as it is not possible to separate out socioeconomic data for the Main Base.

Demographics. In FY 2010, the population of Lackland AFB was 52,561 including military personnel, civilian employees, contractors, and dependants (LAFB 2011b). The population of the San Antonio MSA in 2010 was estimated to be 2,145,561 people, representing approximately 8.5 percent of the State of Texas' population (Census Bureau 2010). The 2010 Census data represent an approximately 34.5 percent increase over the 2000 Census data for the San Antonio MSA population. Bexar County and the State of Texas experienced lower but similar population increases from 2000 to 2010. The population of Bexar County in 2010 was 1,714,773, representing 23.1 percent growth rate since 2000, while the 2010 population estimate for the State of Texas was 25,145,561 with a 20.6 percent growth rate. See **Table 3-13** for year 2000 and 2010 population data (Census Bureau 2000, Census Bureau 2010).

Table 3-13. Year 2000 and Year 2010 Population Data

Location	2000	2010	Change (percent)
United States	281,421,906	308,745,538	9.7
Texas	20,851,820	25,145,561	20.6
San Antonio MSA	1,592,383	2,142,508	34.5
Bexar County	1,392,931	1,714,773	23.1

Sources: Census Bureau 2000, Census Bureau 2010

Economy and Housing. San Antonio's economy is based on services, commercial trade, government employment, tourism, medical facilities, and manufacturing. The area relies heavily upon government employment, as four of the top six employers are military installations: Fort Sam Houston, Lackland AFB, Brooks City-Base, and Randolph AFB (LAFB 2010a). Lackland AFB has created an additional estimated 16,187 jobs indirectly and $614 million in payroll from support jobs throughout the community (LAFB 2011b).

Lackland AFB's annual payroll to approximately 52,561 military personnel and civilian employees is about $1.8 billion (LAFB 2011b). Based on the value of installation operations and maintenance activities, construction, and education payments and other services, Lackland AFB contributes more than $3.2 billion to the San Antonio economy each year (LAFB 2011b).

Employment types in the San Antonio MSA vary; however, as would be expected, there is a larger percentage of persons employed in the Armed Forces in the ROI than in the State of Texas as a whole because of the presence of multiple military installations (see **Table 3-14**). The largest employment type in the San Antonio MSA, Bexar County, and Texas is educational, health, and social services (22.01, 21.87, and 20.37 percent, respectively). Retail trade and professional, scientific, management, administrative, and waste management services are the second and third largest employment types in the San Antonio MSA, Bexar County, and Texas (Census Bureau 2009).

In 2009, the unemployment rate for the State of Texas and the San Antonio MSA were 6.8 and 6.5 percent, respectively. There was an estimated 752,509 housing units in the San Antonio MSA in 2009. Of these housing units, 673,884 were occupied (approximately 89 percent). The number of vacant housing units was 78,625 (Census Bureau 2009).

Environmental Justice. Based on 2009 U.S. Census data, less than 50 percent of the San Antonio MSA population was within a racial minority (race other than white alone) (27.2 percent); however, slightly more than half of the MSA population was of Hispanic or Latino origin (see **Table 3-15**). When compared to Bexar County, the San Antonio MSA had slightly lower percentages of residents reporting to be of a racial minority (29.4 percent versus 30.3 percent), of Hispanic or Latino origins (52.9 percent versus 57.5 percent). The San Antonio MSA has a higher percentage of residents of Hispanic or Latino origins (52.9 percent versus 35.9 percent) than the State of Texas; however, the population within a racial minority is slightly lower (27.2 percent) in the San Antonio MSA than the State of Texas (28.1 percent) (Census Bureau 2009).

Residents living in the San Antonio MSA have slightly higher median household incomes ($47,728) and per capita incomes ($23,152) than Bexar County; however, when compared to the State of Texas these figures are slightly lower (see **Table 3-15**). The percentage of persons living below the poverty level in the San Antonio MSA (15.9 percent) is slightly lower than that of Bexar County and Texas (17.1 percent and 16.8 percent, respectively) (Census Bureau 2009).

Table 3-14. Percentage of Employment Types in San Antonio MSA, Bexar County, and the State of Texas (2009)

Industry	San Antonio MSA (percent)	Bexar County (percent)	Texas (percent)
Employed Persons in Armed Forces (in the Labor Force 16 years and over)	1.5	1.7	0.5
Agriculture, forestry, fishing, hunting, and mining	1.07	0.67	2.88
Construction	8.77	8.44	9.00
Manufacturing	6.55	5.99	9.73
Wholesale trade	2.96	2.97	3.32
Retail trade	11.89	11.87	11.54
Transportation, warehousing, and utilities	5.04	4.84	5.74
Information	2.20	2.40	2.18
Finance, and insurance, real estate, rental, and leasing	9.10	9.54	6.90
Professional, scientific, management, administrative, and waste management services	10.50	10.91	10.61
Educational, health, and social services	21.87	22.01	20.37
Arts, entertainment, recreation, accommodation, and food services	9.54	9.99	8.33
Other services (except public administration)	5.15	5.27	5.20
Public administration	5.36	5.10	4.20

Source: Census Bureau 2009

Table 3-15. Minority and Low-Income Data in San Antonio MSA, Bexar County, and Texas (2009)

	San Antonio MSA	Bexar County	Texas
Total Population	1,979,686	1,584,817	23,819,042
Percent Male	49.0	41.3	49.9
Percent Female	51.0	58.7	50.1

Percent Under 5 Years	8.0	8.4	8.4
Percent Over 65 Years	10.9	10.3	10.1
Percent White	72.8	69.7	71.8
Percent Black or African American	6.2	7.1	11.5
Percent American Indian Alaskan Native	0.7	0.7	0.5
Percent Asian	1.8	2.1	3.4
Percent Hawaiian or Other Pacific Islander	0.1	0.1	0.1
Percent Some Other Race	15.8	17.6	10.7
Percent Reporting 2 or More Races	2.6	2.7	1.9
Percent Hispanic or Latino*	52.9	57.5	35.9
Percent Below Poverty	15.9	17.1	16.8
Per Capita Income	$23,152	$22,557	$24,318
Median Household Income	$47,728	$45,688	$48,199

Note: * Persons of Hispanic or Latino origin can be of any race, and thus are also included in applicable race categories.

3.10.3 Environmental Consequences

3.10.3.1 Significance Criteria

The significance of socioeconomic impacts is assessed in terms of direct impacts on the local economy and related impacts on other socioeconomic resources (e.g., income, housing, employment). Socioeconomic impacts would be considered significant if the Proposed Action would result in any of the following:

- Cause a substantial change in revenue for local businesses, government agencies, or Native American tribes
- Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere
- Cause substantial changes in the local employment or labor force
- Cause a substantial decrease in property values.

The magnitude of potential impacts can also vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, they would be considered adverse. This section also evaluates environmental justice concerns including disproportionate impacts on low-income and minority populations. The Proposed Action would have an adverse impact with respect to the socioeconomic conditions within the ROI if it would result in any of the following:

- Change the local business volume, employment, personal income, or population that exceeds the ROI's historical annual change
- Adversely affect social services or social conditions, including property values, school enrollment, county or municipal expenditures, or crime rates
- Disproportionately affect minority populations or low-income populations.

3.10.3.2 Proposed Action

No significant impacts would be expected on socioeconomic resources, as the Proposed Action would not cause a substantial change in revenue for local businesses, government agencies, or Native American tribes; displace substantial numbers of people or existing housing; cause a substantial change in the local employment or labor force; or cause a substantial decrease in property values.

Short-term, minor to moderate, beneficial impacts on the local economy in the ROI would be expected from increases in employment and local business volume during construction activities. Construction costs associated with the Proposed Action would be approximately $481 million, and the Proposed Action would take approximately 20 years to complete. The quantity of workers required for construction and demolition activities is anticipated to be substantial over the course of 20 years. As of 2009, approximately 8 percent of the residents of the San Antonio MSA were employed in the construction industries. Further, the unemployment rate for the San Antonio MSA is currently 6.5 percent (Census Bureau 2009). Therefore, it is expected that there would be sufficient construction workers available to complete construction and demolition activities. Short-term increases in local business volume within the San Antonio MSA during construction would also be expected due to the provision of construction materials and supplies and other related services.

Long-term, negligible to minor, beneficial impacts on the local economy within the ROI could be expected from an increase of 4,801 individuals (3,705 students and 1,096 staff) working or studying at Lackland AFB as a result of the Proposed Action. It is expected that this increase would occur during Phase I (0–5 years) of the ADP. Staff would live off-installation and commute to work, resulting in an increased demand for housing, schools, purchase of goods and services, and payroll taxes. As of 2009, approximately 11 percent of the homes in the San Antonio MSA were vacant, so it is expected that sufficient housing would be available to accommodate the 1,096 additional staff and their dependents. Increases in housing demand would result in the reduction of current vacant housing stock and subsequent potential increases in property tax receipts and increases in housing values. Students would be housed in quarters on the installation.

The ROI does not consist of higher percentages of low-incomes or minority populations; however, it could be characterized as having a disproportionately higher Hispanic or Latino population because more than 50 percent (52.9 percent) of the San Antonio MSA is reported to be of Hispanic or Latino origins. However, the San Antonio MSA Hispanic or Latino population is lower than that of Bexar County (57.5 percent) and is not significantly more than 50 percent. Therefore, the Proposed Action would not be expected to adversely or disproportionately affect minority or low-income populations. Further, no disproportionate risks to children from environmental health risks or safety risks would be expected.

3.10.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on socioeconomics and environmental justice under this alternative would be expected to be the same as those identified in **Section 3.10.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the

ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on socioeconomics and environmental justice under this alternative would be expected to be the same as those identified in **Section 3.10.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on socioeconomics and environmental justice under this alternative would be expected to be the same as those identified in **Section 3.10.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.10.2**, would remain the same. No impacts on socioeconomic resources or environmental justice would be expected from implementation of the No Action Alternative.

3.11 Cultural Resources

3.11.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic sites, buildings, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources might provide insight into the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act (NHPA) of 1966, the Archeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (NAGPRA) (1990).

Typically, cultural resources are subdivided into archaeological resources (prehistoric or historic sites, where human activity has left physical evidence of that activity but no structures remain standing); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

Archaeological resources comprise areas where human activity has measurably altered the earth, or deposits of physical remains are found (e.g., projectile points and bottles).

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources should be more than 50 years old to be considered for eligibility for inclusion in the National Register of Historic Places (NRHP). To meet the evaluation criteria for eligibility to the NRHP, a property should be 50 years of age or older, significant under one or more NRHP evaluation criteria (36 CFR 60.4), and retain historic integrity expressive of the significance. More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future as per NRHP evaluation criteria consideration G.

Resources of traditional, religious, or cultural significance to Native American tribes can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process under NEPA and the consultation and review process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Historic properties are cultural resources that are listed in or eligible for listing in the NRHP. Under Section 110 of the NHPA, Federal agencies are required to inventory resources under their purview and nominate those eligible to the NRHP. In accordance with the NHPA, consultation with the State Historic Preservation Office (SHPO) is required regarding the identification and evaluation of potentially affected cultural resources for NRHP, determination of potential effects of an undertaking on historic properties, and resolution of any adverse effects. Federally recognized Native American tribes would be consulted with in accordance with EO 13175, *Consultation and Coordination With Indian Tribal Governments* (November 9, 2000).

3.11.2 Description of the Affected Environment

3.11.2.1 Prehistoric and Historic Overview

Prehistoric Overview (11,500 B.P. to 1519 A.D.) of Central Texas. The prehistory of central Texas, which includes the Lackland AFB area, can be subdivided into three broad temporal periods: the Paleo-Indian (11500 to 8800 B.P.), Archaic (8800 to 1200 B.P.), and Late Prehistoric (1200 to 300 B.P.). Each of these periods has a distinctive stone tool kit, ecological adaptations, and lifeways.

The Paleo-Indian period is the earliest substantiated cultural period in Texas. The period is characterized by small, mobile bands of foragers. The period can be divided into early and late sub-periods, the former characterized by Clovis and Folsom projectile points and the latter characterized by a wider array of projectile points including Plainview, Dalton, San Patrice, Wilson, Golondria-Barber, and St. Mary's Hall point styles.

The Archaic period begins with this growing diversity of projectile point styles and is broadly characterized by stemmed and side-notched dart points. Subsistence patterns became more diffuse and nomadic lifestyle continued. The Archaic period can be divided into three sub-periods: Early, Middle, and Late. The Early Archaic period is characterized by small sites with diverse tool assemblages suggesting mobile, low-density populations. The Middle Archaic period exhibits changes in settlement patterns, economic and social systems, and technology. The Late Archaic period is characterized by further changes in economic and social systems exhibited but trade artifacts and large cemeteries.

The Late Prehistoric period is characterized by the introduction of the bow-and-arrow and later by ceramics. The Austin phase is distinguished by the appearance of arrow points. The later Toyah phase is characterized by contracting stem arrow points, bone-tempered ceramics, and diamond-shaped beveled knives (LAFB 2007b).

Historic Overview of Central Texas. The cultural history for central Texas which includes Lackland AFB can be subdivided into 11 distinct periods that reflect the overall common political and economic activity that dominated that time period (see **Table 3-16**) (LAFB 2007b).

The Historic Period (beginning in 1519 A.D.) marks the beginning of European domination and invasions by non-local Native American groups, such as the Apache and Comanche. Spanish exploration and establishment of missions of Texas began in 1519. It was another 200 years before the Spanish established a permanent settlement (along the San Antonio River). San Antonio de Bexar (as the town came to be known) became a way-station for travelers on El Camino Real (or Kings Highway) (LAFB 2007b).

Table 3-16. Chronological Framework for the Historic Central Texas Area

Period	Approximate Dates
Historic	1519 A.D. to present
Early Spanish Exploration and Missions	1519 to 1718 A.D.
Spanish Colonial Settlement	1718 to 1821 A.D.
Mexican Statehood	1821 to 1836 A.D.
The Republic of Texas	1836 to 1846 A.D.
Early U.S. Statehood	1846 to 1865 A.D.
Post Civil War Period	1865 to 1900 A.D.
Twentieth Century Pre-World War I	1900 to 1917 A.D.
World War I	1917 to 1919 A.D.
Inter-War Years	1919 to 1941 A.D.
World War II	1941 to 1945 A.D.
Cold War Era	1946 to 1991 A.D.

Source: LAFB 2007b

Kelly AFB traces its origins to the establishment of Camp Kelly (Kelly Field No. 1) on May 7, 1917, followed by an expansion west and south to form Kelly Field No. 2. During World War I, the two fields provided training for more pilots than any other school in the United States. Prior to the U.S. involvement in World War II, a bombing training area associated with Kelly AFB (known as the "Hill") was proposed as a new training area. In September 1941, the Army Air Forces designated the new training facility as the Air Corps Replacement Center, and aircrew both military and civilian candidates began their training here. By July 1942, the center was designated as a separate command, the San Antonio Aviation Cadet Center (SAACC) (LAFB 2007b).

As part of demobilization efforts at the end of World War II, SAACC was redesignated as the Army Air Forces Military Training Center. Not long after the Army Air Forces Military Training Center was established, it was redesignated as the Indoctrination Division, Air Training Command. On July 1, 1947, the Indoctrination Division facility was renamed Lackland AFB following the establishment of the USAF (LAFB 2007b).

