Environmental Assessment

Tinker Aerospace Complex
Tinker Air Force Base, Oklahoma

Prepared for:
United States Air Force
Air Force Center for Engineering and the Environment

May 2008

Report Documentation Page

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14. ABSTRACT
Tinker AFB is considering leasing the former GM Oklahoma City assembly plant to the south of Tinker AFB. This 430-acre parcel of land with 3.8 million square feet (SF) of industrial and manufacturing facility space provides an opportunity to relocate and consolidate numerous Oklahoma City Air Logistics Center (OC-ALC) maintenance activities into one facility known as TAC. In turn, approximately 1.9 million SF of deteriorated or substandard facilities on Tinker AFB would be demolished, avoiding approximately $470 million in military construction (MILCON) funds needed to perform required renovations on these facilities. The TAC initiative would also provide the OC-ALC with valuable space that could be leveraged in the future for attracting additional depot-level maintenance workload. The following resources were identified for study in this EA: Noise, Land Use, Air Quality Earth Resources, Biological Resources, Cultural Resources, Water Resources, Hazardous Substances, Safety, Utilities and Infrastructure, Socioeconomic Resources, and Environmental Justice and Environmental Health and Safety of Children.

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FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT
TINKER AEROSPACE COMPLEX

TINKER AIR FORCE BASE, OKLAHOMA

AGENCY: 72nd Air Base Wing (ABW), Tinker Air Force Base (AFB), Oklahoma.

BACKGROUND: The 72nd ABW has prepared an environmental assessment (EA) to address demolition of 39 facilities and relocation of select mission activities to the former General Motors (GM) assembly plant. This EA has been accomplished pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations implementing the NEPA, Department of Defense (DoD) Directive 6050.1, Environmental Effects in the United States of DoD Actions, Air Force Instruction (AFI) 32-7061, The Environmental Impact Analysis Process, and 32 Code of Federal Regulations (CFR) Part 989 Environmental Impact Analysis Process.

PROPOSED ACTION: The Air Force proposes to demolish 39 substandard and deteriorated facilities on Tinker AFB and relocate select depot-level aircraft maintenance functions from those facilities to the former GM assembly plant adjacent to Tinker AFB. The new facility will be known as the Tinker Aerospace Complex (TAC). Tinker AFB will lease the former GM property as well as obtain access to a city-owned parcel that would connect Tinker AFB to the proposed TAC. Multiple construction projects are proposed to provide access to and secure the perimeter of the proposed TAC.

SUMMARY OF FINDINGS FOR PROPOSED ACTION:

Noise. Noise exposure to sensitive receptors associated with the relocation of static aircraft engine test cells to TAC will increase by less than one dB(A) DNL which will be barely perceptible. Demolition and construction activities in the vicinity of each project location will result in minor, short-term increases in noise levels. Short-term noise created by the Proposed Action will not significantly impact sensitive receptors on, or adjacent to Tinker AFB.

Land Use. A long-term positive impact will result from the demolition of incompatible facilities currently located in airfield clear zones. Otherwise, activities in the Proposed Action will be compatible with existing land uses and in accordance with land use plans for the installation and surrounding areas.

Air Quality. There will be a short-term increase in air emissions associated with the construction and demolition activities. No new permanent emission sources are expected to be created as a result of the Proposed Action. The increase in emissions would not be considered regionally significant and would not be expected to cause the region to exceed air quality standards. The Proposed Action will occur in an area that is currently classified as “attainment” for National Ambient Air Quality Standards, will not be subject to a conformity analysis, and will not expose the public or operational personnel to hazardous levels of air emissions.

Water Resources. There will be a decrease in impervious cover on the installation associated with facility demolition activities resulting in decreased runoff volumes. There will be an increase in impervious cover at the proposed TAC associated with construction activities resulting in increased runoff volumes. There will be a potential for insignificant short-term impacts to surface water quality during the initial demolition and construction activities. There will be no impacts to the quality or quantity of groundwater at Tinker AFB or the surrounding area.

Cultural Resources. No impacts to cultural resources are expected. Procedures are in place that would be followed in the event of inadvertent discoveries of cultural resource materials or human remains during demolitions, construction and subsequent operation/maintenance activities.

Earth Resources. There will be short-term, minor soil disturbance as a result of the proposed construction and demolition activities. The majority of soils in the vicinity of the proposed projects have been previously disturbed and the projects are located in improved areas with existing facilities and paved roads.

Biological Resources. Only minor impacts to biological resources are expected. The proposed demolition projects will occur within developed areas of Tinker AFB and will result in a positive impact on biological resources as the overall development density will be reduced. Minor adverse impacts to biological resources will occur associated with the proposed projects on the TAC site and the city-owned property. No known federally threatened or endangered species are thought to inhabit the project areas.

Hazardous Materials and Wastes. Hazardous materials and wastes will be managed in accordance with existing Tinker AFB, state, and federal plans and regulations. Project activities will occur within one-half mile of known Environmental Restoration Program sites or Areas of Concern, but it is unlikely that construction or demolition activities will encounter contaminated soil or groundwater.

Occupational Safety and Health. There could be short-term, minor adverse effects to safety due to the temporary increase in construction activities.

Infrastructure and Utilities. There will be a minor, short-term increase in solid waste associated with construction and demolition activities and minor, long-term impacts to drainage systems due to additional impervious surface. There will be positive long-term impacts for traffic flows on Tinker AFB as some commuter traffic will relocate to the proposed TAC. There are expected to be negligible impacts to energy and water consumption for the installation. There is a potential long-term positive impact associated with increased use of renewable energy sources in the form of landfill gas for proposed TAC operations.

Socioeconomic Resources. There will be long-term reduction in commercial tax base for local taxing entities with the greatest drop in tax revenue felt by the Midwest City-Del City School District. This loss in tax revenue is expected to be offset by an increase in state funding. A short-term positive economic impact would be expected associated with the proposed construction and demolition activities.

Environmental Justice. The Proposed Action is not expected to create disproportionately high or adverse effects on children, minority populations, or low-income populations.

SUMMARY OF FINDINGS FOR NO-ACTION ALTERNATIVE: The conditions and characteristics anticipated under the No-Action Alternative for each resource area will continue at levels equal to those occurring under the existing condition. No significant environmental impacts are experienced or generated by the existing condition. Therefore, no significant impacts will be expected for the No-Action Alternative. However, installation activities will continue to be housed in deteriorated and substandard facilities where asbestos-containing material and lead-based paint are present. Facilities will continue to be inappropriately located in Airfield Clear Zones. Without reuse, the GM assembly plant will continue to deteriorate or be demolished, reducing property values, and thereby resulting in a decrease in tax revenue.

SUMMARY OF CUMULATIVE IMPACTS: The cumulative impact of implementing this action along with other past, present, and future projects in the Region of Influence were assessed in the attached EA and no significant cumulative impacts were identified.

SUMMARY OF PUBLIC COMMENTS: No public comments were received during the public comment period.

DECISION: Based upon my review of the Environmental Assessment attached and incorporated by reference, and contingent upon implementation of specific mitigation measures to be implemented by the 72nd ABW, I conclude that none of the alternatives, nor the Proposed Action will have a significant direct, indirect, or cumulative impact upon the environment. Accordingly, the requirements of the National Environmental Policy Act, regulations promulgated by the President's Council on Environmental Quality, and 32 CFR Part 989 are fulfilled and an Environmental Impact Statement is not required at this time.

MARK A. CORRELL
Colonel, USAF
Commander, 72nd Air Base Wing

8 May 08
Date

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Environmental Assessment

for

Tinker Aerospace Complex

Tinker Air Force Base, Oklahoma

Prepared For:

United States Air Force
Air Force Center for Engineering and the Environment

May 2008

Cover Sheet

COVER SHEET

Responsible Agency: 72nd Air Base Wing, Tinker AFB, Oklahoma

Proposed Action: Demolish 39 substandard and deteriorated facilities on Tinker Air Force Base (AFB) and relocate select depot-level aircraft maintenance functions from those facilities to the former General Motors (GM) assembly plant adjacent to Tinker AFB. This facility would be known as Tinker Aerospace Complex (TAC). Tinker AFB would lease the former GM property as well as obtain access to a city-owned parcel that would connect Tinker AFB to the new property. Multiple construction projects are proposed to provide access to and secure the perimeter of the proposed TAC.

Point of Contact: Cynthia Garrett, 72 ABW/CEAN, 7701 Arnold Street, Tinker AFB, OK 73145-9100

Report Designation: Environmental Assessment (EA)

Abstract: Tinker AFB is considering leasing the former GM Oklahoma City assembly plant to the south of Tinker AFB. This 430-acre parcel of land with 3.8 million square feet (SF) of industrial and manufacturing facility space provides an opportunity to relocate and consolidate numerous Oklahoma City Air Logistics Center (OC-ALC) maintenance activities into one facility known as TAC. In turn, approximately 1.9 million SF of deteriorated or substandard facilities on Tinker AFB would be demolished, avoiding approximately $470 million in military construction (MILCON) funds needed to perform required renovations on these facilities. The TAC initiative would also provide the OC-ALC with valuable space that could be leveraged in the future for attracting additional depot-level maintenance workload.

The following resources were identified for study in this EA: Noise, Land Use, Air Quality, Earth Resources, Biological Resources, Cultural Resources, Water Resources, Hazardous Substances, Safety, Utilities and Infrastructure, Socioeconomic Resources, and Environmental Justice and Environmental Health and Safety of Children.

PRIVACY ADVISORY NOTICE

Letters or other written comments provided may be published in the Final Environmental Assessment (EA). As required by law, comments will be addressed in the Final EA and made available to the public. Any personal information provided will be kept confidential. Private addresses will be compiled to develop a mailing list for those requesting copies of the Final EA. However, only the names of the individuals making comments and their specific comments will be disclosed. Personal home addresses and phone numbers will not be published in the Final EA.

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Acronyms and Abbreviations

ACRONYMS AND ABBREVIATIONS

ACM	asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupation Safety and Health
AICUZ	Air Installation Compatible Use Zone
AIRFA	American Indian Religious Freedom Act
AQCR	Air Quality Control Region
ARPA	Archeological Resources Protection Act
AST	aboveground storage tank
AWACS	Airborne Warning and Control System
bgs	below ground surface
BMP	Best Management Practice
BRAC	Base Realignment and Closure
BTEX	benzene, toluene, ethylbenzene, and xylene
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CENRAP	Central Regional Air Planning Association
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CO	carbon monoxide
COC	community of comparison
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DLA	Defense Logistics Agency
DNL	day-night average sound level
DoD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
°F	degrees Fahrenheit
FY	Fiscal Year
GM	General Motors
gpd	gallons per day
gpm	gallons per minute
HRMA	Housing Requirements and Market Analysis
HMMP	Hazardous Materials Management Program
IAP	International Airport
ICRMP	Integrated Cultural Resources Management Plan
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IWTP	Industrial Wastewater Treatment Plant

ACRONYMS AND ABBREVIATIONS (CONT.)

JEIM	Jet Engine Intermediate Maintenance
kV	kilovolts
lbs	pounds
LBP	lead-based paint
LTM	Long Term Monitoring
MFH	military family housing
MILCON	Military Construction
mph	miles per hour
MSA	Metropolitan Statistical Area
MSDS	material safety data sheets
MSGP	Multi-Sector General Permit
MSL	mean sea level
MSSL	Media Specific Screening Level
NAA	non-attainment area
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NEPA	National Environmental Policy Act
NFRAP	No Further Response Action Planned
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOI	notice of intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OAS	Oklahoma Archeological Survey
OC-ALC	Oklahoma City Air Logistics Center
OCAMA	Oklahoma City Air Material Area
OCC	Oklahoma Corporation Commission
ODEQ	Oklahoma Department of Environmental Quality
OG&E	Oklahoma Gas and Electric
OSHA	Occupational Safety and Health Administration
PAOC	Potential Area of Concern
Pb	lead
PM_{10}	particulate matter equal to or less than 10 micrometers in aerodynamic diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter
PMEL	Precision Measuring Equipment Laboratory
ppe	personal protective equipment
ppm	parts per million
PSD	Prevention of Significant Deterioration
PVC	polyvinyl chloride
Q	quarter
RA-O	Remedial Action Operation

ACRONYMS AND ABBREVIATIONS (CONT.)

RCRA	Resource Conservation and Recovery Act
ROD/DD	Record of Decision/Decision Document
ROI	Region of Influence
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SPL	sound pressure level
SF	square feet
SWPPP	Storm Water Pollution Prevention Plan
TAC	Tinker Aerospace Complex
TPH	total petroleum hydrocarbons
tpy	tons per year
TSCA	Toxic Substances Control Act
TSO21	Tinker Smart Ops 21
TSP	total suspended particulate
UFC	United Facilities Criteria
$\mu g/m^3$	micrograms per cubic meter
USC	United States Code
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VOC	volatile organic compound
IWTP	wastewater treatment plant

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Chapter 1

Purpose of and Need for Action

CHAPTER 1
PURPOSE OF AND NEED FOR ACTION

This chapter has six parts: a statement of the purpose of and need for action, a description of the location of the proposed action, identification of the decision to be made, a description of the scope of the environmental review, identification of applicable regulatory requirements, and an introduction to the organization of the document.

1.1 PURPOSE OF AND NEED FOR ACTION

Tinker AFB is considering a long-term lease of the former General Motors (GM) assembly plant. This 430-acre parcel of land with 3.8 million square feet (SF) of industrial and manufacturing facility space provides an opportunity to relocate and consolidate numerous Oklahoma City Air Logistics Center (OC-ALC) maintenance activities into one facility that would be known as the Tinker Aerospace Complex (TAC). The activities that would be relocating to TAC are currently housed in approximately 2.2 million square feet of deteriorated or substandard facilities scattered across Tinker AFB. In some cases, these existing facilities are in unsafe and inappropriate locations based on modern airfield clearance requirements. Other facilities do not have appropriate air conditioning systems resulting in decreased productivity when hot weather requires changes to work-rest cycles. The vacant GM assembly plant presents an opportunity to re-use a modern industrial facility that is contiguous to the installation and would allow the Air Force to avoid approximately $470 million in military construction (MILCON) funds needed to perform required renovations on existing facilities.

1.2 LOCATION OF THE PROPOSED ACTION

The proposed and alternative actions would occur both on Tinker AFB and at the GM assembly plant. The main portion of Tinker AFB is located within the incorporated city limits of Oklahoma City, Oklahoma. Centered ten miles southeast of downtown, Tinker AFB is bordered to the north by Interstate 40 and Southeast 29th Street, to the east by Douglas Boulevard, to the south by Southeast 74th Street, and to the west by Sooner Road (Figure 1-1). Incorporated areas immediately surrounding the installation include Midwest City to the north and Del City to the northwest. The GM assembly plant is located to the southwest of Tinker AFB and is immediately adjacent to the installation's boundary (Figure 1-2).

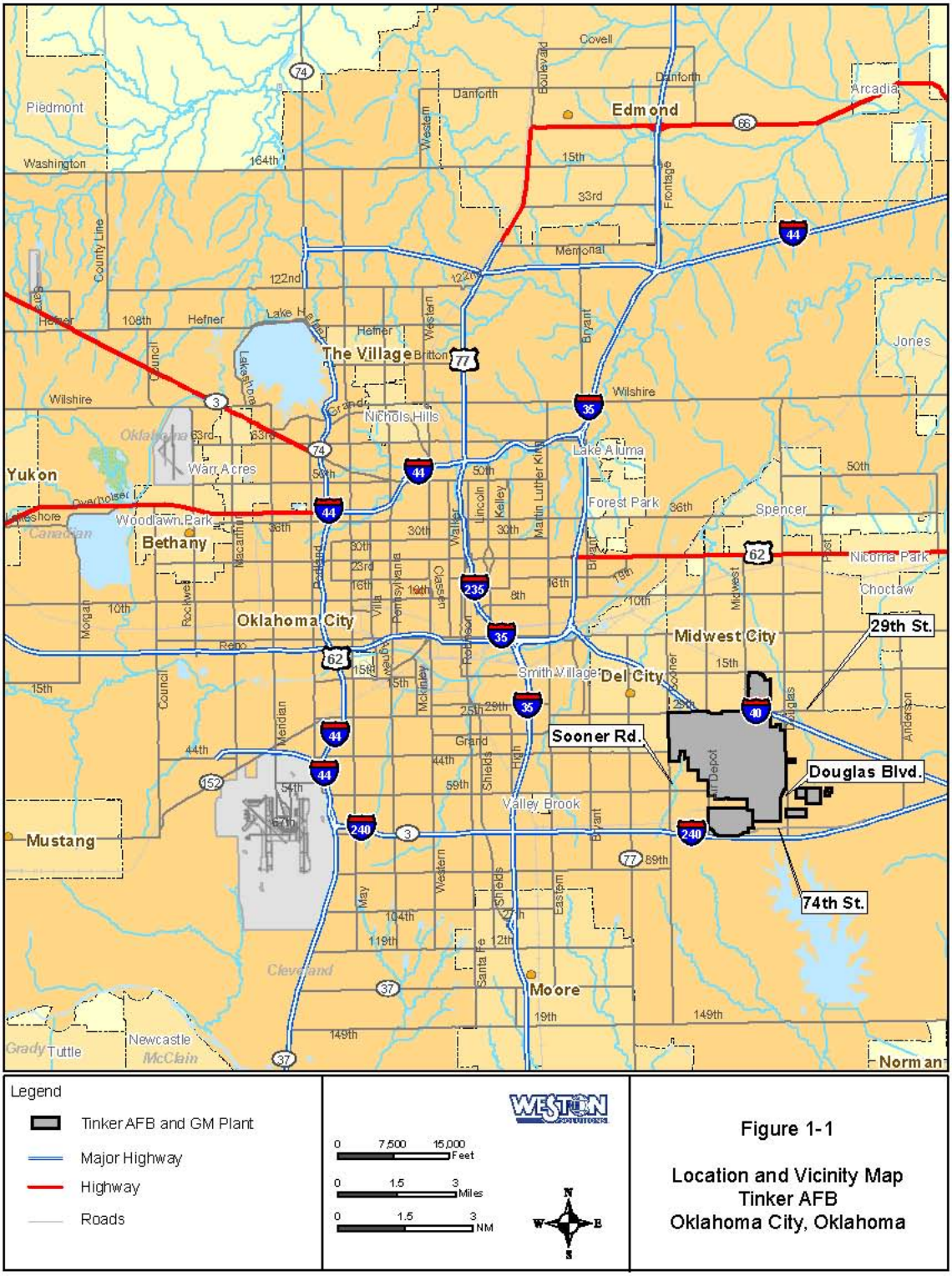


Figure 1-1

Location and Vicinity Map
Tinker AFB
Oklahoma City, Oklahoma

Legend

- Tinker AFB
- TAC Project Area Boundary
- Major Highway
- Roads

0 1,500 3,000 Feet

0 0.25 0.5 Miles

0 0.15 0.3 NM

N W E S

Figure 1-2

Location of the Proposed Action
Tinker AFB
Oklahoma City, Oklahoma

1.3 DECISION TO BE MADE

This Environmental Assessment (EA) evaluates the potential environmental consequences of a list of activities associated with the TAC initiative. Based on this information, the Air Force will determine if the proposed action qualifies for a Finding of No Significant Impart or will require the preparation of an Environmental Impact Statement. As required by the National Environmental Policy Act (NEPA) and its implementing regulations, preparation of an environmental document must precede final decisions regarding the proposed project, and be available to inform decision-makers of the potential environmental impacts.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

NEPA, as amended, requires federal agencies to consider environmental consequences in their decision-making process. The President's Council on Environmental Quality (CEQ) has issued regulations to implement NEPA that include provisions for both the content and procedural aspects of the required environmental impact analysis. The Air Force Environmental Impact Analysis Process (EIAP) is accomplished through adherence to the procedures set forth in CEQ regulations (40 Code of Federal Regulations [CFR] Sections 1500-1508) and 32 CFR 989 (EIAP), 15 July 1999, and amended 28 March 2001. These federal regulations establish both the administrative process and substantive scope of the environmental impact evaluation designed to ensure that deciding authorities have a proper understanding of the potential environmental consequences of a contemplated course of action.

This EA identifies, describes, and evaluates the potential environmental impacts that are associated with acquisition of two real estate parcels and limited construction and demolition activities, taking into consideration possible cumulative impacts from other actions. The potential environmental effects of taking no action are also described. As appropriate, the affected environment and environmental consequences of the action may be described in terms of a regional overview or a site-specific description. Fiscal year (FY) 2007 or the most current information is used as the baseline condition.

The Air Force has announced other independent actions for Tinker AFB concurrent with the Proposed Action. The environmental impacts of these other actions, in most cases, have been analyzed in separate NEPA documents. In addition, other actions are planned for the surrounding community (see Section 2.6). Through Intergovernmental and Interagency Coordination for Environmental Planning (IICEP), requests have been made for information on these and other planned actions in the surrounding community. IICEP correspondence and responses are included in Appendix A. This EA addresses the environmental impacts of these other actions only in the context of potential cumulative impacts, if any. A cumulative impact, as defined by the CEQ (40 CFR 1508.7), is the "impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of which agency (federal or non-federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

1.4.1 Resource Areas Addressed in Detail

Resource areas that could be affected by the proposed or alternative actions have been selected to allow for a comprehensive analysis of potential impacts. The following resource areas are discussed in detail in the EA:

- Noise
- Land Use
- Air Quality
- Water Resources
  - Surface Water
  - Groundwater
  - Wetlands
  - Floodplains
- Cultural Resources
- Earth Resources
- Biological Resources
  - Vegetation
  - Wildlife
  - Threatened and Endangered Species
- Hazardous Materials and Wastes (including Environmental Restoration Program [ERP] sites)
- Occupational Health and Safety
- Utilities and Infrastructure
  - Sanitary Sewer
  - Potable Water
  - Solid Waste
  - Transportation
  - Electricity/Natural Gas
- Socioeconomic Resources
  - Population
  - Economy
  - Environmental Justice

1.4.2 Resource Topics Eliminated from Detailed Analysis

Some resource areas or some aspects of resource areas would not be affected by the proposed or alternative actions. Resource areas that have been eliminated from further detailed study in this document and the rationale for eliminating them are presented below:

- Aircraft Operations. There would be no change to the number of aircraft assigned to the installation. Therefore, aircraft operations would not be affected by the proposed or alternative actions.

- Airspace Use and Management. There would be no change in the airspace associated with aircraft operations. Therefore, airspace use and management would not be affected by the proposed or alternative actions.

1.5 APPLICABLE REGULATORY REQUIREMENTS

This EA is part of the EIAP for the proposed project as set forth in 32 CFR 989, 15 July 1999, and amended 28 March 2001; CEQ regulations; Department of Defense (DoD) Directive 4715.1 (*Environmental Security, March 19, 2005)*; as well as DoD Instruction 4715.9 (*Environmental Planning and Analysis*).

NEPA, as amended, requires federal agencies to consider, as part of the decision-making process, the environmental consequences of their proposed and alternative actions. The Air Force considers the potential environmental impacts identified during the EIAP in its decision. The following paragraphs describe the laws and regulations that apply or may apply to the proposed and alternative actions.

1.5.1 Interagency and Intergovernmental Coordination

Federal, state, and local agencies with jurisdiction that could be affected by the proposed or alternative actions have been notified and consulted. A complete listing of the agencies consulted is included in Chapter 6 and IICEP correspondence and responses are included in Appendix A. This coordination fulfills the Interagency Coordination Act and Executive Order (EO) 12372, which require federal agencies to cooperate with and consider state and local views in implementing a federal proposal. EO 12372 is implemented by the Air Force in accordance with Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*.

1.5.2 Permits

It would be the construction contractor's responsibility to ensure permits are identified and obtained from the installation, local, state, and federal agencies. Upon leasing the GM assembly plant, the Tinker AFB Title V air permit would require modification. The current Tinker AFB Multi-Sector General Permit (MSGP) would need to be amended to include the property, activities, and discharges that would occur at TAC. Tinker AFB would also need to modify their individual National Pollutant Discharge Elimination System (NPDES) permit to include the storm water outfalls on the GM property. Proposed Action construction projects would require a Notice of Intent (NOI) for Storm Water Discharges (OKR10) that would need to be filed with Tinker AFB and include the creation and implementation of a SWPPP. Tinker AFB would also need to modify their Industrial User Permit with the city of Oklahoma City for pre-treatment of industrial wastewater. Tinker AFB's RCRA Hazardous Waste permit would also have to be modified with the relocation of mission activities to TAC.

1.5.3 Other Regulatory Requirements

The EA considers all applicable laws and regulations, including but not limited to the following:

- Clean Air Act (CAA) (42 United States Code [USC] 7401 et seq.)
- AFI 32-7040, Air Quality Compliance
- AFI 32-7062, Air Field Planning
- United Facilities Criteria (UFC) 3-260-02 Airfield and Heliport Planning and Design
- EO 11990, *Protection of Wetlands*
- Clean Water Act (CWA), (33 USC 1251 et seq.)
- EO 11988, *Floodplain Management*
- Endangered Species Act (ESA) (16 USC 1531-1542)
- Pollution Prevention Act of 1990 (42 USC 13101 and 13102 et seq.)
- Resource Conservation and Recovery Act (42 USC 6901 et seq.)
- Archeological Resources Protection Act
- Native American Graves Protection and Repatriation Act of 1991 (25 USC 3001 et seq.)
- Energy Independence and Security Act of 2007 (Public Law 110-140)
- UFC 3-210-10, Low Impact Development
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 13045, Protection of Children from Environmental Health Risks and Safety Risks

1.6 INTRODUCTION TO THE ORGANIZATION OF THE DOCUMENT

This EA is organized into seven chapters.

Chapter 1: Contains a statement of the purpose of and need for action, the location of the proposed action, identification of the decision to be made, a summary of the scope of the environmental review, identification of applicable regulatory requirements, and a description of the organization of the document.

Chapter 2: Describes the history of the formulation of alternatives, describes the No-Action Alternative, identifies alternatives eliminated from further consideration, provides a detailed description of the Proposed Action, summarizes other actions announced for Tinker AFB and the surrounding community, provides a comparison matrix of environmental effects for all alternatives, identifies the preferred alternative, and describes mitigation measures.

Chapter 3: Contains a general description of the current conditions of the resources that could potentially be affected by the proposed or alternative actions.

Chapter 4: Provides an analysis of the environmental consequences of the proposed and alternate actions.

Chapter 5: Lists preparers of this document.

Chapter 6: Lists persons and agencies consulted in the preparation of this EA.

Chapter 7: Lists source documents relevant to the preparation of this EA.

Chapter 2

Description of the Proposed Action and Alternatives

CHAPTER 2
DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter has eight parts: a brief history of the formulation of alternatives, identification of alternatives eliminated from further consideration, a description of the No-Action Alternative, a description of the Proposed Action, identification of other proposed actions planned for Tinker AFB and the surrounding community, a summary of environmental impacts of all alternatives, identification of the preferred alternative, and a table of proposed mitigation measures.

2.1 HISTORY OF THE FORMULATION OF ALTERNATIVES

Any alternative to address the purpose and need for modernization of OC-ALC facilities should, at a minimum:

- Repair or replace existing facilities to address deterioration, improve energy efficiency, and comply with modern facility standards,
- Relocate facilities currently in airfield clear zones to undeveloped land of sufficient size that is also free of environmental or other land use planning constraints, and
- Provide facility solutions on a timeframe and budget that allows for successful execution of the OC-ALC mission.

The Proposed Action was formulated to meet the purpose and need for modernization of OC-ALC facilities while providing an opportunity to re-use valuable facilities and infrastructure that would otherwise be abandoned by GM. The GM assembly plant occupies a 430-acre parcel of land southwest of Tinker AFB. The facility consists of 3.8 million SF of facilities including a 3 million SF main assembly building, a paint shop, a powerhouse and an industrial wastewater treatment plant. Construction of the buildings at the site began in January 1974 and was completed in April 1979. GM operated the plant from that time until February 2006 when automotive manufacturing operations ceased. Since that time, the facility has been undergoing decommissioning and awaiting final disposition.

2.2 ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Other potential alternatives that were eliminated from further consideration include:

- Performing an estimated $470 million (USAF 2008a) in repair, renovation, and construction of OC-ALC facilities instead of acquiring the GM assembly plant. In perspective, this figure represents over one-half of the FY 2008 MILCON budget for the U.S. Air Force (USAF 2008b). In the last three fiscal years, Tinker AFB has received an average of approximately $22 million in MILCON funding ((USAF 2008b). At current funding rates, without accounting for inflation, it would take over 20 years to complete OC-ALC facility modernization through MILCON projects. In addition, there is insufficient developable land on Tinker AFB for the relocation of facilities currently in airfield clear zones.

- Leasing or otherwise acquiring other off-base facility space was eliminated from further consideration because there are insufficient facilities and/or developable land adjacent to Tinker AFB, other than the GM assembly plant, available to accommodate this requirement.

2.3 DESCRIPTION OF THE PROPOSED ACTION

The Proposed Action entails three main components: facility demolition, GM assembly plant acquisition and construction, and TAC operations. Each of these components is described in detail below.

Tinker AFB Facility Demolition

Under the Proposed Action, approximately 2.2 million SF of facilities on Tinker AFB would be either demolished or abandoned with no further use between 2009 and 2018. At this time, a five-year plan (FY 2009 through 2013) for facility demolition has been identified that includes 39 facilities for a total of approximately one million SF. The remaining 1.2 million SF would be demolished as a part of an out-years (FY 2014 through 2018) demolition plan with specific facilities to be determined at a later date. For the purposes of this analysis, assessment of facility demolition will be limited to the five-year demolition plan. Appropriate assessment of the environmental impacts of the out-years demolition plan will be completed at a later date.

Figure 2-1 shows the location of the facilities on Tinker AFB scheduled for demolition under the five-year plan. Table 2-1 displays the buildings scheduled for demolition, their size, and the year they are slated for demolition.