Lackland AFB History. Lackland AFB is within the city limits of San Antonio, in Bexar County, Texas. The former field training and bombing range, established in 1942 as the SAACC, was used for aircrew training, service separation processing, and the basic military training center for officers and enlisted personnel entering the Army Air Forces during World War II. SAACC was renamed Lackland AFB in honor of Brigadier General Frank D. Lackland, the Kelly Field Commander who had proposed an aviation and cadet center on this site. Temporary structures were built to house the new recruits resulting from the military build-up of the 1950s and 1960s. A 1,000-person Recruit Housing and Training facilities and other permanent buildings were constructed at Lackland AFB. Through the years, Lackland AFB has grown through the acquisition of the former Q Area, a storage site for nuclear weapons during the early Cold War. The realignment of Lackland Training Annex (formerly Medina Base) and portions of Kelly AFB in 2001 gave Lackland AFB responsibility over the former Kelly AFB, now Kelly Field Annex. Lackland AFB has expanded geographically and new missions have been added due to installation closures, but its training mission has not significantly changed (LAFB 2007b).

Defense Language Institute English Language Center History. The DLIELC had its beginnings in May 1954 with the activation of the 3764th Pre-Flight Training Squadron (language) at Lackland AFB. In 1960, the Language School, USAF, activated and assumed its mission. In 1963, the DOD established the Defense Language Institute in Washington, D.C. which consolidated the Army Language School at the Presidio of Monterrey, California as DLI West Coast Branch and the foreign language school at the Naval Intelligence School as DLI East Coast Branch. In 1966, the language school at Lackland AFB became the Defense Language Institute English Language School and was placed under U.S. Army control. In 1976, the school was renamed the DLIELC and the USAF was appointed as the executive agent for the school (DLIELC 2010).

3.11.2.2 Cultural Resources

There have been numerous cultural resources surveys and inventories completed at Lackland AFB, including the Lackland Main Base, Kelly Field Annex (and Security Hill), and Lackland Training Annex (LAFB 2007b).

Archaeological Resources. Thirteen archaeological investigations have been completed at the Main Base and Lackland Training Annex, and one at the Kelly Field Annex. Currently 76 archaeological sites have been identified at Lackland AFB. Of those sites, three have been determined NRHP-eligible and 10 sites have been identified as requiring further investigation to determine NRHP-eligibility, two are within the boundaries of Lackland Training Annex (Medina Base) and one (Site #41BX1108) is within Lackland Main Base (LAFB 2007b). The three NRHP-eligible archaeological sites are of unknown prehistoric cultural affiliation. Of the 10 sites requiring further investigation, only one (Site #41BX1107) is within Lackland Main Base. None of the NRHP eligible archaeological sites or sites with undetermined eligibility is closer to the project area than 1.3 miles. The footprint for the proposed project area is on previously disturbed ground. Therefore, it is anticipated that there are no archaeological sites within the project area.

Architectural Resources. Lackland AFB has had a number of architectural inventories and assessments. 1,653 buildings or structures are currently listed in the Lackland AFB real property inventory. All buildings and structures at Lackland AFB 50 years old or older and all Cold War-era buildings and structures have been evaluated for NRHP eligibility. One hundred twenty-four built resources have been identified as NRHP-eligible or potentially eligible, of which 116 are Cold War-era nuclear weapons storage facilities in the Lackland Training Annex (Medina Base) area, west of and discontinguous with the Main Base. The remaining 8 NRHP-eligible buildings and structures are World War II-era buildings and structures, six on Lackland Main Base and two on the Kelly Annex. Five of the six NRHP eligible buildings on the Main Base (Buildings 6146, 6147, 6149, 6150, and 6152) are World War II-era

temporary buildings located approximately two blocks (0.4 miles) north of the Proposed Action with intervening development. Building 5432 is a NRHP-eligible, World War II-era chapel that was the subject of an extensive project to repair termite damage and restore its original World War II architectural integrity (LAFB 2007b). It is located one block (0.2 miles) north of the east boundary of the Proposed Action footprint.

Given the long timeline associated with the implementation of the Proposed Action, 35 buildings and structures constructed between 1966 and 1989 within and just outside of the project area that were evaluated as not NRHP-eligible under Criteria Consideration G will reach 50 years of age during the Proposed Action. They would be evaluated under NRHP eligibility criteria listed in 36 CFR 60.4 upon turning 50 years of age. As noted in the Lackland AFB Integrated Cultural Resource Management Plan (ICRMP), procedures have been established for evaluating these building and structures as they reach the 50-year mark. Many of the early Cold War-era buildings have been altered to the level that they no longer retain their integrity and will not be eligible for the NRHP when they reach 50 years of age (LAFB 2007b).

A residential subdivision is adjacent to and west of the project area outside of the boundaries of Lackland Main Base. The Valley-Hi subdivision was built between 1957 and the mid-1960s by Ray Ellison, a community builder in San Antonio. Ellison chose the location of the subdivision based on the proximity to Lackland AFB and the knowledge that the 410 loop would soon bisect his development. The Valley-Hi subdivision was surveyed and evaluated for NRHP eligibility in 2007 by HNTB Corporation for the San Antonio-Bexar County Metropolitan Planning Organization and a proposed long-range expansion project for Interstate Highway 410. The subdivision was evaluated as not eligible for NRHP listing due to a lack of integrity (HNTB 2007).

Native American Resources/Traditional Cultural Properties (TCPs). There are currently no identified TCPs at Lackland AFB (LAFB 2007b). The project area is highly developed, so it is unlikely that any exist. A 2000 cultural affiliation study by nearby Fort Sam Houston in Bexar County identified the Tonkawa, the Lipan Apache, the Mescalero Apache, the Coahuiltecan, the Wichita, the Comanche, and the Kiowa/Kiowa Apache as Native American tribes who might wish to claim cultural patrimony in the San Antonio area. Of these, only the Mescalero Apache, the Comanche, the Kiowa/Kiowa Apache, and the Wichita are federally recognized tribes (LAFB 2007b).

3.11.3 Environmental Consequences

3.11.3.1 Significance Criteria

The criteria of adverse effect as defined by 36 CFR 800.5(a)(1) provides a definition of a significance impact for the purposes of NEPA and Section 106. According to the criteria of adverse effect:

> "*An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative.*"

Impacts on cultural resources would be considered significant under NEPA if any of the above impacts were considered to be substantial. Under Section 106 of the NHPA, the Proposed Action might have no

effects on historic properties, no adverse effects on historic properties, or adverse effects on historic properties.

3.11.3.2 Proposed Action

No significant impacts would be expected under the Proposed Action. None of the facilities that would be renovated or demolished under the Proposed Action are NRHP-eligible properties. The five NRHP-eligible, World War II-era temporary buildings are clustered together approximately 0.4 miles north of the project area. None will be affected by the Proposed Action. Only Building 5432, the World War II-era chapel is within visual proximity of the Proposed Action. The majority of construction, renovation, and demolition under the Proposed Action is on the west side of the Proposed Action footprint and at a greater distance from Building 5432. Additionally, existing buildings and structures situated between Building 5432 and the project footprint further reduce the potential for adverse effects, particularly visual effects. Therefore, under Section 106, Building 5432 will not be adversely affected by the Proposed Action and under NEPA, there will be no significant impact. The Proposed Action footprint is on previously disturbed ground; therefore, no NRHP-eligible archaeological sites are expected within the proposed demolition area. There are no known traditional cultural properties of significance to Native Americans at Lackland AFB.

However, should there be unanticipated discoveries of archaeological deposits, human remains, or objects of cultural patrimony during construction, renovation, or demolition activities, Lackland AFB would follow the applicable Standard Operation Procedures in the Lackland AFB ICRMP in accordance with applicable Federal regulations (LAFB 2007b).

3.11.3.3 Alternatives to the Proposed Action

Site Configuration Alternative

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), except the facilities to be constructed would be placed in different configurations within the ADP footprint. Therefore, short-term and long-term impacts on cultural resources under this alternative would be expected to be the same as those identified in **Section 3.11.3.2**.

Temporary Trailer Site Alternative 1

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the parking lot next to the DLIELC Academic Center. The temporary dining facility would be installed in the footprint for the proposed Visiting Quarters. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be installed. Therefore, short-term and long-term impacts on cultural resources under this alternative would be expected to be the same as those identified in **Section 3.11.3.2**.

Temporary Trailer Site Alternative 2

Under this alternative, all of the actions described under the Proposed Action would occur (see **Section 2.1**), and the temporary classroom and administrative trailer would be installed within the ADP footprint in the building footprint for the proposed Visiting Quarters. The temporary dining facility would also be installed in this location. The same permanent building types would be constructed and demolished in the same locations, and the same type and number of temporary facilities would be

installed. Therefore, short-term and long-term impacts on cultural resources under this alternative would be expected to be the same as those identified in **Section 3.11.3.2**.

No Action Alternative

Under the No Action Alternative, the USAF would not implement the ADP. New facilities and infrastructure would not be constructed, buildings would not be demolished, temporary trailers would not be installed, and there would not be an increase above historical levels of students or administrative staff on campus. The existing conditions, as described in **Section 3.11.2**, would remain the same. No impacts on cultural resources would be expected from implementation of the No Action Alternative.

4. Cumulative and Other Effects

4.1 Definition of Cumulative Effects

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects 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). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions (CEQ 1997).

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA or EIS reveal any potentially significant effects not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, and a description of what resources could potentially be cumulatively affected. The full temporal span of the Proposed Action is 20 years (i.e., 2011 through 2031). The geographic scope of analysis for cumulative effects varies by resource area. Short-term, construction-related, cumulative effects could be expected for projects that are in close proximity and occurring at the same time. All planned and reasonably foreseeable future projects on Lackland AFB were initially considered for potential cumulative effects, and projects that could have additive environmental effects to those identified associated with the Proposed Acton.

4.2 Projects Considered Potential Cumulative Effects

Ambulatory Care Center on Lackland AFB. In 2010, the USAF prepared the *Final Environmental Assessment Addressing the Proposed Construction of an Ambulatory Care Center, Lackland Air Force Base, Texas* (LAFB 2010a). This EA analyzed the environmental effects of constructing an Ambulatory Care Center (ACC) complex and associated infrastructure at the San Antonio Military Medical Center South Campus, which would ultimately replace the Wilford Hall Medical Center complex. The new ACC would be constructed in phases between 2010 and 2014. No new civilian or military personnel are planned once the Wilford Hall Medical Center has been vacated, but the new ACC would be capable of providing medical services to 57,000 patients annually, an increase of 2,000 patients. The Wilford Hall Medical Center and associated buildings and infrastructure would be demolished to accommodate the ACC. **Table 4-1** summarizes the construction, demolition, and infrastructure associated with the new ACC. The new ACC project area is more than 1 mile northeast of the DLIELC-IAAFA ADP project area.

Installation Development Projects on Lackland AFB. In 2006, Lackland AFB prepared the Environmental Assessment of Installation Development at Lackland Air Force Base Texas (LAFB 2006a). This EA analyzed the environmental effects of implementing the requirements of the 2005 Base Closure and Realignment Committee's Recommendations and other installation development activities based on the Capital Improvements Program to construct, demolish, upgrade, replace, or supplement

Table 4-1. ACC Project Construction and Demolition Summary

Project Element	Building Size (ft^2)	Footprint (ft^2)
Construct ACC Complex (4 buildings and ambulance shelter)	+646,500	+192,200
Construct parking garage	+344,000	+108,000
Construct Central Energy Plant	+11,260	+11,260
Construct surface lots, pads, sidewalks	--	+1,300,000
Demolish Buildings 4550, 4895, 4552, 4604, 3460, 3350, 3450, 4600, 4602	–1,546,891	–555,079
Demolish surface lots, pads, sidewalks	--	–955,026
	Total	**+101,355**

Source: LAFB 2010a

Note: Temporary buildings and lots are not included in this ACC project description as they will be removed and the site restored to original condition following construction activities.

facilities. The Installation Development EA specifically identified 38 projects throughout Lackland AFB, including Main Base, Lackland Training Annex, and Kelly Field Annex. For the purposes of this cumulative effects analysis, only construction or demolition projects located on Lackland Main Base that would be implemented during the timeframe of the Proposed Action were considered. Due to the geographic distance from the DLIELC-IAAFA ADP project area (**See Figure 1-1)**, construction and development projects analyzed in the Installation Development EA on Lackland Training Annex or Kelly Field Annex would not be expected to have cumulative effects and were not considered further in this EA. All construction and demolition projects identified in the Installation Development EA that are planned for 2011, which is the last year analyzed in the Installation Development EA, on Lackland Main Base are summarized in **Table 4-2.**

Implementation of all projects analyzed in the Installation Development EA would result in an increase in 117 people at Lackland AFB, which includes personnel, support personnel, and average daily student load (LAFB 2006a). All of the projects resulting in changes in personnel have already been implemented, so these changes are already encompassed in the existing conditions at Lackland AFB. Therefore, the installation development projects would not be expected to result in further personnel changes.

Other Development in San Antonio Area. The San Antonio area is a growing urban area. San Antonio is the seventh largest city in the nation and one of the fastest growing cities in Texas. Population growth in the San Antonio MSA is forecasted at approximately 28 percent between 2000 and 2020 (TAMU 2011). The increases in personnel and students and new facilities associated with the proposed DLIELC-IAAFA ADP are negligible in the context of this urban settings and other large ongoing development activities. Therefore, potential cumulative effects associated with development activities in the San Antonio area are not considered in detail in this EA.

4.2.1 Cumulative Effects Analysis

Table 4-3 summarizes past actions, existing conditions, environmental effects of the Proposed Action, and environmental effects of other known future actions on Lackland AFB. A detailed discussion of potential cumulative effects by resource area follows. No significant adverse cumulative effects were identified in the cumulative effects analysis.

Table 4-2. Installation Development Project Construction and Demolition Summaries

Project Name	Construction (ft^2)	Demolition (ft^2)	Summary	Project Location
Recruit Housing and Training (RH&T) Complex	B: 550,708 P: 103,750	B: 179,220	Construct two dormitories, satellite kitchen, and classrooms. Construct a running track/exercise pad and a drill pad/war skills pad. Demolish Building 9310. Construction and demolition activities occurred in 2008–2010 in support of this project, including construction of four dormitories, central kitchen and auditorium, satellite kitchen and classrooms, and outdoor recreational facilities; and demolition of 20 facilities and numerous pavements and outdoor recreational facilities. These activities have already occurred and are encompassed in the existing conditions at Lackland AFB.	The new RH&T Complex is northeast of the DLIELC-IAAFA ADP project area.
BMT Administrative Support and Military Training Instructor Training Center	B: 30,000		Construct an administrative facility. This center would help replace administrative office space displaced by new RH&T facilities.	This new facility would be within the DLIELC-IAAFA ADP project area.
Military Working Dogs Campus Roadway and Training Surface	P: 360,150		Construct roadway and training surfaces to support the safe movement of dogs through the training campus.	This new pavement would be south of the DLIELC-IAAFA ADP project area, along the southern boundary of Lackland Main Base.
Air Force Information Warfare Center	B: 205,000		Construct a new complex to accommodate the entire Air Force Information Warfare Center. This project would require the cleanup of the former skeet range. Vacate (not demolish) Buildings 171, 178, and 179.	This new complex would be more than 1 mile east of the DLIELC-IAAFA ADP project area.