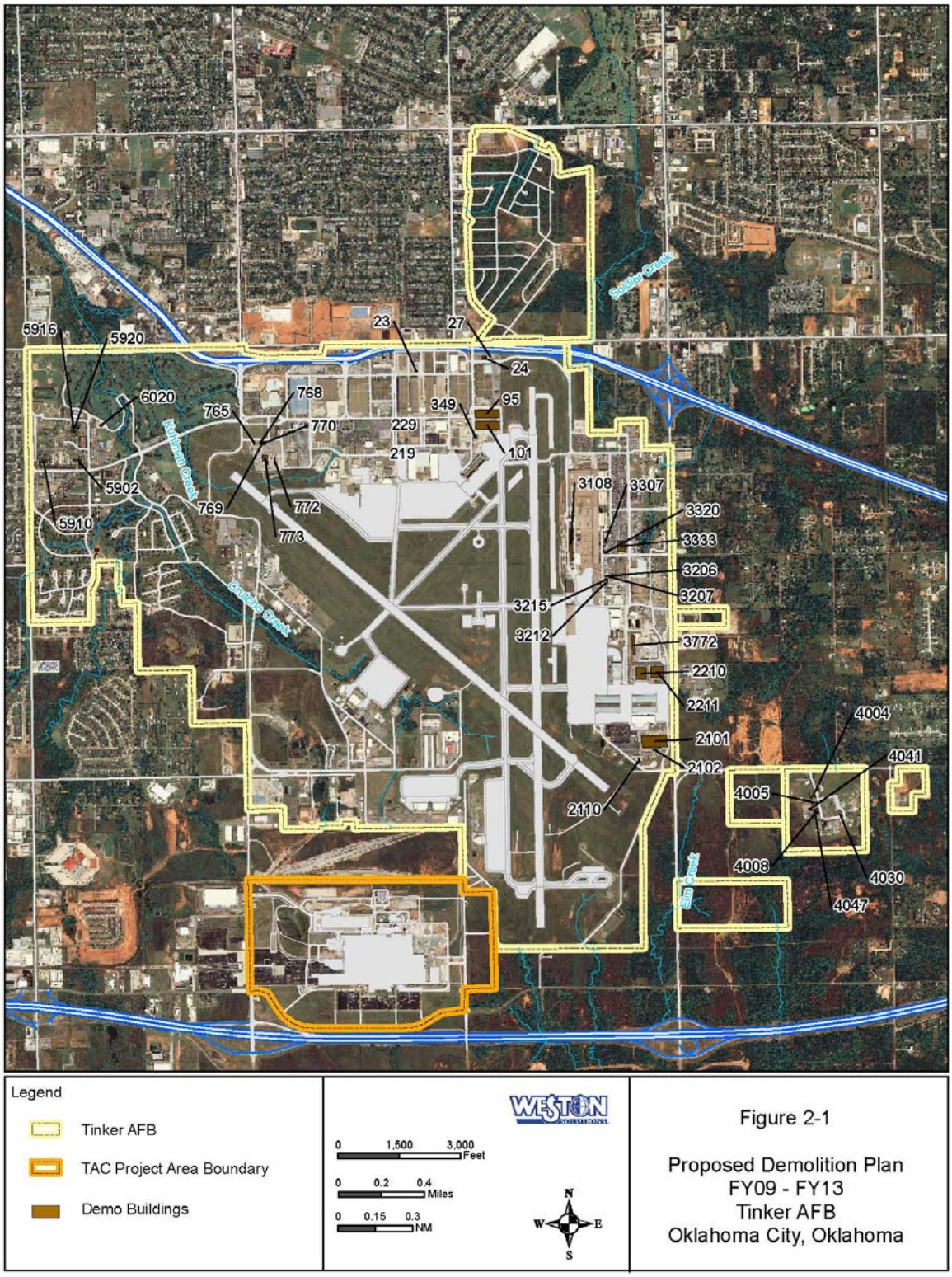


Figure 2-1

Proposed Demolition Plan
FY09 - FY13
Tinker AFB
Oklahoma City, Oklahoma

Table 2-1 Five-Year Demolition Plan

Building Number	Size (SF)	Proposed Demo Year
23	3,000	2012
24	10,443	2009
27	128	2009
95	121,128	2009
101	115,683	2009
219	363	2009
229	26,827	2011
349	15,000	2009
765	3,300	2009
768	3,300	2009
769	3,300	2009
770	3,328	2009
772	5,100	2009
773	24,465	2009
2101	197,589	2010
2102	4,605	2010
2110	4,515	2013
2210	73,578	2011
2211	86,735	2012
2101	84,410	2010

Building Number	Size (SF)	Proposed Demo Year
3206	800	2013
3207	1,600	2013
3212	2,618	2013
3215	5,869	2013
3307	8,967	2013
3320	4,000	2013
3333	51,766	2010
3772	30,098	2013
4004	11,798	2013
4005	3,117	2010
4008	7,767	2010
4030	3,179	2009
4041	2,194	2009
4047	141	2009
5902	26,930	2009
5910	26,931	2009
5916	21,463	2009
5920	20,534	2009
6020	3,200	2009
Total	**1,019,769**	**--**

Note:
SF = square feet

GM Assembly Plant Acquisition and Construction

Under the Proposed Action, Tinker AFB would lease the GM assembly plant for OC-ALC aircraft maintenance activities. In addition to the 430-acre GM parcel, Tinker AFB would also have access to a 26-acre parcel of land owned by the city of Oklahoma City. The property would provide access to the GM assembly plant area from Tinker AFB. The parcels involved in the property transactions are shown in Figure 2-2.

Figure 2-2

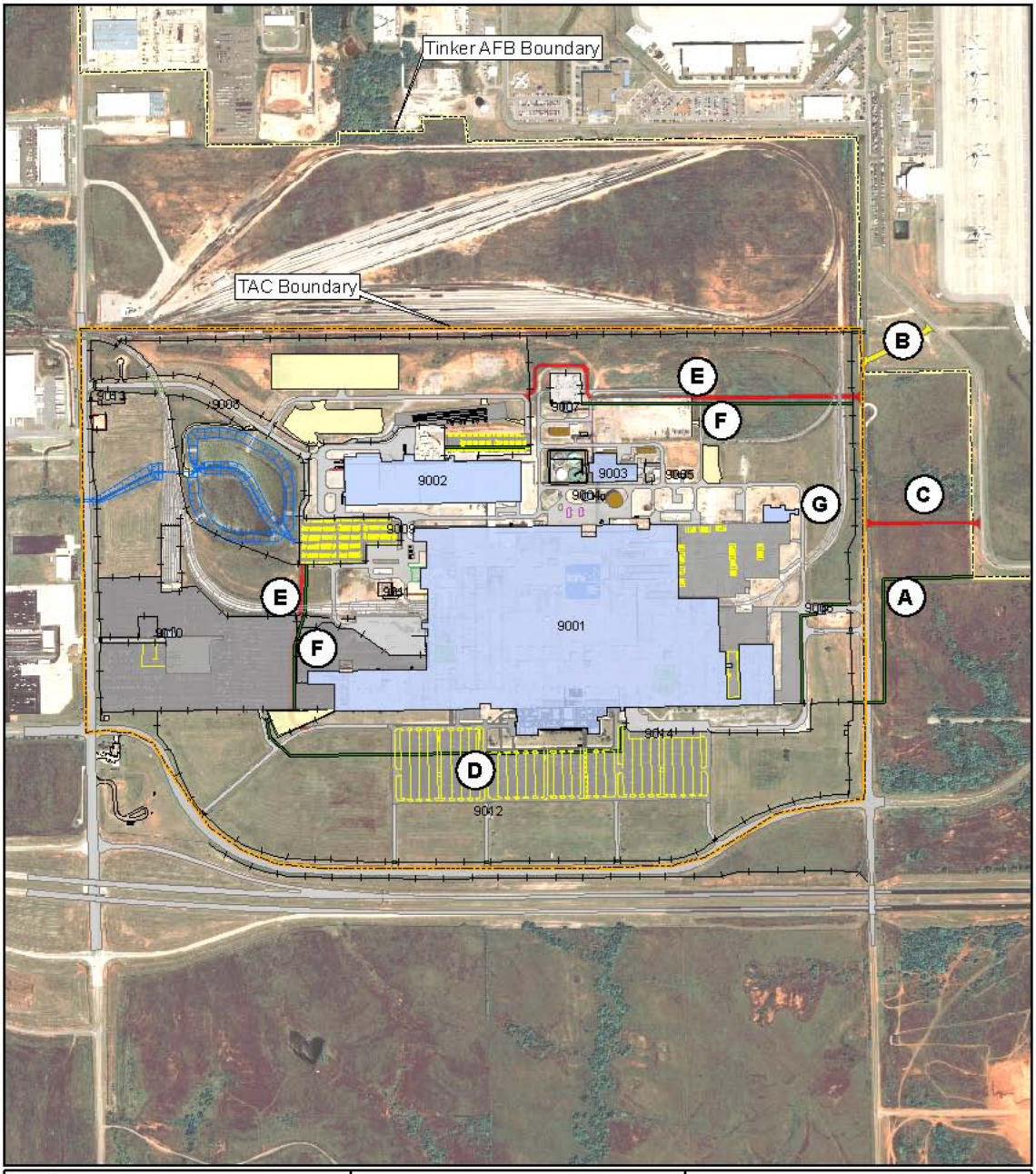
Property Locations
Tinker AFB
Oklahoma City, Oklahoma

Table 2-2 identifies construction projects planned to support the acquisition and utilization of the GM assembly plant. These projects are also identified on Figure 2-3.

Table 2-2 Proposed Construction

Project Title	Description	Estimated Completion Date
Construct Perimeter Security	Construct a fence connecting the existing base fence to the existing fence on the east side of the GM assembly plant. Secure existing assembly plant perimeter gates by installing jersey barriers and parking blocks as necessary to meet Air Force perimeter criteria. Repair gates and fence as necessary. Remove existing lighted GM sign. Remove perimeter GM signs. Install standard Air Force perimeter signs	Fourth Quarter (4Q), fiscal year (FY) 08
Construct Temporary Access Road	Construct approximately 450 feet of temporary recycled aggregate roadway to provide temporary direct access to the GM facility.	4Q, FY08
Construct Perimeter Road Extension	Construct a permanent roadway connecting Tinker AFB to GM facility	First Quarter (1Q), FY09
Repair Building 9001 for Force Protection	Install approximately 3,400 feet of chain link fencing on the south side of Building 9001. Connect to existing fences such that the south parking lot is separated from the building. Install new and/or relocate existing card access pedestrian turnstiles. Demolish parking lot medians, restore pavement, and re-stripe pavement as necessary to maintain as much parking on each side of the fence while complying with applicable security criteria. Install two-level card access systems and associated software at each of the turnstile sets.	1Q, FY10
Construct GM Assembly Plant Loop Roads	Construct approximately 4,000 feet of permanent roadway and roadway segments to connect existing GM assembly plant roadways internally and with Midwest Boulevard. Re-stripe existing parking lots as necessary to establish roadways within them.	FY10-13
Construct Industrial Security Perimeter	Construct approximately 3,600 feet of chain link fence segments to connect portions of the existing GM assembly plant internal fence. Install two controlled-access vehicle gates.	FY10
Construct T-9 Engine Test Cell	Construct foundation and install utilities to support installation of T-9 Noise Suppressor System. The facility footprint is approximately 11,000 SF	FY10-13

Notes:
FY = fiscal year Q = quarter
GM = General Motors SF = square feet



Legend

- Ⓐ Construct Perimeter Security
- Ⓑ Construct Temporary Access Road
- Ⓒ Construct Perimeter Road Extension
- Ⓓ Repair B9001 for Force Protection
- Ⓔ Construct TAC Loop Roads
- Ⓕ Construct Industrial Security Perimeter
- Ⓖ Construct T9 Engine Test Cell

0 450 900 Feet
0 0.1 0.2 Miles
0 0.1 0.2 NM
N W E S

Figure 2-3

Proposed Action Construction Projects Tinker AFB Oklahoma City, Oklahoma

TAC Operations

Initially, approximately 1,500 personnel are expected to work at the TAC facility. Expected growth in the first five years could reach a total of 4,500 personnel which was the approximate peak facility population when in use by GM. While the majority of activities planned for TAC represent operations that would be relocated from existing facilities on Tinker AFB, this action does have the potential to generate some new job growth for the area. For planning purposes in this document, approximately 200 new jobs would be created as a result of this action over a five year period.

Mission activities that would be relocated to the GM assembly plant include:

COMMODITIES GROUP

This mission activity includes relocation of a portion of the operational elements of the 76th Commodities Maintenance Group (76 CMXG) from current facilities on Tinker AFB to TAC. Specific elements relocating to TAC include the 551st Sheetmetal and Composites Production Squadron, portions of the 550th Avionics/Air Accessories Squadron and portions of the 552nd Fuel Accessories and Manufacturing Production Squadron. Specific aircraft maintenance activities within these organizations include:

Sheetmetal Production: This activity would occupy 320,000 SF in TAC and is responsible for production, repair, and maintenance of sheetmetal used on aircraft components and weapons systems. While the overall workload for this activity is not expected to increase, this activity is expanding from 246,000 SF at its current location to allow it to be self-sufficient in corrosion control operations (stripping, painting, and drying).

Composites Production: This activity would occupy 117,000 SF in TAC and is responsible for production, repair, and maintenance of composite materials used on aircraft components and weapons systems. While the overall workload for this activity is not expected to increase, this activity is expanding from 84,000 SF at its current location to provide space for new equipment.

Machining/Manufacturing: This activity would occupy 208,000 SF in TAC and involves several shops that include Machining/Grinding, Welding, Computer Numerical Control Machining, Sheetmetal Manufacturing/Foundry, Tool and Die, and Battery shops. The current area for these combined shops is 153,000 SF at their current locations. The additional space would allow for future additional equipment, processes, and capacity that are not currently defined.

Miscellaneous Shop Space: An additional 129,000 SF of TAC would be used for miscellaneous shop space to include Electric Accessories, Tube and Cable, Fabric, Fuel Cells, and Cable and Harness. These shops occupy 109,000 SF at their current locations. The additional space would allow for future additional equipment, processes, and capacity that are not currently defined.

Cleanroom Space: 76 CMXG would require 126,000 SF of "Cleanroom Space" for maintenance and repair of sensitive aircraft electronic and life support systems.

SOFTWARE GROUP

This Mission Activity includes relocation of most operational elements of the 76th Software Maintenance Support Group (76 SMXG) from various facilities on Tinker AFB to TAC. This group is comprised of five squadrons that provide software support for the weapons systems maintained at OC-ALC. Elements of this group include:

- Avionics Test and Industrial Software,
- B-1B Software,
- E-3 Software,
- B-2 Software, and
- Missile and Mission Planning Software.

This mission would occupy approximately 40,000 SF of TAC. Facility requirements for this mission include office/work space for managerial, general administrative and technical functions required for software development, testing, and maintenance. Electrostatic Discharge protected software laboratory space would be required to support activities that include soldering, dismantling of interface test adapters, asset storage, and troubleshooting.

PROPULSION GROUP

This Mission Activity includes relocation of the TF-33 Engine Maintenance Shop, part of the 76 Propulsion Maintenance Group (76 PMXG), that is currently located in Building 3001 on Tinker AFB. Additional space for the 76 PMXG would be allocated for Jet Engine Intermediate Maintenance (JEIM) workloads that could be coming to Tinker AFB in the future. The T9 Engine Test Cell proposed for installation on site would support the 76 PMXG workload at TAC.

MAINTENANCE SUPPORT GROUP

The 76th Maintenance Support Group (76 MXSG) would relocate all installation, warehouse support, and Precision Measuring Equipment Laboratory (PMEL) functions to the TAC facility. The installation component of 76 MXSG supports the installation of operations and equipment across the depot. The following installation shops within 76 MXSG would be relocated to TAC: Equipment Mechanics, Pipe Fitters, Electricians, Carpenters, Welders, Sheetmetal Mechanics, and Painters. The PMEL function would require 31,000 SF of environmentally controlled area for laboratory functions. The 76 MXSG warehouse operations would also relocate to TAC. 76 MXSG warehouse operations support installation functions as well as maintenance functions throughout the OC-ALC.

DEFENSE LOGISTICS AGENCY (DLA) MATERIAL SUPPORT

A portion of the TAC complex would be used by the DLA providing material support for maintenance activities described above. These operations consist of general aircraft maintenance materials loading, unloading, storage and distribution via cart, pallet jack, and forklift.

Additionally, 300,000 SF of space would be used on the first floor of the GM paint facility located northwest of the main facility. This space would be used for engine storage that would

be relocated from Building 3 on Tinker AFB and for engine storage associated with JEIM work accomplished in the main facility. There would also be approximately 300,000 SF of space designated in the main facility for warehouse storage of items relocated from other DLA facilities on Tinker AFB.

ADMINISTRATIVE SUPPORT ACTIVITIES

Approximately 200,000 SF of space would be required to provide adequate administrative support functions associated with the above mission activities. This space is currently available in three mezzanines located in the main shop area, an administrative area in the old paint facility, and an administrative area located on the south side of the facility.

MISSION SUPPORT ACTIVITIES

Additional mission support activities proposed for TAC include a Cafeteria, Fitness Area, Safety Office, Bioenvironmental Engineering Office, and Facility Maintenance Office.

2.4 DESCRIPTION OF THE NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the GM assembly plant would not be leased and no facilities would be demolished on Tinker AFB. OC-ALC activities would continue to be housed in deteriorated and substandard facilities and Tinker AFB would continue to experience associated mission impacts and ever-increasing operations and maintenance costs. In addition, facilities would continue to be located in airfield clear zones.

2.5 OTHER ACTIONS ANNOUNCED FOR TINKER AFB AND SURROUNDING COMMUNITY

This EA also considers the effects of cumulative impacts (40 CFR 1508.7) and concurrent actions (40 CFR 1508.25(1)), if any are applicable to the Proposed Action. Other actions announced for Tinker AFB that could occur during the same time period as the Proposed Action include:

- **Aircraft Maintenance Hangar (FY09):** Construction of a three-bay, multi-aircraft fuel-capable hangar sized for KC-135, E-3, B-1, B-52, and KC-X (Next generation) tanker aircraft. The facility is proposed for construction west of Building 2280 (which is located on the industrial east side of the base). The new facility is required as part of the Programmed Depot Maintenance for KC-135. Workload and repairs for this aircraft currently take place in three separate facilities that are inadequate in size. The new hangar is required to adequately address these issues and also to consolidate workload and function, improving efficiency.
- **Construct Air Traffic Control Tower (Possible FY10):** Construct a new eleven story Air Traffic Control Tower. Construction to include reinforced concrete piers, control tower cab with tinted double glazing, elevator, flight command and administrative area, supervision and simulation training area as well as fire protection, utilities, back-up power, lighting protection, access road, and any other necessary support for a complete

and useable facility. Project to include minimum DoD antiterrorism force protection requirements and demolition of existing control tower and access road.

- **Military Family Housing (MFH) Privatization (FY08):** Air Force implementation of the privatization initiative which involves leasing of all housing areas to a private developer for 50 years. The Air Force also would convey 694 military family housing units to the developer and, depending on the alternative selected by the developer, would implement a combination of demolition, renovation, and/or construction of housing units to meet the end-state requirement of 660 MFH units. Once privatization is implemented, the developer would own, operate, and manage all MFH units on the installation while leasing the land underlying the housing communities (approximately 224 acres) for a period of 50 years. Depending on the developer, there would be a combination of demolition, renovation, and new construction distributed throughout the MFH areas.
- **Re-Align Air Depot Gate (Possible FY10/11):** Relocation of Air Depot Gate located on the west side of the base. Relocation is required to provide an adequate and secure base entry. Relocation would alleviate current hazardous traffic congestion and would maintain the base perimeter security. The existing roadway alignment poses a safety issue and does not meet security requirements.
- **Construct Consolidated Fuel and Overhaul Facility (FY08):** Construct a new consolidated fuels, overhaul, and repair facility on the east side of Douglas Boulevard next to Building 3902. Construction of this facility is required to consolidate functions, improve efficiency, and eliminate the need for major renovation to areas in Building 3001 and Building 3108.
- **507th Base Realignment and Closure (BRAC) Action (FY08):** As recommended by BRAC, the following actions would take place:
    - The relocation of operations and maintenance personnel associated with the 137 Airlift Wing of the Air National Guard from Will Rogers International Airport (IAP) to Tinker AFB, where the 137 Air Wing (137 AW) would become an associative wing, operating with the 507th Air Refueling Wing of the Air Force Reserve Command. Although the 137 AW currently operates eight C-130 cargo aircraft, those aircraft would not follow the 137 AW to Tinker AFB but rather relocate to Pope AFB in Fayetteville, North Carolina.
    - The transfer of four KC-135R aircraft from the 939 Air Reserve Wing from Portland IAP Air Guard Station to Tinker AFB.
    - The demolition and construction of facilities to support the additional personnel and aircraft.
        - Construction of Air Force Reserve Command and Air National Guard squadron operations, operations support squadron, life support storage, and life support work areas.
        - Construction of a new hangar with hangar access and associated demolition of Buildings 1037 and 1041, which would also correct a current deficiency at Tinker AFB.

- Renovation of Building 1048.

- **Addition to Child Care Facility, Building 5510 (FY08):** Addition of 4,000 SF to the west side of Building 5510. This building is located on the west side of Tinker AFB. This addition would provide two additional rooms to be used for child care.

- **DLA Warehouse (FY08):** Construction of a 167,575 SF, permanent, non-combustible, general purpose warehouse with a 25 foot clear stack height, weather sealed door tracks, loading/unloading docks with dock levelers, paved roadways, and connection. The facility would require steam heat from the Central Heat Plant or boiler. All electrical, mechanical, and fire protection systems would meet national, state, and local code requirements. An annex would house a 1,324 SF administrative area with a lunch/break area, restrooms, and locker rooms. A utility annex would house all the utility functions for this facility. There are 18 depots within the continental United States, most of which are located on active military bases. These Depots support the mission of the Military Installation on which they are located. These Depots also store general commodities. BRAC identified the requirement for construction of additional warehouses at the Defense Distribution Depot Oklahoma City (located at Tinker AFB). This is a BRAC requirement.

- **Construct Medical Clinic (FY09):** Construction of a new medical clinic, approximately 172,000 SF, in the open land area northeast of Gott Gate. The new facility would replace the existing clinic and would result in the demolition of the Central Plant, which contains both the chillers and boilers that service the clinic. Demolition of the boilers would also result in de-commissioning of an underground diesel storage tank. This proposed project would also include a medical squadron building as well as the War Readiness Materials warehouse. The new clinic would house doctor's offices, exam and treatment rooms, laboratories, radiology, pharmacy, dental clinic, conference and training rooms, as well as storage areas. Energy to operate the new boilers would require a combination of diesel fuel (stored in above ground storage tanks) and natural gas. The existing medical clinic would also be demolished (approximately 184,000 SF). Upon completion of the new facilities, the existing medical clinic and TRICARE facility (Building 5803) would also be demolished.

- **MROTC Fabric Maintenance Hangar (FY10):** The Boeing Company would build a 239,000 SF hangar to perform maintenance on commercial planes and contract work for government planes. Location of the new hangar would be east of Douglas Boulevard, across from Tinker AFB.

- **Child Development Center (CDC) (FY10):** Construction of a new CDC in the southwest portion of the installation, north of SE 59th Street and northwest of Gott Gate in the South Forty Area. Size of the facility would be approximately 32,877 SF. The proposed action would be located approximately 375 feet west of Air Depot Road and approximately 100 feet north of the installation fence line. Approximately 130 feet of the Urban Greenway Multi-Use trail would be removed and re-routed as a result. The new CDC would provide for the care and training of dependent children of both military and civilian personnel assigned to Tinker AFB. The building would contain

areas for child activities, staff support, facility support, core administration, and maintenance. 2.1 acres of land would be required surrounding the facility.

- **Harry Twaddle Acquisition (FY10):** The U.S. Army Reserve's 95th Division (Institutional Training) would move to Fort Sill. It is currently located at the Major General Harry Twaddle United States Armed Forces Reserve Center, Oklahoma Center, Oklahoma. The Reserves Center, approximately 152,000 SF, would be acquired by Tinker AFB.
- **Construct Consolidated Wing Headquarters Facility (FY10/11)**: Construction of a Consolidated Wing Headquarters building for distinct legal staff to include a Headquarters Command section, Resource Manager, Public Affairs, Base Plans, 72 Mission Support Group, 72 Mission Support Squadron, as well as a large Staff Judge Advocate facility. This project involves construction of a multi-story steel frame building on piers and concrete slab. The project would also include demolition of Building 460 and reconfiguration of the road intersection at Arnold and F Streets. Construction of the new facility is required because the existing building is antiquated and is in violation of the Americans with Disabilities Act. The existing facility also does not meet the Air Force Legal Facilities Design Guide and has poor indoor air quality. There are problems with mold, wood rot and the building has suffered from termite infestation in the past.
- **Construct Physical Fitness Center (FY10/11):** Construct a physical fitness center to include a health and wellness center with a cardiovascular room, equipment and free weight room, exercise rooms, racquetball rooms, indoor track, Olympic size pool, child play area, two full court basketball courts, locker rooms, as well as men's and women's restrooms. Facility is 90,901 SF in size. This project would also include demolition of Buildings 5922, 5937, 5927, 5916, 5915, 5924, 5920, 6004, and 216. This new facility would be constructed on the west side of the installation.
- **Building 3001, Phase III, Revitalization (FY10/11):** Expansion and opening of south dog-leg for additional aircraft access. Project would also involve providing centralized location for secondary utilities as well as upgrading electrical and utility connections.
- **Consolidated Security Forces, South 40 Development (FY10/11):** Construction of a 64,000 SF facility on the south side of Tinker AFB. This project includes construction of a new facility to relocate and consolidate key Security Police Operations functions at a single facility. One centralized facility would reduce the response time to react to various situations.
- **Engine Test Facility, Phases I and II (FY10/11):** Construction of an engine test addition onto the south side of Building 3234 which would consist of an administrative area, control room, mechanical room, and 14 meter test cell. The addition would be approximately 23,680 SF. The facility would be equipped with a sound suppression system which would eliminate unacceptable, disruptive noise levels in order to comply with noise and air pollution requirements as established by law. This is required to house the next generation engines. These engines are very sensitive to inlet flow distortion and smooth inlet air flow is not possible in a front loading test cell. The cell must be side-loading to accommodate the inlet airflow elements in the front.

- **Phase III, 3rd Combat Communications Complex (FY13):** The purpose of this project is to design and construct a new Squadron Operations Complex for the 32nd Combat Communications Squadron at Tinker AFB. The new facility would replace 13 substandard existing facilities. The new consolidated facility would enhance the squadron's capability to train, maintain its equipment and to deploy to any location in the world. The 3rd Combat Communications Group is a tenant on Tinker AFB that provides deployable communications, computer systems, navigational aids, and air traffic control services internationally. The new facility would support a squadron of approximately 141 personnel. The site is located east of Air Depot and north of Reserve Road. The Squadron Operations Complex is organized around a core containing the common areas: restrooms, supply room, conference room and training room for all flights. There are three flight bays located off the core area that provide each flight with air conditioned office space, electronic workbenches and drive through bay areas to store, palletize, and maintain deployable equipment. The front of the facility contains offices for the Squadron Commander and the Squadron administrative functions.
- **Demolition of Tinker AFB facilities:** Approximately 1.2 million SF of facilities would be demolished as a part of an out-years (FY 2014 through 2018) demolition plan with specific facilities to be determined at a later date.
- **Oklahoma City Southeast Sector Plan:** The recommendations made by the Southeast Sector Plan include protection, preservation and enhancement of the sector's natural resources and the recreational amenities they present; protection and preservation of the rural character of the sector by considering all impacts of development proposals, and providing necessary improvements to infrastructure concurrent with new development; and allowing for the expansion of Tinker AFB and the expansion of specialized industrial development within a strategic area. Some actions recommended by the plan include area-wide development and design improvements; encouragement of industrial development; preservation of Environmental Conservation Areas; increasing police protection, fire protection, and emergency services; improvements to transportation, water, sewer and solid waste systems; improving parks, recreation, and open spaces; improving school facilities and systems; modification of re-zoning requirements; and improvement of neighborhood associations.

2.6 COMPARISON OF ENVIRONMENTAL EFFECTS OF ALL ALTERNATIVES

Table 2-3 summarizes the impacts of the Proposed Action and the No-Action Alternative.

2.7 IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The preferred alternative is the Proposed Action.

2.8 MITIGATION MEASURES

Table 2-4 presents mitigation measures and best management practices anticipated for impacts incurred under the Proposed Action and the No-Action Alternative.

Table 2-3 Summary of Environmental Impacts

Resource	**Proposed Action** Building Demolition and Establish TAC.	**No-Action Alternative**
Noise	Increased noise levels at sensitive noise receptors due to relocation of engine test cells would not be expected to be perceptible. Short-term, minor impacts associated with construction noise would increase, but would be minimal given the existing noise environment on the installation.	No change from baseline conditions.
Land Use	Buildings currently in airfield clear zones would be demolished, improving overall land-use compatibility in airfield areas.	Facilities would continue to be inappropriately located in Airfield Clear Zones.
Air Quality	There would be a short-term increase in air emissions associated with the construction and demolition activities. These emissions would cease upon completion of the projects, and would contribute only a small percentage to regional emissions. No new emission sources are expected. The Proposed Action would occur in an attainment area, would not be subject to a conformity analysis, and would not expose the public or operational personnel to hazardous levels of air emissions.	No change from baseline conditions.
Water Resources	There would be a potential for short-term increases in the sediment loading of surface water as a result of demolition and construction activities. These increases would be managed through implementation of a Storm Water Pollution Prevention Plan along with the incorporation of best management practices for sediment control during construction. There would be no impacts to the quality or quantity of groundwater at Tinker AFB or the surrounding area. There would be no impacts to wetland or floodplains on the installation or at the GM assembly plant.	No change from baseline conditions.
Cultural Resources	No impacts to cultural resources are expected. Procedures are in place that would be followed in the event of inadvertent discoveries of cultural resource materials or human remains during demolitions, construction and subsequent operation/maintenance activities.	No change from baseline conditions.
Earth Resources	There would be short-term, minor soil disturbance as a result of the proposed construction and demolition activities. The soils in the vicinity of the proposed projects have been previously disturbed and the projects would be located in improved areas with existing facilities and paved roads. Impacts would include increased soil erosion and fugitive dust emissions that would be minimized through the implementation of best management practices.	No change from baseline conditions.
Biological Resources	Minor impacts to biological resources are expected. The proposed demolition projects would occur within developed areas of Tinker AFB and would result in a positive impact on biological resources as the overall development density would be reduced. Minor adverse impacts to biological resources would occur associated with the proposed projects on the TAC site and the city-owned property. No known or suspected federally threatened or endangered species are thought to inhabit the project areas.	No change from baseline conditions.

Table 2-3 (Continued)

Resource	Proposed Action Building Demolition and Establish TAC.	No-Action Alternative
Hazardous Materials and Wastes	Contractors would oversee the management of asbestos-containing material, lead-based paint, and hazardous materials and waste. Management of these materials and waste streams would occur under the existing Tinker AFB management programs and would not result in long-term impacts.	Installation activities would continue to be housed in deteriorated and substandard facilities where asbestos-containing material and lead-based paint are present.
Occupational Health and Safety	There would be short-term, minor adverse effects to safety due to the temporary increase in construction activities. Construction contractors would be required to establish and maintain safety programs that would provide protection to their workers and limit the exposure of base personnel to construction hazards.	Installation activities would continue to be housed in deteriorated and substandard facilities, thus potentially exposing personnel to unsafe working conditions. In addition, facilities would continue to be located in airfield clear zones.
Utilities and Infrastructure	There would be a minor, short-term increase in solid waste associated with construction and demolition activities. There would be positive long-term impacts for traffic flows on Tinker AFB as commuter traffic would relocate to the proposed TAC. There are expected to be negligible impacts to energy and water consumption for the installation. There is a potential long-term positive impact associated with increased use of renewable energy sources in the form of landfill gas for proposed TAC operations.	No change from baseline conditions.
Socioeconomic Resources	There would be long-term reduction in commercial tax base for local taxing entities with the greatest drop in tax revenue felt by the Midwest City-Del City School District. This loss in tax revenue is expected to be offset by an increase in state funding. A short-term positive economic impact would be expected associated with the proposed construction and demolition activities.	Without reuse, the GM assembly plant would continue to deteriorate or be demolished, reducing property value, and thereby resulting in a loss of commercial tax revenue.
Environmental Justice	The Proposed Action is not expected to create disproportionately high or adverse effects on children, minority populations, or low-income populations.	No change from baseline conditions.

Notes:
AFB = Air Force Base
GM = General Motors
TAC = Tinker Aerospace Complex

Table 2-4 Summary of Mitigation and Best Management Practices

Resource	Mitigation and Best Management Practices (BMPs)
Noise	No mitigation measures are necessary. BMPs include restricting the operation of extremely noisy equipment (e.g., brick cutters or jackhammers) before 0900 hours and after 1700 hours. Other practices include properly operating and maintained equipment (e.g., possessing mufflers, gaskets, sharpened and lubricated blades), maximizing the distance of loud equipment from a residence, directing equipment to use less noise-sensitive routes, fitting silencers to combustion engines, fastening machinery covers or panels tightly, isolating vibrating parts and damping, constructing sound barriers to reduce propagation, or shutting off or idling machinery between work periods are other suggestions to reduce construction-associated noises and disturbances.
Land Use	No mitigation measures are necessary.
Air Quality	No mitigation measures are necessary. BMPs to minimize fugitive dust emissions would include watering the disturbed construction area, covering dirt and aggregate trucks and/or piles, preventing dirt carryover to paved roads, and using erosion barriers and wind breaks.
Water Resources	No mitigation measures are necessary. Proposed construction projects would include site-specific sediment and erosion control plans that detail BMPs to prevent soil disturbance, capture and contain loose soil, and slow the movement of storm water during heavy rains. In order to minimize the potential for increased total suspended solids in downstream surface water bodies, a Storm Water Pollution Prevention Plan should be implemented. No mitigation measures are necessary for ground water.
Cultural Resources	No mitigation measures are necessary. Procedures are in place that would be followed in the event of inadvertent discoveries of cultural resource materials or human remains during demolitions, construction and subsequent operation/maintenance activities.
Earth Resources	No mitigation measures are necessary. Proposed construction projects would include site-specific sediment and erosion control plans that detail BMPs to prevent soil disturbance, capture and contain loose soil, and slow the movement of storm water during heavy rains. Fugitive dust from construction activities would be minimized by watering and soil stockpiling, thereby reducing the total amount of soil exposed to wind.
Biological Resources	No mitigation measures are necessary. Construction area footprints should be minimized on projects occurring on the city-owned property.
Hazardous Materials and Wastes	No mitigation measures are necessary.
Occupational Health and Safety	No mitigation measures are necessary. Site specific health and safety plans should be in place for all proposed construction and demolition projects.
Infrastructure and Utilities	No mitigation measures or BMPs are necessary.
Socioeconomic Resources	No mitigation measures or BMPs are necessary.
Environmental Justice	No mitigation measures or BMPs are necessary.

Notes:
BMPs = Best Management Practices

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Chapter 3

Affected Environment

CHAPTER 3
AFFECTED ENVIRONMENT

3.1 INTRODUCTION

This chapter describes the current conditions of the environmental resources, either manmade or natural, that would be affected by implementation of the Proposed Action or No-Action Alternative. Section 3.3 focuses on the conditions at Tinker AFB and, where applicable, in the surrounding community. The baseline conditions presented in this chapter are described to the level of detail necessary to support analysis of potential impacts presented in Chapter 4, Environmental Consequences.

3.2 INSTALLATION LOCATION, HISTORY, AND CURRENT MISSION

Tinker AFB is headquarters for the OC-ALC and the primary mission is to provide responsive installation and support services to all installation missions. Tinker AFB is located in Oklahoma County, approximately ten miles southeast of downtown Oklahoma City, Oklahoma. Midwest City to the north and Del City to the northwest are incorporated areas immediately surrounding Tinker AFB (USAF 2007a).

Tinker Field was established in 1941 as a maintenance and supply depot, and immediately following World War II, expanded to include Douglas Aircraft assembly plant. At this time, Tinker Field was renamed as the Oklahoma City Air Material Area (OCAMA). From the 1950s to the 1980s, the OCAMA continued to support additional aircraft and weapons. In 1974, the depot was renamed Oklahoma City Air Logistics Center. In 1991, two Navy E-6 squadrons were added to maintain a flying/communications link between the White House and ballistic missile submarines around the world. Tinker AFB also provided front line support to the forces engaged in Operation Desert Shield and Desert Storm in the early 1990s, and the more recent Operation Enduring Freedom, Operation Iraqi Freedom, and the Global War on Terrorism (USAF 2007a).

3.3 DESCRIPTION OF THE AFFECTED ENVIRONMENT

3.3.1 Noise

3.3.1.1 Definition of Resource

Noise is generally defined as sound that is unwanted or undesirable because it interferes with speech communication and hearing, or is otherwise annoying. Under certain conditions, noise may cause hearing loss, interfere with human activities, and in various ways, affect the health and well-being of a community.

The decibel (dB) is the accepted standard unit for measuring the amplitude of sound. The dB unit is a logarithmic ratio of the increase in atmospheric pressure that a sound event causes, compared to a defined reference pressure. This reference pressure is the lowest detectible pressure recognized by the human ear (0.00002 Pascals). When using decibels to depict airborne sound pressure levels (SPL), zero dB is the threshold of human hearing and exponential increases occur

every 10 dB. As such, an event that generates 60 dB of sound is ten times louder than one that generates 50 dB. In addition to quantifying the pressure of a noise event, the quality of noise is described in terms of frequency or more commonly, "pitch." While the human ear can detect sound over a very wide spectrum of frequencies, it is particularly well adapted to perceiving sounds in the mid-range frequencies.

When describing sound and its effect on a human population, A-weighted (dBA) SPLs are typically used to account for the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal in a manner corresponding to the way the human ear perceives sound. The A-weighted noise level has been found to correlate well with people's judgments of the loudness of different sounds and has been used for many years as a measure of community noise. Humans can detect changes in sound levels of approximately 3 dBA. Changes of less than 3 dBA are generally not discernable by humans with normal hearing sensitivity.

Human response to sound is not only a function of the maximum SPL, but also the duration and temporal variation. As such, cumulative measures of sound exposure over time have been developed. The "Day-Night Average Sound Pressure Level" (DNL) was developed to evaluate noise exposure over a 24-hour period. The DNL metric applies a 10-dB "penalty" to the nighttime hourly SPL from 10pm to 7am and then averages the total acoustic energy over a 24-hour period. The nighttime 10 dB weighting is used to account for the increased sensitivity to nighttime noise that would be expected in a community.

3.3.1.2 Affected Environment

The major source of noise on Tinker AFB is attributable to aircraft operations on the installation. Noise on Air Force installations is managed through the Air Installation Compatible Use Zone (AICUZ) program. The AICUZ program seeks to identify and promote compatible land uses in and around Air Force installations. Tinker AFBs most recent AICUZ document was published in 2006 and Figure 3-1 displays the noise contours at the installation as delineated in the 2006 AICUZ report.

Federal 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. Occupational safety and health regulations are a primary method of enforcing these guidelines and standards.

Hearing Loss. The potential for permanent hearing loss arises from direct exposure to noise on a regular, continuing long-term basis (16 hours a day for 40 years) to levels above 75 dBA DNL. Based on an USEPA report, hearing loss is not expected in people exposed to 75 dBA DNL or less (USEPA 1974). The Federal Interagency Committee on Urban Noise states that hearing loss due to noise: 1) may begin to occur in people exposed to long-term noise at or above 75 dBA DNL, 2) would not likely occur in people exposed to noise between 70 and 75 dBA DNL, and 3) would not occur in people exposed to noise less than 70 dBA DNL (FICUN 1980).

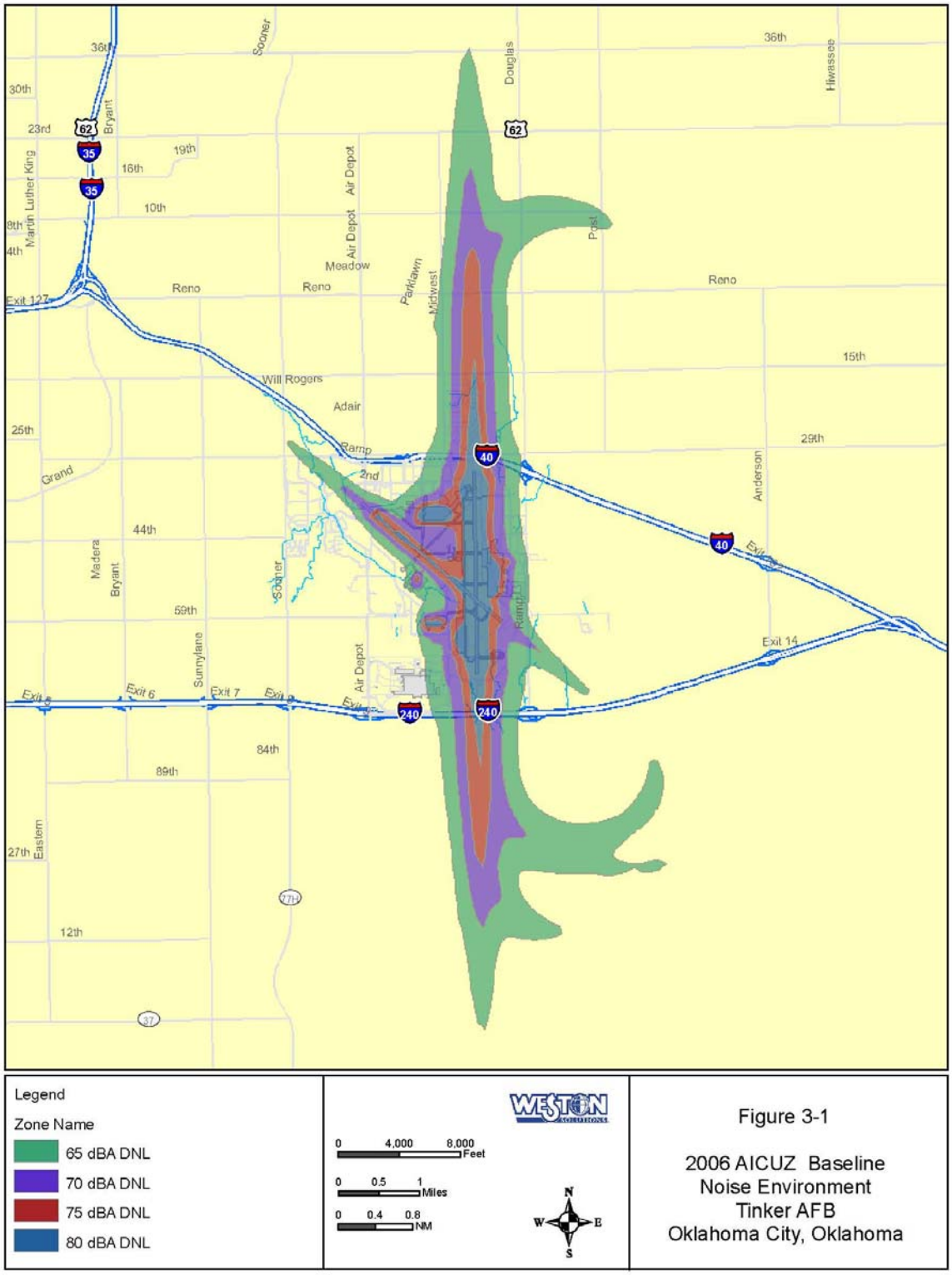


Figure 3-1

2006 AICUZ Baseline
Noise Environment
Tinker AFB
Oklahoma City, Oklahoma

Noise Interference. Elevated noise levels can potentially interfere with speech, cause annoyance, or disturb sleep. Annoyance resulting from noise exposure is typically measured via community surveys where the level of tolerance can vary greatly among individuals (USEPA 1974). It is estimated that 13.5 percent of the population exposed to 65 dBA DNL would be highly annoyed, while 37 percent would be highly annoyed if exposed to a 75 dBA DNL (USEPA 1974). Research also indicates that the "type of neighborhood" a person inhabits influences their noise annoyance level, with instances of noise complaints being greater for those living in rural areas than in suburban or urban residential areas (Schomer 2001).

Interior noise levels are typically lower than exterior levels due to the attenuation of the sound energy by the structure, with the amount of noise level reduction provided by a building depending on the type of construction and the number of openings such as doors, windows, chimneys, and plumbing vents. The approximate reduction in interior noise is 15 dBA when windows are open and 25 dBA with windows closed (USEPA 1974).

3.3.2 Land Use

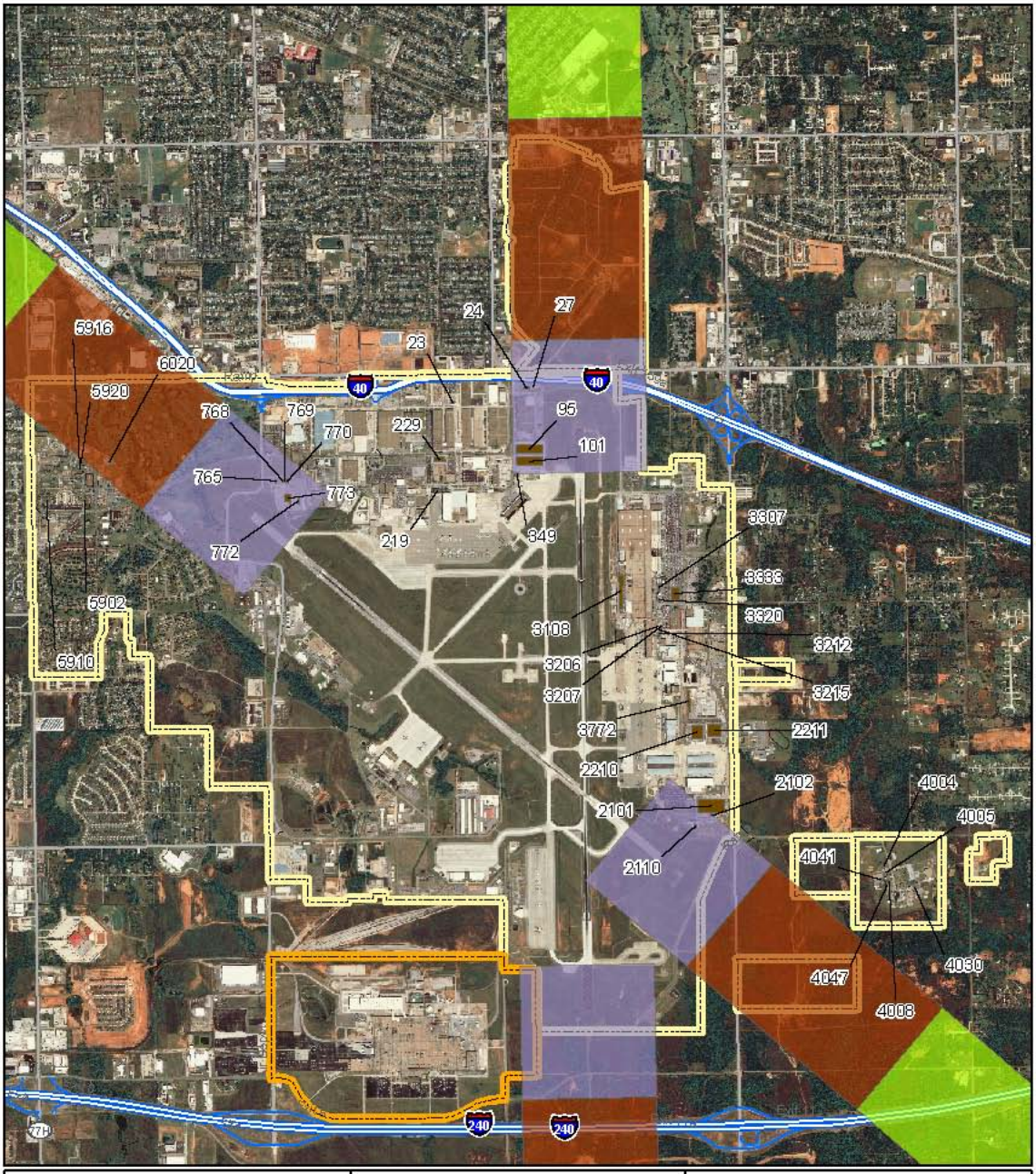
3.3.2.1 Definition of Resource

Land use describes the activities that take place in a particular area and generally refers to human modification of land, often for residential or economic purposes. It also refers to use of land for preservation or protection of natural resources. It is important as a means to determine if there is sufficient area for proposed activities and to identify any potential conflicts with local land-use plans. This section of the EA describes the on- and off-base land-use resources that could potentially be affected by the Proposed Action and alternative.

3.3.2.2 Tinker AFB and Vicinity

Existing land-use patterns on Tinker AFB are a result of the installation's development since World War II. Facility development and supporting infrastructure have evolved over time as missions and requirements have changed or expanded. Tinker AFB's runways separate the installation into several distinct functional land-use areas. The installation's unique and multiple missions have further contributed to the development of these areas into distinct planning districts. Airfield clearance criteria have also affected development patterns at Tinker AFB, as several facilities were constructed in the airfield Clear Zones prior to adoption of more stringent clearance criteria. Figure 3-2 shows the airfield clear zones and accidental potential zones on the installation and includes buildings proposed for demolition in the Proposed Action.

Despite these hindrances, the installation has maintained adequate functional relationships with relatively few land-use conflicts. Current land uses on Tinker AFB include Administrative, Aircraft Operations and Maintenance, Airfield, Community Commercial, Community Service, Housing, Industrial, Medical, Open Space, Outdoor Recreation and Water. Industrial is the predominant land use in areas associated with Proposed Action project activities (USAF 2007a). Figure 3-3 shows the existing land uses for Tinker AFB and surrounding areas. Figure 3-4 shows future land uses for Tinker AFB and surrounding areas.



Legend

- Tinker AFB
- TAC Project Area Boundary
- Demo Buildings
- Clear Zones
- Accident Potential Zones I
- Accident Potential Zones II

0 1,500 3,000 Feet

0 0.25 0.5 Miles

0 0.15 0.3 NM

N W E S

Figure 3-2

Tinker AFB Airfield Clear and Accident Potential Zones Tinker AFB Oklahoma City, Oklahoma

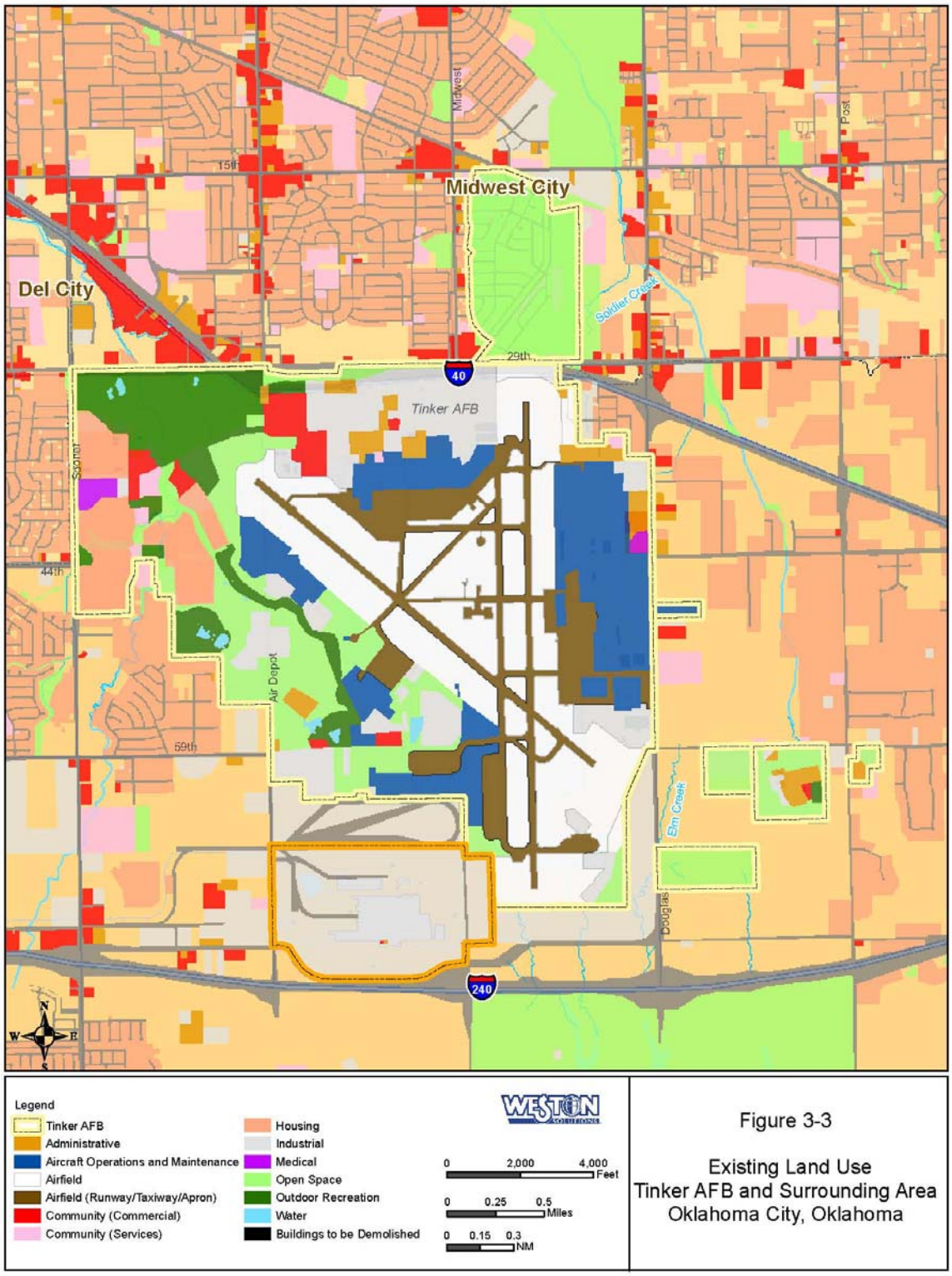


Figure 3-3

Existing Land Use
Tinker AFB and Surrounding Area
Oklahoma City, Oklahoma

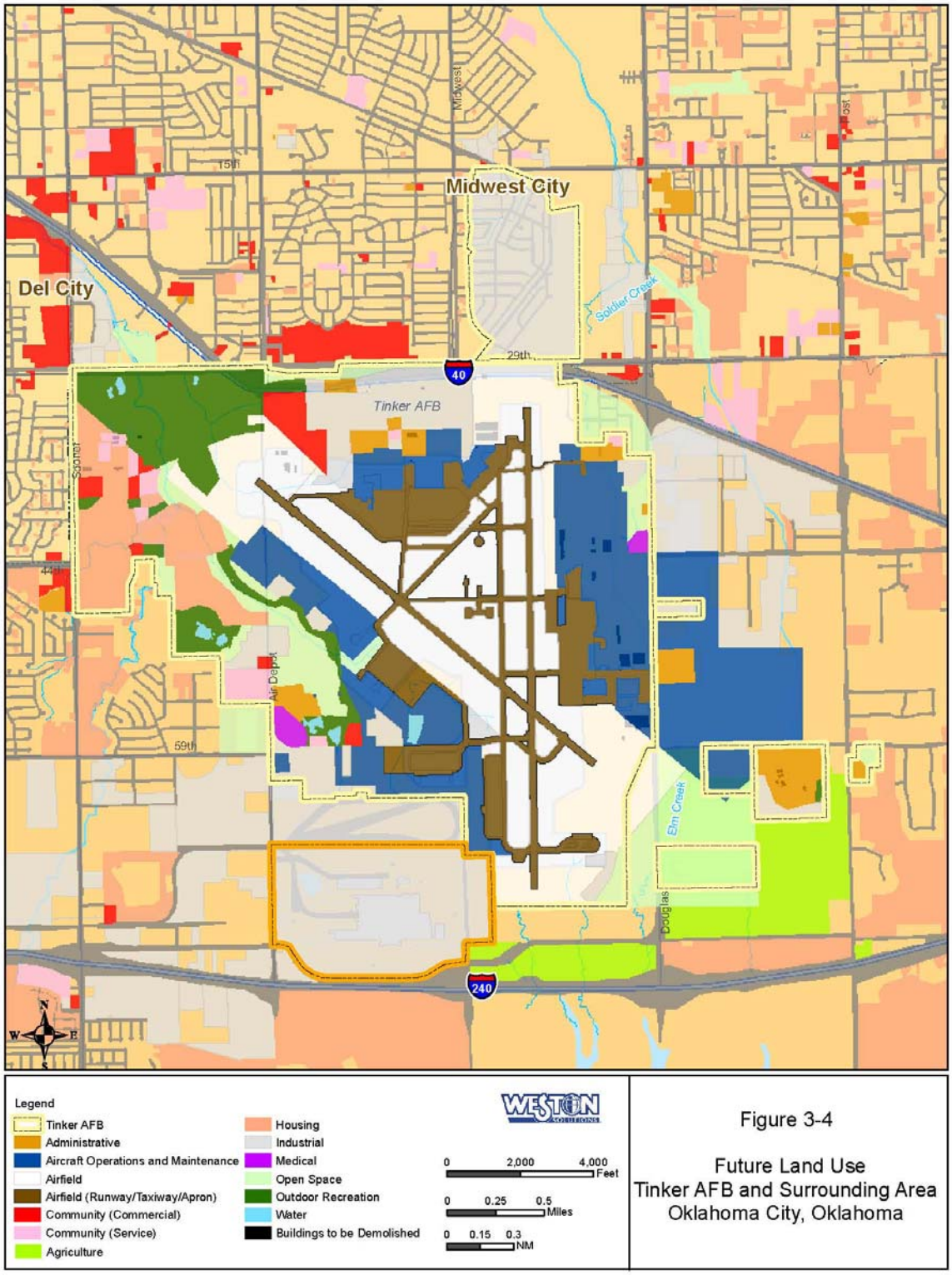


Figure 3-4

Future Land Use
Tinker AFB and Surrounding Area
Oklahoma City, Oklahoma

The majority of the land surrounding Tinker AFB can be characterized as moderate-density urban developed, with areas of undeveloped land south of the installation. Midwest City, located directly north of the installation, is predominantly residential, with considerable amounts of commercial land uses located along major road corridors. These commercial corridors are primarily 15th Street, 29th Street, Interstate 40, Air Depot Boulevard, and Midwest Boulevard. A significant amount of public and institutional uses are scattered throughout Midwest City. These include City Hall, a public library, post office, several schools, and the John Conrad Regional Golf Course (USAF 2006a).

Del City is located northwest of the installation and is a mostly developed, moderate-density, mixed-use community. The predominant land use is residential, with commercial corridors existing along 15th Street, 29th Street, and Interstate 40. Only limited amounts of land remain undeveloped in Del City. Limited areas of industrial uses exist in Del City between Interstate 40 and the Canadian River (USAF 2006a).

Most of the undeveloped land in the Tinker vicinity lies within Oklahoma City. Interstate 240 runs east to west just south of the installation. A railroad yard, the GM assembly plant, and other industrial uses are located between Tinker AFB and Interstate 240, with sporadic areas of open space intermixed throughout the corridor. Residential subdivisions are being developed southwest of the GM assembly plant, south of Interstate 240. Lake Stanley Draper occupies nearly 3,000 acres south of Interstate 240. The lake is in an Environmental Conservation District owned by the Oklahoma City Water Trust and is surrounded by a significant amount of undeveloped land. Outside the eastern boundary of Tinker AFB, minimal commercial development exists along Douglas Boulevard, with sporadic residential development further east (USAF 2006a).

3.3.3 Air Quality

3.3.3.1 Air Quality Standards and Regulations

The United States Environmental Protection Agency (USEPA) has established primary and secondary National Ambient Air Quality Standards (NAAQS) under the Clean Air Act Amendments of 1990 (CAAA). The CAAA also set emission limits for certain air pollutants from specific sources, set new source performance standards based on best demonstrated control technologies, and established national emission standards for hazardous air pollutants.

The CAAA specifies two sets of standards – primary and secondary – for each regulated air pollutant. Primary standards define levels of air quality necessary to protect public health, including the health of sensitive populations such as people with asthma, children, and the elderly. Secondary standards define levels of air quality necessary to protect against decreased visibility and damage to animals, crops, vegetation, and buildings. Federal air quality standards are currently established for six pollutants (known as criteria pollutants), including carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), sulfur oxides (SO_x, commonly measured as sulfur dioxide – SO_2), lead, and particulate matter (which includes particulate matter equal to or less than 10 micrometers in aerodynamic diameter [PM_{10}] and particulate matter equal to or less than 2.5 micrometers in aerodynamic diameter [$PM_{2.5}$]). Although O_3 is considered a criteria pollutant and is measurable in the atmosphere, it is often not considered as a pollutant when

reporting emissions from specific sources, because O_3 is not typically emitted directly from most emissions sources. O_3 is formed in the atmosphere from its precursors – nitrogen oxides (NO_x) and volatile organic compounds (VOCs) – that are directly emitted from various sources. Thus, emissions of NO_x and VOCs are commonly reported instead of O_3.

The NAAQS for the six criteria pollutants are shown in Table 3-1. Units of measure for the standards shown in this table are micrograms per cubic meter of air ($\mu g/m^3$), except for ozone, which is in parts per million (ppm).

The USEPA classifies the air quality within an Air Quality Control Region (AQCR) according to whether the region meets federal primary and secondary air quality standards. An AQCR or portion of an AQCR may be classified as attainment, non-attainment, or unclassified with regard to the air quality standards for each of the criteria pollutants. "Attainment" describes a condition in which standards for one or more of the six pollutants are being met in an area. The area is considered an attainment area for only those criteria pollutants for which the NAAQS are being met. "Non-attainment" describes a condition in which standards for one or more of the six pollutants are not being met in an area. "Unclassified" indicates that air quality in the area cannot be classified and the area is treated as attainment. An area may have all three classifications for different criteria pollutants.

Table 3-1 National Ambient Air Quality Standards

Pollutant	Standard Value ($\mu g/m^3$)[a]	Standard Type
CO		
1-hr average	40,000	Primary
8-hr average	10,000	Primary
NO_2		
Annual average	100	Primary and secondary
O_3		
8-hr average[b]	0.075	Primary
Lead		
Quarterly average	1.5	Primary
PM_{10}		
24-hr average[c]	150	Primary and secondary
$PM_{2.5}$		
24-hr average[d]	35	Primary
Annual average[e]	15	Primary
SO_2		
3-hr average	1,300	Secondary
24-hr average	365	Primary
Annual average	80	Primary

Notes:
CO = carbon monoxide
$\mu g/m^3$ = micrograms per cubic meter.
NO_2 = nitrogen dioxide
O_3 = ozone
$PM_{2.5}$ =particulate matter equal or less than 2.5 micrometers in diameter.
PM_{10} = particulate matter equal or less than 10 micrometers in diameter.
SO_2 = sulfur dioxide
[a] Units for ozone are ppm.
[b] To attain the 8-hour ozone 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.
[c] The 24-hour standard for PM_{10} is not be exceeded more than once per year
[d] The $PM_{2.5}$ 24-hour standard is based on the 3-year average 98th percentile of 24-hour concentrations at
e The $PM_{2.5}$ annual standard is based on 3-year average of weighted annual arithmetic mean concentrations, must not exceed 15 $\mu g/m^3$.

The CAAA requires federal actions to conform to any applicable state implementation plan (SIP). USEPA has promulgated regulations implementing this requirement (USEPA 2003a and USEPA 2003b). A SIP must be developed to achieve the NAAQS in non-attainment areas (i.e., areas not currently attaining the NAAQS for any pollutant) or to maintain attainment of the NAAQS in maintenance areas (i.e., areas that were non-attainment areas but are currently attaining that NAAQS). General conformity refers to federal actions other than those conducted according to specified transportation plans (which are subject to the Transportation Conformity Rule). Therefore, the General Conformity rule applies only to non-transportation actions in non-attainment or maintenance areas. For such actions, a determination of conformity with the SIP must be performed if the emissions resulting from the action exceed applicability thresholds specified for each pollutant and classification of non-attainment. Both direct emissions from the action itself and indirect emissions that may occur at a different time or place but are an anticipated consequence of the action must be considered. The Transportation Conformity Rule does not apply to this project.

The applicability thresholds are 100 tons per year (tpy) for criteria pollutants, except for those shown in Table 3-2.