Source: LAFB 2006a

Table 4-3. Summary of Past Actions, Existing Conditions, the Proposed Action, and Known Future Actions

Resource Area	Past Actions	Existing Conditions	Proposed Action	Known Future Actions
Noise	Ambient sound environment has been dominated by activities common to a military installation.	Ambient sound environment is affected mainly by military aircraft and training and vehicle traffic. Noise levels are comparable to a noisy urban residential area.	Short-term, minor, adverse effects from construction activities. Long-term, minor, adverse effects from increased personnel and student populations operating motor vehicles on roadways.	*ACC & Installation Development:* • Short-term, minor, adverse effects from construction activities. • Negligible long-term effects expected.
Air Quality	SAIAQCR was designated as in attainment for all criteria pollutants in 2008.	Lackland AFB and surrounding areas are in attainment.	Short-term, minor, adverse effects from construction and demolition activities. Long-term, negligible, adverse effects from increased commuter emissions. New operational equipment has not been defined but would comply with air operating permits.	*ACC:* • Short-term, minor, adverse effects from construction activities. • Long-term, minor, beneficial effects from reducing central plant air emissions. *Installation Development:* • Short-term, minor, adverse effects from construction activities. • Negligible long-term adverse effects expected.
Land Use and Aesthetics	Lackland AFB has been used as a military installation at its current location since the 1940s. Surrounding area of San Antonio has been intensely developed as an urban area.	Current land use of the proposed site is training-indoor, training-outdoor, industrial, administrative, community-commercial, housing-unaccompanied, outdoor recreation, and open space. It is in the training visual district.	Long-term, beneficial, effects on land use from consolidation of compatible land uses. Long-term, beneficial, effects on aesthetics from removal of older facilities and construction of a new, cohesive campus.	*ACC:* • Development activities are compatible with existing and planned land uses. *Installation Development:* • Development activities could modify existing land use though future land use classifications would be taken into consideration during base planning.

Resource Area	Past Actions	Existing Conditions	Proposed Action	Known Future Actions
Geological Resources	Past activities have modified soils.	Site is largely developed. Soils are limited due to cutback caving, shrink-swell clays, and low strength.	Short-term, minor, adverse effects from construction activities. Long-term, minor, adverse effects from compaction, disturbance, and modification.	*ACC and Installation Development:* • Short-term, minor, adverse effects from construction activities.
Water Resources	Development and point and nonpoint source pollution from on- and off-installation sources have impacted water quality.	Lower Leon Creek is an impaired water body. The Edwards Aquifer is a sole-source aquifer and provides potable water to much of south-central Texas. There is no regulated floodplain at the proposed site.	Short-term, minor, adverse effects from construction activities. Long-term minor adverse effects from increased impervious surfaces. Approximately 593 feet of man-made stream would be filled. Water supply would not be significantly affected by the change in installation population.	*ACC and Installation Development:* • Short-term, minor, adverse effects during construction activities. • Long-term adverse effects from increased impervious surfaces. • Negligible effects on Edwards Aquifer because there would be negligible changes in installation population. • No effects on the floodplain would be expected.
Biological Resources	The biological environment of Lackland AFB has been altered as a result of development and military training activities.	Vegetation species are primarily ornamental trees and grasses. Faunal species are generally limited to those adapted to an urban environment. No threatened or endangered species are known to occur on Lackland AFB.	Long-term, negligible, adverse effects from ornamental vegetation removal. Short-term, negligible to minor, adverse effects on wildlife during construction activities. Long-term, indirect, negligible, adverse effects could occur on threatened and endangered species from Edwards Aquifer withdrawals. Direct adverse effects on wetlands would occur. Approximately 0.115 acres of nonjurisdictional wetlands would be filled.	*ACC:* • Short-term, minor, adverse effects from construction activities. • Long-term, negligible, adverse effects from permanent loss of vegetation. *Installation Development:* • No effects on native vegetation or wildlife habitat were identified. No effects on threatened or endangered species were identified. • There are wetlands associated with a drainage ditch just east of the RH&T Complex project. No effects on wetlands were identified.

Resource Area	Past Actions	Existing Conditions	Proposed Action	Known Future Actions
Health and Safety	Lackland AFB has abided by Federal health and safety regulations.	Lackland AFB abides by Federal health and safety regulations.	There is a short-term increase in the risk to contractors during construction activities. Short-term, negligible, adverse and long-term beneficial effects would be expected from the removal of ACM and LBP in older buildings.	*ACC & Installation Development:* • Negligible health and safety effects were identified.
Utilities, Infrastructure, and Transportation	Water supply, sewer and wastewater, storm drainage, electrical, natural gas, heating and cooling, and communications systems; solid waste management protocols; and transportation networks have been well-developed on Lackland AFB and in the surrounding urban area.	Utilities and infrastructure systems are generally in good working condition, supporting the Lackland AFB population.	Short-term, negligible to minor, adverse effects on water supply, sanitary sewer and wastewater, storm drainage, electrical, solid waste, and transportation systems from construction activities. Long-term, beneficial effects on infrastructure systems would occur from upgrades and replacements. Long-term, minor, adverse effects on water supply, sanitary sewer and wastewater, electrical, natural gas, and transportation systems from increased installation population; however, it is anticipated that there is adequate capacity to support the population increase. Long-term, minor, adverse effects on the storm drainage system from increased impervious surfaces.	*ACC & Installation Development:* • Short-term, negligible, adverse effects on electricity and natural gas, potable water, solid waste management, wastewater, transportation, and storm water drainage systems would be expected as a result of construction activities. *ACC:* • Long-term, beneficial effects from replacing the central plant.

Resource Area	Past Actions	Existing Conditions	Proposed Action	Known Future Actions
Hazardous Wastes and Materials	Hazardous wastes and materials, ACM, LBP, PCBs, pesticides, ASTs and USTs, ERP sites, and MMRP sites occur at Lackland AFB as a result of its historic use as a military installation.	Hazardous wastes and materials, ACM, LBP, PCBs, pesticides, ASTs and USTs, ERP sites, and MMRP sites are managed in accordance with USAF and other applicable Federal regulations.	Short-term, negligible to minor, adverse effects from construction activities from use of or the potential to encounter hazardous materials, hazardous waste, ACM, LBP, and PCBs. Long-term, minor, beneficial effects from removal of ACM, LBP, and PCBs.	*ACC & Installation Development:* • Short-term, negligible effects during construction activities would be expected. Construction would require use of small quantities of hazardous materials. Demolition of older buildings could uncover ACM or LBP. ACC: • Short-term, minor, adverse effects from ERP and MMRP sites could occur.
Socioeconomics and Environmental Justice	Populations of San Antonio MSA, Bexar County, and Texas have grown substantially over the past 10 years.	The top employment industry for San Antonio MSA, Bexar County, and Texas is educational, health, and social services. The San Antonio MSA and Bexar County have higher percentages of Latino residents than the overall Texas average.	Short-term, minor to moderate, beneficial effects from construction expenditures. Long-term, negligible to minor, beneficial effects on local economy from increased population. No environmental justice effects were identified.	*ACC & Installation Development:* • Short-term, minor, beneficial effects from construction expenditures. • Negligible, long-term effects expected.
Cultural Resources	Lackland AFB became operational in the 1940s. Consequently, Lackland AFB has many historical resources.	There is 1 NRHP-eligible archaeological site and 1 site requiring investigation on Lackland Main Base. There are 6 NRHP-eligible buildings on Lackland Main Base.	There are no known cultural resources within the APE. No effects are anticipated.	*ACC & Installation Development:* • Negligible effects expected.

Cumulative effects as a result of the Site Configuration Alternative, Temporary Trailer Alternative 1, and the Temporary Trailer Alternative 2 would be generally the same as those described for the Proposed Action.

Noise. The noise environment on Lackland AFB would continue to be comparable to a noisy urban area. Short-term, minor, adverse, cumulative effects could occur during construction activities, particularly when construction activities are occurring at the same time and in the same area, such as the Proposed Action and the BMT Administrative Support and Military Training Instructor Training Center (see **Table 4-2**). The Proposed Action would have long-term, minor, adverse contributions to the cumulative noise environment by increasing the population and the number of motor vehicles operating at Lackland AFB and surrounding areas of San Antonio. No significant adverse cumulative effects are expected.

Air Quality. Air emissions associated with the Proposed Action and other projects would not be expected to result in violations of NAAQS or noticeably degrade ambient air quality. **Table 4-4** shows the construction-related emissions resulting from the Proposed Action, the ACC, and installation development activities; the year with the highest estimated emissions are shown. The Proposed Action would have long-term, minor, adverse, cumulative contributions to local and regional air emissions by increasing the population and the number of motor vehicles operating at Lackland AFB and surrounding areas of San Antonio. No significant adverse cumulative effects are expected.

Table 4-4. Estimated Air Emissions Resulting from the Proposed Action, ACC, and Installation Development Projects

Project (Year)	NO_x (tons)	VOC (tons)	CO (tons)	SO_2 (tons)	PM_{10} (tons)	$PM_{2.5}$ (tons)	CO_2 (metric tons)
Proposed Action (2011 to 2015) [a]	13.52	5.90	48.07	0.51	19.12	2.11	128.80
ACC (2014) [b]	28.867	2.247	12.586	0.858	54.258	5.122	3,147.556
Installation Development (2011) [c]	184.95	12.76	41.76	0.32	16.53	16.53	--

Notes and sources:

a. Refer to AIR QUALITY **Table 3-7**

b. LAFB 2010a

c. LAFB 2006a. Calculations for particular matter emissions were provided, so PM_{10} and $PM_{2.5}$ emissions would actually be lower than shown. CO_2 estimates were not calculated.

Land Use and Aesthetics. Land uses surrounding would be compatible to existing and foreseeable future land uses. No significant adverse cumulative effects are expected.

Geological Resources. Soils on Lackland AFB are intensely modified by previous development activities. Short-term, minor, adverse, cumulative effects on soil could occur during construction activities, particularly when construction activities are occurring at the same time and in the same area, such as the Proposed Action and the BMT Administrative Support and Military Training Instructor Training Center (see **Table 4-2**). BMPs would be used to minimize erosion and sedimentation. No significant adverse cumulative effects are expected.

Water Resources. Short-term, minor, adverse, cumulative effects on water resources could occur during construction activities, particularly when construction activities are occurring at the same time and in the same area, such as the Proposed Action and the BMT Administrative Support and Military Training

Instructor Training Center (see **Table 4-2**). BMPs would be used to minimize sediment-laden storm water from leaving the construction site and entering surface water bodies. No significant adverse cumulative effects are expected from construction activities.

Long-term, minor, adverse, cumulative effects on water resources would occur as a result of increased impervious surfaces. **Table 4-5** summarizes the change in impervious surfaces associated with each project. Cumulatively, impervious surfaces would increase by approximately 1.3 million ft^2, or 30 acres. This is an approximate 2 percent increase in impervious surfaces on Lackland Main Base.

Table 4-5. Estimated Change in Impervious Surfaces Resulting from the Proposed Action, ACC, and Installation Development Projects

Project	Change in Impervious Surfaces (ft^2)
Proposed Action [a]	+128,250
ACC [b]	+101,355
RH&T Complex (final phase) [c]	+475,238
BMT Administrative Support and Military Training Instructor Training Center [c]	+30,000
Military Working Dogs Campus Roadway and Training Surface [c]	+360,150
Air Force Information Warfare Center [c]	+205,000
Total	**+1,299,993**

Notes and sources:

a. Refer to **Section 2.1.1**

b. LAFB 2010a, see also **Table 4-1**

c. LAFB 2006a, see also **Table 4-2**

Negligible, cumulative effects on the Edwards Aquifer would be expected. The Edwards Aquifer is a finite source of water for residents in and around the San Antonio area, population and industry growth are carefully accounted for by the Texas Water Development Board, the San Antonio Water System, the Edwards Aquifer Authority, and county and city water boards. The Proposed Action would increase the population at Lackland AFB (4,801 people). The ACC would increase hospital patients (2,000 people annually). It is estimated that, based on current water use and mandated pumping limits, there is adequate potable water supply from the Edwards Aquifer to support an additional 25,610 people (LAFB 2006a); cumulatively, the increased population would not exceed the potable water pumping limits.

Biological Resources. Long-term, negligible, cumulative effects on vegetation would be expected. The Proposed Action and other installation development project would occur in previously developed areas, so disturbed vegetation would be primarily grass and ornamental landscaping. Short-term, negligible to minor, adverse, cumulative effects on wildlife could occur during construction activities, particularly when construction activities are occurring at the same time and in the same area, such as the Proposed Action and the BMT Administrative Support and Military Training Instructor Training Center (see **Table 4-2**). The Proposed Action would result in increased water withdrawals from the Edwards Aquifer as a result of the increased personnel and student population; however, it is not anticipated that increased withdrawals would contribute to any cumulative adverse effects on threatened and endangered Comal and San Marcos springs species. The Proposed Action and the RH&T Complex would also result in the removal of wetlands; negligible to minor, adverse, cumulative effects on wetlands would be

expected since these wetlands are nonjurisdictional. No significant adverse cumulative effects on biological resources are expected.

Health and Safety. Continued adherence to health and safety standards set forth by USEPA, OSHA, and USAF would minimize the potential for adverse effects on humans. No significant adverse cumulative effects are expected.

Utilities, Infrastructure, and Transportation. Localized service disruptions could result in short-term, minor, adverse, cumulative effects on all utility, infrastructure, and transportation systems, particularly when construction activities are occurring at the same time and in the same area, such as the Proposed Action and the BMT Administrative Support and Military Training Instructor Training Center (see **Table 4-2**).

Long-term, minor, beneficial, cumulative effects would be expected as utility, infrastructure, and transportation systems are upgraded with each project. However, long-term, minor, adverse, cumulative effects would be expected from increased demand on utility, infrastructure, and transportation systems from the increased installation population. The Proposed Action would increase the population at Lackland AFB (4,801 people). The ACC would increase hospital patients (2,000 people annually). It is anticipated that there is adequate capacity for all utility, infrastructure, and transportation systems to support the population increase, though some systems are likely to require localized upgrades. No significant adverse cumulative effects are expected.

Hazardous Materials and Wastes. Short-term, negligible, adverse, cumulative effects could occur during construction activities. Any hazardous materials, hazardous wastes, ACM, LBP, or PCBs encountered would be handled, transported, and disposed of in accordance with existing Lackland AFB management plans and Federal regulations. Long-term, minor, beneficial, cumulative effects would be expected following the removal and disposal of ACM, LBP, and PCBs in buildings by removing these sources of contamination from Lackland AFB. No significant adverse cumulative effects are expected.

Socioeconomics and Environmental Justice. Short-term economic expenditures associated with the Proposed Action and other installation development projects would cumulatively have beneficial socioeconomic effects in the San Antonio MSA. The Proposed Action would have a beneficial contribution to the long-term economy as a result of purchasing goods and services and payroll taxes. Given the context of the growing urban area of the San Antonio MSA, these beneficial effects would be negligible. No significant adverse cumulative effects expected.

Cultural Resources. No effects on cultural resources were identified for the Proposed Action, Ambulatory Care Center, or installation development projects. Therefore, no cumulative effects are expected.

4.3 Unavoidable Adverse Effects

Unavoidable adverse effects would result from implementation of the Proposed Action. None of these effects would be significant.

4.4 Compatibility of Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Environmental effects of the Proposed Action would occur entirely within the boundaries of Lackland AFB. The proposed ADP has been sited according to existing land use zones. Consequently,

construction activities would not be in conflict with installation land use policies or objectives. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated clear zones.

4.5 Relationship Between Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

Short-term uses of the biophysical components of the human environment include direct effects, usually related to construction activities, which occur over a period of less than 5 years. Long-term uses of the human environment include those effects that occur over a period of more than 5 years, including permanent resource loss.

This EA identifies potential short-term adverse effects on the natural environment as a result of construction activities. These potential adverse effects include noise emissions, air emissions, soil erosion, storm water runoff into surface water, and increased traffic. Redevelopment of the site for the proposed ADP would be expected to increase the long-term productivity of the site by removing old and outdated facilities and replacing them with modern and efficient facilities.

4.6 Irreversible and Irretrievable Commitment of Resources

An irreversible or irretrievable commitment of resources refers to effects on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and effects that such a loss will have on future generations. For example, if prime farmland is developed there would be a permanent loss of agricultural productivity.

Material Resources. Material resources irretrievably used for the Proposed Action include steel, concrete, and other building materials. Such materials are not in short supply and would not be expected to limit other unrelated construction activities. The irretrievable use of material resources would not be considered significant.

Energy Resources. Energy resources used for the Proposed Action would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel) and electricity. During construction, gasoline and diesel fuel would be used for the operation of construction vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant effects would be expected.

Landfill Space. The generation of construction and demolition debris and subsequent disposal of that debris in a landfill would be an irretrievable adverse impact. Construction contractors would be expected to recycle at least 40 percent of the debris that is generated. If a greater percentage is recycled, then irretrievable impacts on landfills would be reduced. There are numerous rubble landfills and construction and demolition processing facilities that could handle the waste generated. However, any waste that is generated by the Proposed Action that is disposed of in a landfill would be considered an irretrievable loss of that landfill space.

Human Resources. The use of human resources for construction is considered an irretrievable loss only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action represents employment opportunities, and is considered beneficial.

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APPENDIX A

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

Appendix A

Applicable Laws, Regulations, Policies, and Planning Criteria

When considering the affected environment, the various physical, biological, economic, and social environmental factors must be considered. In addition to the National Environmental Policy Act (NEPA), there are other environmental laws and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Noise

Federal, state, and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, requires compliance with state and local noise laws and ordinances.

The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The U.S. Army, through AR 200-1, *Environmental Protection and Enhancement*, implements Federal laws concerning environmental noise form U.S. Army activities. The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (AFI 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near USAF installations.

Land Use

The term "land use" refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on a USAF installation. In addition, land use guidelines established by the HUD and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use. The U.S. Army uses the 12 land use types for installation land use planning, and these land use types roughly parallel those employed by municipalities in the civilian sector.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National

Ambient Air Quality Standards (NAAQS) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance and leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction and long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could also be subject to USEPA's Prevention of Significant Deterioration (PSD) regulations. These regulations apply to new major stationary sources and modifications to such sources. Although few agency facilities will actually emit pollutants, increases in pollution can result from a change in traffic patterns or volume. Section 118 of the CAA waives Federal immunity from complying with the CAA and states all Federal agencies will comply with all Federal- and state-approved requirements.

The General Conformity Rule requires that any Federal action meet the requirements of a State Implementation Plan (SIP) or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered "regionally significant" or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 Code of Federal Regulations (CFR) 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR's total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

On May 13, 2010, the USEPA issued the Greenhouse Gas (GHG) Tailoring Rule that sets thresholds for GHG emissions from large stationary sources. The new GHG emissions thresholds for large stationary sources define when permits under the New Source Review Prevention of PSD and Title V Operating Permit programs are required for new and existing industrial facilities. Beginning January 2, 2011, large industrial facilities that have CAA permits for non-GHG emissions must also include GHGs in these permits. Beginning July 1, 2011, all new construction or renovations that increase GHG emissions by 75,000 tons of carbon dioxide or equivalent per year or more will be required to obtain construction permits for GHG emissions. Operating permits will be needed by all sources that emit GHGs above 75,000 tons of carbon dioxide or equivalent per year beginning in July 2011.

Health and Safety

Human health and safety relates to workers' health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration

(OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program,* implements Air Force Policy Directive (AFPD) 91-3, *Occupational Safety and Health,* by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements.

AFI 91-202, *USAF Mishap Prevention Program*, implements AFPD 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information.

U.S. Army regulations in AR 385-10, *Army Safety Program*, prescribe policy, responsibilities, and procedures to protect and preserve U.S. Army personnel and property from accidental loss or injury. AR 40-5, *Preventive Medicine*, provides for the promotion of health and the prevention of disease and injury.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 23, 1997), directs Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Federal agencies must also ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

Geology and Soil Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act (FPPA) to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland is described as soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective rooting zones, and that are not subject to periodic flooding. Under the FPPA, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the FPPA include Federal permitting and licensing, projects on land already in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires USEPA to establish water quality standards for specified contaminants in surface waters and forbids the discharge of pollutants from a point source into navigable waters without a National Pollutant Discharge Elimination System (NPDES) permit. NPDES permits are issued by USEPA or the appropriate state if it has assumed responsibility. Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill material into waters of the United States. Section 404 permits are issued by the U.S. Army Corps of Engineers (USACE). Waters of the United States include interstate and intrastate lakes, rivers, streams, and wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. The objective of the CWA is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. Each agency should

consider the impact on water quality from actions such as the discharge of dredge or fill material into U.S. waters from construction, or the discharge of pollutants as a result of facility occupation.

Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a waterbody can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment and to develop an implementation plan that will allocate reductions to each source to meet the state standards. The TMDL program is currently the Nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically calls for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

The USEPA issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls. In addition, construction site owners and operators that disturb 1 or more acres of land are required to use best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Construction site owners are encouraged to phase ground-disturbing activities to limit the applicability of the monitoring requirements and the turbidity limitation. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

The Coastal Zone Management Act (CZMA) of 1972 declares a national policy to preserve, protect, and develop, and, where possible, restore or enhance the resources of the Nation's coastal zone. The coastal zone refers to the coastal waters and the adjacent shorelines, including islands, transitional and intertidal areas, salt marshes, wetlands, and beaches, and includes the Great Lakes. The CZMA encourages states to exercise their full authority over the coastal zone through the development of land and water use programs in cooperation with Federal and local governments. States may apply for grants to help develop and implement management programs to achieve wise use of the land and water resources of the coastal zone. Under Section 307, Federal agency activities that affect any land or water use or natural resource of a coastal zone must be consistent to the maximum extent practicable with the enforceable policies of the state's coastal management program.

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants; and turbidity. MCLGs are maximum concentrations below which no negative human

health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

The Wild and Scenic Rivers Act of 1968 provides for a wild and scenic river system by recognizing the remarkable values of specific rivers of the Nation. These selected rivers and their immediate environment are preserved in a free-flowing condition, without dams or other construction. The policy not only protects the water quality of the selected rivers but also provides for the enjoyment of present and future generations. Any river in a free-flowing condition is eligible for inclusion, and can be authorized as such by an Act of Congress, an act of state legislature, or by the Secretary of the Interior upon the recommendation of the governor of the state(s) through which the river flows.

EO 11988, *Floodplain Management* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in floodplains. An agency may locate a facility in a floodplain if the head of the agency finds there is no practicable alternative. If it is found there is no practicable alternative, the agency must minimize potential harm to the floodplain, and circulate a notice explaining why the action is to be located in the floodplain prior to taking action. Finally, new construction in a floodplain must apply accepted floodproofing and flood protection to include elevating structures above the base flood level rather than filling in land.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act (EISA). The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

EO 13514 also requires Federal agencies to improve water efficiency and management by reducing potable water consumption intensity by 2 percent annually, or by 26 percent, by Fiscal Year (FY) 2020, relative to a FY 2007 baseline. Furthermore, Federal agencies must also reduce agency industrial, landscaping, and agricultural water consumption by 2 percent annually, or 20 percent, by FY 2020, relative to a FY 2010 baseline.

EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes* (July 19, 2010), establishes a national policy to ensure the protection, maintenance, and restoration of the health of ocean, coastal, and Great Lakes ecosystems and resources; enhance the sustainability of ocean and coastal economies; preserve our maritime heritage; support sustainable uses and access; provide for adaptive management to enhance our understanding of and capacity to respond to climate change and ocean acidification; and coordinate with our national security and foreign policy interests.

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to

jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

The Migratory Bird Treaty Act (MBTA) of 1918, as amended, implements treaties and conventions between the United States, Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless otherwise permitted by regulations, the MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess; offer to or sell, barter, purchase, or deliver; or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. The MBTA also makes it unlawful to ship, transport, or carry from one state, territory, or district to another; or through a foreign country, any bird, part, nest, or egg that was captured, killed, taken, shipped, transported, or carried contrary to the laws from where it was obtained; and import from Canada any bird, part, nest, or egg obtained contrary to the laws of the province from which it was obtained. The U.S. Department of the Interior has authority to arrest, with or without a warrant, a person violating the MBTA.

The Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), as amended, Public Law (P.L.) 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. In November 1997, the Sikes Act was amended via the Sikes Act Improvement Amendment (P.L. 105-85, Division B, Title XXIX) to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. INRMPs must be reviewed by the USFWS and applicable states every 5 years. The National Defense Authorization Act of 2004 modified Section 4(a) (3) of the ESA to preclude the designation of critical habitat on DOD lands that are subject to an INRMP, if the Secretary of the Interior determines in writing that such a plan provides a benefit to the species for which critical habitat is proposed for designation.

EO 11514, *Protection and Enhancement of Environmental Quality* (March 5, 1970), states that the President, with assistance from the Council on Environmental Quality (CEQ), will lead a national effort to provide leadership in protecting and enhancing the environment for the purpose of sustaining and enriching human life. Federal agencies are directed to meet national environmental goals through their policies, programs, and plans. Agencies should also continually monitor and evaluate their activities to protect and enhance the quality of the environment. Consistent with NEPA, agencies are directed to share information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977), directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other

pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

EO 13186, *Conservation of Migratory Birds* (January 10, 2001), creates a more comprehensive strategy for the conservation of migratory birds by the Federal government. EO 13186 provides a specific framework for the Federal government's compliance with its treaty obligations to Canada, Mexico, Russia, and Japan. EO 13186 provides broad guidelines on conservation responsibilities and requires the development of more detailed guidance in a Memorandum of Understanding (MOU). EO 13186 will be coordinated and implemented by the USFWS. The MOU will outline how Federal agencies will promote conservation of migratory birds. EO 13186 requires the support of various conservation planning efforts already in progress; incorporation of bird conservation considerations into agency planning, including NEPA analyses; and reporting annually on the level of take of migratory birds.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). The ACHP advises the President, Congress, and Federal agencies on historic preservation issues. Section 106 of the NHPA directs Federal agencies to take into account effects of their undertakings (actions and authorizations) on properties included in or eligible for the NRHP. Section 110 sets inventory, nomination, protection, and preservation responsibilities for federally owned cultural properties. Section 106 of the act is implemented by regulations of the ACHP, 36 CFR Part 800. Agencies should coordinate studies and documents prepared under Section 106 with NEPA where appropriate. However, NEPA and NHPA are separate statutes and compliance with one does not constitute compliance with the other. For example, actions which qualify for a categorical exclusion under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 establishes rights of American Indian tribes to claim ownership of certain "cultural items," defined as Native American human remains, funerary objects, sacred objects, and objects of cultural patrimony, held or controlled by Federal agencies. Cultural items discovered on Federal or tribal lands are, in order of primacy, the property of lineal descendants, if these can be determined, and then the tribe owning the land where the items were discovered or the tribe with the closest cultural affiliation with the items. Discoveries of cultural items on Federal or tribal land must be reported to the appropriate American Indian tribe and the Federal agency with jurisdiction over the land. If the discovery is made as a result of a land use, activity in the area must stop and the items must be protected pending the outcome of consultation with the affiliated tribe.

EO 11593, *Protection and Enhancement of the Cultural Environment* (May 13, 1971), directs the Federal government to provide leadership in the preservation, restoration, and maintenance of the historic and cultural environment. Federal agencies are required to locate and evaluate all Federal sites under their jurisdiction or control which might qualify for listing on the NRHP. Agencies must allow the ACHP to comment on the alteration, demolition, sale, or transfer of property which is likely to meet the criteria for listing as determined by the Secretary of the Interior in consultation with the SHPO. Agencies must also initiate procedures to maintain federally owned sites listed on the NRHP.

EO 13007, *Indian Sacred Sites* (May 24, 1996), provides that agencies managing Federal lands, to the extent practicable, permitted by law, and not inconsistent with agency functions, shall accommodate American Indian religious practitioners' access to and ceremonial use of American Indian sacred sites, shall avoid adversely affecting the physical integrity of such sites, and shall maintain the confidentiality of such sites. Federal agencies are responsible for informing tribes of proposed actions that could restrict future access to or ceremonial use of, or adversely affect the physical integrity of, sacred sites.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of Federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

EO 13287, *Preserve America* (March 3, 2003), orders Federal agencies to take a leadership role in protection, enhancement, and contemporary use of historic properties owned by the Federal government, and promote intergovernmental cooperation and partnerships for preservation and use of historic properties. EO 13287 established new accountability for agencies with respect to inventories and stewardship.

Socioeconomics and Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), directs Federal agencies to make achieving environmental justice part of their mission. Agencies must identify and address the adverse human health or environmental effects that its activities have on minority and low-income populations, and develop agencywide environmental justice strategies. The strategy must list "programs, policies, planning and public participation processes, enforcement, and/or rulemakings related to human health or the environment that should be revised to promote enforcement of all health and environmental statutes in areas with minority populations and low-income populations, ensure greater public participation, improve research and data collection relating to the health of and environment of minority populations and low-income populations, and identify

differential patterns of consumption of natural resources among minority populations and low-income populations." A copy of the strategy and progress reports must be provided to the Federal Working Group on Environmental Justice. Responsibility for compliance with EO 12898 is with each Federal agency.