Table 3-2 General Conformity Applicability Thresholds

NAAQS Pollutant	Type of Non-attainment or Maintenance Area	Applicability Threshold (tpy)
Ozone	Extreme NAAs	10 tpy VOC or NO_x
	Severe NAAs	25 tpy VOC or NO_x
	Serious NAAs	50 tpy VOC or NO_x
	Marginal or moderate NAAs inside an ozone transport region	50 tpy VOC (100 tpy NO_x)
	Maintenance areas inside an ozone transport region	50 tpy VOC (100 tpy NO_x)
Carbon Monoxide	All NAAs	100 tpy
Sulfur Dioxide	All	100 tpy
PM_{10}	Serious NAAs	70 tpy PM_{10}
	Moderate NAAs	100 tpy PM_{10}
	All Maintenance areas	100 tpy
Lead	All NAAs	25 tpy Pb
	All Maintenance areas	25 tpy Pb

Notes:
NAA = Non-attainment area
NAAQS = National Ambient Air Quality Standard
NO_x = nitrogen oxide
Pb = lead
PM_{10} = particulate matter equal or less than 10 micrometers in diameter.
tpy = tons per year
VOC = volatile organic compound

A number of actions are exempted from the requirements of general conformity, including the following:

- Actions that do not have emissions increases.
- Actions with an emissions increase that is clearly *de minimis* (21 actions are listed; primarily actions that are administrative, legal, or routine in nature including routine movement of mobile assets, material and personnel as well as routine maintenance and repair).
- Actions that are not reasonably foreseeable or that respond to natural disasters or emergencies. Actions that have been approved under specified federal programs.
- If an action triggers the applicability thresholds and is not exempt from the requirements, the federal agency must demonstrate and document that the direct and indirect emissions would conform to the SIP. In particular, it must be demonstrated that the proposed action will not:
  - Cause or contribute to a new violation of an NAAQS.
  - Interfere with the SIP.
  - Increase the frequency or severity of existing violations.
  - Delay attainment or any required progress toward that attainment.

The determination generally involves emission estimation and sometimes air quality modeling for the entire non-attainment or maintenance area (usually a multi-county area). If the initial

conformity determination demonstrates that the proposed action does not conform to the SIP, measures must be established and committed to mitigate the projected air quality impacts. A timeline for implementation of these measures may be specified; however, enforcement measures must also be established to ensure that they are implemented as required.

Air quality management at Air Force installations is established in AFI 32-7040, Air Quality Compliance. AFI 32-7040 requires installations to achieve and maintain compliance with all applicable federal, state, and local standards. Air quality compliance involves prevention, control, abatement, documentation, and reporting of air pollution from stationary sources and mobile sources if located in non-attainment areas. Maintaining compliance with air quality regulations may require reduction or elimination of pollutant emissions from existing sources and control of new pollution sources.

3.3.3.2 Regional Air Quality

Tinker AFB lies entirely within the boundaries of Oklahoma County, located in the central portion of Oklahoma. The main portion of Tinker AFB is located within the city limits of Oklahoma City, which is located in the southwest portion of the county. The installation is centered 10 miles southeast of downtown Oklahoma City. Incorporated areas immediately surrounding Tinker AFB include Midwest City to the north and Del City to the northwest.

Oklahoma County is part of the Central Great Plains in the western parts of the county and transitions to the crosstimbers region in the eastern parts of the county. The climate of Oklahoma is continental, as is all of the Great Plains. Warm, moist air moving northward from the Gulf of Mexico often exerts much influence, particularly over the southern and eastern portions of the state, where humidity, cloudiness and precipitation are resultantly greater than in western and northern sections. Summers are long and usually quite hot. Winters are shorter and less rigorous than those of the more northern Plains states. Periods of extreme cold are infrequent, and those lasting more than a few days are rare.

Tinker AFB is located within the Central Oklahoma Intrastate AQCR, which consists of the territorial area encompassed by the boundaries of the following jurisdictions or described area: Canadian County, Cleveland County, Grady County, Lincoln County, Logan County, Kingfisher County, McClain County, Oklahoma County, and Pottawatomie County. Oklahoma is in attainment for all criteria pollutants. Therefore, Tinker AFB is not subject to the General Conformity regulations (40 CFR Parts 6, 51 and 93).

Oklahoma has a single Prevention of Significant Deterioration (PSD) Class I area; Wichita Mountains National Wildlife Refuge in Comanche County near Fort Sill Military Reservation. This area is located approximately 80 miles southwest of Tinker AFB.

Oklahoma is part of the Central Regional Air Planning Association (CENRAP), an organization of states, tribes, federal agencies and other interested parties that identifies regional haze and visibility issues and develops strategies to address them. CENRAP is one of the five Regional Planning Organizations across the United States and includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, and Louisiana. The goals of CENRAP include promotion of policies that ensure fair and equitable treatment of all

participating members; providing coordination of science and technology to support air quality policy issues in the region; recommending strategies on air quality issues for use by member states and tribes in developing implementation programs, regulations and laws; and conducting research and undertaking other activities as necessary for information to support the development of sound state and tribal air pollution policies.

3.3.3.3 Tinker AFB Air Quality

An accurate emissions inventory is needed for assessing the potential contribution of a source or group of sources to regional air quality. An emissions inventory is an estimate of the actual and potential pollutant emissions generated by a source or sources over a period of time, normally a calendar year. The inventory accounts for permitted sources that are required to report annual emissions to USEPA. Oklahoma County emissions include emissions from point and area sources. There are approximately 438 major stationary emission sources at Tinker AFB that include boilers, generators, surface coating operation, paint booths, storage tanks, fueling operations, and woodworking operations, among others. Mobile and biogenic emission sources are not included in the emission totals for Tinker AFB. Table 3-3 compares the 2006 actual and potential emissions for Tinker AFB and the 2001 Oklahoma County emissions. As shown in Table 3-3, Tinker AFB contributes a small amount to the Oklahoma County emission totals.

Table 3-3 Oklahoma County Emissions and Tinker AFB Actual and Potential Emissions

	Annual Emissions (tpy)					
	CO	**VOC**	**NOx**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
2001 Oklahoma County Emission Inventory[a]	253,221	37,724	34,441	2,607	25,563	6,157
2006 Tinker AFB Actual Emissions[b,d]	133	226	181	8.9	7.2	6.9
2006 Tinker AFB Potential Emissions[c,e]	551	1,153	1,001	68.3	76.5	76.5
Percent of Regional Emissions[f]	5.25E-04	5.99E-03	5.26E-03	3.41E-03	2.82E-04	1.12E-03

Notes:
CO = carbon monoxide
NO_x = nitrogen oxides
$PM_{2.5}$ = particulate matter equal or less than 2.5 micrometers in diameter.
PM_{10} = particulate matter equal or less than 10 micrometers in diameter.
SO_2 = sulfur dioxide
tpy = tons per year
VOC = volatile organic compounds

[a] Includes emissions from point and area sources. Source: http://www.epa.gov/air/data/ (U.S. Environmental Protection Agency AirData).
[b] 2006 actual emissions were obtained from Oklahoma Department of Environmental Quality's Tinker AFB 2006 Air Emissions Turnaround Document. Emissions from mobile and biogenic sources not included.
[c] Potential emissions based upon sources with permit limits. Emissions from mobile and biogenic sources not included. $PM_{2.5}$ emissions assumed to be the same as PM_{10}.
[d] Actual emissions are the air pollutant emissions that result from the actual operation and material usage quantities during a one-year period (i.e., typically a calendar year).
[e] Potential emissions are those emissions resulting from the operation of an emission unit under maximum potential conditions, unless operation is restricted by a regulatory condition (e.g. fuel use limit in permit). For example, calculating emissions from a boiler by taking into account its maximum rated heat input capacity and operation 24 hours per day, 7 days per week, 52 weeks per year would result in a potential emission calculation.
[f] Compares 2006 Tinker AFB actual emissions to Oklahoma County 2001 emissions.

3.3.4 Water Resources

3.3.4.1 Surface Water

Tinker AFB is located within the Arkansas River Watershed. Streams within this watershed flow into the Mississippi River, and then into the Gulf of Mexico. The total Arkansas Watershed drainage area is 195,000 square miles and has the Canadian River, Poteau River, Verdigris River, and Cimarron River as its major tributaries within Oklahoma (USGS 1995).

Tinker AFB is comprised of three drainage areas; Crutcho Creek, Elm Creek, and Hog Creek. The Crutcho Creek drainage area consists of two additional water bodies, Kulhman Creek and Solider Creek. Sixteen man-made retention ponds and two detention basins located within the Crutcho Creek drainage area are utilized to control Tinker AFB's storm water runoff. Crutcho Creek receives storm water runoff and natural water flow from the northern and western portions of Tinker AFB. Crutcho Creek flows to the north and discharges into the North Canadian River; the North Canadian River then discharges into the Arkansas River. Elm Creek drainage area receives storm water runoff from the southernmost portion of Tinker AFB. Hog Creek drainage area receives storm water runoff from the far southeast portion of Tinker AFB. Both Elm and Hog Creek discharge into the Little River (USAF 2007b). The Little River flows into the Canadian River and then into the Arkansas River.

Permitting for point and storm water discharges has been delegated to the state of Oklahoma by the NPDES. Individual and general storm water permits require the permittee to develop and implement a pollution prevention plan to monitor discharges for specific pollutants. Tinker AFB is an industrial facility and as such has obtained an OKR05 MSGP for Storm Water Discharges Associated with Industrial Activities and a OKR04 General Permit for Phase II Small Municipal Separate Storm Sewer System Discharges from the ODEQ. Tinker AFB also has an individual NPDES permit, OK0000809, which regulates stormwater discharge from ten outfalls and ten impoundments. These permits allow Tinker AFB to discharge storm water associated with industrial activities into receiving waters within the state of Oklahoma. The permits require monitoring of specific pollutants at outfalls, utilization of best management practices (BMPs), and implementation of engineering controls to control runoff (USAF 2007c).

The GM assembly plant has two unlined storm water retention basins which each hold approximately 2.3 million gallons at an operating depth of five feet. Effluent from the retention basins is discharged to an unnamed tributary of Crutcho Creek. The GM property has a NPDES Industrial Wastewater Discharge permit, OK0035203, This permit authorizes GM to discharge storm water runoff and discharges associated with industrial activities into Crutcho Creek. The permit expires 31 August 2008 (USEPA 2008b). Under the permit, the retention basins are allowed to receive condensate from the heating, ventilation, and air conditioning systems; drainage from drinking fountains, eyewash stations, air supply units, fire system test waters, and fugitive mist from cooling towers. Precipitation falling on process areas, including drum storage areas, the process fluids aboveground storage tank farm, and wastewater treatment plant areas and tankage is routed to the industrial wastewater treatment plant to avoid potential contamination of the storm sewer system.

3.3.4.2 Groundwater

Tinker AFB and the GM plant are located over the recharge zone of the Central Oklahoma Aquifer. The Central Oklahoma Aquifer System occupies an approximately 3,000 square mile area in central Oklahoma. The groundwater of the Central Oklahoma Aquifer flows south and southwest across the southern half of Tinker AFB and west to northwest across the northern half (USAF 2007b). The groundwater is discharged to the surface by evapotranspiration, spring discharge, or to streams as base flow. The aquifer is generally recharged by direct precipitation (USGS 1995). The productive formations associated with this aquifer, that impact Tinker AFB are the Permian Garber Sandstone and Wellington Formations. These formations are often collectively referred to as the "Garber-Wellington" Aquifer.

There are four water bearing units located in this area: the Hennessey water bearing zone (HWBZ), upper saturated zone (USZ), lower saturated zone (LSZ), and producing zone (PZ). The HWBZ is only present when the Hennessey Group, overlaying the aquifer, is thick enough to support saturation. The USZ, LSZ, and the PZ are parts of the "Garber-Wellington" Aquifer. Groundwater flows between the HWBZ and the USZ along the south side of Crutcho Creek and from the USZ to the LSZ along the eastern edge of the USZ. Within the HWBZ the depth to groundwater varies, from the surface to 30 feet below surface (bgs). The HWBZ presents seasonal springs on Tinker AFB. The USZ and LSZ are located beneath most of Tinker AFB. The USZ is eroded or thins near the eastern boundary of Tinker AFB while the LSZ extends to the east of the base. The depth to groundwater within the USZ ranges from near the surface at the northeastern section of Tinker AFB to 60 feet bgs. Under the eastern and southern portions of Tinker, groundwater flows to the west or southwest with the USZ. The USZ is generally referred to as a confined aquifer, but in areas were the HWBZ is not present, the aquifer is unconfined to semi-confined. The LSZ groundwater flows either to the southwest or west-northwest and is found 30 feet to 110 feet bgs. The groundwater flow within the LSZ changes direction to the northwest underneath the northwest portion of Tinker AFB. The LSZ extends to a depth of roughly 200 feet. The PZ has a depth to groundwater of 200 to 280 feet bgs and extends to a depth of over 800 feet bgs under Tinker, below which it becomes salty. The flow of groundwater within this zone is influenced by production from well withdrawal, but naturally flows to the southwest under the base. The PZ is the zone that is utilized for drinking water by Tinker AFB and Oklahoma City (USAF 2002). It is to be assumed the same water bearing units are located beneath the GM assembly plant.

The drinking water wells located at Tinker AFB generally reach depths of 400 to 800 feet bgs and produce approximately 150 to 250 gallons per minute. These wells were constructed with multiple screens or the casing has been perforated at various intervals; the highest perforated interval is usually located at 200 feet bgs (USAF 2002). The water obtained from the PZ of the "Garber Wellington" yields calcium magnesium carbonate-bicarbonate type water that contains less than 500 milligrams per liter of dissolved solids. Water in the aquifer becomes more mineralized; including arsenic, chromium, and selenium with depth (USGS 1995). There are no water wells located on the GM assembly plant.

3.3.4.3 Wetlands and Floodplains

The U.S. Department of Interior's National Wetlands Inventory (NWI), and Fish and Wildlife Service's Wetlands Geodatabase (2007b) was searched for the presence of wetlands on the two parcels. No wetlands were found to be present on the city-owned property. However, two wetlands were found to occur in the southwest quarter of Section 27 on the GM assembly plant property just east of Air Depot Boulevard. It is highly likely these were created as a result of constructing the GM assembly plant. Other wetland areas near these properties are along or in association with Crutcho Creek on Tinker AFB to the north, or near the upper reaches of Lake Stanley Draper to the south.

The Flood Insurance Rate Map for Oklahoma County, Federal Emergency Management Agency, (2002) was also consulted for the presence of any flood hazard areas inundated by the 100-year flood, and designated floodway areas. None were listed for either property. However, the two portions of West Elm Creek occurring on the city-owned property are located within the U.S. Army Corps of Engineers 100-year floodplain.

As shown in Figure 3-5 none of the 39 structures proposed for demolition appear to be located within 100-year floodplains, 500-year floodplains, or jurisdictional wetlands located on Tinker AFB. However, Building 6020 appears to back up to the 500-year floodplain of Kuhlman Creek.

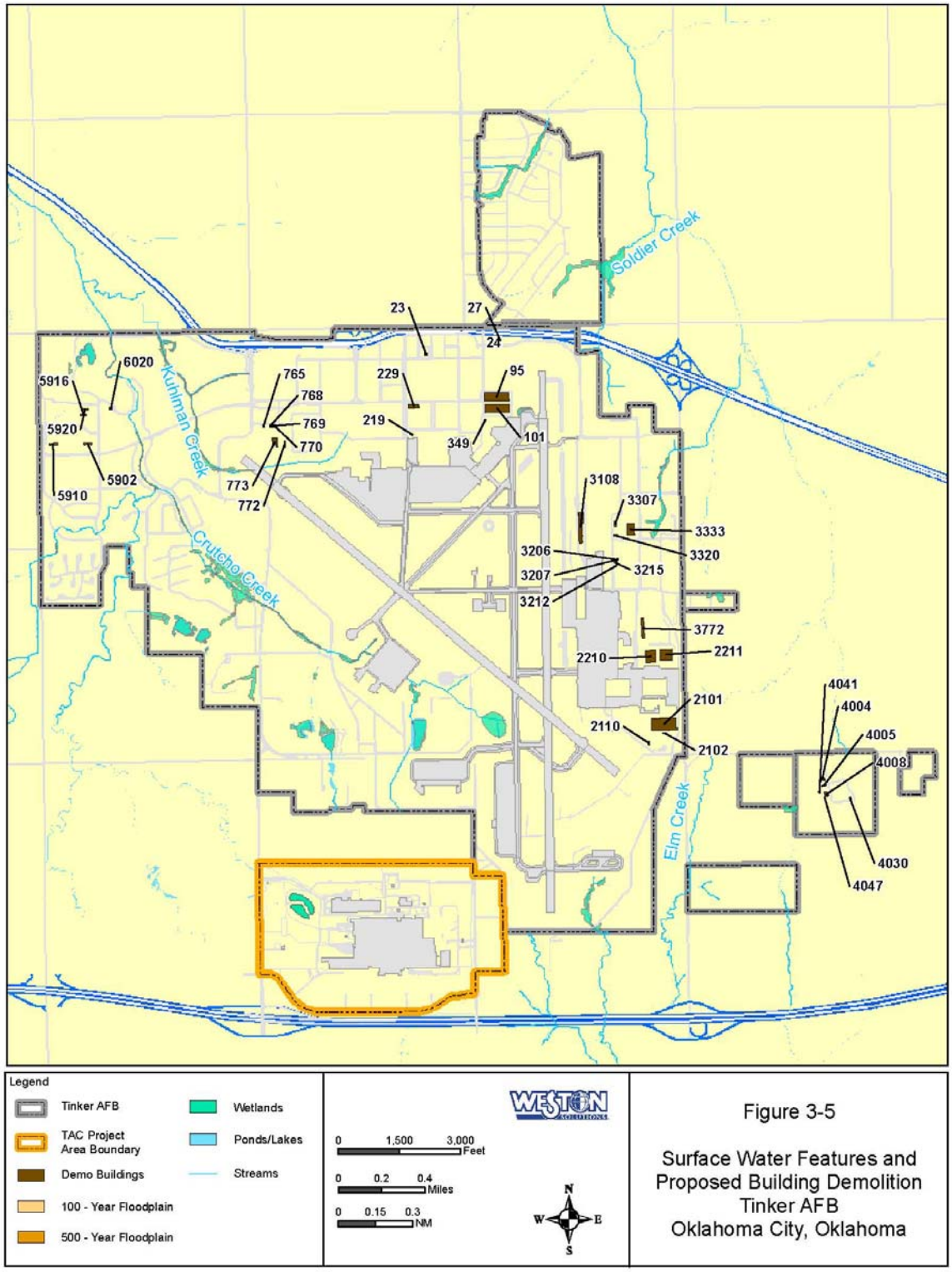


Figure 3-5

Surface Water Features and Proposed Building Demolition
Tinker AFB
Oklahoma City, Oklahoma

3.3.5 Cultural Resources

Cultural resources are prehistoric and historic sites, districts, structures, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons. A historic district is an area that "possesses a significant concentration, linkage, or continuity of sites, buildings, structures, or objects united historically or aesthetically by plan or physical development" (NPS 1997).

The nature and potential significance of cultural resources are identified by considering the following definition: historic properties, under 36 CFR Part 800, are defined as "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP)." For the purpose of these regulations this term includes artifacts, records, and remains that are related to and located within such properties. The term "eligible for inclusion in the National Register" includes both properties formally determined as such by the Secretary of the Interior and all other properties that meet NRHP-listing criteria.

Tinker AFB has a number of historic properties that are eligible for inclusion on the (NHRP). These include five individually eligible historic buildings and one historic district with seven contributing buildings, all of which were nominated in 1994. These historic resources are associated with aircraft construction and modification from 1942 through 1946 and with facilities associated with the Cuban Missile Crisis in 1962 (USAF 2007d). Table 3-4 lists these twelve buildings and Figure 3-4 shows their location on Tinker AFB.

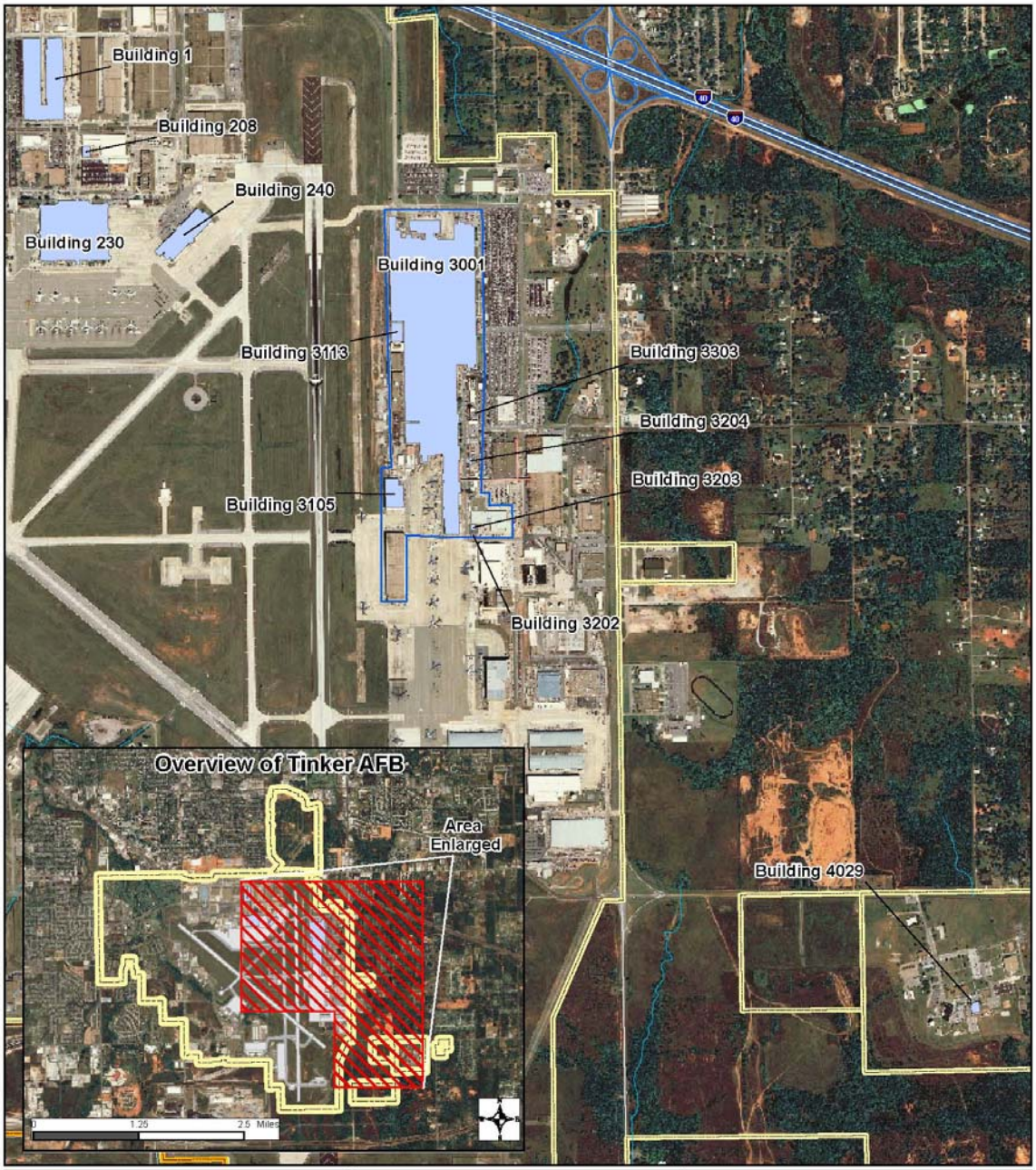
Table 3-4 Tinker AFB Historic Building ResourcesTinker AFB Historic Building Resources

Building Number	Construction Date	Description	Individually Eligible?	Historic District
1	1942	Depot Supply	Yes	No
208	1942	Steam Plant	Yes	No
230	1942	Airplane Repair Building	Yes	No
240	1942	Flight Test Hangar/Base Operations	Yes	No
3001	1943	Douglas Assembly Building	Yes	Douglas Cargo Aircraft Manufacturing District
3105	1943	Paint Building	No	Douglas Cargo Aircraft Manufacturing District
3113	1943	Woodworking Building	No	Douglas Cargo Aircraft Manufacturing District
3202	1943	Fire Pump Station	No	Douglas Cargo Aircraft Manufacturing District
3203	1943	Fore Protection Water Storage Tank	No	Douglas Cargo Aircraft Manufacturing District
3204	1943	Switch Gear House	No	Douglas Cargo Aircraft Manufacturing District
3303	1943	Pump House	No	Douglas Cargo Aircraft Manufacturing District
4029	1951	Combat Control Center	Yes	No

All undeveloped areas of Tinker AFB have been surveyed for archeological resources. Tinker AFB contains two historical and two prehistoric archeological sites. Three of the sites (34OK-157, 34OK-166 and 34OK-167) are eligible for the NRHP and are not located near any of the project areas associated with the proposed action. The fourth site (34OK-146) is a historic trash scatter near the border of Tinker AFB and the GM assembly plant and was previously determined to be ineligible for the NHRP (USAF 2007d).

At the request of the SHPO and the Oklahoma Archeological Survey (OAS), an archeological survey was performed on approximately 120 acres in and around the GM assembly plant (including the area of 34OK-146). Figure 3-7 shows the areas that were subject to this survey. These areas were surveyed by archeologists walking transects across the landscape and conducting shovel tests. The results of this survey were reported to the State Historic Preservation Office (SHPO) and OAS indicated no new archeological sites and the ineligibility of site 34OK-146 remained unchanged (USAF 2008c).

Tinker AFB maintains an Integrated Cultural Resources Management Plan as the basis for a Programmatic Agreement between Tinker AFB, the SHPO and the National Advisory Council on Historic Preservation regarding identification and preservation of cultural resources on Tinker AFB. As a part of the ICRMP process on Tinker AFB and the archeological survey performed on the GM and City properties , inventory of cultural resources in the project areas, as required by 36 CFR 800.4, has been met. Copies of correspondence with SHPO and OAS can be found in Appendix A.



Legend

- Tinker AFB
- Historic Facilities
- Historic District Boundary
- Major Highway

0 750 1,500 Feet

0 0.125 0.25 Miles

0 0.1 0.2 NM

N W E S

Figure 3-6

Tinker AFB Historic Building Resources
Tinker AFB
Oklahoma City, Oklahoma

Figure 3-7

Archeological Survey Area
Tinker AFB
Oklahoma City, Oklahoma

3.3.6 Earth Resources

Tinker AFB is located in the Central Redbed Plains section of the Central Lowland Physiographic Province which is characterized by level to gently rolling hills, broad flat plains, and bottomlands bisected by small- to medium-sized water courses. Oklahoma County elevations range from about 850 feet above mean sea level (MSL) in the southeastern part to 1,300 feet MSL in the northwestern part. Elevations on the installation range from approximately 1,200 feet MSL (Crutcho Creek, northwestern portion of base) to 1,310 feet MSL (southeast portion of the base). The airfield elevation is approximately 1,291 feet MSL (USAF 2007b).

Early aerial photographs of the Tinker AFB land area prior to military development indicate that the majority of the land was used for agricultural purposes. Soil tillage and terracing are evident indicating that much of the land was farmed. Impacts to soils during the urbanization and industrialization of the area included soil borrowing from on-base areas to be used for building up facility foundations and for leveling portions of the airfield (USAF 2007b).

Physical properties of soils have been otherwise altered by construction operations and activities. For example, vehicular traffic around construction sites and the historical parking of aircraft on grassy areas have compacted soils. In addition, soil was excavated and redistributed/compacted for projects such as large storm drainage systems across the base (USAF 2007b).

3.3.7 Biological Resources

3.3.7.1 Vegetation

Oklahoma has a diversity of vegetative communities and species of plants. There are 173 families, 868 genera, and 2,540 species of vascular plants reported for the state (Tyrl 2002). Bailey (1995) lists seven distinct ecoregions occurring in Oklahoma. The project area is located in central Oklahoma within Bailey's Prairie Parkland (Subtropical) Province (2512). This province is quite large encompassing an area running from the Canadian border in the north and south to the Texas Gulf Coast. It consists of prairies and savannas and forms an ecotone between the forested areas of the eastern United States and the grassland areas of the Southern Great Plains to the west.

One of the most noted classification and description of vegetation is the work completed by L.G. Duck and J.B. Fletcher. Their vegetation map for the state of Oklahoma (Duck and Fletcher 1943 and Duck and Fletcher 1945) classifies the vegetative communities of Oklahoma by game types. The project area is located within their Postoak-Blackjack Oak Forest and Tallgrass Prairie Types.

Prior to settlement, the project area was probably dominated by prairie grasses consisting of species such as big bluestem, little bluestem, switch grass, Indian grass, and various forbs and legumes. However, after settlement and subsequent development, very little of the original vegetative community remains intact. The vegetative community associated with the 430-acre GM parcel has been totally disturbed and replaced with introduced grass species consisting primarily of fescue and Bermuda grass, which are heavily maintained and manicured. Other vegetative species occurring on the site include species such as Johnson grass, bristle grass, barnyard grass, crabgrass, Dallis grass, curly dock, curly cup gumweed, horseweed, silver

bluestem, Illinois bundleflower, wavy leaf thistle, giant ragweed, annual sunflower, ragweed, narrow leaf cattail, roughleaf dogwood, broomweed, and crabgrass. Ornamental tree and shrub species have been planted for landscaping around the buildings. These shrub plantings consist primarily of species such as redbud, crepe myrtle, Bradford pear, lilac, sycamore, Siberian elm, and ornamental pine species.

The 26-acre parcel owned by the city of Oklahoma City and located just to the east of the GM assembly plant is different. This site is still somewhat representative of the pre-settlement grasslands, and vegetation associated with Bailey's Prairie Parkland Province. It consists primarily of grasslands with two small fingers of riparian vegetation. The condition of the grassland could be characterized as poor to fair due to the invasion of eastern red cedar and lack of proper rangeland management practices. Noted grassland species occurring on the site include big bluestem, switch grass, Indian grass, side oats gramma, and silver bluestem. Other vegetative species occurring on the parcel include prairie coneflower, Illinois bundleflower, dwarf sumac, western ragweed, Johnson grass, ironweed, goldenrod, pokeweed, partridge pea, yarrow, bristle grass, annual sunflower, and Maximillian sunflower. A more complete listing of species noted to occur in the project area is shown in Appendix C**.**

The tree and understory species associated with the riparian zones of this tract contain species such as eastern hackberry, sugarberry, smooth sumac, American elm, green ash, box elder, roughleaf dogwood, silver maple, coralberry, poison ivy, Virginia creeper, and green briar. Scattered clusters and individual large specimens of eastern cottonwood also occur along the two small drainages.

Another component of the project includes demolition of 39 facilities on Tinker AFB. Approximately one million SF of facility space would be demolished. As shown in Figure 2-1 these facilities are scattered around the installation. For the most part these facilities are located on grounds that consist of lawn grasses such as Bermuda grass, and are landscaped and regularly mowed. Figure 3-8 shows the distribution of biological resources across the installation and their spatial relationship to facilities proposed for demolition.