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters. Section 120(h) of CERCLA requires Federal agencies to notify prospective buyers of contaminated Federal properties about the type, quantity, and location of hazardous substances that would be present.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes; redesigning products; substituting raw materials; and making improvements in management techniques, training, and inventory control. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]), sets a goal for all Federal agencies to promote environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at their facilities. Additionally, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decisionmaking processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

The Resource Conservation and Recovery Act (RCRA) of 1976 is an amendment to the Solid Waste Disposal Act. RCRA authorizes USEPA to provide for "cradle-to-grave" management of hazardous waste and sets a framework for the management of nonhazardous municipal solid waste. Under RCRA, hazardous waste is controlled from generation to disposal through tracking and permitting systems, and restrictions and controls on the placement of waste on or into the land. Under RCRA, a waste is defined as hazardous if it is ignitable, corrosive, reactive, toxic, or listed by USEPA as being hazardous. With the Hazardous and Solid Waste Amendments (HSWA) of 1984, Congress targeted stricter standards for waste disposal and encouraged pollution prevention by prohibiting the land disposal of particular wastes. The HSWA strengthens control of both hazardous and nonhazardous waste and emphasizes the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. If a Federal agency acquires a contaminated site, it can be held liable for cleanup as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim

the "innocent purchaser" defense under CERCLA. According to Title 42 United States Code (U.S.C.) 9601(35), the current owner/operator must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated biphenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and could cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the United States should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs Federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

Energy

The Energy Policy Act (EPAct) of 2005, P.L. 109-58, amended portions of the National Energy Conservation Policy Act and established energy management goals for Federal facilities and fleets. Section 109 of EPAct directs that new Federal buildings (commercial or residential) be designed 30 percent below American Society of Heating, Refrigerating, and Air-Conditioning Engineers standards or the International Energy Code. Section 109 also includes the application of sustainable design principles for new buildings and requires Federal agencies to identify new buildings in their budget requests that meet or exceed the standards. Section 203 of EPAct requires that all Federal agencies' renewable electricity consumption meet or exceed 3 percent from FY 2007 through FY 2009, with increases to at least 5 percent in FY 2010 through FY 2012 and 7.5 percent in FY 2013 and thereafter. Section 203 also establishes a double credit bonus for Federal agencies if renewable electricity is produced onsite at a Federal facility, on Federal lands, or on Native American lands. Section 204 of EPAct establishes a photovoltaic energy commercialization program for Federal buildings.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (dated October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of "green" technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

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APPENDIX B

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING/PUBLIC INVOLVEMENT

IICEP Distribution List (same for DOPAA and Draft EA)

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Texas Commission on Environmental Quality
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Mr. F. Lawrence Oaks
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President
Mescalero Apache and Affiliated Tribes
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Wichita and Affiliated Tribes
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President
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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Lisa P. Jackson, Administrator
USEPA Region 6
1445 Ross Avenue, Suite 1200
Dallas, Texas 75202

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Ms. Jackson

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation in the NEPA process by reviewing the attached DOPAA. Also, we solicit your comments concerning the DOPAA and any potential environmental consequences that might concern you. Please provide written comments or information at your earliest convenience but no later than 30 days from the date of this letter. We have also attached a listing of federal, state, and local agencies that have been contacted. If there are additional agencies that you feel should review and comment on the proposed activities, please include them in your distribution of this letter and the attachments.

Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
1. DOPAA for an EA Addressing the DLIELC and IAAFA Area Development Plan at Lackland AFB Texas.
2. Distribution List

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. David C. Frederick
Field Supervisor
U.S. Fish and Wildlife Service
10711 Burnet Road, Suite 200
Austin, Texas 78758

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Frederick

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Wayne Lea
U.S. Army Corps of Engineers
Regulatory Branch, Permit Section
Attn: CESWF-PER-R
P.O. Box 17300
Fort Worth, Texas 78612-0300

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Lea

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Sincerely

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AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Richard A. Hyde, Deputy Director
Office of Permitting and Registration
Texas Commission on Environmental Quality
MC 122
P.O. Box 13087
Austin, Texas 78711-3087

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Hyde

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Sincerely

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AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. F. Lawrence Oaks
State Historic Preservation Office
Texas Historical Commission
P.O. Box 12276
Austin, Texas 78111-2276

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Oaks

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

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AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
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802 CES/CEAO
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Ms. Denise S. Francis
TRACs-Single Point of Contact
P.O. Box 12428
Room 441-A
Austin, Texas 78711-2428

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Ms. Francis

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Kyle Mills
Federal Emergency Management Agency
800 North Loop 288
Denton, Texas 76209

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Ms. Mills

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation in the NEPA process by reviewing the attached DOPAA. Also, we solicit your comments concerning the DOPAA and any potential environmental consequences that might concern you. Please provide written comments or information at your earliest convenience but no later than 30 days from the date of this letter. We have also attached a listing of federal, state, and local agencies that have been contacted. If there are additional agencies that you feel should review and comment on the proposed activities, please include them in your distribution of this letter and the attachments.

Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
1. DOPAA for an EA Addressing the DLIELC and IAAFA Area Development Plan at Lackland AFB Texas.
2. Distribution List

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Ms. Tiffany Pickens
Alamo Area Council of Governments
Community Relations Coordinator
8700 Tesoro Drive, Suite 700
San Antonio, Texas 78217

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Ms. Pickens

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
1. DOPAA for an EA Addressing the DLIELC and IAAFA Area Development Plan at Lackland AFB Texas.
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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Dr. David Sager
Texas Parks and Wildlife Department
Chief, Ecosystem/Habitat Assessment Branch
4200 Smith School Road
Austin, Texas 78744-3291

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Dr. Sager

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

San Antonio Public Library
Attn: Government Documents, 2nd Floor
600 Soledad Street
San Antonio, Texas 78205

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Sir or Madam

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Wallace Coffee
Chairman
Comanche Tribe
PO Box 908
Lawton, Oklahoma 73502

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Coffee

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
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DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Mark Chino
President
Mescalero Apache and Affiliated Tribes
PO Box 227
Mescalero, New Mexico 88340

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Chino

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

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2. Distribution List

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Gary McAdams
President
Wichita and Affiliated Tribes
PO Box 729
Andarko, Oklahoma 73005

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. McAdams

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
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2. Distribution List

DEPARTMENT OF THE AIR FORCE
AIR EDUCATION AND TRAINING COMMAND

Edward L. Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB TX 78236-5645

Mr. Donald Patterson
President
Tonkawa Tribe
1 Rush Buffalo Road
Tonkawa, Oklahoma 74653

SUBJECT: Environmental Assessment (EA) for Review and Comment

Dear Mr. Patterson

The 802d Civil Engineer Squadron (CES), Defense Language Institute English Language Center (DLIELC), and the Inter-American Air Forces Academy (IAAFA) at Lackland Air Force Base (AFB) TX are preparing an *Environmental Assessment Addressing the DLIELC and IAAFA Area Development Plan at Lackland Air Force Base, Texas*. The environmental impact analysis process for this EA is being conducted by the Air Education and Training Command (AETC), 802d CES, DLIELC, and IAAFA in accordance with Council on Environmental Quality regulations pursuant to the requirements of the National Environmental Policy Act (NEPA) of 1969. The Description of the Proposed Action and Alternatives (DOPAA) is at Attachment 1.

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Please address your questions or comments on the DOPAA by mail to Mr. Andrew Riley, P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236-5645.

Sincerely

EDWARD L. ROBERSON, P.E.

Attachments:
1. DOPAA for an EA Addressing the DLIELC and IAAFA Area Development Plan at Lackland AFB Texas.
2. Distribution List

IICEP Comments Received-
Texas Commission on Environmental Quality

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

June 2, 2011

Mr. Edward L. Roberson, PE
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB, TX 78236-5645

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2011-205, City of Lackland AFB, Bexar County – Environmental Assessment (EA) for Review and Comment

Dear Mr. Roberson:

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

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

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

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

Any debris or waste disposal should be at an appropriately authorized disposal facility.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Tangela Niemann at (512) 239-3786 or tangela.niemann@tceq.texas.gov.

Sincerely,

Jim Harrison, Director
Intergovernmental Relations Division

IICEP Comments Received-
Texas Historical Commission

TEXAS HISTORICAL COMMISSION
real places telling real stories

June 7, 2011

Mr. Andrew Riley
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236

Re: Environment Assessment (EA) Defense Language Institute English Language Center & Inter-American Air Forces Academy Area Development Plan at Lackland AFB, TX

Dear Mr. Riley:

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

Our staff, led by William McWhorter, has completed a review of the above referenced submission. There appears to be a discrepancy between your report's cover letter and the body of the report, stating that this EA is a draft in progress, while the report's cover page refers to it as the Final EA.

After reviewing the documentation in your correspondence the THC was unable to locate any mention of cultural resources that might be located within the project area and potentially affected by this proposed undertaking. If any eligible or potentially eligible structures are impacted by this proposed undertaking please send a follow-up report to the THC for review. In addition, since this report covers a proposed demolition and construction project that will take place over the next 20 years, the THC requests that the U.S. Air Force revisit the eligibility criteria of any structures of historic age that might be affect by demolition or renovation in the project area.

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

Sincerely,

William Mcwhorter

for: Mark Wolfe
Executive Director
State Historic Preservation Office

IICEP Comments Received-
Federal Emergency Management Agency

U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

PUBLIC NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD REQUEST THAT THE LOCAL FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT.

Nefi Garza P.E., CFM
Assist Director of Public Work/ FPA
P. O. Box 839966
San Antonio, TX 78283
nefi.garza@sanantonio.gov
(210) 207-7785

REVIEWER:

Mayra G. Diaz
Floodplain Management and Insurance Branch
Mitigation Division
(940) 898-5541

DATE: June 14, 2011

IICEP Comments Received-
U.S. Army Corps of Engineers

REC'D ON
12 JUL 11 QR

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P.O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO ATTENTION OF

May 26, 2011

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2011-00263, DLIELC and IAAFA Area Development

Mr. Edward Roberson, P.E.
Chief, Asset Optimization
802 CES/CEAO
1555 Gott Street
Lackland AFB, TX 78236-5645

Dear Mr. Roberson,

Thank you for your letter received May 23, 2011 concerning a proposal by the Department of the Air Force to develop property to include a new facility with an Academic Building, Outdoor Sports Complex, International Ministries Facility, and an International Student Activity Center located within the western portion of Lackland AFB in Bexar County, Texas. This project has been assigned Project Number SWF-2011-00263. Please include this number in all future correspondence concerning this project.

Mr. Frederick Land has been assigned as the regulatory project manager for your request and will be evaluating it as expeditiously as possible.

You may be contacted for additional information about your request. For your information, please reference the Fort Worth District Regulatory Branch homepage at http://www.swf.usace.army.mil/regulatory and particularly guidance on submittals at http://www.swf.usace.army.mil/pubdata/environ/regulatory/introduction/submital.pdf, and mitigation at http://www.usace.army.mil/CECW/Pages/final_cmr.aspx that may help you supplement your current request or prepare future requests.

If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Mr. Frederick Land at the address above or telephone (817)886-1729 and refer to your assigned project number. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

Please help the Regulatory Program improve its service by completing the survey on the following website: http://per2.nwp.usace.army.mil/survey.html.

Stephen L. Brooks
Chief, Regulatory Branch

TEXAS HISTORICAL COMMISSION
real places telling real stories

October 28, 2011

Mr. Andrew Riley
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236-5645

Re: Second consultation regarding Environment Assessment (EA) Defense Language Institute English Language Center & Inter-American Air Forces Academy Area Development Plan at Lackland AFB, TX

Dear Mr. Riley:

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

Our staff, led by William McWhorter, has completed a review of the above referenced submission. Regarding this report's findings, outlined under **Cultural Resources, Section 3.11.3.2,** page 3-79, for the Proposed Action, the THC concurs with the findings of **No Historic Properties Affected**.

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

Sincerely,

for: Mark Wolfe
Executive Director
State Historic Preservation Office

Comments on Draft EA –
Texas Commission on Environmental Quality

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

October 4, 2011

Mr. Andrew Riley, P.E.
Department of the Air Force
802 CES/CEAOP
1555 Gott Street
Lackland AFB, TX 78236-5645

Re: TCEQ Grant and Texas Review and Comment System (TRACS) #2011-382, City of Lackland Air Force Base, Bexar County - Draft Environmental Assessment on (DLIELC-IAAFA Area Development Plan - for Review and Comment

Dear Mr. Riley:

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

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

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

We are in support of the project. The environmental assessment addresses issues related to surface and groundwater quality.

Any debris or waste disposal should be at an appropriately authorized disposal facility.

Thank you for the opportunity to review this project. If you have any questions, please contact Ms. Janie Roman at (512)239-0604 or Janie.roman@tceq.texas.gov.

Sincerely,

Jim Harrison, Director
Intergovernmental Relations Division

Comments on Draft EA –
Federal Emergency Management Agency

U. S. Department of Homeland Security
FEMA Region 6
800 North Loop 288
Denton, TX 76209-3698

FEMA

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VI
MITIGATION DIVISION

PUBLIC NOTICE REVIEW/ENVIRONMENTAL CONSULTATION

☐ We have no comments to offer. ☒ We offer the following comments:

WE WOULD REQUEST THAT THE COMMUNITY FLOODPLAIN ADMINISTRATOR BE CONTACTED FOR THE REVIEW AND POSSIBLE PERMIT REQUIREMENTS FOR THIS PROJECT.
We would request Project to be compliant with EO 11988 & 11990.

REVIEWER:

Mayra G. Diaz
Floodplain Management and Insurance Branch
940-898-5541

DATE: October 5, 2011

Comments on Draft EA – Alamo Area Council of Governments

AACOG
Alamo Area Council Of Governments

October 21, 2011

Mr. Andrew Riley, P.E.
NEPA/EIAP Program Manager
802 CES/CEAOP
1555 Gott Street
Lackland Air Force Base Texas 78236

RE: AACOG Local Review of the Environmental Assessment (EA) for the Defense Language Institute and Inter-American Air Force Academy Area Development Plan

Dear Mr. Riley,

This letter is to advise you that the Alamo Area Council of Governments' (AACOG) Economic Development and Environmental Review Committee (EDERC) after hearing your presentation on October 18, 2011 reference the EA mentioned above did approve a recommendation of a Consensus to Proceed on this project.

Thank you for taking the time to make a presentation to this committee and for your contribution to AACOG and its regional members.

Should you have any questions, please contact me directly.

Sincerely,

Joe Ramos
Senior Director of Regional Services
210-362-5212

CC: Edward Roberson

8700 Tesoro, Suite 700 • San Antonio, Texas • 78217 • (210) 362-5200 • Fax: (210) 225-5937 • Web site: www.aacog.com • E-mail: mail@aacog.com

CITY OF SAN ANTONIO

P. O. BOX 839966
SAN ANTONIO TEXAS 78283-3966

December 23, 2011

Andrew Riley, P.E.
NEPA/EIAP Program Manager
802 CES/CEAOP
Lackland AFB TX

Re: Draft Environmental Assessment for Defense Language Institute English Language Center & Inter-American Air Forces Academy Area Development Plan – COSA Review & Comments

Dear Mr. Riley,

Per your request, the City of San Antonio, Public Works and Capital Improvements Management Services Departments has reviewed the draft Environmental Assessment (EA) for the referenced project. It is our understanding that the Federal Emergency Management Administration (FEMA) requested that the document be forwarded to the Local Floodplain Administrator for review. Considering this information, the City only reviewed sections of the document applicable to water quality.

The City reviewed the Lackland Air Force Base Environmental Assessment (EA) dated October 2011, specifically the Water Resources section of the document. As part of this evaluation, the EMD was also given the Wetland Survey Report, which was provided by your office. The wetland survey appears to have been conducted by the U.S. Army Corps of Engineers (USACE). The USACE is the nation's authority for making determinations regarding the jurisdictional status of water features. Based on this information, the USACE has determined that the M12 drainage is non-jurisdictional. The EA accurately reflects the USACE's determination.

Based on our review, we concur with the USACE's findings and conclusions. Should you have any questions regarding this letter, please contact me 210-207-1450 or john.cantu@sanantonio.gov.

Sincerely,

John Cantu, E.I.T.
Environmental Manager
Capital Improvements Management Services Dept.

cc: Nefi Garza, P.E., Public Works, Assistant Director

Draft EA Notice of Availability

PUBLIC NOTICE

Notice of Availability

ENVIRONMENTAL ASSESSMENT ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN (ADP) AT, LACKLAND AIR FORCE BASE, TEXAS

The U.S. Air Force (USAF), Lackland Air Force Base (AFB), Texas, proposes to implement the ADP for the DLIELC and IAAFA academic campus to accommodate the projected growth of both organizations. Implementing the ADP would include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative population. The purpose of the Environmental Assessment (EA) is to identify the potential for significant environmental impacts. In accordance with the National Environmental Policy Act, the USAF has prepared a Draft EA and is now making this environmental documentation available to the public for review.

The review period for the Draft EA is 30 days, commencing on the date of this notice. The Draft EA is available for review at the San Antonio Central Library, 600 Soledad Street, San Antonio, Texas 78205. Copies can also be requested by mail from Mr. Andrew Riley P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236. Lackland AFB representatives will brief the Draft EA to the Alamo Area Council of Governments (AACOG) Committee on Economic Development and Environmental Review on Tuesday, October 18, 2011 at 1:30 p.m.

HDR | ONE COMPANY *Many Solutions*

30 September 2011

San Antonio Central Library
600 Soledad Street
San Antonio, Texas 78205

Subject: Notice of Availability. Draft Environmental Assessment Addressing Installation Improvements And Maintenance At Lackland Air Force Base, Texas

The public notice of availability shown below will be published in San Antonio Express Newpaper. Please place the enclosed copy of the Draft Environmental Assessment either on reserve or in the reference section of your library. Members of the public have been invited to review the document at your library. The document should not leave the library.

PUBLIC NOTICE

Notice of Availability

ENVIRONMENTAL ASSESSMENT ADDRESSING THE DEFENSE LANGUAGE INSTITUTE ENGLISH LANGUAGE CENTER (DLIELC) AND INTER-AMERICAN AIR FORCES ACADEMY (IAAFA) AREA DEVELOPMENT PLAN (ADP) AT, LACKLAND AIR FORCE BASE, TEXAS

The U.S. Air Force (USAF), Lackland Air Force Base (AFB), Texas, proposes to implement the ADP for the DLIELC and IAAFA academic campus to accommodate the projected growth of both organizations. Implementing the ADP would include the construction of new facilities and infrastructure, facility demolition, the installation of temporary modular trailers, and an increase in student and administrative population. The purpose of the Environmental Assessment (EA) is to identify the potential for significant environmental impacts. In accordance with the National Environmental Policy Act, the USAF has prepared a Draft EA and is now making this environmental documentation available to the public for review.

The review period for the Draft EA is 30 days, commencing on the date of this notice. The Draft EA is available for review at the San Antonio Central Library, 600 Soledad Street, San Antonio, Texas 78205. Copies can also be requested by mail from Mr. Andrew Riley P.E., 802 CES/CEAOP, 1555 Gott Street, Lackland AFB, Texas 78236. Lackland AFB representatives will brief the Draft EA to the Alamo Area Council of Governments (AACOG) Committee on Economic Development and Environmental Review on Tuesday, October 18, 2011 at 1:30 p.m.

Should you have any questions or need any further information, please contact me at (830) 980-4702 ext. 108.

Sincerely,

HDR, Inc.

Stephen Pyle

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APPENDIX C

PROJECT SITE PHOTOGRAPHS

C1. DLIELC Main Building Entrance Area from Parking Lot

C2. DLIELC Conference Center from Parking Lot

C3. DLIELC Typical Interior Hallway, Main Building

C4. DLIELC Representative Classroom

C5. DLIELC Coursebook Production, Storage, Distribution, Main Building

C6. DLIELC Loading Dock Tractor Trailer Used for Extra Storage Space

C7. DLIELC Typical Campus Area

C8. DLIELC Representative Dormitories

C9. IAAFA Dormitories

C10. IAAFA Representative Modified Korean War Era Buildings

C11. IAAFA Classroom Building

C12. Drainage Ditch Wetland Running Along West Side of Proposed ADP

C13. Drainage Ditch with Wetland Running Along West Side of ADP

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APPENDIX D

AIR EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year for Proposed Action (Phase 1 - Current, Annual).
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the San Antonio Metropolitan Statistical Area Region Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 1 - Current, Annual)

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
Construction Combustion	8.649	1.016	3.642	0.454	0.578	0.561	995.009
Construction Fugitive Dust	-	-	-	-	20.405	1.473	-
Construction Commuter	4.940	4.918	44.460	0.0580	0.468	0.295	5,895.648
TOTAL	***13.589***	***5.934***	***48.103***	***0.512***	***21.451***	***2.328***	***6,890.657***

Note: Total CY01 $PM_{10}/_{2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***6,249.826***	***metric tons***	
State of Texas' CO_2 emissions =	***623,000***	***metric tons***	*(DOE/EIA 2008)*
Percent of Texas' CO_2 emissions =	***1.00318%***	***metric tons***	

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2008. State Carbon Dioxide Emissions Summary for the State of Texas. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 22 April 2011.

Since future year budgets were not readily available, actual 2002 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

San Antonio/Metropolitan Statistical Area

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2002	81,631	73,199	451,770	38,175	109,981	15,737

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 01 August 2011.

Air Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 1 - Current, Annual)
Determination Significance (Significance Threshold = 10% of regional)

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	81,631	73,199	451,770	38,175	109,981	15,737
Emissions	13.59	5.93	48.10	0.51	21.45	2.33
% of Regional	**0.017%**	**0.0081%**	**0.0106%**	**0.0013%**	**0.020%**	**0.015%**

Combustion Emissions - Proposed Action (Phase 1 - Current, Annual)

Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, PM_{10}, and CO_2 due to Construction

General Construction Activities	Area Disturbed (ft^2)*	Total Area Disturbed	
Construct DLIELC Academic Center Renovation	6,000 ft^2	30,000 ft^2	
Construct DLIELC Logistics Center	8,000 ft^2	40,000 ft^2	
Construct Temporary Classroom and Administrative Facility	10,000 ft^2	50,000 ft^2	
Construct Renovate International Student Ministries Facility	7,954 ft^2	39,769 ft^2	
Construct Thermal Energy Storage System Facility (2)	40,000 ft^2	200,000 ft^2	Assummed 100,000 ft each.
Construct Visiting Quarters	42,000 ft^2	210,000 ft^2	
Construct Visiting Quarters	42,000 ft^2	210,000 ft^2	
Construct Visiting Quarters	42,000 ft^2	210,000 ft^2	
Renovate AMIGO Inn Renovation	3,472 ft^2	17,360 ft^2	
Construct Dining Hall	9,945 ft^2	49,727 ft^2	
Construct Airman's Gate - Guard Shack and Visitors Center	7,000 ft^2	35,000 ft^2	
Construct 318 TRS Operations Flight Training Center	10,000 ft^2	50,000 ft^2	
Construct Academic (Classrooms & Admin Support) Temporary Facility:	6,400 ft^2	32,000 ft^2	
Construct Dining Temporary Facility Foundation	5,400 ft^2	27,000 ft^2	
Construct Global Ministry & Worship Temporary Facility Foundation	8,800 ft^2	44,000 ft^2	
Construct Airman's Gate Paving	48,499 ft^2	242,496 ft^2	
Construct DLIELC Academic Center Parking Addition	2,999 ft^2	14,994 ft^2	
Construct DLIELC Academic Center Sidewalks	2,999 ft^2	14,994 ft^2	
Construct DLIELC Logistics Center Parking and Circulation	33,750 ft^2	168,750 ft^2	
Construct DLIELC Logistics Center Sidewalks	1,899 ft^2	9,495 ft^2	
Construct Visiting Quarters Parking and Circulation	900 ft^2	4,500 ft^2	
Construct Visiting Quarters Sidewalks	22,549 ft^2	112,743 ft^2	
Construct Maintenance Facilities/Storage Yard	7,499 ft^2	37,494 ft^2	
Construct 318 TRS Operations Flight Training Center Sidewalks	10,000 ft^2	50,000 ft^2	
Construct Academic (Classrooms & Admin Support) Temporary Facility Pave	17,000 ft^2	85,000 ft^2	
Construct Academic (Classrooms & Admin Support) Temporary Facility Tren	1,800 ft^2	9,000 ft^2	3000 LF, Assumed 3 ft wide trench
Construct Dining Temporary Facility Trenching	1,200 ft^2	6,000 ft^2	2000 LF, Assumed 3 ft wide trench
Construct Global Ministry & Worship Temporary Facility Impervious Paveme	2,400 ft^2	12,000 ft^2	
Construct Global Ministry & Worship Temporary Facility Trenching	3,000 ft^2	15,000 ft^2	5000 LF, Assumed 3 ft wide trench
Demo IAAFA and 837 TRS	2,810 ft^2	14,048 ft^2	
Demo TSA - I Dormitory	2,729 ft^2	13,643 ft^2	
Demo Security Forces "Return to Duty" - I Dormitory	2,729 ft^2	13,643 ft^2	
Demo Mosque	2,729 ft^2	13,643 ft^2	
Demo Troop Shelter - B/7537	561 ft^2	2,805 ft^2	
Demo Troop Shelter - B/7539	561 ft^2	2,805 ft^2	
Demo BMT Dormitory - B/9110	43,165 ft^2	215,824 ft^2	
Demo BMT Dormitory - B/9210	43,165 ft^2	215,824 ft^2	
Demo BMT Dormitory - B/9310	43,165 ft^2	215,824 ft^2	
Demo BMT Dormitory - B/9410	43,165 ft^2	215,824 ft^2	

***Assume Annual area disturbed is .2 of 5yr construction period of total area disturbed.**

Total General Construction Area: 248,971 ft^2
5.7 acres

Project Combustion
Phase I

Total Demolition Area:	184,777 ft^2	
	4.2 acres	
Total Pavement Area:	156,493 ft^2	
	3.6 acres	
Total Disturbed Area:	590,241 ft^2	
	13.6 acres	
Construction Duration:	12 months	
1 Yr Project Construction Activity:	240 days/yr	Assume 12 months, 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet fcr each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469	4941.526
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693	5623.957
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865	3703.074
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			40.666					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	590,241	13.55	5	(from "Grading" worksheet)
Paving:	156,493	3.59	18	
Demolition:	184,777	4.24	212	
Building Construction:	248,971	5.72	240	
Architectural Coating	248,971	5.72	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	208.21	12.88	78.55	4.16	12.73	12.35	24,708
Paving	816.61	46.90	334.41	16.33	49.97	48.47	101,231
Demolition	6,746.21	399.91	2,668.95	134.92	407.90	395.66	785,401
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	820.78	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**17,297.62**	**2,031.63**	**7,284.97**	**908.37**	**1,155.75**	**1,121.08**	**1,990,018**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	17,297.62	2,031.63	7,284.97	908.37	1,155.75	1,121.08	1,990,018
Total Project Emissions (tons)	8.65	1.02	3.64	0.45	0.58	0.56	995.01

Construction Fugitive Dust Emissions - Proposed Action (Phase 1 - Current, Annual)

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006

$PM_{2.5}$ Emissions

$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	3.6	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	10.0	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	18.11	9.05	1.81	0.91
General Construction Activities	22.70	11.35	1.14	0.57
Total	**40.81**	**20.40**	**2.95**	**1.47**

Project Fugitive
Phase I

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule - Proposed Action (Phase 1 - Current, Annual)

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 13.6 acres/yr (from Combustion Worksheet)
Qty Equipment: 5.0 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	13.55	1.69
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	13.55	6.62
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	6.78	6.83
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	6.78	2.80
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	13.55	4.75
TOTAL								22.70

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 22.70
Qty Equipment: 5.00
Grading days/yr: 4.54

Construction/Staff Commuter Emissions - Proposed Action (Phase 1 - Current, Annual)

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2011-2015 are used.
The average roundtrip commute for a construction/staff worker = 40 miles
Number of construction days = 240 days
Number of construction/Staff workers (daily) = 1121 people
Note: The number of construction workers includes 25 Construction workers and 1,096 staff increase over 5 years. Students are assumed to live on base with no commute.

Passenger Vehicle Emission Factors for Year 2011-2016 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	9880.666	9835.976	88920.485	115.953	936.031	589.534	############
tons	4.940	4.918	44.460	0.0580	0.4680	0.2948	5895.648

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

San Antonio/Metropolitan Statistical Area

				Point Source Emissions						Area Source Emissions (Non-Point and Mobile Sources)					
Row #	State	County	Tier-1	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	TX	Bexar Co	01-Fuel Comb. Elec. Util.	2,186	11,833	1,651	228	26,306	182	0	0	0	0	0	0
2	TX	Guadalupe Co	01-Fuel Comb. Elec. Util.	40.1	807	77.4	76.8	11.4	4.8	0	0	0	0	0	0
3	TX	Bexar Co	02-Fuel Comb. Industrial	384	614	28.4	22.5	12.2	71.3	494	1,235	1,157	232	4,519	6.92
4	TX	Comal Co	02-Fuel Comb. Industrial	0.94	1.1	0.07	0.03	0.16	0.06	57.8	142	134	26.8	506	0.84
5	TX	Guadalupe Co	02-Fuel Comb. Industrial	0.02	0.09	0.007	0.007	0.01	0.007	76	187	177	35.2	666	1.08
6	TX	Wilson Co	02-Fuel Comb. Industrial	0	0	0	0	0	0	3.4	9.32	7.54	1.53	33	0.06
7	TX	Bexar Co	03-Fuel Comb. Other	275	341	6.18	6.17	34.5	18.7	3,506	1,777	396	390	185	1,144
8	TX	Comal Co	03-Fuel Comb. Other	13.2	61.4	4.45	4.45	4.06	4.98	221	101	25.5	25.3	5.94	72.5
9	TX	Guadalupe Co	03-Fuel Comb. Other	7.3	21.2	1.64	1.64	1.9	1.49	303	81.4	42.5	42.5	6.02	90.4
10	TX	Wilson Co	03-Fuel Comb. Other	0	0	0	0	0	0	110	26.4	27.1	27	2.7	86.9
11	TX	Bexar Co	04-Chemical & Allied Product Mfg	0	0	0	0	0	0.11	0	0	0	0	0	0
12	TX	Bexar Co	05-Metals Processing	20.3	24.2	28.9	24.4	0.15	45.8	0	0	0	0	0	0
13	TX	Guadalupe Co	05-Metals Processing	713	187	281	273	151	116	0	0	0	0	0	0
14	TX	Bexar Co	06-Petroleum & Related Industries	30.8	6.14	5.62	2.24	0.8	64.3	607	1,446	0	0	0	1,791
15	TX	Guadalupe Co	06-Petroleum & Related Industries	0	0	0	0	0	0	354	423	0	0	0	2,018
16	TX	Wilson Co	06-Petroleum & Related Industries	0	0	0	0	0	0	94.2	113	0	0	0	451
17	TX	Bexar Co	07-Other Industrial Processes	1,766	4,677	267	95.6	2,069	376	170	91.2	901	581	0	312
18	TX	Comal Co	07-Other Industrial Processes	2,494	4,107	439	146	246	120	14.7	55.7	522	221	0	16.7
19	TX	Guadalupe Co	07-Other Industrial Processes	75.2	16.7	94.6	54	155	58	7.71	261	336	88	0	8.47
20	TX	Wilson Co	07-Other Industrial Processes	0	0	0	0	0	0	3.19	283	312	68.6	0	3.07
21	TX	Bexar Co	08-Solvent Utilization	2.07	2.48	0.28	0.27	0.006	316	0	0	0	0	0	17,458
22	TX	Comal Co	08-Solvent Utilization	0	0	0.04	0.04	0	0.36	0	0	0	0	0	1,195