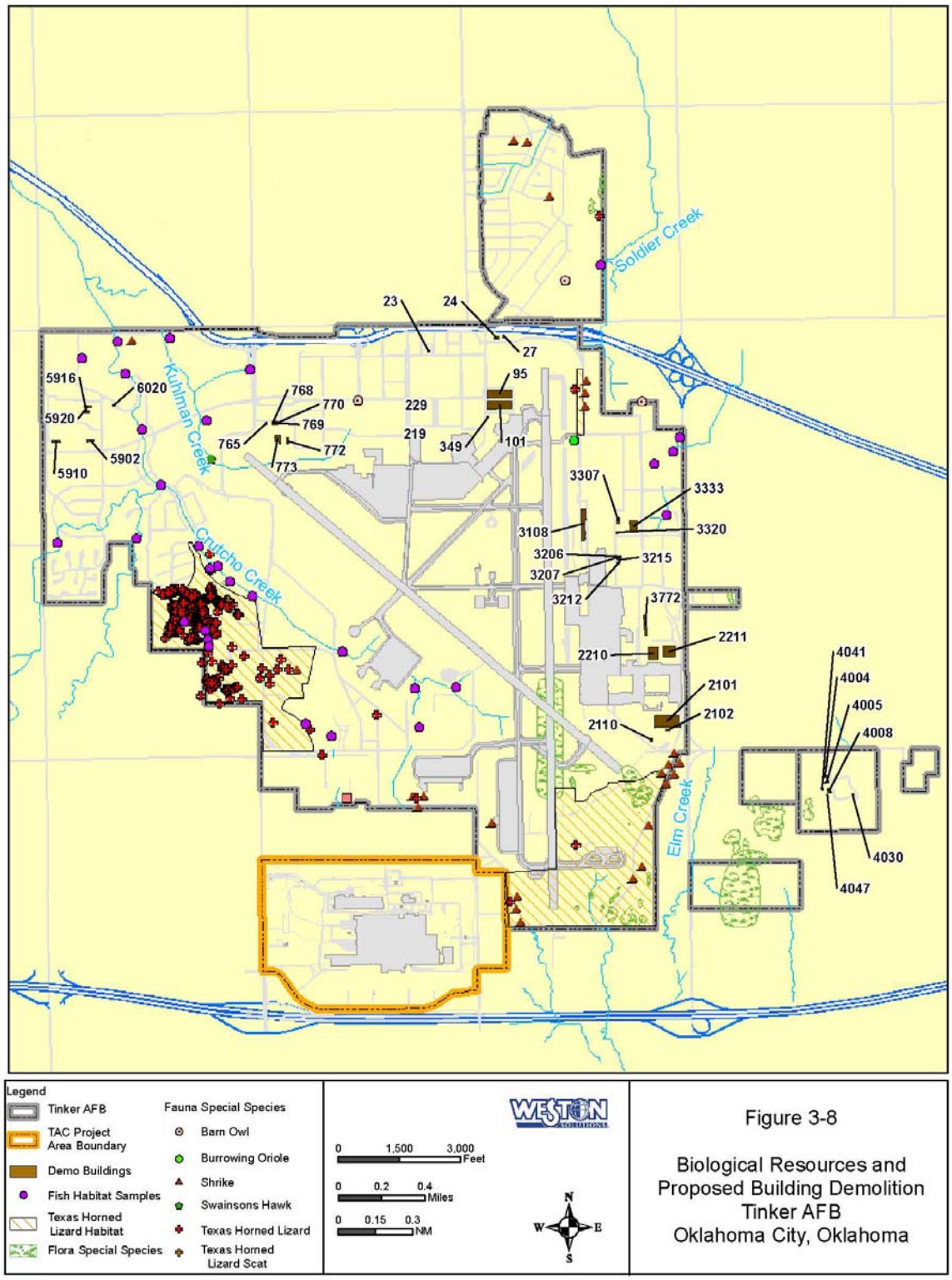


Figure 3-8

Biological Resources and Proposed Building Demolition
Tinker AFB
Oklahoma City, Oklahoma

3.3.7.2 Wildlife

The disturbed condition of the habitat types in the project area severely limit the types and number of wildlife species occurring in the project area. Habitat fragmentation due to urban sprawl, base operation activities, and commercial development has also reduced the abundance and diversity of wildlife habitat adjacent to the project area. Consequently, existing habitats can only support limited types and numbers of wildlife species. Over 230 species of native and introduced vertebrates have been documented to occur on Tinker AFB, which is located adjacent to both properties (USAF 2007b). This list includes both resident and migrant species and is composed of 26 mammals, 149 birds, 24 reptiles, 10 amphibians, and 26 fish.

Due to their mobility, most of the wildlife species documented as occurring on Tinker AFB would have the potential to occur on the GM assembly plant site and city-owned property provided suitable habitat was present. Since there are no permanent water resources on these properties the presence of fish species, amphibians, reptiles, water birds, and waterfowl would be limited to lack of habitat. However, at least two seasonal water bodies are present on the GM and city-owned properties. A large storm water detention pond is located along the western edge of the GM assembly plant. There is also an old farm pond structure located on a small drainage within the city-owned property that is dry most of the year. These two structures would contain water during parts of the year and would provide limited habitat for waterfowl, shorebirds, wading birds, amphibians and reptiles.

Some of the more common wildlife species likely occurring on the GM parcel include mourning dove, rock dove, American kestrel, common crow, scissor-tail flycatcher, Canada goose, mallard, blue and green wing teal, great blue heron, great egret, western and eastern kingbird, European starling, field sparrow, English sparrow, killdeer, eastern cottontail, plains pocket gopher, hispid cotton rat, house mouse, opossum, striped skunk, and deer mouse.

Wildlife habitat on the city-owned property adjacent to the GM assembly plant (26 acres) has the potential to contain numerous wildlife species due to the presence of the riparian woodland and native prairie habitats. The riparian areas also provide a travel corridor for wildlife along West Elm Creek from Lake Stanley Draper to the south. Some wildlife species having the potential to occur on this tract include mammals such as fox squirrel, raccoon, Eastern cottontail, armadillo, striped skunk, coyote, bobcat, opossum, hispid cotton rat, and white-tailed deer. Some of the more common bird species potentially occurring on this tract include Mississippi kite, Cooper's hawk, red-tailed hawk, yellow billed cuckoo, great horned owl, barred owl, common flicker, red-headed woodpecker, barn swallow, boat-tailed grackle, blue jay, Carolina chickadee, tufted titmouse, Northern mockingbird, American robin, Eastern bluebird, blue-gray gnatcatcher, Northern cardinal, red-winged blackbird, logger headed shrike, and numerous warblers, sparrows, and other songbirds.

3.3.7.3 Rare, Threatened, and Endangered Species

According to the U.S. Fish and Wildlife Service, there are three federally-listed threatened or endangered species occurring in Oklahoma County (U.S. Fish and Wildlife Service 2007a). None of the federally-listed species have been reported to occur on Tinker AFB based on surveys completed as a part of the Installation Integrated Natural Resource Management Plan (USAF

2007b) and are not expected to occur on either of the two parcels being evaluated in this EA. However, five state species of special concern are known to occur on base, and could potentially occur on either of the two properties. A list of all the federally-listed, state-sensitive species, and rare species are shown in Table 3-5.

Table 3-5 Rare, Threatened, and Endangered Species

Common Name	Scientific Name	Status
Federally-listed Species*		
interior least tern	*Sternula (Sterna) antillarum*	Endangered
whooping crane	*Grus Americana*	Endangered
piping plover	*Charadrius melodus*	Threatened
Species of Special Concern**		
barn owl	*Tyto alba*	SS2
burrowing owl	*Athene Cunicularia*	SS2
migrant loggerheaded shrike	*Lanius ludovicianus migrans*	SS2
Swainson's hawk	*Bueto swainsoni*	SS2
Texas horned lizard	*Phrynosoma cornutum*	CS, SS2
Rare Species**		
powdery thalia	*Thalia dealbata*	S3
Oklahoma penstemon	*Penstemon oklahomensis*	S3

Source:
* U.S. Fish and Wildlife Service 2007a
** USAF 2007b
SS2 = Species of Special Concern (state ranking). These species have been identified by technical experts as possibly threatened of extirpation but for which additional information is needed.
CS = Statewide closed season (state ranking). It is unlawful at any time to possess or to kill individuals of these species or to remove any individuals of these species from their natural habitats.
S3 = Rare and local in Oklahoma (though it may be abundant at some of its locations)

Based on the locations of recorded sightings for sensitive species in the Tinker AFB Integrated Natural Resources Management Program, the three sensitive species most likely to occur on the two properties are the Texas horned lizard, logger headed shrike, and Oklahoma penstemmon or beardtongue. The Texas horned lizard and logger headed shrike have been reported immediately adjacent to the project area on both the north and east. Due to their mobility it is likely they exist on both the GM and city-owned properties.

The Oklahoma penstemmon is a perennial cool season forb which grows in mixed native and nonnative prairies. A population exists on Tinker just to the east of the city-owned property and it is likely a population could occur on this tract.

Of the sensitive species identified as occurring on Tinker AFB, only two have been recorded near any of the buildings proposed for demolition. As shown in Figure 3-8 the Texas horned lizard has been recorded in the general vicinity of buildings 1126 and 1127, and a population of Oklahoma penstemon has also been recorded just to the west of buildings 4041, 4004, 4005, 4047, and 4030.

3.3.8 Hazardous Materials and Wastes

3.3.8.1 Hazardous Materials

Hazardous material use and management at Tinker AFB are regulated under the Toxic Substance Control Act (TSCA), Occupational Safety and Health Administration (OSHA), Emergency Planning and Community Right-to-Know Act, and Air Force Occupational Safety and Health Standards. The regulations require personnel using hazardous materials to be trained in the application, management, handling, and storage of material; to know the location of material safety data sheets (MSDSs) for all hazardous materials that they are using; and to wear the correct personal protective equipment (PPE) required for materials that are being used. Tinker AFB has a Hazardous Materials Management Program (HMMP) in place that documents procurement, use, and disposal of hazardous materials located on Tinker AFB and all associated property. The HMMP also stores training, exposure, inventory, PPE requirements, waste management, and a database of all MSDSs used on-base (USAF 2007a).

Current operations at Tinker AFB and associated properties require the use of hazardous materials in varying quantities. Hazardous materials are used by military personnel and on-base contractors throughout the base. The location of hazardous materials, procedures and equipment at Tinker AFB used to prevent and clean up a release, and actions to be taken in the event of a release are located in the *Tinker AFB Spill Prevention Control and Countermeasures Plan* (USAF 2007a).

Hazardous material use and management at the GM assembly plant were regulated under the TSCA, OSHA, ODEQ, and Oklahoma Corporation Commission (OCC). The regulations require personnel using hazardous materials to be trained in the application, management, handling, and storage of material; to know the location of MSDSs for all hazardous materials that they are using; and to wear the correct PPE required for materials that are being used. Previous operations at the GM assembly plant required the use of hazardous materials in varying quantities. Hazardous materials were only to be used by designated personnel. There were instances of hazardous materials releases over the course of the plant's operational history. Of the 430 acres, less than 23 acres are classified as Potential Areas of Concern (PAOCs). Chemicals of concern include polycyclic aromatic hydrocarbons, volatile organic chemicals, and metals. Preliminary risk evaluations of these PAOCs indicate that risks to an indoor worker would be well below risk management thresholds for all PAOCs. Only one PAOC could pose an elevated risk to an outdoor worker but it is located in an undeveloped, vegetated area on the periphery of the site that is not expected to be disturbed as a part of the Proposed Action.

3.3.8.2 Asbestos

Tinker AFB has a database of all known asbestos that is identified through sampling during renovation projects and all known asbestos in any given building. The Civil Engineering group manages the program for Tinker AFB.

An Asbestos Management and Operations Plan is in effect at Tinker AFB, and qualified contractors are hired to perform abatement and removal when applicable. The plan details procedures for notification, record keeping, protection, and abatement associated with asbestos

containing material (ACM). The Asbestos Management and Operations Plan ensures that Tinker AFB is in compliance with all ACM related federal, state, and local regulations. ACM is potentially present in pipe insulation, cement pipe, floor tile, floor tile adhesive, roof patching sealant, wall board in mechanical closets, wall and ceiling texture, and wall board panels.

A limited-scope ACM survey for the GM assembly plant was conducted in March 2006. The survey identified the presence of friable and non-friable ACM in thermal insulation of elbow gasket material and boiler rope gasket material, transite panels, mastic under floor tile, linoleum, and a 12-inch line found under the concrete floor in the assembly area (Moore 2007).

The Asbestos Management and Operation Plan in place at Tinker AFB would be applied at the facilities located in TAC. The plan details procedures for notification, record keeping, protection, and abatement associated with ACM. The Asbestos Management and Operation Plan ensures that Tinker AFB is in compliance with all ACM related federal, state, and local regulations (USAF 2007a).

3.3.8.3 Lead-Based Paint

At this time, a base-wide lead based paint (LBP) survey has not been conducted for Tinker AFB. As such, it must be assumed that all facilities constructed prior to 1980 have the potential to contain LBP.

Tinker AFB currently maintains a database related to the limited LBP surveys conducted on-base, and has a LBP Management Plan. The database currently contains information from LBP surveys and sampling conducted during and after 1994. The LBP Management Plan establishes responsibilities, procedures for assessing risk, hazard management and risk reduction, medical screening, record keeping, and waste disposal requirements, and provides for capture and removal of LBP scrapings or dust. Historic painting activities did not include capture and proper disposal of paint scrapings or dust; therefore, it is possible that the soil in areas where LBP was used may exhibit elevated concentrations of lead.

The facilities present on the GM assembly plant were constructed between 1974 and 1979, during the time that LBP was starting to be phased-out. The full extent of LBP contamination in the former GM plant is not known but it suspected that some LBP exists in the facility (USAF 2007e).

3.3.8.4 Pesticides

Pesticide application is routinely performed by contract. The Pesticide Management Program is managed by the Pest Management Shop and the main bulk storage facilities for pesticides are located at Building 1049, the Pest Management Shop, and Building 6020, Golf Course Pesticide Shop. Commercially available pesticides and herbicides are applied as needed along roadways, fire breaks, and pre-determined locations (spot applications) throughout Tinker AFB. Application and use of these and all pesticides and herbicides is done in accordance with the Integrated Pest Control Management Plan (USAF 2007a).

Historic pesticide applications have occurred throughout Tinker AFB. Historical pesticides included diazinon, allethrin, chlordane, and pyrethrin-based products. These products were used

within appropriate guidelines for application at the time that they were used. Historically, chlordane was injected beneath foundations of buildings when termite infestations were observed. Due to the persistence of chlordane in the environment, it is likely that concentrations of chlordane may be present in soils (USAF 2007a).

Pesticide application was performed on the landscaped areas on a limited basis. During sampling events within the GM assembly plant, pesticides were not detected (USAF 2007e).

3.3.8.5 Hazardous Waste

Hazardous wastes are defined by the Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments, RCRA subtitle C (40 CFR, Parts 260 through 270). The USEPA regulatory authority is delegated to the state of Oklahoma. Hazardous waste management at Tinker AFB is also regulated under AFI 32-7013, *Hazardous Waste Management and Minimization*.

These regulations are implemented at Tinker AFB through hazardous waste permitting procedures and the Tinker AFB Hazardous Waste Management Instruction, OC-ALC-TAFB Instruction 32-7004. The document details hazardous waste packaging, turn-in, transportation, storage, recordkeeping, and emergency procedures. Approximately 1,616 tons of RCRA hazardous waste were generated and disposed of at an off-site treatment, storage, and disposal facility during 2006. Hazardous waste is generated at Tinker AFB from aircraft and jet engine maintenance; automotive, building, and grounds maintenance; laboratory chemicals; spent hazardous materials; and spills. Air Force waste management operations at Tinker AFB are registered with the USEPA under identification number OK1571724391.

Day-to-day operations at Tinker AFB generate multiple types of hazardous wastes that require special handling and proper disposal. These include oils and fuels, cleaning compounds, paints, solvents, and batteries. Hazardous wastes are collected at 1,200 initial accumulation points and approximately 400 hazardous waste staging areas. After the collection vessel has reached 90% capacity, the waste is transferred to the Tinker AFB permitted Hazardous Waste Management Facility, Building 808, and Hazardous Waste Storage Facility, Building 810. Once at Building 810, the waste is sampled and removed by a certified contractor within 365 days for off-base treatment/disposal at an appropriate facility (USAF 2007a).

The hazardous wastes located within the GM assembly plant project boundary area, were regulated by the same federal and state regulations as those of Tinker AFB.

These regulations were implemented at the GM Oklahoma City assembly plant. The GM assembly plant was considered a large quantity generator, having stated that 1,000 kilograms or more of hazardous waste was generated per calendar month. In 1980, GM submitted a RCRA Hazardous Waste Permit, identifying nine potential waste management areas. In 1984 and 1989, the permit was renewed and identified three out of the original nine potential waste management areas. These three management areas included the spill containment underground storage tanks (UST) located adjacent to the AST farm, waste storage AST at the storm water retention basin, and the clarifier scum tank located at the IWTP. Throughout the GM assembly plant operations,

it was observed that there were five primary facilities/locations that stored hazardous waste: Hazardous Waste Storage Area, Primary Drum Storage Area, Secondary Drum Storage Area, Storm Water Retention Basin, and the New Paint Mix Room (USAF 2007e).

Hazardous waste was generated at the GM assembly plant during the support of the X-body car production. Waste management operations at the GM assembly plant were registered with the USEPA under identification number OKD082565714 (ODEQ 2007). Hazardous waste generation ceased in 2006 when the facility terminated operations. Upon the cessation of operations, hazardous waste was removed from the facility. The 13,000-gallon paint thinner hazardous waste storage tank was closed in 2006 and the associated hazardous waste storage pad was closed in 2007 (Moore 2007).

Day-to-day operations at the GM assembly plant generated multiple types of hazardous wastes that required special handling and proper disposal. These include waste solvent, purge solvent, and paint waste. Hazardous wastes are required to be collected and removed by a certified contractor within 90 days for off-property treatment/disposal at an appropriate facility (USEPA 2006).

3.3.8.6 Environmental Restoration Program

The ERP, formerly known as the Installation Restoration Program, was implemented by the DoD to identify and evaluate areas and constituents of concern of toxic and hazardous material disposal and spill sites. Once the areas and constituents had been identified, the ERP was tasked to remove the hazards in an environmentally responsible manner. All response actions were based upon provisions of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), and the *Superfund Amendments and Reauthorization Act of 1986* as clarified in 1991 by EO 12580, Superfund Implementation.

Tinker AFB has a total of 40 ERP sites, most of which are regulated under RCRA. Currently 22 of the ERP sites are closed or require no further response action. Of the 18 open ERP sites, 12 of these sites are located within one-half mile of all the proposed demolition and construction activities. Table 3-6 provides additional information about the ERP sites (USAF 2004). In general groundwater contamination under Tinker AFB moves in the direction of the GM Plant. The information provided below on the twelve active ERP sites that are within one-half mile of the proposed demolition activities has been summarized from the ERP Management Action Plan. The GM assembly plant is not currently subject to the program, as it is not property of the DoD.

Table 3-6 Tinker AFB Environmental Restoration Program – ERP Sites and AOC Located Within One-half Mile of Proposed Construction and Demolition Activities

Site ID	Site Name	Regulatory Phase	Description
LF011	Landfill #1	LTM	The site is approximately 1.5 acres and houses general household waste. Landfill was utilized from 1942 to 1945 and was capped in 1991. Long-term groundwater monitoring commenced in 1991. Low levels of volatile organics, semi-volatile organics, and metals were observed during trench water sampling.
LF012	Landfill #2	LTM	The site is approximately 27.5 acres and houses general, industrial, and radiological waste. The site was utilized from 1945 to 1952. The industrial solvents and petroleum products are believed to be located in the northeast corner of the landfill. The radiological waste (burned radium dials) is located in the center of the landfill. The landfill was capped in 1998 and long-term groundwater monitoring commenced in 2001. Low levels of volatile organics, semi-volatile organics, and trichloroethylene (TCE), and vinyl chloride were observed during trench water sampling.
LF013	Landfill #3	LTM	The site is approximately 8.25 acres and houses general and industrial waste. Landfill was utilized from 1952 to 1961. The industrial waste includes lead contaminated soils, sludge containing waste oils, and sludge from the Petroleum Oil Lubricant Facility. The landfill was capped in 1991 and long-term groundwater monitoring commenced in 1998. Low levels of volatile organics, semi-volatile organics, and trichloroethylene (TCE), methyl ethyl ketone, toluene, and metals were observed during trench water sampling.
LF014	Landfill #4	LTM	The site is approximately 12.4 acres and houses general, industrial, and radiological waste. Landfill was utilized from 1961 to 1968. The industrial waste includes land farming sludges collected from the bottom of petroleum and solvent storage tanks. These wastes are located in the central portion of the landfill. Drainage controls around the landfill were put in place in 1997, the landfill was capped in 1998, and long-term groundwater monitoring commenced in 1998. Low levels of volatile organics, semi-volatile organics, and trichloroethylene (TCE), methyl ethyl ketone, toluene, and metals were observed during trench water sampling.
LF015	Landfill #5	LTM	The site is approximately 6 acres and houses approximately 75,000 cubic yards of general and industrial waste. The site consists of trenches that run from northwest to southeast. The trenches are estimated to be 400 feet long, 50 feet wide, and 16 feet deep. The site is located in the southern area of Tinker AFB and is bounded by Tower Road on the west, Taxiway E to the south, and Crutcho Creek to the north and east. A compacted clay and topsoil cover was constructed over the trenched area in August 1990, the landfill was capped in 1998 to 1999, and long-term groundwater monitoring commenced in 2001.

Table 3-6 (Continued)

LF016	Landfill #6	LTM	The site is approximately 25 acres and houses approximately 500,000 cubic yards of general waste, industrial waste, and sludges from the wastewater treatment plants. The site is located in the western portion of Area "D" approximately 0.5 miles south-east of Tinker AFB along Southeast 59th Street and 750 feet east of Elm Creek. Area D was developed on land leased from Oklahoma City. Waste was deposited into parallel trenches within the landfill at depths of up to 30 feet and covered daily with either sand, clay, or a sand/clay mixture. The landfill was utilized from 1970 to 1979. In 1979 several feet of compacted soil was used to cover the trenches. The landfill was capped in 1986-1988, again in 1998-2000, and long-term groundwater monitoring commenced in 2001. Arsenic, barium, and cadmium were observed in groundwater samples taken from the upper saturated zone of the groundwater located beneath the site.
ST003	North Tank Area	RA-O	The area was used to store fuel oil, waste solvents, and gasoline from 1943 to 1984. The remediation activities included removal of the free product in 1991, the removal of drums, tanks, and bulk containers in 1992.
ST006	Southwest Tank Area	RA-O	The area was used to store fuel oil and solvents, from 1945 to 1980. The remediation activity was the removal of groundwater contaminants through bio-remediation. Bio-remediation was conducted from 1994 to 1997. Prior to remediation, soil samples were observed to have levels of benzene, toluene, ethyl benzene, and xylene compounds.
ST007	290 Fuel Farm	RA-O	The site housed twenty-five underground storage tanks (USTs) from 1942 to 1980. USTs stored motor fuels, jet propulsion (JP) 4 jet fuel, and aviation fuel. In 1988, all USTs were removed and replaced with above ground storage tanks (ASTs) were constructed at the site. During sampling events, fuel related contaminants were observed in the soils and groundwater. Remediation activities conducted included free product recovery and air stripping from 1998 to 2002. The site underwent long-term monitoring from 1997 to 2001. Future long term monitoring is scheduled to be conducted.
ST008	Four Fuel Sites	ROD/DD	The site consists of four USTs and a storm drain. Three USTs were located around Building 201, while the other is located at Building 214. The USTs were used to store solvents and fuels. The USTs are still present within the site. Analytical results support the presence of chlorobenzene, trichloroethylene, and vinyl chloride in groundwater. One UST is fenced in while the others are unfenced.
ST033	Area “A” Service Station	RA-O	The site served as Tinker AFB’s military vehicle refueling station from 1942 to 1992. The site housed four USTs, storing leaded gasoline, unleaded gasoline, and diesel fuel. The USTs were removed and analytical results report that the groundwater located beneath the site is contaminated with gasoline and diesel. Remediation of the contamination included treatment of the groundwater from 1997 to 1998.

Table 3-6 (Continued)

WP018	Industrial Waste Pit #1	ROD/DD	The site is a 1.4 acre unlined pit that housed waste oils, cyanide, chromates, phenols, and solvent and was in use from 1947 to 1958. The site is located 500 yards southwest of Building 2121, approximately 400 yards west of Douglas Boulevard. The pit was filled in 1958, and investigation of the site began in 1981. Analytical results have indicated a migration of contaminants through soil and surface water pathways, but the extent of the migration has not been identified. Past Ex situ soil treatment has occurred, and additional soil remediation is planned for 2008.

Notes:
AST = aboveground storage tanks
JP = jet propulsion
LTM = Long Term Monitoring
NFRAP = No Further Response Action Planned
RA-O = Remedial Action Operation
ROD/DD = Record of Decision /Decision Document
UST = underground storage tanks

3.3.9 Occupational Safety and Health

A safe environment is one in which there is no potential, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. The elements of an accident-prone environment include the presence of a hazard and an exposed population at risk of encountering the hazard. Numerous approaches are available to manage the operational environment to improve safety including reducing the magnitude of a hazard or reducing the probability of encountering the hazard.

The primary safety programs on Air Force installations include Aviation, Weapons, and Ground Safety aspects contributing to an overall safe environment. Aviation Safety includes Aircraft Flying Safety and the Bird/Wildlife-Aircraft Strike Hazard program. The Weapons Safety program establishes and executes mishap prevention programs for all nuclear and conventional weapons systems. Ground Safety address operational, occupational, sports and recreation, and traffic safety issues. Ground Safety personnel develop and oversee policy, programs and procedures to provide a safe work environment and enhance the safety of Air Force personnel on and off duty to help maintain combat capability and readiness. As the Proposed Action does not involve any changes to aircraft or weapons operations at Tinker AFB, the safety analysis in this document will be confined to Ground Safety programs.

The Air Force publishes industrial and general ground safety standards as Air Force Occupation Safety and Health (AFOSH) standards, which implement U.S. OSHA standards. Area-specific instructions and technical data include other ground safety criteria. When AFOSH standards or safety criteria do not cover a situation, non-Air Force standards are used, including professional safety and health standards, national consensus standards, and other federal agency standards. Tinker AFB maintains an active Ground Safety Program that seeks to manage risk and prevent mishaps in the areas of operational, occupational, sports and recreation, and traffic safety (USAF 1998).

3.3.10 Utilities and Infrastructure

3.3.10.1 Potable Water

Tinker AFB derives its primary water supply from the Garber-Wellington Aquifer system through 24 groundwater supply wells on the installation. The Garber-Wellington Aquifer system is part of the larger Central Oklahoma Aquifer (USAF 2007a).

Potable water used for drinking and industrial purposes comes from a depth of 200 ft bgs or greater. Water from the Garber-Wellington Aquifer is of sufficient quality to be used for most industrial, agricultural, and domestic purposes. The aquifer system is primarily recharged by percolation of surface water and by rainfall infiltration and Tinker AFB is considered to be in the recharge zone for the Garber-Wellington Aquifer. These 24 wells range from 700 to 850 feet in finished depth, and yield 205 to 250 gallons per minute (gpm), supplying approximately 6.5 millions gallons of water per day to the installation. The system is currently operating at about 75 percent of its capacity (USAF 2007a).

Additional water supply for Tinker AFB is purchased from Oklahoma City and is provided by the Oklahoma City Water Department at two metered connections. Water is supplied through these connection points at a maximum delivery rate of 6,400 gpm when approximately 80 pounds of pressure per square inch gauge can be maintained. Usage from these two points is limited to two million gallons per day (gpd) (USAF 2007a).

Domestic elevated water storage capacity on the installation provides increased capability to meet peak seasonal or firefighting demands and maintains distribution system pressure. Tinker AFB's water distribution system has five elevated steel tanks. Four of the water storage tanks are 500,000-gallon tanks, and the fifth tank holds one million gallons. Therefore, the total elevated water storage capacity is three million gallons (USAF 2007a).

The water distribution system is almost entirely decentralized and consists of approximately 562,000 linear feet of asbestos cement, cast iron, and polyvinyl chloride (PVC) pipe. Water line sizes range from two inches to ten inches in diameter. Cast iron and asbestos cement water lines were installed initially in 1943; PVC water lines were installed as recently as 2001 (USAF 2007).

The current water supply and distribution system is operating at approximately 75 percent capacity, but is considered to be in good condition (USAF 2007a).

The GM assembly plant receives its potable water supply from the city of Oklahoma City. There are no water supply wells on the assembly plant property.

3.3.10.2 Wastewater

Domestic wastewater at Tinker AFB is collected and discharged to the Oklahoma City wastewater system through four metered discharge points. The majority of the wastewater collection system was constructed in 1943. Most of the lines are made of vitrified clay; however, approximately seven percent of the lines are cast iron and PVC pipe. The size of the force main is approximately 22 inches in diameter and the main itself is concrete. The general condition of the sanitary sewer collection system is fair (USAF 2007a).

The installation operates an Industrial Wastewater Treatment Plant (IWTP). Industrial wastewater is collected in a dedicated sewer system and piped to the installation's IWTP, which is located in the Eastside Depot Maintenance District. The IWTP typically receives and treats 900,000 gpd of wastewater. Wastewater collected for the IWTP is usually contaminated with petroleum products, heavy metals, and organics. These substances are removed from the wastewater at the IWTP and the effluent is then discharged to the municipal wastewater collection system under an Industrial User Permit with the city of Oklahoma City. According to the installation's General Plan, the industrial wastewater system is in excellent condition and the treatment plant is adequately sized to handle normal and peak influent (USAF 2007a).

The GM assembly plant discharged domestic wastewater to the Oklahoma City wastewater system. There is also an IWPT at the GM assembly plant which pre-treated industrial wastewater streams from automotive manufacturing processes prior to discharge to the sanitary sewer system. This facility operated under an Industrial User Permit as well with the city of Oklahoma City. There is also one septic tank system at the main truck entrance guardhouse, although little information is available on this system.

3.3.10.3 Solid Waste

Solid waste generated on the installation is handled base-wide by a private contractor. The contractor is responsible for pick-up and disposal of conventional solid waste generated by routine activities on the base, regardless of the number of receptacles serviced. Construction and demolition debris are not included in that contract. Non-recycled household and office wastes are hauled off-base and disposed of in a licensed landfill facility. Yard waste is kept separate at its origin/collection point and is hauled to a site on the south side of the installation for composting (USAF 2007a). Municipal solid waste generated from Tinker AFB is disposed of at an Allied Waste Landfill, while construction and demolition waste is disposed of at Waste Management's East Oak Landfill. The East Oak Landfill currently has a life expectancy of approximately 7 years, with plans for expansion once the current footprint is at capacity (Williams 2008).

Tinker AFB has a separate recycling program for office and household waste. The Recycling Center operates under the Services Division. The Recycling Center furnishes containers for offices and homes, and administers curbside pickup of the material. The center also tracks recycled materials by weight upon transport to buyers (USAF 2007a).

Solid waste was removed from the GM assembly plant by contract. There are no operational municipal solid waste landfills on Tinker AFB or on the GM assembly plant property.

3.3.10.4 Transportation

Three local arterial roadways (Sooner Road, Southeast 29th Street, and Douglas Boulevard) and Interstate Highways 40 and 240 provide access to the installation. There are 17 perimeter gates, 11 of which are used by installation personnel.

The current Tinker AFB transportation network consists of a series of arterial, collector, and local roadway networks. The arterial network is a system of two- to four-lane roads supporting the majority of traffic circulation onto and around the installation. The major arterial roads are Air Depot, East Drive, Arnold, and Patrol Road. The collector network is primarily a two-lane

network that provides access to mission facilities and support facilities. The collectors provide access to the arterial road network. The major collectors for Tinker AFB are McNarney Avenue, Reserve Road, and Mitchell Avenue.

Organizational parking is located adjacent to facilities, with limited parking spaces available to accommodate assigned personnel. Although Tinker AFB has 397 acres of parking lots, it is unable to accommodate the needs of all personnel. As a result, many service members are parking their vehicles along streets and in open areas.

The GM assembly plant is accessible via three arterial roadways (Midwest Boulevard, Air Depot Boulevard, and SE 74th Street). The main truck entrance is located off of Midwest Boulevard. Parking for the facility is located on the south side of the complex and is accessed from SE 74th Street. Various railroad tracks are present at the facility and one set goes into the main plant for approximately 250 feet.