Area of Influence
Phase I

23	TX	Guadalupe Co	08-Solvent Utilization	0	0	0.006	0.006	0	1.95	0	0	0	0	0	1,193
24	TX	Wilson Co	08-Solvent Utilization	0	0	0	0	0	0	0	0	0	0	0	314
25	TX	Bexar Co	09-Storage & Transport	6.57	1.69	198	85	0.86	341	0	0	0	0	0	7,766
26	TX	Comal Co	09-Storage & Transport	0	0	125	42.3	0	0.49	0	0	0	0	0	594
27	TX	Guadalupe Co	09-Storage & Transport	0	0	0.03	0.03	0	0.06	0	0	0	0	0	776
28	TX	Wilson Co	09-Storage & Transport	0	0	0	0	0	0	0	0	0	0	0	171
29	TX	Bexar Co	10-Waste Disposal & Recycling	85.5	18.4	209	103	6.07	56.3	0.01	25.6	1,274	27.4	28.5	482
30	TX	Comal Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	288	4.19	144	133	1.68	66.8
31	TX	Guadalupe Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	736	6.64	243	231	2.58	87.9
32	TX	Wilson Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	113	3.98	104	96	0.99	18.4
33	TX	Bexar Co	11-Highway Vehicles	0	0	0	0	0	0	256,660	33,329	893	654	1,742	20,601
34	TX	Comal Co	11-Highway Vehicles	0	0	0	0	0	0	24,936	3,237	85.7	62.8	167	1,887
35	TX	Guadalupe Co	11-Highway Vehicles	0	0	0	0	0	0	22,876	2,853	75.4	55.2	148	1,719
36	TX	Wilson Co	11-Highway Vehicles	0	0	0	0	0	0	6,140	668	19.5	13.9	41.7	485
37	TX	Bexar Co	Highway	0	0	0	0	0	0	111,188	9,493	820	778	874	8,711
38	TX	Comal Co	Highway	0	0	0	0	0	0	6,942	1,009	88.1	83.6	90	1,054
39	TX	Guadalupe Co	Highway	0	0	0	0	0	0	5,939	1,790	108	102	136	625
40	TX	Wilson Co	Highway	0	0	0	0	0	0	1,024	178	20.7	20	19.3	93.8
41	TX	Bexar Co	14-Miscellaneous	0	0	0	0	0	1.32	508	73.9	63,435	6,951	0.2	73.4
42	TX	Comal Co	14-Miscellaneous	0	0	0	0	0	0	96.1	1.84	8,528	881	0.14	12.8
43	TX	Guadalupe Co	14-Miscellaneous	0	0	0	0	0	0	202	6.62	17,397	1,790	0.001	28.2
44	TX	Wilson Co	14-Miscellaneous	0	0	0	0	0	0	0	0.006	9,290	954	0.005	2.87
Grand Total				8,100	22,719	3,418	1,165	28,999	1,781	443,670	58,912	106,563	14,572	9,176	71,418

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2002)
Site visited on 01 August 2011.

Metropolitan San Antonio Intrastate Air Quality Control Region (40 CFR 81.40)

	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC
Bexar Co	878	1,849	1,185	255	4,531	78
SAIAQCR	451,770	81,631	109,981	15,737	38,175	73,199

Area of Influence
Phase I

Summary	Summarizes total emissions by calendar year for Proposed Action (Phase 2 - Short Term, Annual).
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the San Antonio Metropolitan Statistical Area Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 2 - Short Term, Annual)

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
CY01	Construction Combustion	5.125	0.702	2.245	0.384	0.365	0.354	582.318
	Construction Fugitive Dust	-	-	-	-	5.975	0.404	-
	Construction Commuter	0.110	0.110	0.992	0.0013	0.010	0.007	131.482
	TOTAL CY01	***5.236***	***0.811***	***3.236***	***0.385***	***6.350***	***0.765***	***713.799***

Note: Total CY01 $PM_{10/2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***647.416***	***metric tons***	
State of Texas' CO_2 emissions =	***623,000***	***metric tons***	*(DOE/EIA 2008)*
Percent of Texas' CO_2 emissions =	***0.10392%***	***metric tons***	

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2008. State Carbon Dioxide Emissions Summary for the State of Texas. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 22 April 2011.

Since future year budgets were not readily available, actual 2002 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

San Antonio/Metropolitan Statistical Area

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2002	81,631	73,199	451,770	38,175	109,981	15,737

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 01 September 2011.

Air Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 2 - Short Term, Annual)
Determination Significance (Significance Threshold = 10% of regional)

CY01	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	81,631	73,199	451,770	38,175	109,981	15,737
CY01 Emissions	5.24	0.81	3.24	0.39	6.35	0.76
% of Regional	**0.006%**	**0.0011%**	**0.0007%**	**0.0010%**	**0.006%**	**0.005%**

Combustion Emissions - Proposed Action (Phase 2 - Short Term, Annual)
Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, PM_{10}, and CO_2 due to Construction

General Construction Activities	Area Disturbed*	Total Area Disturbed		
Construct DLIELC Operations Center	4,200 ft^2	21,000	ft^2	
Construct Sebille Hall - Student Union Center	9,247 ft^2	46,237	ft^2	
Construct DLIELC Conference Center	403 ft^2	2,017	ft^2	
Construct DLIELC Academic Center Annex	16,400 ft^2	82,000	ft^2	
Construct IAAFA Headquarters	5,214 ft^2	26,070	ft^2	
Construct IAAFA Open Bay Dormitory	2,000 ft^2	10,000	ft^2	
Construct International Student Management Flight Center Expansi	2,000 ft^2	10,000	ft^2	
Construct 837 TRS Training Center	6,000 ft^2	30,000	ft^2	
Construct Regional Storm-water Pond	0 ft^2	0	ft^2	Assume 500,000 ft^2
Construct Leadership Reaction Course	1,000 ft^2	5,000	ft^2	Assume 5,000 ft^2
Construct 1.5-Mile Running Track	9,504 ft^2	47,520	ft^2	Assume 5280 ft/mi*1.5 mi*6 ft wide
Construct Relocate Lift Station	100 ft^2	500	ft^2	
Construct Carswell Boulevard Project	69,696 ft^2	348,480	ft^2	
Construct Waterline Improvements- Loop Water Main	3,000 ft^2	15,000	ft^2	Assume 3 ft wide by 5,000 LF long
Construct Carswell Boulevard Mill and Overlay Curb and Drainage I	880 ft^2	4,400	ft^2	Assume 2 ft wide by 2,200 LF long
Construct Carswell Boulevard Mill and Overlay Curb and Drainage I	880 ft^2	4,400	ft^2	Assume 2 ft wide by 2,200 LF long
Construct "Pole Away"	5,640 ft^2	28,200	ft^2	Assume 3 ft wide by 9,400 LF long
Construct DLELC Operations Center Sidewalks	8,500 ft^2	42,498	ft^2	
Construct DLIELC Academic Center Annex Parking and Circulation	22,999 ft^2	114,993	ft^2	
Construct DLIELC Academic Center Annex Sidewalks	1,759 ft^2	8,793	ft^2	
Construct 837 TRS Training Center Parking and Circulation	2,498 ft^2	12,492	ft^2	
Construct 837 TRS Training Center Sidewalks	749 ft^2	3,744	ft^2	
Demo Detachment 2-22 - I Dormitory TRS	2,768 ft^2	13,839	ft^2	
Demo IAAFA - I Dormitory	2,768 ft^2	13,839	ft^2	
Demo Marine Corps Detachment - I Dormitory	2,768 ft^2	13,839	ft^2	
Demo ATC Technical Training Support	3,049 ft^2	15,247	ft^2	
Demo Latrine	90 ft^2	448	ft^2	

***Assume Annual area disturbed is .2 of 5yr construction period of total area disturbed.**

Total General Construction Area:	136,165 ft^2	
	3.1 acres	
Total Demolition Area:	11,442 ft^2	
	0.3 acres	
Total Pavement Area:	36,504 ft^2	
	0.8 acres	
Total Disturbed Area:	184,111 ft^2	
	4.2 acres	
Construction Duration:	12 months	
1 Yr Project Construction Activity:	240 days/yr	Assume 12 months, 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO_x	VOC	CO	SO_2**	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	1	41.641	2.577	15.710	0.833	2.546	2.469	4941.526
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693	5623.957
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865	3703.074
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			30.074					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	184,111	4.23	3	(from "Grading" worksheet)
Paving:	36,504	0.84	4	
Demolition:	11,442	0.26	13	
Building Construction:	136,165	3.13	240	
Architectural Coating	136,165	3.13	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Grading Equipment	124.92	7.73	47.13	2.50	7.64	7.41	14,825
Paving	181.47	10.42	74.31	3.63	11.10	10.77	22,496
Demolition	417.76	24.76	165.28	8.36	25.26	24.50	48,636
Building Construction	9,455.12	751.15	4,171.75	#####	678.97	658.60	1,071,483
Architectural Coatings	71.48	608.94	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**10,250.75**	**1,403.01**	**4,489.78**	#####	**729.16**	**707.28**	**1,164,635**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	10,250.75	1,403.01	4,489.78	#####	729.16	707.28	1,164,635
Total Project Emissions (tons)	5.13	0.70	2.24	0.38	0.36	0.35	582.32

Construction Fugitive Dust Emissions - Proposed Action (Phase 2 - Short Term, Annual)

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006

$PM_{2.5}$ Emissions

$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	0.8	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	3.4	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	4.22	2.11	0.42	0.21
General Construction Activities	7.73	3.86	0.39	0.19
Total	**11.95**	**5.97**	**0.81**	**0.40**

Project Fugitive
Phase II

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999.* EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1).* Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule - Proposed Action (Phase 2 - Short Term, Annual)

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 4.2 acres/yr (from Combustion Worksheet)
Qty Equipment: 3.0 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	4.23	0.53
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	4.23	2.07
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	2.11	2.13
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	2.11	0.87
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	4.23	1.48
TOTAL								7.08

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 7.08
Qty Equipment: 3.00
Grading days/yr: 2.36

Construction Commuter Emissions - Proposed Action (Phase 2 - Short Term, Annual)

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2011-2015 are used.

The average roundtrip commute for a construction worker =	40	miles
Number of construction days =	240	days
Number of construction workers (daily) =	25	people

Passenger Vehicle Emission Factors for Year 2011-2016 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes:
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	220.354	219.357	1983.062	2.586	20.875	13.148	262963.764
tons	0.110	0.110	0.992	0.0013	0.0104	0.0066	131.482

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

San Antonio/Metropolitan Statistical Area

				Point Source Emissions						Area Source Emissions (Non-Point and Mobile Sources)					
Row #	State	County	Tier-1	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	TX	Bexar Co	01-Fuel Comb. Elec. Util.	2,186	11,833	1,651	228	26,306	182	0	0	0	0	0	0
2	TX	Guadalupe Co	01-Fuel Comb. Elec. Util.	40.1	807	77.4	76.8	11.4	4.8	0	0	0	0	0	0
3	TX	Bexar Co	02-Fuel Comb. Industrial	384	614	28.4	22.5	12.2	71.3	494	1,235	1,157	232	4,519	6.92
4	TX	Comal Co	02-Fuel Comb. Industrial	0.94	1.1	0.07	0.03	0.16	0.06	57.8	142	134	26.8	506	0.84
5	TX	Guadalupe Co	02-Fuel Comb. Industrial	0.02	0.09	0.007	0.007	0.01	0.007	76	187	177	35.2	666	1.08
6	TX	Wilson Co	02-Fuel Comb. Industrial	0	0	0	0	0	0	3.4	9.32	7.54	1.53	33	0.06
7	TX	Bexar Co	03-Fuel Comb. Other	275	341	6.18	6.17	34.5	18.7	3,506	1,777	396	390	185	1,144
8	TX	Comal Co	03-Fuel Comb. Other	13.2	61.4	4.45	4.45	4.06	4.98	221	101	25.5	25.3	5.94	72.5
9	TX	Guadalupe Co	03-Fuel Comb. Other	7.3	21.2	1.64	1.64	1.9	1.49	303	81.4	42.5	42.5	6.02	90.4
10	TX	Wilson Co	03-Fuel Comb. Other	0	0	0	0	0	0	110	26.4	27.1	27	2.7	86.9
11	TX	Bexar Co	04-Chemical & Allied Product Mfg	0	0	0	0	0	0.11	0	0	0	0	0	0
12	TX	Bexar Co	05-Metals Processing	20.3	24.2	28.9	24.4	0.15	45.8	0	0	0	0	0	0
13	TX	Guadalupe Co	05-Metals Processing	713	187	281	273	151	116	0	0	0	0	0	0
14	TX	Bexar Co	06-Petroleum & Related Industries	30.8	6.14	5.62	2.24	0.8	64.3	607	1,446	0	0	0	1,791
15	TX	Guadalupe Co	06-Petroleum & Related Industries	0	0	0	0	0	0	354	423	0	0	0	2,018
16	TX	Wilson Co	06-Petroleum & Related Industries	0	0	0	0	0	0	94.2	113	0	0	0	451
17	TX	Bexar Co	07-Other Industrial Processes	1,766	4,677	267	95.6	2,069	376	170	91.2	901	581	0	312
18	TX	Comal Co	07-Other Industrial Processes	2,494	4,107	439	146	246	120	14.7	55.7	522	221	0	16.7
19	TX	Guadalupe Co	07-Other Industrial Processes	75.2	16.7	94.6	54	155	58	7.71	261	336	88	0	8.47
20	TX	Wilson Co	07-Other Industrial Processes	0	0	0	0	0	0	3.19	283	312	68.6	0	3.07
21	TX	Bexar Co	08-Solvent Utilization	2.07	2.48	0.28	0.27	0.006	316	0	0	0	0	0	17,458
22	TX	Comal Co	08-Solvent Utilization	0	0	0.04	0.04	0	0.36	0	0	0	0	0	1,195

Area of Influence
Phase II

23	TX	Guadalupe Co	08-Solvent Utilization	0	0	0.006	0.006	0	1.95	0	0	0	0	0	1,193
24	TX	Wilson Co	08-Solvent Utilization	0	0	0	0	0	0	0	0	0	0	0	314
25	TX	Bexar Co	09-Storage & Transport	6.57	1.69	198	85	0.86	341	0	0	0	0	0	7,766
26	TX	Comal Co	09-Storage & Transport	0	0	125	42.3	0	0.49	0	0	0	0	0	594
27	TX	Guadalupe Co	09-Storage & Transport	0	0	0.03	0.03	0	0.06	0	0	0	0	0	776
28	TX	Wilson Co	09-Storage & Transport	0	0	0	0	0	0	0	0	0	0	0	171
29	TX	Bexar Co	10-Waste Disposal & Recycling	85.5	18.4	209	103	6.07	56.3	0.01	25.6	1,274	27.4	28.5	482
30	TX	Comal Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	288	4.19	144	133	1.68	66.8
31	TX	Guadalupe Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	736	6.64	243	231	2.58	87.9
32	TX	Wilson Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	113	3.98	104	96	0.99	18.4
33	TX	Bexar Co	11-Highway Vehicles	0	0	0	0	0	0	256,660	33,329	893	654	1,742	20,601
34	TX	Comal Co	11-Highway Vehicles	0	0	0	0	0	0	24,936	3,237	85.7	62.8	167	1,887
35	TX	Guadalupe Co	11-Highway Vehicles	0	0	0	0	0	0	22,876	2,853	75.4	55.2	148	1,719
36	TX	Wilson Co	11-Highway Vehicles	0	0	0	0	0	0	6,140	668	19.5	13.9	41.7	485
37	TX	Bexar Co	Highway	0	0	0	0	0	0	111,188	9,493	820	778	874	8,711
38	TX	Comal Co	Highway	0	0	0	0	0	0	6,942	1,009	88.1	83.6	90	1,054
39	TX	Guadalupe Co	Highway	0	0	0	0	0	0	5,939	1,790	108	102	136	625
40	TX	Wilson Co	Highway	0	0	0	0	0	0	1,024	178	20.7	20	19.3	93.8
41	TX	Bexar Co	14-Miscellaneous	0	0	0	0	0	1.32	508	73.9	63,435	6,951	0.2	73.4
42	TX	Comal Co	14-Miscellaneous	0	0	0	0	0	0	96.1	1.84	8,528	881	0.14	12.8
43	TX	Guadalupe Co	14-Miscellaneous	0	0	0	0	0	0	202	6.62	17,397	1,790	0.001	28.2
44	TX	Wilson Co	14-Miscellaneous	0	0	0	0	0	0	0	0.006	9,290	954	0.005	2.87
Grand Total				8,100	22,719	3,418	1,165	28,999	1,781	443,670	58,912	106,563	14,572	9,176	71,418

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2002)
Site visited on 22 April 2011.

Area of Influence
Phase II

Metropolitan San Antonio Intrastate Air Quality Control Region (40 CFR 81.40)

	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC
Bexar Co	878	1,849	1,185	255	4,531	78
SAIAQCR	451,770	81,631	109,981	15,737	38,175	73,199

Summary	Summarizes total emissions by calendar year for Proposed Action (Phase 3 - Long Term, Annual).
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the San Antonio Metropolitan Statistical Area Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 3 - Long Term, Annual)

		NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
CY01	Construction Combustion	5.091	0.568	2.234	0.383	0.363	0.352	579.463
	Construction Fugitive Dust	-	-	-	-	6.745	0.615	-
	Construction Commuter	0.110	0.110	0.992	0.0013	0.010	0.007	131.482
	TOTAL CY01	***5.201***	***0.678***	***3.225***	***0.384***	***7.119***	***0.973***	***710.944***

Note: Total CY01 $PM_{10/2.5}$ fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO_2 emissions converted to metric tons =	***644.827***	***metric tons***	
State of Texas' CO_2 emissions =	***623,000***	***metric tons***	*(DOE/EIA 2008)*
Percent of Texas' CO_2 emissions =	***0.10350%***	***metric tons***	

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2008. State Carbon Dioxide Emissions Summary for the State of Texas. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 22 April 2011.

Since future year budgets were not readily available, actual 2002 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

San Antonio/Metropolitan Statistical Area

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2002	81,631	73,199	451,770	38,175	109,981	15,737

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 01 August 2011.

Air Emissions from Defense Language Institue English Language Center (DLIELC) - Proposed Action (Phase 3 - Long Term, Annual)
Determination Significance (Significance Threshold = 10% of regional)

CY01	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	81,631	73,199	451,770	38,175	109,981	15,737
CY01 Emissions	5.20	0.68	3.23	0.38	7.12	0.97
% of Regional	**0.006%**	**0.0009%**	**0.0007%**	**0.0010%**	**0.006%**	**0.006%**

Combustion Emissions - Proposed Action (Phase 3 - Long Term, Annual)
Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, PM_{10} and CO_2 due to Construction

General Construction Activities	Area Disturbed*	Total Area Disturbed		
Construct DLIELC Headquarters	2,300 ft^2	23,000	ft^2	
Construct Recruits Dormitory	5,998 ft^2	59,975	ft^2	
Construct Concession Stand/Latrine	400 ft^2	4,000	ft^2	
Construct Skateboard Park	1,200 ft^2	12,000	ft^2	
Construct Fitness Center	13,000 ft^2	130,000	ft^2	
Construct Softball Fields (Qty = 2)	20,000 ft^2	200,000	ft^2	Assume 100,000 SF per field
Construct Children's Playground	500 ft^2	5,000	ft^2	Assume 5,000 SF
Construct DLIELC Headquarters Parking and Circulation	8,850 ft^2	88,497	ft^2	
Construct DLIELC Headquarters Sidewalks	1,474 ft^2	14,742	ft^2	
Construct Recruits Dormitory Parking and Circulation	3,000 ft^2	29,997	ft^2	
Construct Recruits Dormitory Sidewalks	190 ft^2	1,899	ft^2	
Construct Fitness Center Parking	33,500 ft^2	334998	ft^2	
Construct Fitness Center Sidewalks	49,050 ft^2	490,500	ft^2	
Demo Latrine - B/7305	496 ft^2	4,959	ft^2	
Demo Pool House	515 ft^2	5,152	ft^2	
Demo Swimming Pool	901 ft^2	9,010	ft^2	
Demo Recreation Facility	88 ft^2	877	ft^2	

***Assume Annual area disturbed is .1 of 10yr construction period of total area disturbed.**

Total General Construction Area:	43,398 ft^2	
	1.0 acres	
Total Demolition Area:	2,000 ft^2	
	0.0 acres	
Total Pavement Area:	96,063 ft^2	
	2.2 acres	
Total Disturbed Area:	141,461 ft^2	
	3.2 acres	
Construction Duration:	12 months	
1 Yr Project Construction Activity:	240 days/yr	Assume 12 months, 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0
Emission factors are taken from the NONROAD model and were provided to e²M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.
Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Bulldozer	1	13.60	0.96	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment[d]	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c] (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Reqd.[a] per 10 acres	NO_x (lb/day)	VOC[b] (lb/day)	CO (lb/day)	SO_2[c]	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	CO_2 (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.

b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.

c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.

d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

Construction Fugitive Dust Emissions - Proposed Action (Phase 3 - Long Term, Annual)

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42	ton PM_{10}/acre-month	MRI 1996; EPA 2001; EPA 2006

$PM_{2.5}$ Emissions

$PM_{2.5}$ Multiplier	0.10	(10% of PM_{10} emissions assumed to be $PM_{2.5}$)	EPA 2001; EPA 2006
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	2.2	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	1.0	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	PM_{10} controlled	$PM_{2.5}$ uncontrolled	$PM_{2.5}$ controlled
New Roadway Construction	11.11	5.56	1.11	0.56
General Construction Activities	2.38	1.19	0.12	0.06
Total	**13.49**	**6.75**	**1.23**	**0.62**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM_{10}/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM_{10}/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM10/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

$PM_{2.5}$ Multiplier **0.10**

$PM_{2.5}$ emissions are estimated by applying a particle size multiplier of 0.10 to PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} and $PM_{2.5}$ in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants.* Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule - Proposed Action (Phase 3 - Long Term, Annual)

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 3.2 acres/yr (from Combustion Worksheet)
Qty Equipment: 3.0 (calculated based on 3 pieces of equipment for every 10 acres)

Assumptions
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day	equip-days per acre	Acres/yr (project-specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	3.25	0.41
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	3.25	1.59
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	1.62	1.64
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	1.62	0.67
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	3.25	1.14
TOTAL								5.44

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 5.44
Qty Equipment: 3.00
Grading days/yr: 1.81

Construction Commuter Emissions - Proposed Action (Phase 3 - Long Term, Annual)

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html.

Assumptions:
Passenger vehicle emission factors for scenario year 2011-2015 are used.

The average roundtrip commute for a construction worker =	40 miles
Number of construction days =	240 days
Number of construction workers (daily) =	25 people

Passenger Vehicle Emission Factors for Year 2011-2016 (lbs/mile)

NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>. Accessed 27 May 2009.
Notes:
The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC.

Construction Commuter Emissions

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
lbs	220.354	219.357	1983.062	2.586	20.875	13.148	262963.764
tons	0.110	0.110	0.992	0.0013	0.0104	0.0066	131.482

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

San Antonio/Metropolitan Statistical Area

				Point Source Emissions						Area Source Emissions (Non-Point and Mobile Sources)					
Row #	State	County	Tier-1	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	TX	Bexar Co	01-Fuel Comb. Elec. Util.	2,186	11,833	1,651	228	26,306	182	0	0	0	0	0	0
2	TX	Guadalupe Co	01-Fuel Comb. Elec. Util.	40.1	807	77.4	76.8	11.4	4.8	0	0	0	0	0	0
3	TX	Bexar Co	02-Fuel Comb. Industrial	384	614	28.4	22.5	12.2	71.3	494	1,235	1,157	232	4,519	6.92
4	TX	Comal Co	02-Fuel Comb. Industrial	0.94	1.1	0.07	0.03	0.16	0.06	57.8	142	134	26.8	506	0.84
5	TX	Guadalupe Co	02-Fuel Comb. Industrial	0.02	0.09	0.007	0.007	0.01	0.007	76	187	177	35.2	666	1.08
6	TX	Wilson Co	02-Fuel Comb. Industrial	0	0	0	0	0	0	3.4	9.32	7.54	1.53	33	0.06
7	TX	Bexar Co	03-Fuel Comb. Other	275	341	6.18	6.17	34.5	18.7	3,506	1,777	396	390	185	1,144
8	TX	Comal Co	03-Fuel Comb. Other	13.2	61.4	4.45	4.45	4.06	4.98	221	101	25.5	25.3	5.94	72.5
9	TX	Guadalupe Co	03-Fuel Comb. Other	7.3	21.2	1.64	1.64	1.9	1.49	303	81.4	42.5	42.5	6.02	90.4
10	TX	Wilson Co	03-Fuel Comb. Other	0	0	0	0	0	0	110	26.4	27.1	27	2.7	86.9
11	TX	Bexar Co	04-Chemical & Allied Product Mfg	0	0	0	0	0	0.11	0	0	0	0	0	0
12	TX	Bexar Co	05-Metals Processing	20.3	24.2	28.9	24.4	0.15	45.8	0	0	0	0	0	0
13	TX	Guadalupe Co	05-Metals Processing	713	187	281	273	151	116	0	0	0	0	0	0
14	TX	Bexar Co	06-Petroleum & Related Industries	30.8	6.14	5.62	2.24	0.8	64.3	607	1,446	0	0	0	1,791
15	TX	Guadalupe Co	06-Petroleum & Related Industries	0	0	0	0	0	0	354	423	0	0	0	2,018
16	TX	Wilson Co	06-Petroleum & Related Industries	0	0	0	0	0	0	94.2	113	0	0	0	451
17	TX	Bexar Co	07-Other Industrial Processes	1,766	4,677	267	95.6	2,069	376	170	91.2	901	581	0	312
18	TX	Comal Co	07-Other Industrial Processes	2,494	4,107	439	146	246	120	14.7	55.7	522	221	0	16.7
19	TX	Guadalupe Co	07-Other Industrial Processes	75.2	16.7	94.6	54	155	58	7.71	261	336	88	0	8.47
20	TX	Wilson Co	07-Other Industrial Processes	0	0	0	0	0	0	3.19	283	312	68.6	0	3.07
21	TX	Bexar Co	08-Solvent Utilization	2.07	2.48	0.28	0.27	0.006	316	0	0	0	0	0	17,458
22	TX	Comal Co	08-Solvent Utilization	0	0	0.04	0.04	0	0.36	0	0	0	0	0	1,195

Area of Influence
Phase III

23	TX	Guadalupe Co	08-Solvent Utilization	0	0	0.006	0.006	0	1.95	0	0	0	0	0	1,193
24	TX	Wilson Co	08-Solvent Utilization	0	0	0	0	0	0	0	0	0	0	0	314
25	TX	Bexar Co	09-Storage & Transport	6.57	1.69	198	85	0.86	341	0	0	0	0	0	7,766
26	TX	Comal Co	09-Storage & Transport	0	0	125	42.3	0	0.49	0	0	0	0	0	594
27	TX	Guadalupe Co	09-Storage & Transport	0	0	0.03	0.03	0	0.06	0	0	0	0	0	776
28	TX	Wilson Co	09-Storage & Transport	0	0	0	0	0	0	0	0	0	0	0	171
29	TX	Bexar Co	10-Waste Disposal & Recycling	85.5	18.4	209	103	6.07	56.3	0.01	25.6	1,274	27.4	28.5	482
30	TX	Comal Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	288	4.19	144	133	1.68	66.8
31	TX	Guadalupe Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	736	6.64	243	231	2.58	87.9
32	TX	Wilson Co	10-Waste Disposal & Recycling	0	0	0	0	0	0	113	3.98	104	96	0.99	18.4
33	TX	Bexar Co	11-Highway Vehicles	0	0	0	0	0	0	256,660	33,329	893	654	1,742	20,601
34	TX	Comal Co	11-Highway Vehicles	0	0	0	0	0	0	24,936	3,237	85.7	62.8	167	1,887
35	TX	Guadalupe Co	11-Highway Vehicles	0	0	0	0	0	0	22,876	2,853	75.4	55.2	148	1,719
36	TX	Wilson Co	11-Highway Vehicles	0	0	0	0	0	0	6,140	668	19.5	13.9	41.7	485
37	TX	Bexar Co	Highway	0	0	0	0	0	0	111,188	9,493	820	778	874	8,711
38	TX	Comal Co	Highway	0	0	0	0	0	0	6,942	1,009	88.1	83.6	90	1,054
39	TX	Guadalupe Co	Highway	0	0	0	0	0	0	5,939	1,790	108	102	136	625
40	TX	Wilson Co	Highway	0	0	0	0	0	0	1,024	178	20.7	20	19.3	93.8
41	TX	Bexar Co	14-Miscellaneous	0	0	0	0	0	1.32	508	73.9	63,435	6,951	0.2	73.4
42	TX	Comal Co	14-Miscellaneous	0	0	0	0	0	0	96.1	1.84	8,528	881	0.14	12.8
43	TX	Guadalupe Co	14-Miscellaneous	0	0	0	0	0	0	202	6.62	17,397	1,790	0.001	28.2
44	TX	Wilson Co	14-Miscellaneous	0	0	0	0	0	0	0	0.006	9,290	954	0.005	2.87
Grand Total				8,100	22,719	3,418	1,165	28,999	1,781	443,670	58,912	106,563	14,572	9,176	71,418

SOURCE:
http://www.epa.gov/air/data/geosel.html
USEPA - AirData NET Tier Report
*Net Air pollution sources (area and point) in tons per year (2002)
Site visited on 22 April 2011.

Area of Influence
Phase III

Metropolitan San Antonio Intrastate Air Quality Control Region (40 CFR 81.40)

	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC
Bexar Co	878	1,849	1,185	255	4,531	78
SAIAQCR	451,770	81,631	109,981	15,737	38,175	73,199

Area of Influence
Phase III

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