3.3.10.5 Electricity/Natural Gas

Tinker AFB receives its electrical power from Oklahoma Gas and Electric Company (OG&E). OGE delivers electrical power through a looped 138-kilovolt (kV) transmission line. The Base has four possible electric utility feeds. The distribution system consists of overhead lines with pole-mounted transformers and underground lines with pad-mounted transformers. Underground electrical lines are both induct and direct buried. The overhead electrical lines are composed primarily of bare aluminum conductor, steel reinforced. The underground electrical lines are composed primarily of shielded copper conductors. Backup power is supplied to key buildings by approximately 72 generators. According to the installation's General Plan, the electrical supply to Tinker AFB is adequate and the electrical distribution system is in good condition (USAF 2007a).

Tinker AFB purchases natural gas through a government-wide supply contract administered by Defense Energy Supply Center. Geary Energy is the current natural gas supply contractor. Oklahoma Natural Gas Company delivers natural gas to the installation at three metered delivery points. Although the natural gas supply to the installation is adequate to meet existing needs and provide for future expansion, many natural gas lines and valves are old and deteriorated and should be replaced and upgraded. These cast iron pipes were installed over 60 years ago, and many lines are severely corroded. The condition of the pipes results in gas pressure instability (USAF 2007a).

The GM assembly plant receives electricity from OG&E via one of several transformers at the facility. OG&E owns the electrical substation on the north side of the facility that provides power to the facility's transformers. Natural gas is supplied to the GM assembly plant by OG&E, and landfill gas from the Bryant Street Landfill in Oklahoma City is used as well to fuel the boilers at the powerhouse. This gas is supplied to the site via an aboveground pipeline.

3.3.11 <u>Socioeconomic Resources</u>

Tinker AFB is located within the incorporated city limits of Oklahoma City, Oklahoma in Oklahoma County. The socioeconomic status of Tinker AFB and the region are addressed in this

section. The scope of this section includes population, housing, education, and economic activity.

3.3.11.1 Population

According to the US Census Bureau (USCB), the year 2000 estimated population for Oklahoma County was 660,448, representing an approximately 9.2 percent increase from 1990 to 2000 (USCB 2007a and USCB 2007b). An estimated 506,132 people, or 76.6 percent, of the 2000 Oklahoma County population reside in Oklahoma City (USCB 2007c and USCB 2007a) and the average family size in Oklahoma City is 3.04 (USCB 2007d). Oklahoma City, which is located entirely within Oklahoma County, experienced a faster growth rate from 1990 to 2000 compared to Oklahoma County. For Oklahoma City, the 2000 population estimate of 506,132 represents an increase of 12.1 percent over the 10 year period (USCB 2007c and USCB 2007b). In contrast, population growth for the state of Oklahoma from 1990 to 2000 was approximately 8.8 percent (USCB 2007e and USCB 2007 b), and the nationwide population growth was 11.6 percent from 1990 to 2000 (USCB 2007f and USCB 2007g).

3.3.11.2 Housing

The Tinker AFB Housing Requirements and Market Analysis (HRMA) for 2007 defines the housing market area as covering a 60 minute commute or 20 miles from Tinker AFB's headquarters building or major work centers (USAF 2007f). The HRMA analyzes data from 2006 and makes projections through 2011. In 2006, there were estimated to be 166,882 rental units in the housing market area; 39,479 units were considered to be unsuitable by Air Force standards. Of the remaining suitable rental units (127,403), an estimated 116,699 were occupied and 10,704 were vacant. According to the 2007 HRMA, there are currently 694 military family housing units at Tinker AFB.

3.3.11.3 Education

Children who live in permanent quarters on Tinker AFB, as well as those living off-base in Oklahoma City, attend schools within the Midwest City-Del City School District. The Midwest City-Del City School District includes 17 elementary schools, five junior high schools, and three high schools. Midwest City-Del City School District provides an educational program for over 14,000 students.

3.3.11.4 Economy

<u>Tinker AFB Economic Activity and Contribution</u>. The following information is summarized from the 2006 Tinker Economic Impact Report (USAF 2006b).

Tinker AFB generates economic activity in the region through employee payrolls, service contracts, construction programs, and other expenditures. Approximate annual payroll for Tinker AFB in FY06, statewide, was $1.2 billion, the Metropolitan Statistical Area (MSA) accounted for $1.1 billion of the payroll. The MSA covers Oklahoma, Cleveland, Canadian, Lincoln, McClain, Grady, and Logan Counties. The annual expenditures for contracts and procurements; materials, equipment, and supplies; construction; health; temporary duty; education; base exchange; and commissary for the state of Oklahoma was $945.8 million and for

the MSA was $886.7 million. The number of positions held by personnel considered a primary job at Tinker AFB was 25,287 statewide and 22,515 in the MSA. Secondary jobs held statewide at Tinker AFB were 29,093 and 25,893 in the MSA. In 2006, Tinker AFB executed $5 billion in annual contract awards and processed more than 13,000 contractual actions.

Regional Employment and Income. According to the 2000 Census, per capita personal income in Oklahoma City was 13 percent lower than the US average (USCB 2007h, USCB 2007i). In 2000, Oklahoma City unemployment rate was 3.3 percent, which was equal to the state average (3.3 percent) and below the US average (3.7 percent) (USCB 2007h, USCB 2007i, and USCB 2007j). In Oklahoma City, the leading non-governmental industries in 2000 were education, health, and social services (17.5 percent of working civilian population); retail trade (11.9 percent of working civilian population); manufacturing (11.0 percent of working civilian population); and professional, scientific, management, administrative, and waste management services (9.4 percent of working civilian population). In Oklahoma City, 14.8 percent of the population works for federal, state, or local governments (USCB 2007i).

3.3.12 Environmental Justice

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, provides that, "each Federal Agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." In an accompanying Presidential memorandum, the President specified that federal agencies shall analyze the environmental effects of their proposed actions on minority and low-income communities, including human health, economic, and social effects when such analysis is required by NEPA.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, mandates the investigation of environmental effects on children. This EO acknowledges that children may suffer disproportionately from environmental health risks and safety risks. Therefore, each federal agency is required to make it a priority to identify and assess environmental health and safety risks that may disproportionately affect children and ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

This Environmental Justice section presents relevant Oklahoma City and Oklahoma County data regarding environmental justice, along with an analysis of Census reporting areas that would be affected by the proposed and alternative actions. This analysis follows the Air Force Interim Guidance for Environmental Justice Analysis, November 1997, and the CEQ Environmental Justice Guidance under NEPA, December 1997. This section also presents baseline conditions for the health and safety of children.

Existing Conditions

In order to determine if minority and low-income populations are disproportionately impacted by the Proposed Action or alternatives, two areas of comparison must first be determined: the potentially affected area, or the Region of Influence (ROI), and the larger regional area that includes the affected area and serves as a Community of Comparison (COC). The ROI is the geographic area that would be adversely affected by a proposed project. The ROI for this environmental justice analysis is Oklahoma City. Oklahoma County, which includes the ROI, will be the COC under this environmental justice analysis.

Disadvantaged groups within the ROI and COC, including low-income and minority communities, are specifically considered in order to assess the potential for disproportionate occurrence of impacts. For the purposes of this analysis, disadvantaged groups are defined as follows:

- *Minority Population*: Black or African Americans; American Indians and Alaska Native; Asian; Native Hawaiian and Other Pacific Islander; and some other race. For the 2000 Census, race and Hispanic origin (ethnicity) were considered two separate concepts and were recorded separately. For the purposes of this analysis, the total minority race population will be separate from the total Hispanic population to determine total minority race population from the Hispanic total within the affected areas.
- *Low-Income Population*: Persons living below the poverty level, according to income data collected in the US Census 2000.

Tinker AFB is located within the incorporated city limits of Oklahoma City, Oklahoma in Oklahoma County. In the year 2000, the population of Oklahoma City was 506,132. Caucasians represented 68.4 percent of the population and minorities represented 27.7 percent. Of the total population, Caucasians were the predominant ethnicity (USCB 2007k).

Census data for the year 2000 showed the population for Oklahoma County as being 660,448. Caucasians represented 70.4 percent of the population and minorities represented 25.7 percent. Of the total population, Caucasians were the predominant ethnicity (USCB 2007l).

Based on the 2000 Census data, the incidence of persons in Oklahoma City with incomes below the poverty level was 16.0 percent (USCB 2007m) compared to 15.2 percent in Oklahoma County (USCB 2007n). Nationally, 12.4 percent of the population lives below the poverty level (USCB 2007o).

In 2000, the total population of the United States was 281,421,906. Minorities represented 22.4 percent of the population with 12.3 percent Black or African American; 0.9 percent American Indian and Alaskan Native; 3.6 percent Asian; 0.1 percent Native Hawaiian and Other Pacific Islander; 5.5 percent some other race. A Hispanic or Latino ethnicity was reported by 12.5 percent of the population (USCB 2007p).

Table 3-7 summarizes Census data on minority and low-income populations for Oklahoma City, Midwest City, Del City, and Oklahoma County. Additional information is provided for the state of Oklahoma and the United States (USCB 2007k-v)

Table 3-7 Minority and Low-Income Populations

Demographic Area	Total Population	Total Hispanic/ Latino Population	Percent Hispanic/ Latino	Total Minority Race Population	Percent Minority Race	All Income Levels	Total Low-Income Population	Percent Low Income
Oklahoma City	506,132	51,368	10.15%	140,213	27.70%	493,037	79,084	16.04%
Midwest City	54,088	2,192	4.05%	14,253	26.35%	53,534	7,456	13.43%
Del City	22,128	1,043	4.71%	4,828	21.82%	21,948	2,921	13.31%
Oklahoma County	660,448	57,336	8.68%	169,697	25.69%	643,433	98,145	15.25%
Oklahoma State	3,450,654	179,304	5.20%	666,235	19.31%	3,336,224	491,235	14.72%
United States	281,421,906	35,305,818	12.5%	86,907,766	30.9%	273,882,232	33,899,812	12.38%

Source: USCB 2007k-v
Notes:
Minority Race includes Black or African American; American Indian, and Alaskan Native; Asian; Native Hawaiian and Other Pacific Islander; and some other race
All income levels include everyone except those in institutions, military group quarters, and college dormitories, and unrelated individuals under 15 years old.

Any area whose population consists of greater than 50 percent (including Hispanics or Latinos) low-income families is considered to be a majority-minority or majority-low-income population. Additionally, if the affected area's percentage of minority or low-income population is greater than that of the general population (in this case, Oklahoma City compared to Oklahoma County), the affected area is considered to be a minority or low-income population. Based upon this threshold, Oklahoma City is not a majority-minority population or a low-income population.

Considering that there will be a less than one percent increase in population of military personnel and dependents living on Tinker AFB there will be a minimum amount of additional children exposed to environmental health and safety risks. Children at Tinker AFB are exposed to the same environmental setting as the rest of the population on Tinker AFB.

Chapter 4

Environmental Consequences

CHAPTER 4
ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

This chapter describes the potential environmental impacts that are likely to occur as a result of implementation of the Proposed Action or No-Action Alternative. The No-Action Alternative provides a baseline against which the impacts of the Proposed Action can be compared. A discussion of mitigation measures is included as necessary. Any resultant irreversible or irretrievable commitments of resources are noted as well. Criteria and assumptions used to evaluate potential impacts are discussed at the beginning of each section.

4.2 DESCRIPTION OF THE EFFECTS OF ALL ALTERNATIVES ON THE AFFECTED ENVIRONMENT

4.2.1 Noise

When evaluating noise effects, several aspects are examined, including: 1) the degree to which noise levels generated by mission operations, as well as ongoing construction, demolition, and renovation activities are higher than the ambient noise levels; 2) the degree to which there is hearing loss and/or annoyance; and 3) the proximity of noise-sensitive receptors (i.e., residences) to the noise source. An environmental analysis of noise includes the potential effects on the local population. Such an analysis estimates the extent and magnitude of the noise generated by the proposed and alternative actions.

4.2.1.1 Proposed Action

Noise associated with the operation of machinery on construction sites is typically short-term, intermittent, and highly localized. The loudest machinery generally produces peak SPLs ranging from 86 to 95 dBA at 50 feet from the source (Table 3-4). For every multiple of this distance, SPL decreases by six dBA. It is important to note that the peak SPL range for construction equipment noise does not take into account the ability of sound to be reflected or absorbed by nearby objects, which would further reduce noise levels. Additionally, interior noise levels would be reduced by 18 to 27 dBA due to the NLR properties of the building's construction materials (FAA 1992).

Noise associated with construction and demolition activities does not typically generate a predicted noise exposure of 65 dBA DNL or greater because even at extremely high rates of operation, the equipment itself does not generate noise so intense that averaged over a year would produce a 65 dBA DNL. The nature of sound is such that the temporary noise effects from the operation of construction equipment are minor in comparison to the existing noise exposure from aircraft noise. In essence, the aircraft noise masks the noise from construction equipment, or stated another way, the overall contribution to the cumulative noise exposure from construction noise is small compared to the existing noise environment created by the operation of aircraft.

It is foreseeable that increased noise would temporarily occur under the Proposed Action resulting from activities inherent to construction and demolition activities. These activities would produce noise generated by heavy equipment and vehicles involved in demolition, site preparation, foundation preparation, and construction work. There would be a possibility of short-term, localized speech interference or annoyance near construction zones. In addition, adherence to standard Air Force Occupational Safety and Health regulations would minimizes the risk of hearing loss to construction workers. These regulations require hearing protection along with other personal protective equipment and safety training.

Noise-sensitive receptors are generally not present in the industrial land uses where the Proposed Action construction projects are located. Personnel in or around construction areas would be exposed to construction noise intermittently, and only for the duration of the project; therefore, an extended disruption of normal activities would not be anticipated.

Relocating engine test workload from their current location to the proposed new T9 test cells at TAC would result in a slight change in the overall aircraft operations noise contours on the installation. Preliminary noise modeling was performed by the Air Force Center for Engineering and the Environment considering proposed engine test operations at the proposed T9 Engine Test Calls. Results of the noise modeling showed that the majority of noise sensitive receptors on and adjacent to Tinker AFB would experience the same noise exposure. Those locations that were predicted to experience an increase in noise exposure as a result of proposed T9 Engine Test Cells are presented in Table 4-1 below (USAF 2007g). Figure 4-1 shows the location of these noise sensitive receptors, with respect to noise contours at Tinker AFB.

Table 4-1 Locations Predicted to Experience an Increase in Noise Exposure as a Result of Proposed T9 Engine Test Cells

Location	Baseline Noise Exposure 2006 AICUZ dBA DNL	FY08 T9 Production dBA DNL	FY09 T9 Production dBA DNL
Choctaw Junior High Schools	52.4	52.4	52.5
South Bryant Campus of Metro Tech	38.5	38.5	38.6
Bodine Elementary School	36.8	36.8	36.9

Notes:
AICUZ = Air Installation Compatible Use Zone
dBA = A-weighted decibel
DNL = day-night average sound level
FY = Fiscal Year

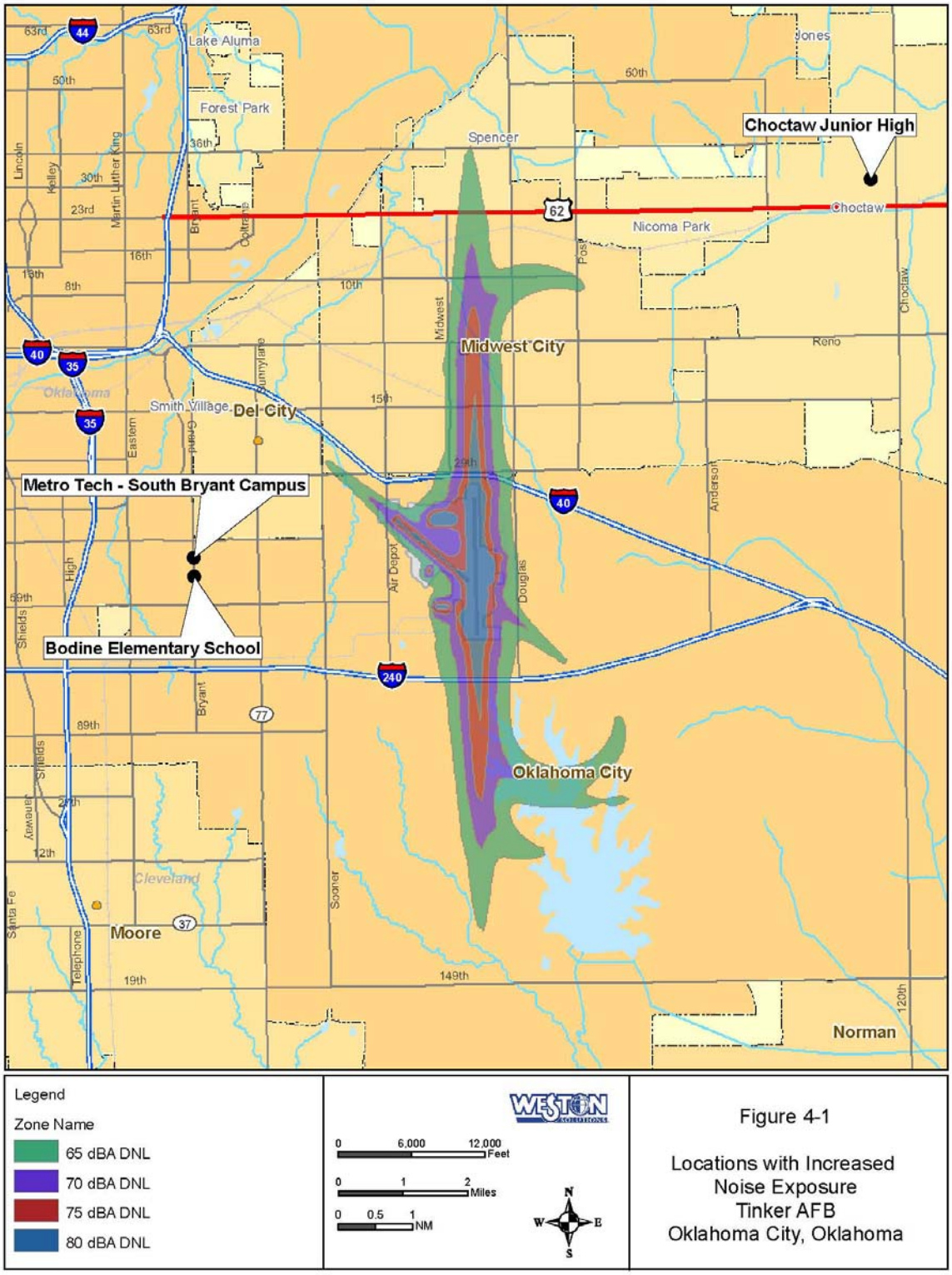


Figure 4-1

Locations with Increased Noise Exposure Tinker AFB Oklahoma City, Oklahoma

The increased noise exposure at these locations represents a 0.1 dBA DNL increase from baseline and is less than 65 dBA DNL, such that no incompatible land uses are created as a result of the Proposed Action. As indicated in Section 3.3.1, an increase of less than 3 dBA would be expected to be indiscernible by the human ear.

4.2.1.2 No-Action Alternative

Under the No-Action Alternative there would be no change to the baseline noise environment as described in Section 3.3.1.

4.2.2 Land Use

A comparative methodology was used to determine impacts to land use at Tinker AFB. Proposed demolition, TAC construction operations, and TAC facility operations were examined and compared to existing land-use conditions and land-use plans. Potential impacts were identified as they would relate to changes in land-use classifications, extent of changes, and potential conflicting uses on- and off-base.

4.2.2.1 Proposed Action

The Proposed Action would result in a long-term positive impact with respect to land-use planning on Tinker AFB. Incompatible facilities that are currently present in the Airfield Clear Zones would be demolished. Otherwise, the projects contained in the Proposed Action would not be expected to conflict with any existing on- or off-base land uses. Parcels outside of airfield clear zones and accident potential zones that would be vacated as a result of facility demolition would be returned to a developable land use status.

4.2.2.2 No-Action Alternative

Under the No-Action Alternative there would be no change to the baseline land-use environment as described in Section 3.3.2. Land-use conflict would continue on Tinker AFB associated with incompatible facilities located in the Airfield Clear Zones.

4.2.3 Air Quality

The following factors were considered in evaluating air quality:

- The short- and long-term air emissions generated from bulldozing, compacting, grading, loading excavated material to trucks and dumping, scraping, paving, combustion engine exhaust, asphalting, concrete pouring, renovation and demolition activities;
- The type of emissions generated; and
- The potential for emissions to result in ambient air concentrations that exceed one of the NAAQS or SIP requirements.

Tinker AFB is not located in a non-attainment or maintenance area, therefore a general conformity analysis is not required. The closest PSD Class I area is Wichita Mountains National Wildlife Refuge, with the nearest border approximately 80 miles from Tinker AFB. Emissions from the proposed and alternate action would have local impacts but would not likely have

significant impacts on the Wichita Mountains National Wildlife Refuge. The air pollutant emission calculations for the proposed and alternative action included in the sections below are detailed in Appendix D. Appendix D includes only short-term emissions associated with construction, renovation, and demolition activities.

4.2.3.1 Proposed Action

The Proposed Action would result in short-term emissions during road construction, asphalt paving, renovation and demolition activities. As mission activities currently proposed for TAC represent the relocation and resumption of existing mission activities on Tinker AFB, new air emission sources are not expected as a result of the Proposed Action. The main source of long term emissions from TAC facility will be the resumed operation of the existing boiler facility, previously used by GM and the relocation of approximately 10 percent of Tinker AFB's air emission sources associated with aircraft maintenance work. The long-term emissions at Tinker AFB will likely remain relatively unchanged, due to the integration of many separate operations into a single facility at TAC. The existing Tinker AFB Title V permit would be modified to include the GM assembly plant boiler facility and to account for any air emission sources transferring to the TAC facility.

The combustion of fuel by the construction equipment and related vehicles involved in the Proposed Action would cause a short-term increase in CO, VOC, NO_x, SO_2, $PM_{10,}$ and $PM_{2.5}$. Fugitive dust would be created by the construction equipment as it disturbs soils. The USEPA has estimated that uncontrolled fugitive dust emissions from ground-disturbing activities would be emitted at a rate of 80 pounds (lbs) of total suspended particulate (TSP) per acre per day of disturbance (USEPA 1995). In a USEPA study of air sampling data at a distance of 50 meters downwind from construction activities, PM_{10} emissions from various open dust sources were determined based on the ratio of PM_{10} to TSP sampling data. The average PM_{10} to TSP ratios for topsoil removal, aggregate hauling, and cut and fill operations are reported as 0.27, 0.23, and 0.22, respectively (USEPA 1988). Using 0.24 as the average ratio for purposes of this analysis, the emission factor for PM_{10} dust emissions becomes 19.2 lb per acre per day of disturbance. Because $PM_{2.5}$ emissions factors have not been developed for all operations, it is conservatively assumed that $PM_{2.5}$ emissions are equivalent to PM_{10} emissions. The emissions presented in Table 4-1 include the estimated annual PM_{10} and $PM_{2.5}$ emissions associated with the uncontrolled fugitive dust emissions from the renovation, construction, and demolition sites. Emissions from infrastructure improvements are also included. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. The USEPA estimates that the effects of fugitive dust from construction activities would be reduced significantly with an effective watering program. Watering the disturbed area of the construction/demolition site twice per day with approximately 3,500 gallons per acre per day would reduce TSP emissions as much as 50 percent (USEPA 1995). The effects from fugitive dust would last only as long as the duration of the activity, fall off rapidly with distance from the site, and would not result in long-term impacts.

Specific information describing the types of construction equipment required for a task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of this analysis, these parameters were estimated using established cost estimating methodologies for construction and experience with similar types of construction, renovation and

demolition projects (Means 1996). Combustive emissions from construction equipment exhaust were estimated by using USEPA-approved emissions factors for heavy-duty diesel-powered construction equipment (USEPA 2000) along with the emission factors for the estimated types and numbers of equipment expected to be used during each activity. These emissions are included in Table 4-2. As with fugitive dust emissions, construction, renovation and demolition emissions would produce slightly elevated air pollutant concentrations. However, the effects from these activities would last only as long as the duration of the activity, fall off rapidly with distance from the site, and would not result in long-term impacts.

Under the Proposed Action the renovation/construction activities of TAC would take place during calendar years 2008 and 2009. The associated demolition of facilities within Tinker AFB would take place during calendar years 2009-2013. A regionally significant action determination is not required for Oklahoma County, since it is an attainment area. The demolition and construction emissions from the Proposed Action have been included in Table 4-2 to show that the emissions would be regionally insignificant even if Oklahoma County was a non-attainment or maintenance area. Emissions are based upon the square footage of demolition given for each year in Table 2-1 and the proposed construction activities in Table 2-2. Assumptions used in the calculation of emissions are included in Appendix D.

The emission of minor amounts of air pollution would be unavoidable; however, the individual and cumulative impacts during renovation, road construction, asphalting, and demolition activities would have little impact when compared to the 2001 Oklahoma County emissions, as shown in Table 4-2.

4.2.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the Tinker AFB emissions described in Section 3.3.3.3.

4.2.3.3 Regional Significance

Review of emissions from the Proposed Action in Table 4-2 indicates that the greatest percentage of impact to the local emissions in a given year during the project would be VOC (92.0 tpy increase in year 2009) at 0.0024 percent from the combined renovation, road construction, asphalt, and demolition operations during the second year of the project. The emissions would be temporary and would be eliminated after the activity is completed. The emissions from the scheduled future demolition of facilities in years 2010-2015 are much less than those from the demolition, construction and renovation of TAC during the initial calendar years 2008-2009. All emissions would fall well below the 10 percent level that would be considered regionally significant by the USEPA if the region were non-attainment for any of the criteria pollutants as stated in 40 CFR 51, Subpart W, Section 852.

No mitigative actions would be required. BMPs would include watering the disturbed area of the construction, covering dirt and aggregate trucks and/or piles, prevention of dirt carryover to paved roads, and the use of erosion barriers and wind breaks.

Table 4-2 Expected Emissions per Construction Year

Criteria Air Pollutant	CO	VOC	NO_x	SO_x	PM_{10}	$PM_{2.5}$[b]
Proposed Action Year 2008 (tpy)	22.9	32.8	49.6	5.3	11.3	11.3
Percent of Regional Emissions	9.05E-05	8.70E-04	1.44E-03	2.02E-03	4.40E-04	4.40E-04
Proposed Action Year 2009 (tpy)	27.5	92.0	54.9	5.8	55.6	55.6
Percent of Regional Emissions	1.09E-04	2.44E-03	1.59E-03	2.24E-03	2.18E-03	2.18E-03
2001 Oklahoma County Emissions (tpy)[a]	253,221	37,724	34,441	2,607	25,563	6,157

Notes:
CO=carbon monoxide
NO_x=nitrogen oxides
$PM_{2.5}$=particulate matter equal or less than 2.5 micrometers in diameter
PM_{10}=particulate matter equal or less than 10 micrometers in diameter
SO_x=sulfur oxides
tpy - tons per year
VOC=volatile organic compound
[a] Includes emissions from point and area sources. Source: http://www.epa.gov/air/data/ (U.S. Environmental Protection Agency AirData).
[b] Assumed that $PM_{2.5}$ is equal to PM_{10}.

4.2.4 Water Resources

Impacts to surface water and groundwater resulting from the proposed or alternative action may occur if project activities resulted in the following:

- Surface water quality declining such that the existing surface water quality standards would be violated.
- An increase in water usage from the Central Oklahoma Aquifer that is located below Tinker AFB.

4.2.4.1 Surface Water

4.2.4.1.1 Proposed Action

The Proposed Action consists of a lease of an industrial facility, relocation of Tinker AFB activities, demolition, shallow excavation, paving, and construction activities. The potential for increased sediment loading of surface water during the initial demolition and construction activities is the most likely impact associated with the Proposed Action. This potential is short-term and is manageable through implementation of a SWPPP along with the incorporation of BMPs for sediment control during construction. Implementation of these actions would minimize potential water quality problems.

As a result of demolition under the Proposed Action, approximately 50 acres of land would return to an undeveloped condition. So long as the acreage remains undeveloped, there would be a decrease in the amount of storm water runoff generated in these areas.

Acquisition of the GM assembly plant would not result in an increase in total impervious cover; however, the acquisition would add approximately 122 acres to the total inventory of impervious cover at Tinker AFB. Construction of additional pavement would increase impervious cover by approximately 2.3 acres. Any increased runoff has the potential to increase sediment loads within the water bodies associated with Tinker AFB. Any increase in storm water should be

managed by the present storm water drainage system that is currently located within the GM assembly plant.

The current Tinker AFB MSGP would need to be amended to include the property, activities, and discharges that would occur at TAC. The additional sediment loads created during the construction should be maintained and managed by the proper implementation of the base wide SWPPP. Each construction project would require a NOI under the General Permit for Storm Water Discharges from Construction Activities within The State of Oklahoma, OKR10, to be filed with Tinker AFB and the creation and implementation of a site specific SWPPP would be required. Tinker AFB would also need to modify their individual NPDES permit to include the storm water outfalls and retention structures on the GM property.

In accordance with the Energy Independence and Security Act of 2007, all Proposed Action construction projects should include site planning, design, construction, and maintenance strategies to maintain or restore, to the maximum extent technically feasible, the predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration of runoff flow.

4.2.4.1.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.4.1.

4.2.4.2 Groundwater

4.2.4.2.1 Proposed Action

In areas throughout Tinker AFB and the proposed TAC, there is a potential for construction and demolition activities associated with the Proposed Action to encounter groundwater from 5 to 70 feet bgs. Proper safety procedures should be put in place in the event contaminated groundwater is encountered.

4.2.4.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.4.2.

4.2.4.3 Wetlands and Floodplains

4.2.4.3.1 Proposed Action

Under the Proposed Action, construction and demolition activities would not occur in a floodplain or in areas containing wetlands. Therefore, no impacts to wetland or floodplains would be expected to occur.

4.2.4.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.4.2

4.2.5 Cultural Resources

Significant impacts to cultural properties would occur only if the proposed or alternative actions would adversely affect historic properties. An adverse effect is an undertaking that diminishes the integrity of a property's location, design, setting, materials, workmanship, feeling, or association. An adverse effect can occur through the destruction or alteration of the property, isolation from or alteration of the environment, introduction of intrusive elements (visual, audible, or atmospheric), neglect, and the transfer, lease, or sale of the property (ACHP 1995).

4.2.5.1 Proposed Action

Assessment of adverse effects under 36 CFR 800.5 resulted in a determination of no adverse effects across project's area of potential effects. Supporting documentation demonstrating consultation with SHPO and OAS can be found in Appendix A. Tinker AFB's ICRMP provides procedures to be followed for inadvertent discoveries of cultural resources materials or human remains identified during demolitions, construction and subsequent operation/maintenance activities related to the proposed action.

4.2.5.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.5

4.2.6 Earth Resources

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

Analysis of potential impacts on geological resources typically includes:

- Identification and description of resources that could potentially be affected.
- Examination of the Proposed Action and alternatives and the potential effects they may have on the resource.
- Provision of mitigation measures in the event that potentially adverse impacts are identified.

Effects on geology and soils would be adverse if they alter the lithology, stratigraphy, and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or change the soil composition, structure, or function within the environment.

4.2.6.1.1 Proposed Action

Proposed Action demolition activities on Tinker AFB and construction activities at the GM assembly plant would occur in currently developed industrial land uses and would not be expected to have any adverse impacts on earth resources. The soils in the vicinity of these

activities have been altered over time and the project areas are permanently disturbed with existing facilities and paved roads.

There would be minor, long-term adverse impacts to the city-owned property where an access road and security fence would be constructed on approximately 1 acre of native grassland. Additional short term negative impacts would be expected to occur during the construction period from activities associated with site preparation, grading, vehicular soil compaction, etc. However, these activities could be mitigated through implementation of proper BMPs during construction. The remaining 25 acres of native grassland on the city-owned property would be left intact and managed as native grasslands.

4.2.6.1.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.6

4.2.7 Biological Resources

4.2.7.1 Proposed Action

The proposed demolition of 39 structures would have an overall positive impact on the natural environment of Tinker AFB and wildlife species in general. With demolition, approximately one million SF of building space would be torn down and the sites restored with some type of vegetation. This would convert approximately 26 acres of developed properties into potential wildlife habitat scattered throughout the base. The degree of positive impact would be dependent upon the types of vegetation utilized to restore the sites and degree and intensity of future development in the project areas which is currently unknown. No impacts to threatened, endangered, or sensitive species would be expected to occur.

Impacts associated with implementation of the proposed TAC Acquisition and Construction project are varied. Cumulatively, all of the construction activities planned for the GM assembly plant (Figure 2-3, Features A-G) would adversely impact a total of 9.79 acres of wildlife habitat of varying quality. With construction of the perimeter security fence on the city-owned parcel (Feature A, Figure 2-3) there would be minor temporary negative impacts to wildlife habitat (1.1 acres) and minor negative impacts to wildlife species. Temporary negative impacts would result from activities associated with construction such as surveying and monumenting the boundaries, mowing and/ or grading, vehicular soil compaction, and general disturbance to the area. These impacts would be short-term in nature and easily mitigated through implementation of BMPs during construction. However, this parcel is presently unfenced and placing a security fence through the area may create a barrier and reduce mobility of wildlife species.

Construction of a temporary access road (Feature B, Figure 2-3); Repair of B9001 for Force Protection (Feature D, Figure 2-3) and construction of an industrial security perimeter (Feature F, Figure 2-3) would all have minor negative temporary impacts to wildlife habitat (4.4 acres) and wildlife species. These impacts would result from construction activities including site preparation, vehicular soil compaction, and general disturbances to the area, and could be mitigated through implementation of proper BMP's. Construction of features D and F would not be expected to have any impacts on threatened, endangered, or sensitive species. Construction of

Feature B may impact two sensitive species, the Texas horned lizard and logger headed shrike. Both of these species are known to occur near this location.

Construction of the perimeter road extension (Feature C, Figure 2-3) would have a long-term minor negative impact to both wildlife habitat and wildlife species. These impacts would result from converting approximately (0.8 acres) of native grasslands to roadway. Additional short term negative impacts would be expected to occur during the construction period from activities associated with site preparation, grading, vehicular soil compaction, etc. However, these activities could be mitigated through implementation of proper BMP's during construction. The remaining 25 acres of native grassland on this site would be left intact and managed as native grasslands. No impacts to threatened or endangered species would be expected to occur. A sensitive species, the migrant logger-headed shrike is known to occur near the eastern edge of the proposed roadway, and construction activities might temporarily impact this species. Construction of Feature C may also impact the Texas horned lizard. This species is known to occur near this location.

Construction of the loop road (Feature E, Figure 2-3) would have minor negative impacts to wildlife habitat (3.4 acres) and wildlife species in general. This feature would be constructed within the GM property and would be located on areas that are presently mowed and maintained. While these lands do provide some habitat for a limited number of wildlife species, existing habitat is very limited and of poor quality. Construction of the loop road would not be expected to have any impacts on threatened and/or endangered species. Construction of Feature E may impact two sensitive species, the Texas horned lizard and logger headed shrike. Both of these species are known to occur near this location.

Construction of the T9 engine test cell (Feature G, Figure 2-3) would not be expected to have any impacts on wildlife habitat, wildlife species, threatened and/or endangered species, or sensitive species. This feature would be constructed on the GM property and is located in an area that is heavily disturbed and is regularly mowed and maintained. While this area may provide habitat for a limited number of wildlife species, it is very limited and of poor quality.

Once operational, impacts on biological resources from mission activities in TAC would be expected to be similar to those associated with historical activities on the site. Continuation of grounds maintenance activities such as mowing, general maintenance activities, and application of herbicides and pesticides would be expected. These activities have been ongoing on the GM properties and would continue with implementation of the TAC project. Continuance of these types of actions would not be expected to result in any impacts to endangered, threatened, or sensitive species. Operation and management activities associated with maintenance of the city-owned parcel would have minor negative impacts on both wildlife habitat and wildlife species. Annual mowing of the road shoulders and drainage ditches could have a negative impact on the long-term viability of the native grassland community. Limited mowing of the road right of way would protect the viability of the native grasses and prevent them from being replaced with invasive or non-native species such as Bermuda grass, fescue, or Johnson grass.

4.2.7.2 No-Action Alternative

Implementation of the No-Action Alternative would essentially mean "Status Quo" for the ongoing mission activities at Tinker AFB, the 430-acre GM assembly plant property, and 26-acre city-owned property. The on-going mission activities would remain on base and continue at their present locations. The creation of approximately 26 acres of undeveloped land resulting from demolition of the 39 structures would not occur.

It is probable that closure and operations and maintenance activities associated with the GM assembly plant property would continue until the property could be disposed of or sold. The minor negative impacts to wildlife habitat and wildlife species presently occurring as a result of operations and maintenance activities at the GM assembly plant would continue. The minor negative impacts predicted to occur to wildlife habitat (9.7 acres) and wildlife species as a result of constructing and operating the various TAC construction projects would not occur. With implementation of the No-Action Alternative the 26-acre native grassland site located on the city-owned property would remain intact.

4.2.8 Hazardous Materials and Wastes

The degree to which proposed acquisition, construction and demolition activities could affect the existing environmental management practices was considered in evaluating potential impacts to hazardous materials and wastes, including ERP sites. Impacts could result if non-hazardous/ regulated and hazardous substances were collected, stored and/or disposed of improperly.

4.2.8.1 Hazardous Materials

4.2.8.1.1 Proposed Action

The use of hazardous materials during the implementation of the Proposed Action is expected to be limited to construction vehicle maintenance (fuel, oils, and lubricants) and construction activities (adhesives, sealants, etc.). These materials would be properly contained, manifested, and managed. In addition, approximately 25 percent of the aircraft maintenance operations that use Hazardous Materials would be moving to TAC.

Asbestos

ACM is potentially present in pipe insulation, cement pipe, floor tile, floor tile adhesive, roof patching sealant, wall board in mechanical closets, wall and ceiling texture, and wall board panels of all buildings located on Tinker AFB. ACM is also potentially present in thermal insulation of elbow gasket material and boiler rope gasket material, transite panels, mastic under floor tile, and linoleum of the GM assembly plant. Upon acquisition of the GM assembly plant, the guidelines present in the Tinker AFB Asbestos Management and Operation Plan must be followed to abate all ACM from the affected units prior to demolition activities. Given the potential, the negative impacts to the environment resulting from this Proposed Action resulting from this alternative would be short-term and would be minimized as long as the guidelines outlined in the Tinker AFB Asbestos Management and Operation Plan were followed during demolition activities associated with the Proposed Action. A long-term positive impact would occur, due to the removal of ACM currently present. No ACM would be used in the construction of any new facilities.

Lead-Based Paint

LBP must be considered to be potentially present in all facilities constructed prior to 1980 at Tinker AFB. The facilities located within the GM assembly plant were constructed before LBP was discontinued. Procedures stated in the Tinker AFB LBP Management Plan must be followed to properly test and manage facilities that have been found to house LBP. Note that areas where LBP has been abated or not found should still be regarded as possibly containing LBP. LBP may be present within the soils surrounding the facilities. If it is necessary to remove soils for off-site disposal, a limited number of random samples would be collected to assess the presence or absence of lead in soil, and to property categorize the soil for hazardous constituents per applicable state and federal regulations for disposal off-site. Long-term impact resulting from this alternative would be positive in the removing of LBP and LBP contaminated soils.

Pesticides

Currently Tinker AFB management applies commercially available pesticides. Tinker AFB records indicate the historical application of several pesticides that are no longer approved for use. Although these pesticides were used in accordance with manufacturers' guidance and directions, the potential exists for residual concentrations in the soil underlying on-base facilities. If it is necessary to remove soils for off-site disposal, a limited number of random samples would be collected to assess the presence or absence of pesticides in soil, and to properly categorize the soil for hazardous constituents per applicable state and federal regulations for disposal off-site. Long-term impact resulting from this No-Action alternative would be positive in the removing of pesticide contaminated soils, if contaminated soils are found. Within the GM assembly plant, pesticide application was performed on landscaped areas on a limited basis. During sampling events within the GM assembly plant, pesticides were not detected.

4.2.8.1.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.8. Installation activities would continue to be housed in deteriorated and substandard facilities where asbestos-containing material and lead-based paint are present.

4.2.8.2 Hazardous Waste

4.2.8.2.1 Proposed Action

During demolition activities, associated with the Proposed Action, any ACM- and LBP-containing materials or other toxics removed/generated would be managed in accordance with established installation management plans and state and federal regulations. LBP-containing materials would qualify for household hazardous waste exemption and would be treated as construction and demolition wastes. As described in Section 4.2.8.1.1, a limited number of soil samples would be collected to ascertain the presence or absence of pesticides and lead so that any excess soil may be disposed of in accordance with applicable state and federal regulations. Approximately 25 percent of the hazardous waste generating activities currently at Tinker AFB would be relocating to TAC. The Proposed Action will require modification of the Tinker AFB Hazardous Waste Management Plan and the RCRA Hazardous Waste Permit. Accumulation points which would be closing would be inspected and new accumulation points would be pre-inspected by safety, fire, and environmental. All new operations would be in compliance with AFI 32-7042, *Solid and Hazardous Waste Management*. Positive impacts would include the

proper disposal of abated LBP, ACM, and LBP and/or pesticide contaminated soils decreasing potential human contact with those materials on Tinker AFB. Proposed Action activities at TAC are sited such that no impact to the 23 acres that contain Potential Areas of Concern would be expected.

4.2.8.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.8.

4.2.8.3 Environmental Restoration Program

4.2.8.3.1 Proposed Action

It is possible that construction, and demolition activities would encounter groundwater as the depth of groundwater ranges from 5 to 70 feet bgs. While not expected based upon the location of Proposed Action activities, if groundwater is encountered, during construction and demolition activities related to the Proposed Action, care would be taken to ensure that groundwater resources and human health are protected from potentially contaminated groundwater.

It is possible that contaminated soils would be encountered during construction and demolition activities related to the Proposed Action. If contact is made with contaminated soils, care would be taken to ensure that human health is protected from potentially contaminated soil.

4.2.8.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.8.

4.2.9 Occupational Health and Safety

4.2.9.1.1 Proposed Action

Short-term, minor adverse effects would be expected due to the temporary increase in construction activities on the installation. Construction contractors would be required to establish and maintain safety programs that would provide protection to their workers and limit the exposure of base personnel to construction hazards.

Consolidating aircraft maintenance operations from numerous substandard and deteriorated facilities to a modern industrial facility would be expected to result in long-term positive impacts to the Occupational Safety and Health environment at Tinker AFB. Improvements to the overall work environment would be expected to translate into fewer occupational mishaps. Relocation of mission activities from existing Tinker AFB facilities to TAC would also be expected to reduce traffic congestion on the installation, especially at the gates, thereby creating a safer environment with respect to vehicle and vehicle-pedestrian accidents.

In areas throughout Tinker AFB and the proposed TAC, there is a potential for construction and demolition activities associated with the Proposed Action to encounter groundwater. Proper safety precautions should be put in place in the event contaminated groundwater is encountered.

4.2.9.1.2 No-Action Alternative

Under the No-Action Alternative, installation activities would continue to be housed in deteriorated and substandard facilities, thus potentially exposing personnel to unsafe working conditions. In addition, facilities would continue to be located in airfield clear zones.

4.2.10 Infrastructure and Utilities

The following factors were considered in evaluating potential impacts to infrastructure and utilities: (1) the degree to which a utility service would have to alter operating practices and personnel requirements; (2) the degree to which the change in demands from implementation of the proposed or alternative actions would impact the utility system's capacity; (3) the degree to which a transportation system would have to alter operating practices and personnel requirements to support the action; (4) the degree to which the increased demands from the proposed program would reduce the reliability of transportation systems; and (5) the degree to which the proposed or alternative actions would change surface water runoff and erosion characteristics.

4.2.10.1 Potable Water

4.2.10.1.1 Proposed Action

Demolition of facilities as well as construction of TAC projects, as described in Section 2.3, would result in a slight increase in potable water consumption as a result of dust suppression activities. This increase would be minor and short-term in nature.

Operations on the existing facility footprint which would be relocated to the GM assembly plant would consume approximately the same amount of water at the new location. It is possible that co-location of multiple activities in a single facility would create system efficiencies that could result in a decrease in the amount of potable water consumed by Tinker AFB. A less than one percent increase in the number of jobs at Tinker AFB would result in a similar increase in potable water consumption. The proposed use of the TAC facility is not expected to exceed the capacity of the water distribution system as designed for an automotive assembly plant. In the long-term, Tinker AFB would consider alternative sources for supplying potable water to TAC including on-site wells and/or connecting with the existing Tinker AFB water system.

4.2.10.1.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline condition, as described in Section 3.3.10.1.

4.2.10.2 Wastewater

4.2.10.2.1 Proposed Action

Demolition of facilities as well as construction of TAC projects, as described in Section 2.3, would not be expected to change the amount of domestic wastewater generated at Tinker AFB. Operations on the existing facility footprint which would be relocated to the GM assembly plant would generate approximately the same amount of wastewater at the new location. A less than one percent increase in the number of jobs at Tinker AFB would result in a similar increase in

domestic wastewater generation. Additionally, domestic wastewater generation at the TAC would not be expected to exceed the capacity of the sanitary sewer system at the GM assembly plant. Therefore, there would be negligible change to domestic wastewater generation as a result of TAC Operations under the Proposed Action.

Relocating mission activities from Tinker AFB to the GM assembly plant would eventually result in a decrease in industrial waste water flow to the Tinker AFB IWTP as there are currently no plans to connect TAC to this facility. In the short-term, while the GM IWTP is re-commissioned to treat industrial waste streams from TAC operations, any industrial wastewater requiring pre-treatment would be trucked across the installation to the Tinker AFB IWTP. Tinker AFB would need to modify their Industrial User Permit with the city of Oklahoma City to add the second IWTP. The pre-treatment requirements and discharge standards for the TAC facility would be expected to be similar to those of the existing Tinker AFB IWTP.

4.2.10.2.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline condition, as described in Section 3.3.10.2.

4.2.10.3 Solid Waste

The following factors were considered in evaluating potential impacts to solid waste management: the degree to which proposed construction, acquisition, demolition, changes in operations, and the potential for generating additional waste could affect the existing solid waste management program. The contractor would be responsible for managing any LBP or ACM discovered during demolition according to local, state, and federal regulations.

4.2.10.3.1 Proposed Action

Demolition of facilities would result in a short-term increase in the amount of solid waste generated at Tinker AFB. Table 4-3 summarizes the solid waste generation expected from the Proposed Action over the five-year period of the demolition plan. With expansion plans already in place, construction and demolition waste generated by the Proposed Action would not be expected to have an adverse impact on the life expectancy of the East Oak Landfill.

Table 4-3 Solid Waste Generated from Demolition of Facilities under the Proposed Action

Description of Action	Total Affected Area (SF)	Rate of Debris Generated[a] (lb/SF)	Estimated Solid Waste Generated from Demolition (Tons)
Demolition[b]	1,019,769	111	56,597

Notes:
lb/SF = pounds per square foot
SF = square feet
[a] USEPA 1998
[b] Demolition debris includes concrete slabs from all affected buildings

Acquisition of the GM assembly plant would not be expected to increase solid waste generation for Tinker AFB. Construction of infrastructure to support the TAC facility would result in a minor, short-term increase in solid waste generation.

Operations on the existing facility footprint which would be relocated to the GM assembly plant would generate approximately the same amount of solid waste at the new location. A less than one percent increase in the number of jobs at Tinker AFB would result in a similar increase in solid waste generation. Therefore, there would be negligible change to solid waste generation as a result of TAC Operations under the Proposed Action.

4.2.10.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline condition, as described in Section 3.3.10.3.

4.2.10.4 Transportation

4.2.10.4.1 Proposed Action

Demolition of facilities on Tinker AFB would not alter existing transportation systems on the installation. However, because personnel would no longer be traveling to these facilities, traffic patterns on the installation would change. Fewer vehicles would be expected at the Tinker AFB gates as personnel were relocated to the TAC complex. During previous operations of the GM assembly plant, peak traffic was greater than or equal to what would be expected as a result of the Proposed Action. Therefore, implementation of the Proposed Action would not be expected to exceed the capacity of transportation infrastructure to and from the GM assembly plant. Construction of infrastructure to support operations of the TAC facility would help to improve transportation between Tinker AFB and the TAC facility, as well as on the TAC facility but this infrastructure is not intended to support large-scale traffic from TAC commuters.

4.2.10.4.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline condition, as described in Section 3.3.10.5.

4.2.10.5 Electricity/Natural Gas

4.2.10.5.1 Proposed Action

Demolition of facilities, as described in Section 2.3, would not be expected to change the amount of electricity and natural gas consumed at Tinker AFB.

Acquisition of the GM assembly plant and construction of supporting infrastructure would not be expected to increase electricity or natural gas consumption for Tinker AFB.

Operations which are being relocated to the new facility would consume approximately the same amount of electricity and natural gas as in their previous location. A short-term increase in energy consumption would be expected during transition since operations at both TAC and the facilities on Tinker AFB that TAC is replacing would be required.

Electrical and natural gas usage at the new facility would not be expected to exceed the capacity of the electrical and natural gas distribution systems at the GM assembly plant. One long-term benefit of the Proposed Action is continued use of the renewable energy source found in the landfill gas pipeline at the GM assembly plant. This would result in an increase in Tinker AFB's use of renewable energy technologies with the potential to expand use of the renewable energy source in the future.

4.2.10.5.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline condition, as described in Section 3.3.10.6.

4.2.11 Socioeconomic Resources

4.2.11.1 Proposed Action

The proposed demolition and construction of facilities would have an overall positive impact on the economy. Expenditures incurred during demolition and construction activities would result in a positive short-term impact to the local economy. Also, the addition of 490 individuals as a result of the GM assembly plant acquisition and construction would result in a positive long-term impact to the local community.

There would be a negligible increase in the Oklahoma County population due to the Proposed Action. The proposed action could bring an additional 200 full-time military and civilian personnel and approximately 290 dependents. This would result in a minor, long-term impact to the population in the local community.

If MFH is available on base at the time of TAC Operations, arriving military personnel and their families would live on base. When on-base MFH is no longer available, arriving military personnel and their families would be required to live off-base. There are projected to be approximately 136,958 suitable vacant rental units within the housing market area in 2011 (USAF 2007). This would accommodate all military personnel and families; therefore, there would be no impacts to housing for military personnel and families. This would, however, result in a decrease in off-base housing units available to the general public; therefore, there would be a minor long-term impact on housing for the general community. This impact would become short term if the commercial housing market responded with additional construction.

One long-term, indirect impact of the Proposed Action is the loss of tax revenue for local taxing entities as the GM assembly plant property is converted from commercial to governmental ownership. Based on 2007 property valuations and tax rates, annual lost revenue for taxing entities would be: Oklahoma City ($144,000), Midwest City-Del City School District ($460,000), Rose State College ($126,000), and Oklahoma County ($159,000) (Oklahoma County 2008). School district representatives have indicated, though, that the state education funding formula will compensate for the majority of the lost tax revenue (The Oklahoman 2008).

4.2.11.2 No-Action Alternative

Under the No-Action Alternative, there would be no change in the baseline conditions described in Section 3.3.11. Without reuse, the GM assembly plant would continue to deteriorate or be demolished, reducing property value, and thereby resulting in a decrease in tax revenue.

4.2.12 Environmental Justice

As discussed in Section 3.3.12, the USAF has issued guidance on environmental justice analysis and analysis of the environmental health and safety of children as part of the Environmental Impact Analysis Process. In order to comply with EO 12898, ethnicity and poverty status in the study area have been examined and compared to state and national statistics to determine if minority or low-income groups could be disproportionately affected by the Proposed Action and alternatives. Additionally, to comply with EO 13045, environmental health and safety risks have been identified to determine if children could be disproportionately affected by the Proposed Action and alternatives.

4.2.12.1 Proposed Action

Demolition activities associated with the Proposed Action would cause short-term increases in air and noise emissions for the duration of the proposed demolition activities. However, emissions would attenuate rapidly with distance from the demolition site and would be evenly distributed throughout the project area, thereby not disproportionately affecting a single population, including children. Short-term solid waste impacts would be limited to the demolition and established disposal sites. Short-term traffic congestion would increase on the installation and would equally affect all who transit the area. Therefore, no disproportionate impacts to a single population from short-term solid waste and transportation impacts would be expected. Expenditures associated with project activities would have a short-term positive impact on the local economy. It is assumed that workers, both skilled and unskilled, would be drawn from the available work force. As such, short-term positive impacts would be evenly distributed within the region, thereby not disproportionately affecting a single population. Disposal of hazardous substances would be managed by the contractor; therefore; children would not be exposed to hazardous materials or wastes generated by the Proposed Action.

Proposed construction activities would cause short-term increases in air and noise emissions for the duration of the proposed construction activities. However, emissions would attenuate rapidly with distance from the construction site and would be evenly distributed throughout the project area, thereby not disproportionately affecting a single population, including children. Short-term solid waste impacts would be limited to the construction and established disposal sites. Short-term traffic congestion would increase on the installation and would equally affect all who transit the area. Therefore, no disproportionate impacts to a single population from short-term solid waste and transportation impacts would be expected. Expenditures associated with project activities would have a short-term positive impact on the local economy. It is assumed that workers, both skilled and unskilled, would be drawn from the available work force. As such, short-term positive impacts would be evenly distributed within the region, thereby not disproportionately affecting a single population. Disposal of hazardous substances would be managed by the contractor; therefore; children would not be exposed to hazardous materials or wastes generated by the Proposed Action.

Ongoing operations at TAC Operations could bring an additional 200 full-time military and civilian personnel and approximately 290 dependents. Expenditures incurred during TAC Operation activities would result in a positive long-term impact to the local economy. As such, long-term positive impacts would be evenly distributed within the region, thereby not disproportionately affecting a single population.

4.2.12.2 No-Action Alternative

Under the No-Action Alternative, there would be no change to the baseline conditions described in Section 3.3.12. Therefore, there would be no environmental justice impacts.

4.3 CUMULATIVE EFFECTS

Noise

Two concurrent actions could have the potential to have a cumulative impact to the aircraft operations noise setting in the vicinity of Tinker AFB. These actions include the BRAC action to relocate the 137th Airlift Wing from Will Rogers IAP to Tinker AFB with four KC-135 aircraft from Portland IAP Air Guard Station and the construction of an engine test facility near Building 3234. The cumulative effects of these actions would not be expected to substantially alter the baseline noise environment but these actions would be addressed in the next installation AICUZ report update. With respect to noise from construction activities, the proposed sites would be sufficiently dispersed in location and timing such that their short-term, localized impacts would not create an adverse cumulative impact.

Land Use

The cumulative effects of the Proposed Action along with the other construction projects on Tinker AFB would be in accordance with the installation General Plan and Oklahoma City Southeast Sector Plan, and therefore, would be expected to result in the long-term benefits of implementing the land-use recommendations contained in the plans.

Air Quality

Acquisition of TAC at Tinker AFB would result in short-term emissions during renovation, construction, and demolition of facilities and associated infrastructure, principally from site clearing/preparation activities and the use of construction equipment and related vehicles. The emissions would be temporary and would be eliminated after the activity is completed. New operations are not planned for TAC, just the relocation of existing or planned operations within Tinker AFB. The long-term emissions are likely to remain the same or possibly decrease due to the integration of many separate operations into a single building instead of many separate buildings.

The Air Force proposes to conduct ten other construction projects (See Section 2.5) during the calendar years 2008-2009 and ten additional construction projects during the calendar years 2010-2013. Air emissions from these other construction projects are also primarily short-term in nature, and associated with construction activities. The long-term emissions from the proposed construction projects would occur from an increase in boilers, generators, and other possible emission sources associated with the operation of these facilities. The long-term emissions

might be offset by the possible reduction of emission sources due to the sharing of infrastructure by operations transferred to TAC.

The cumulative effects from the TAC and the other proposed projects are expected to have little impact when compared to the total emissions for Oklahoma County.

Water Resources

Surface water management would present the main issue of concern regarding cumulative impacts. In the short term, construction and shallow excavation required during construction activities would primarily require addressing sediment control and runoff. In the long term, additional overall land flow would be possible due to increased impervious surface associated with installation development actions. It would also be probable as a result of newer storm water designs and construction techniques that an improvement in surface water control and long-term reduction in sedimentation would occur. As a result, activities associated with the proposed and alternative actions would not contribute to cumulative effects to water resources.

Cultural Resources

Implementation of the Proposed Action and concurrent actions would not be expected to generate any additional cumulative adverse impacts to Cultural Resources as long as requirements and development considerations set forth in the Tinker AFB ICRMP were followed.

Earth Resources

The soils in developed areas on Tinker AFB and in the vicinity of the proposed construction projects at Tinker AFB have been altered over time and the project area is permanently disturbed with existing facilities and paved roads. Potential cumulative effects would include an increase in soil disturbance associated with construction activities. These impacts would be minimized by the use of BMPs to minimize soil erosion and reduce fugitive dust emissions.

Biological Resources

Implementation of concurrent construction projects has the potential to generate similar impacts as those associated with the Proposed Action construction projects. The majority of concurrent construction projects will be occurring in previously developed areas. Those occurring in undeveloped areas would be expected to have minor, long-term impacts to biological resource through loss of wildlife habitat and vegetative communities. The cumulative impacts of concurrent construction project could possibly offset some of the positive impacts of facility demolition in the Proposed Action.

Hazardous Materials and Wastes

The Proposed Action and concurrent actions would require the management of ACM, LBP, and movement associated hazardous materials and wastes. Management of these materials and waste streams would occur under the existing Tinker AFB management programs and would not result in adverse effects. The potential for the presence and management of pesticide impacted soils beneath existing facilities would also not result in adverse effects. Therefore, the proposed and

alternative actions would not contribute to cumulative effects to hazardous materials and wastes in or around Tinker AFB and TAC.

Safety

No cumulative impacts on safety related to the operation of aircraft would be anticipated. Implementation of the Proposed Action and the other construction projects at Tinker AFB would slightly increase the short-term risk associated with construction contractors performing work at these locations. Contractors would be required to establish and maintain safety programs that would provide protection to their workers and limit the exposure of base personnel to construction hazards.

Utilities and Infrastructure

A short-term increase in solid waste generation resulting from construction, renovation, and demolition would be expected as a cumulative effect of the Proposed Action and concurrent construction projects although this increase would not be expected to be regionally significant. Additional construction activities would also contribute to a short-term increase in water consumption associated with dust control activities. Relocation of the 137th Airlift Wing from Will Rogers IAP to Tinker AFB would increase the population that Tinker AFB utility systems would have to support but the overall consumption of water and energy locally would be expected to remain the same.

Socioeconomic Resources

None of the other concurrent activities expected to occur during the same time as the Proposed Action would contribute to a substantial change in population, housing, or education. Concurrent projects occurring during the same time period as the Proposed Action would contribute additional positive economic impacts through expenditures in the local area.

Environmental Justice and Environmental Health and Safety of Children

The impacts associated with the Proposed Action are short-term in nature and would not disproportionately affect children, minorities, or low-income populations in the project area or contribute to negative cumulative effects for children or environmental justice populations.

Chapter 5

List of Preparers

CHAPTER 5
LIST OF PREPARERS

Name/Organization	Degree	Resource Area	Years of Experience
Carlton Hendrix/Weston Solutions, Inc.	B.S. Environmental Engineering; M.S. Civil Engineering	Project Manager; Resource Lead, Utilities and Infrastructure, Land Use, Earth Resources, Noise, Cultural Resources	10
Tamara Carroll/Weston Solutions, Inc.	B.S. Bioenvironmental Science	Project Coordinator, Resource Specialist, Utilities and Infrastructure; Resource Lead, Occupational Health and Safety	6
Barry Peterson/Weston Solutions, Inc.	B.S. Meteorology	Resource Lead, Air Quality	8
Jim Randolph/Weston Solutions, Inc.	B.S. Biology; M.S. Zoology	Resource Lead, Biological Resources	36
Jennifer Peters/Weston Solutions, Inc.	B.S. Geography	Resource Lead, Hazardous Materials and Wastes, Water Resources	8
Elisa Morales/Weston Solutions, Inc.	B.S., Biology	Resource Lead, Socioeconomics, Environmental Justice	5
Robin Divine/Weston Solutions, Inc.	B.A. Geography; M.A. Geography	Technical Review	17
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Julia Glendening/Weston Solutions, Inc.	B.A. Journalism	QC Review	6

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Chapter 6

List of Persons and Agencies Consulted

CHAPTER 6
LIST OF PERSONS AND AGENCIES CONSULTED

Federal Agencies

Federal Emergency Management Association
- Orwat, Jim
- Watts, Carl

Tinker Air Force Base
- Bowen, Scott (Installation Restoration Project Manager)
- Garrett, Cynthia (NEPA Coordinator)
- Kindschuh, Jeff (TAC Project Manager)
- Moody, Raymond (Natural Resource Manager)
- Taylor, Tim (Cultural Resource Manager)
- Wheeler, Teresa (Air Program Manager)

United States Army Corps of Engineers, Tulsa District
- Remondini, Joe (Chief of Floodplains)

United States Department of Agriculture
- Hillard, Ron (State Conservationist)

United States Environmental Protection Agency Region VI
- Gilmore, Cathy (Chief, Compliance Assurance and Enforcement Division [6EN-XP])
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United States Fish and Wildlife Services
- Brabander, Jerry (Field Supervisor)

Oklahoma State Agencies

Association of Central Oklahoma Governments
- Harrington, John (Division Director, Water Resources)

Audubon Society of Central Oklahoma
- Cunningham, Jane (President)

Oklahoma Archeological Survey
- Brooks, Robert (State Archaeologist)

Oklahoma Corporation Commission
- Cloud, Jeff (Chairman)

Oklahoma Department of Environmental Quality
- Graham, Margaret (Quality Site Assessment Unit, Customer Services Division)

Oklahoma Department of Transportation
Sullivan, Dawn (Environmental Director, Planning and Research Division)

Oklahoma Department of Wildlife Conservation
Duffy, Greg (Director)

Oklahoma Geological Survey
Mankin, Charles (Director)

Oklahoma Historical Society
Blackburn, Bob (Executive Director)

Oklahoma State Historic Preservation Office
Heisch, Melvina (Deputy State Historic Preservation Officer)

Oklahoma Water Resource Board
Klaver, Lou (Chief, Planning and Management Division)

Oklahoma Wildlife Federation
McDaniels, Andy (Executive Director)

Tribal Agencies

The Osage Nation
Daniels, Diane (Director, Environmental and Natural Resources Department)

The Muscogee (Creek) Nation
Department of Tribal Affairs

The Seminole Nation of Oklahoma
Health Services- Environmental Protection Office

Other Agencies and Individuals

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City of Midwest City
Janacek, William (Environmental Services Director)

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Lippert, Kathy (Community Action Board)

OK Toxics Campaign
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Oklahoma County
Reinhart, Brent (County Commissioner)

Ralph Ellison Library
Beasley, Susan (Community Action Board)

Reginald, Richard (Community Action Board)

Sierra Club, Oklahoma Chapter
Edmison, Larry (Chair)

Waste Management
Williams, Chris (Market Area Sales Manager, Oklahoma)

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Chapter 7

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Appendix A

Interagency/Intergovernmental Coordination

Scoping Letter

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72D AIR BASE WING (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

14 MAR 2008

MEMORANDUM FOR SEE DISTRIBUTION

FROM: 72 ABW/CC
7460 Arnold Street, Suite 234
Tinker AFB OK 73145-9005

SUBJECT: Notification of Environmental Assessment, Oklahoma City General Motors Plant, Acquisition Analysis

1. The 72d Air Base Wing and Headquarters Air Force Materiel Command are preparing an Environmental Assessment under the National Environmental Policy Act to analyze the possible acquisition of the former General Motors (GM) Oklahoma City Assembly Plant by Tinker Air Force Base. This facility would support existing and potential future mission activities of the Oklahoma City Air Logistic Center. Additional aspects of this overall action include:

- Acquiring an easement for an adjacent property that connects the GM Plant to Tinker AFB;
- Minor construction projects that would secure the facility perimeter and provide direct access to the new facility from Tinker AFB;
- Additional employees are possible depending on future workloads; and
- Demolition of 69 existing facilities on Tinker AFB totaling approximately 2.2 million square feet.

2. We request your participation in the process and solicit any particular concerns, recommendations, or resource issues that you might have. To facilitate the cumulative impact analysis, we would also appreciate information on any major projects in the vicinity that may contribute to cumulative effects. An aerial map with the legal description of the property is attached for reference.

3. Please send your environmental comments within 14 days receipt of this letter to:

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker Air Force Base, Oklahoma

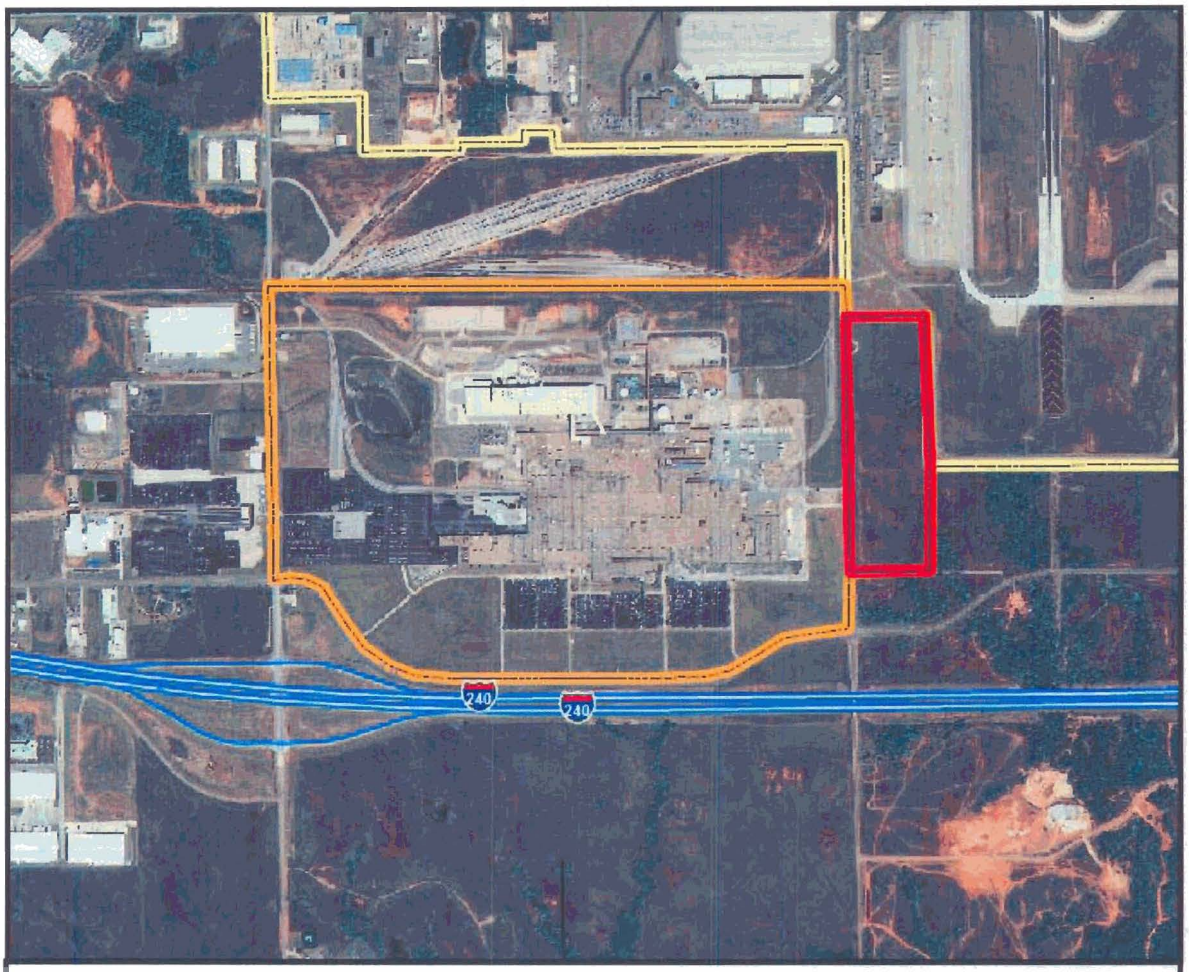
If there are any questions, Ms. Garrett can be contacted at 734-2097 or by e-mail at cynthia.garrett@tinker.af.mil. Thank you for your assistance in this matter.

MARK A. CORRELL, Colonel, USAF
Commander

Distribution: (listed on the next page)

Distribution List:

Association of Central Oklahoma Governments
Audubon Society of Central Oklahoma
City of Del City
City of Midwest City
City of Oklahoma City, Planning Department
City of Oklahoma City, Ward Four
EPA Region VI, Compliance Assurance and Enforcement Division (6EN-XP)
Federal Emergency Management Association (FEMA)
Greater Oklahoma City Chamber of Commerce, Government Relations
Oklahoma Corporation Commission
Oklahoma County, District Two
Oklahoma Department of Environmental Quality, Customer Services Division
Oklahoma Department of Transportation, Planning and Research Division
Oklahoma Department of Wildlife Conservation
Oklahoma Geologic Survey
Oklahoma Water Resources Board, Planning and Management Division
Oklahoma Wildlife Federation
Sierra Club, Oklahoma Chapter
The Osage Nation
The Muscogee (Creek) Nation
The Seminole Nation of Oklahoma
Tinker AFB Community Advisory Board Members
US Army Corps of Engineers, Tulsa District, Planning and Environmental Division
US Department of Agriculture, Natural Resources Conservation Service
US Fish and Wildlife Services, Division of Ecological Services



Tinker Air Force Base

Former General Motors Assembly Plant

LEGAL ADDRESS: A parcel of land located in the S ½ of Section 27, Township 11 North, Range 2 West of the Indian Meridian and the N ½ of the N ½ of Section 34, Township 11 North, Range 2 West of the Indian Meridian, all in Oklahoma County, Oklahoma. Being more fully described in Volume 7335, Page 595 in the Deed Records of Oklahoma County, Oklahoma.

Proposed Property Easement

LEGAL ADDRESS: A parcel of land located in the NW ¼ of the SW ¼ of Section 26, Township 11 North, Range 2 West of the Indian Meridian except the west 500 feet thereof, in Oklahoma County, Oklahoma. Being more fully described in Volume 2738, Page 701 in the Deed Records of Oklahoma County, Oklahoma.

Final Mailing List

IICEP Mailing List - Real Estate Transaction

AGENCY	DEPARTMENT	TITLE	TITLE-1	FIRST NAME	LAST NAME	ADDRESS	ADDRESS-2	CITY	STATE	ZIP	PHONE
Association of Central Oklahoma Governments	Community Action Board		Mr.	John	Harrington	21 E Main	Suite 100	Oklahoma City	OK	73104-2405	405-234-2264
Audubon Society of Central Oklahoma		President	Ms.	Jane	Cunningham	5505 NW 66th Street		Oklahoma City	OK	73132	405-721-5711
City of Del City	Community Action Board	Assistant City Manager	Mr.	Jim	Depuy	4517 SE 29th Street		Del city	OK	73115	405-671-2800
City of Midwest City	Community Action Board	Environmental Services Director	Mr.	William	Janacek	8730 SE 15th Street		Midwest City	OK	73110	405-739-1380
City of Oklahoma City	Planning Department	Mayor		Mick	Cornett	200 N Walker	Suite 302	Oklahoma City	OK	73102	405-297-2424
City of Oklahoma City	Ward Four	Councilman	Mr.	Pete	White	200 N Walker		Oklahoma City	OK	73102	405-297-2402
DEQ Sit Assessment Unit	Community Action Board			Hal	Cantwell	P.O Box 1677		Oklahoma City	OK	73101	
EPA Region VI	Compliance Assurance and Enforcement Division (6EN-XP)	Chief	Ms.	Cathy	Gilmore	1445 Ross Avenue		Dallas	TX	75202-2733	214-665-8150
Federal Emergency Management Association (FEMA)			Mr.	Carl	Watts	800 North Loop 288		Denton	TX	76209	940-898-5128
Federal Emergency Management Association (FEMA)			Mr.	Jim	Orwat	800 North Loop 288		Denton	TX	76209	940-898-5302
Greater Oklahoma City Chamber of Commerce	Government Relations	Vice President	Mr.	Dean	Schirf	123 Park Avenue		Oklahoma City	OK	73102	405-297-8933
Greystone Environmental Inc	Community Action Board	Confirmed via Internet		Kathy	Lippert	1000 W Wilshire	Suite 340	Oklahoma City	OK	73166	
Marketing Data Analyst	Community Action Board		Mr.	Richard	Reginald	1821 Oaks Way		Oklahoma City	OK	73131	
OK Toxics Campaign	Community Action Board		Mr.	Earl	Hatley	19257 S 4403 Drive		Vinita	OK	74301	
Oklahoma Archaeological Survey		State Archaeologist	Dr.	Robert	Brooks	111 E. Chesapeake		Norman	OK	73019-5111	405-325-7211
Oklahoma Corporation Commission		Chairman	Mr.	Jeff	Cloud	P.O. Box 52000		Oklahoma City	OK	73152-2000	405-521-2264
Oklahoma County	District Two	County Commissioner	Mr.	Brent	Rinehart	320 Robert S. Kerr	Room 101	Oklahoma City	OK	73102-3441	405-713-1502
Oklahoma Department of Environmental Quality	Customer Services Division		Ms.	Margaret	Graham	P.O. Box 1677		Oklahoma City	OK	73101-1677	405-702-9122
Oklahoma Department of Transportation	Planning & Research Division	Environmental Director	Ms.	Dawn	Sullivan	200 NE 21st Street		Oklahoma City	OK	73105	405-521-2704
Oklahoma Department of Wildlife Conservation		Director	Mr.	Greg	Duffy	P.O. Box 53465		Oklahoma City	OK	73152	405-521-4660
Oklahoma Geological Survey		Director	Dr.	Charles	Mankin	100 East Boyd St.	Suite N131	Norman	OK	73019	405-325-3031
Oklahoma Historical Society	Administration	Executive Director	Mr.	Bob	Blackburn	2401 North Laird Avenue		Oklahoma City	OK	73105	405-522-5202
Oklahoma State Historic Preservation Office		Deputy SHPO	Ms.	Melvena	Heisch	2401 North Laird Avenue		Oklahoma City	OK	73105	405-522-4484
Oklahoma Water Resource Board	Planning & Management Division	Chief		Lou	Klaver	3800 N. Classen		Oklahoma City	OK	73118	405-530-8800
Oklahoma Wildlife Federation		Executive Director	Mr.	Andy	McDaniels	P.O. Box 7566		Edmond	OK	73083-7566	
Ralph Ellison Library	Community Action Board			Susie	Beasley	2000 NE 23rd		Oklahoma City	OK	73111	
Sierra Club, Oklahoma Chapter		Chair	Mr.	Larry	Edmison	P.O. Box 60644		Oklahoma City	OK	73146-0644	405-521-0345
US Army Corps of Engineers, Tulsa District	Planning & Environmental Division	Chief of Floodplains	Mr.	Joe	Remondini	1645 S. 101 East Avenue		Tulsa	OK	74128-4609	918-669-7182
US Department of Agriculture	Natural Resources & Environmental Division	State Conservationist	Mr.	Ron	Hillard	100 USDA	Suite 206	Stillwater	OK	74074-2655	
US Fish and Wildlife Services	Division of Ecological Services	Field Supervisor	Mr.	Jerry	Brabander	9014 E. 21st Street		Tulsa	OK	74129	918-581-7458
USEPA-REGION 6 (6SF-LP) #1200	Community Action Board		Mr.	Michael	Hebert	1445 Ross Avenue		Dallas	TX	75202-2733	
	Community Action Board			Betty	Reaties	425 Blue Spruce Drive		Midwest City	Ok	73130	
The Osage Nation	Environmental and Natural Resources Department	Director	Ms.	Diane	Daniels	PO Box 1495		Pawhuska	OK	74056	918-287-5404
The Muscogee (Creek) Nation	Department of Tribal Affairs					PO Box 580		Okmulgee	OK	74447	(918) 756-8700
The Seminole Nation of Oklahoma	Health Services- Environmental Protection Office					PO Box 1498		Wewoka	OK	74884	405-382-5112

Scoping Responses

Oklahoma Archeological Survey

THE UNVERSITY OF OKLAHOMA

August 28, 2007

Trudi Logan
Department of the Air Force
72 Air Base Wing (AFMC)
Tinker Air Force Base Oklahoma

Re: Proposed Land Acquisition, Tinker AFB. Legal Description: Sections 27, 26, N ½ Section 34 T11N R2W, Oklahoma. County, Oklahoma.

Dear Ms. Logan:

The above referenced project has been reviewed by the Community Assistance Program staff of this agency to identify potential areas that may contain prehistoric or historic archaeological materials (historic properties). The location of your project has been cross-checked with the state site files containing approximately 18,000 archaeological sites which are currently recorded for the state of Oklahoma. **Site(s) (34OK-146),** are listed in your project area and based on the topographic and hydrologic setting of your project, archeological materials are likely to be encountered. **An archaeological field inspection is therefore considered necessary prior to project construction in order to identify significant archaeological resources that may exist in your area.** Please contact this office at (405) 325-7211 if you require additional information on this project.

NOTE: Only part of the area would need to be surveyed: W ½ SW ¼ Section 27, W ½ W ½ W ½ Section 26 and S ½ N ½ Section 34 T11N R2W.

This environmental review and evaluation is performed in order to locate, record, and preserve Oklahoma's prehistoric and historic cultural heritage in cooperation with the State Historic Preservation Office, Oklahoma Historical Society. In addition to our review comments, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups to identify any concerns they may have pertaining to this undertaking and potential impacts to properties of traditional and/or ceremonial value. Thank you for your cooperation.

Sincerely,

Janna L. Gruber
Staff Archaeologist

Robert L. Brooks
State Archaeologist

:ls

cc: SHPO

111 E. Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Oklahoma Historical Society *Founded May 27, 1893*

State Historic Preservation Office

Oklahoma History Center • 2401 North Laird Ave. • Oklahoma City, OK 73105-7914
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

October 9, 2007

Ms. Trudi Logan, Chief
TAFB Environmental Management Division
72 ABW/CEVOE
7701 Arnold Street, Rm. #109
Tinker AFB, OK 73145-9100

RE: File #2312-07; Tinker AFB Proposed Acquisition of Secs. 26, 27, & 34 T11N R2W

Dear Ms. Logan:

We have received the documentation submitted concerning the above referenced project in Oklahoma County.

We are unable to process your request for review at this time and ask that you supply a completed Historic Preservation Resource Identification Form and appropriate photographs for each of the structures to be affected by the project.

NOTE: If these properties are less than 45 years old, Historic Preservation Resource Identification Forms and photos are not required. However, your review request must include the address and date (or year) of construction of each property.

If these properties are 45 years old or older, and you have not received Historic Preservation Resource Identification Forms and the Review and Compliance Manual which is necessary to complete the forms, you may call or write to request hard copies from our office, or go directly on line at www.okhistory.org and select "SHPO," then "Programs," then "Section 106," then click on *"Review & Compliance (Section 106 Process) Manual"* which includes instructions and the form.

If you have any questions regarding this request, you may reach me at 405/521-6381. Your response must reference the above underlined file number. Thank you.

Sincerely,

Charles S. Wallis

Charles Wallis, RPA
Historical Archaeologist

CW:pm

Oklahoma Historical Society *Founded May 27, 1893*

State Historic Preservation Office

Oklahoma History Center • 2401 North Laird Ave. • Oklahoma City, OK 73105-7914

(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

January 15, 2008

Mr. Tim Taylor
TAFB, Environmental Engineering Operations Section
72 ABW/CEVOE
7701 Arnold Street, Room 109
Tinker AFB, OK 73145-9100

RE: File #0602-08; Tinker AFB Proposed Acquisition of Secs. 26, 27, & 34 T11N R2W (formerly #2312-07)

Dear Mr. Taylor:

We have received and reviewed the documentation submitted on the referenced project in Oklahoma County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no known historic properties affected within the referenced project's area of potential effect.

In addition to our review, you must contact the Oklahoma Archeological Survey (OAS), 111 E. Chesapeake, #102, Norman OK 73019-5111 (#405/325-7211, FAX #405/325-7604), to obtain a determination about the presence of prehistoric resources that may be eligible for the National Register of Historic Places. Should the OAS conclude that there are no prehistoric archeological sites or other types of "historic properties," as defined in 36 CFR Part 800.16(l), which are eligible for inclusion in the National Register of Historic Places within the project area and that such sites are unlikely to occur, we concur with that opinion.

The OAS may conclude that an on-site investigation of all or part of the project impact area is necessary to determine the presence of archeological resources. In the event that such an investigation reveals the presence of prehistoric archeological sites, we will defer to the judgment of the OAS concerning whether or not any of the resources should be considered "historic properties" under the Section 106 review process. If sites dating from the historic period are identified during the survey or are encountered during implementation of the project, additional assessments by the State Historic Preservation Office will be necessary.

Should further correspondence pertaining to this project be necessary, the above underlined file number must be referenced. If you have any questions, please contact Charles Wallis, RPA, Historical Archeologist, at 405/521-6381. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:bh

Oklahoma Archeological Survey

THE UNVERSITY OF OKLAHOMA

February 7, 2008

Trudi Logan
Department of the Air Force
72 Air Base Wing
7701 Arnold Street Room 109
Tinker Air Force Base, Oklahoma 73145-9100

Re: Proposed Tinker Aerospace Complex (TAC)9000. Legal Description: W ½ W ½ W ½ Section 26 and SW ¼ SW ¼ Section 27 T11N R2W, Oklahoma County, Oklahoma.

Dear Ms. Logan:

A cultural resources report of investigations has been received by this agency on the above referenced project. This agency confirms the recommendations contained in the report. The review was conducted in cooperation with the State Historic Preservation Office, Oklahoma Historical Society.

Please contact this office at (405) 325-7211 if buried archaeological materials such as chipped stone tools, pottery, bone, historic crockery, glass, metal items, or building materials are exposed during construction activities.

In addition to our comment on the cultural resource inventory conducted for this project, under 36CFR Part 800.3 you are reminded of your responsibility to consult with the appropriate Native American tribe/groups for any concerns they may have pertaining to this report.

Sincerely,

Robert L. Brooks
State Archaeologist

:ls

cc: SHPO

111 E. Chesapeake, Room 102, Norman, Oklahoma 73019-5111 PHONE: (405) 325-7211 FAX: (405) 325-7604
A UNIT OF ARTS AND SCIENCES SERVING THE PEOPLE OF OKLAHOMA

Oklahoma Historical Society *Founded May 27, 1893*

State Historic Preservation Office
Oklahoma History Center • 2401 North Laird Ave. • Oklahoma City, OK 73105-7914
(405) 521-6249 • Fax (405) 522-0816 • www.okhistory.org/shpo/shpom.htm

March 7, 2008

Ms. Trudi Logan
Chief, Environmental Management Division
72ABW/CEVOE
7701 Arnold Street Room 109
Tinker AFB, OK 73145-9100

RE: File #1056-08; Tinker Aerospace Complex-9000 Project
Phase #1, & 34OK146

Dear Ms. Logan:

We have received and reviewed the documentation concerning the referenced project in Oklahoma County. Additionally, we have examined the information contained in the Oklahoma Landmarks Inventory (OLI) files and other materials on historic resources available in our office. We find that there are no historic properties affected by the referenced project.

Thank you for the opportunity to comment on this project. We look forward to working with you in the future.

If you have any questions, please contact Charles Wallis, RPA, Historical Archaeologist, at 405/521-6381.

Should further correspondence pertaining to this project be necessary, the above underlined file number must be referenced. Thank you.

Sincerely,

Melvena Heisch
Deputy State Historic
Preservation Officer

MH:bh

U.S. Department of Homeland Security
FEMA Region 6
800 N. Loop 288
Denton, TX 76209-3698

FEMA

March 21, 2008

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker AFB, OK 73145-9005

Re: Environmental Assessment, Oklahoma City General Motors Plant, Acquisition Analysis

Dear Ms. Garrett:

This is in response to your letter dated March 14, 2008 (enclosed).

This agency's concern would be development in the identified Special Flood Hazard Areas (SFHA's). Any development taking place prior to the property being identified as federal land must be permitted by the local community to ensure compliance with their adopted Flood Damage Prevention Ordinance. After conversion to federal land, we would request that coordination take place between Tinker and the local community if there are any changes to the SFHA.

If there are any questions, please free to contact me at the above address, or 940-898-5128, or carl.watts@dhs.gov.

Sincerely,

Carlton R. Watts
NFIP Specialist

acog

association of central oklahoma governments

Chair Mark Sharpton
Logan County Commissioner

Vice-Chair Willa Johnson
Oklahoma County Commissioner

Secretary / Treasurer Kathy Walker
Nichols Hills Councilmember

Interim Executive Director
John G. Johnson

March 24, 2008

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker Air Force Base, Oklahoma

Dear Ms. Garrett:

RE: ID#C19801 Department of the Air Force
Notification of Environmental Assessment, Oklahoma City General Motors Plant, Acquisition Analysis

The Association of Central Oklahoma Governments has completed its Regional Clearinghouse Review of the above referenced proposal recently submitted by your office. Any future communication regarding this proposal should be accompanied by the ID number listed above.

As a result of our review process and comments received, the process and comments received, the proposed project, as of this date, does not appear to be inconsistent with areawide goals and objectives.

Please notify this office of any subsequent modifications, supplements, or amendments to this proposal if such occurs. At that point we will conduct an additional regional review of the modified proposal as necessary. You are also requested to notify this office of the official action taken on this proposal by the agency from which you are requesting assistance.

Please be advised that this letter is not a commitment of funds for your proposal from any funding source, but allows you to proceed with your application for funding consideration.

We appreciate this opportunity for review and comment on your proposal.

Sincerely,

John G. Johnson
Interim Executive Director

21 E Main Street, Suite 100 Oklahoma City, OK 73104-2405 405 234 2264 FAX 234 2200 TTY 234 2217 www.acogok.org

Muscogee (Creek) Nation

Division of Tribal Affairs

Allen Harjo
Director

March 25, 2008

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker Air Force Base, Oklahoma 73145

RE: Letter of March 14, 2008, General Motors Plant, Oklahoma City.

Dear Ms. Garrett,

This is a follow-up to a telephone call you and I had this morning regarding the Notification of Environmental Assessment of the General Motors Plant in Oklahoma City.

We appreciate your correspondence describing the project and have no comments to offer at this time. We do, however have an interest in any inadvertent discoveries during land or surface excavations that produce possible archeological discoveries due to our ancestral Tribal occupations in or near the territory of your projects. We would like to be informed of any inadvertent discoveries.

Again, we appreciate your correspondence and share in your good faith of the projects.

Sincerely,

Wilbert Lowe
Acting Director Tribal Affairs

WL/kc

Muscogee (Creek) Nation Tribal Capital Complex • P.O. Box 580 • Okmulgee, Oklahoma 74447 • (918) 756-8700 • Fax (918) 756-2911

STEVEN A. THOMPSON
Executive Director

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY

BRAD HENRY
Governor

March 25, 2008

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker Air Force Base, Oklahoma 73145-9005

Dear Ms. Garrett:

RE: Environmental Assessment, Oklahoma City General Motors Plant, Acquisition Analysis

We have completed a preliminary general review of the above referenced project area. At this time, we have no objection regarding this possible acquisition, however there are several areas of environmental concern:

a) Oklahoma is currently in attainment with Federal Air Quality Regulations; therefore, during any construction or demolition work, reasonable precautions must be taken to protect air quality by minimizing fugitive dust emissions.
b) Any future demolition work which might include the removal of paints shall conform to all relevant lead-based paint regulations.
c) Any future demolition work which might include the handling and/or removal of asbestos shall conform to all relevant asbestos regulations
d) Prior to beginning any construction, a determination should be made as to whether an Oklahoma Pollutant Discharge Elimination System (OPDES) permit for the storm water runoff is required during any construction phase.

If you have any questions or need clarification, please do not hesitate to contact me at 405/702-9122 or 1/800-869-1400.

Sincerely,

Margaret M. Graham

Margaret M. Graham
Environmental Review Coordinator
CUSTOMER ASSISTANCE PROGRAM

707 NORTH ROBINSON, P.O. BOX 1677, OKLAHOMA CITY, OKLAHOMA 73101-1677

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DEPARTMENT OF WILDLIFE CONSERVATION

P.O. Box 53465 Oklahoma City, OK 73152 PH. (405) 521-3851

April 01, 2008

72 CEG/CEAN
Attn: Cindy Garrett
7701 Arnold Street, Ste. 204
Tinker Air Force Base, OK 73145-9005

OBS Ref: 2008-178-FED-DOD
Re: Possible Acquisition of the former General Motors Oklahoma City Assembly Plant

Dear Ms. Garrett,

This letter is written in response to your request for information regarding the presence of endangered species and other elements of biological concern at the referenced site. We have reviewed the information currently in the Oklahoma Natural Heritage Inventory database and have found no records of elements of concern at the location you describe.

Because the ONHI database is only as complete as the information that has been collected, we cannot say with certainty whether or not a given site harbors rare species or ecological communities. For this reason, if you are concerned about species of federal interest, we urge you to consult with the Tulsa office of the U.S. Fish and Wildlife Service (918-581-7458), as they may have additional information of which we are unaware. However, based upon the currently available information, it is unlikely that threatened or endangered species occur in the vicinity of the project site.

The information we provide to you is a product of a cooperative agreement between the Oklahoma Biological Survey (OBS) and the Oklahoma Department of Wildlife Conservation (ODWC). If you have any questions, please contact me at ODWC (405-424-6062). You may also find the OBS web site helpful for expediting your information request. See http://www.biosurvey.ou.edu/fastforward.html.

Sincerely,

William Ray
Environmental Biologist

Search for the Scissortail on Your State Tax Form

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(no document text this page)

Draft EA Letter

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 72D AIR BASE WING (AFMC)
TINKER AIR FORCE BASE OKLAHOMA

1 6 APR 2008

MEMORANDUM FOR SEE DISTRIBUTION

FROM: 72 ABW/CC
7460 Arnold Street, Suite 234
Tinker AFB OK 73145-9005

SUBJECT: Notification of Draft Environmental Assessment, Lease Acquisition of the Former Oklahoma City General Motors Plant by Tinker Air Force Base

1. The 72d Air Base Wing and Headquarters Air Force Materiel Command have prepared an Environmental Assessment (EA) under the National Environmental Policy Act to analyze the environmental impacts associated with the possible lease acquisition of the former General Motors Oklahoma City Assembly Plant by Tinker Air Force Base (AFB). This complex would support existing and potential future mission activities of the Oklahoma City Air Logistic Center. No significant impacts were identified through the EA.

2. An electronic copy of this document has been included for your review. The formal comment period is from 16 April through 7 May 2008. The comment period is a continuation of the public involvement process used to develop the draft assessment. The public is invited to review the draft report and make comments.

3. We request your participation in the process and solicit any comments or concerns you may have on the draft EA. You may send your environmental comments by 7 May to the following address:

72 CEG/CEAN
Attn: Ms. Cindy Garrett
7701 Arnold Street, Suite 204
Tinker Air Force Base, Oklahoma

4. In an effort to conserve resources and reduce paper use, an electronic copy has been provided. If a paper copy is preferred, please let us know. Point of contact for this matter is Ms. Cindy Garrett. Ms. Garrett can be reached by telephone at (405) 734-2097 or by e-mail at cynthia.garrett@tinker.af.mil. Thank you for your assistance in this matter.

MARK A. CORRELL, Colonel, USAF
Commander

Attachment:
CD, EA (draft)

Distribution: (listed on next page)

Distribution List:

Association of Central Oklahoma Governments
Audubon Society of Central Oklahoma
City of Del City
City of Midwest City
City of Oklahoma City, Planning Department
City of Oklahoma City, Ward Four
EPA Region VI, Compliance Assurance and Enforcement Division (6EN-XP)
Federal Emergency Management Association (FEMA)
Greater Oklahoma City Chamber of Commerce, Government Relations
Oklahoma Corporation Commission
Oklahoma County, District Two
Oklahoma Department of Environmental Quality, Customer Services Division
Oklahoma Department of Transportation, Planning and Research Division
Oklahoma Department of Wildlife Conservation
Oklahoma Geologic Survey
Oklahoma Water Resources Board, Planning and Management Division
Oklahoma Wildlife Federation
Sierra Club, Oklahoma Chapter
The Osage Nation
The Muscogee (Creek) Nation
The Seminole Nation of Oklahoma
Tinker AFB Community Advisory Board Members
US Army Corps of Engineers, Tulsa District, Planning and Environmental Division
US Department of Agriculture, Natural Resources Conservation Service
US Fish and Wildlife Services, Division of Ecological Services

(no document text this page)

Draft EA Responses

No comments were received during the public comment period.

Appendix B

Public Involvement

my calendar

Community news published by The Oklahoman

Today

"Exhibitions West," National Cowboy & Western Heritage Museum, 1700 NE 63, 478-2250, ext. 219. Runs through May 4.

Judo, OKC Southside, 6 p.m., Sellers Community Center, 8301 S Villa, 685-3311.

Wannabiz Business Owners Club, 8 a.m., Caffe Pranzo, 9622 N May Ave., 670-1733.

Computer Club of OKC, free beginners course, 9 a.m., The Center 3000, 3000 United Founders Blvd., 359-5675.

Tai Chi, 10 a.m., Christ the King Catholic Church, 8005 Dorset Drive, Nichols Hills, 603-3576.

Thursday

Noble Beekeepers, 7 p.m., Noble Church of the Nazarene, 4201 E Maguire Road, 872-8385.

Oklahoma Hot Rod Association, 6 p.m., Jamie's Restaurant, SW 89 and Western Avenue, 396-2647.

Okie A's Model A Club, New Church, 9201 N Rockwell Ave., 844-2513.

OKC Swing Club, 2 p.m., 4361 NW 50, Suite 400, 943-1950.

ABC Square Dance Club, 7 p.m., Heartland Hall, 1345 SW 30, 604-0892.

Oklahoma City Civil War Round Table, 6:30 p.m., Oklahoma Station BBQ, 4331 NW 50, 721-2972.

Oklahoma Mineral and Gem Society, 7 p.m., Will Rogers Garden Exhibition Center, 3400 NW 36.

Upload it to NewsOK.com
Publish your:
Your personal & civic stories
Your best photos
Your thoughts and comments

Seniors Dance, 2 p.m., Oklahoma City Swing Club, 4361 NW 50, 943-1950.

Computer Club of OKC - Senior Net, 10 a.m., The Center 3000, 3000 United Founders Blvd., 359-5675.

Harrah City Council, 7 p.m., city hall, 1900 Church Ave.

Spencer City Council, 7 p.m., city hall, 8300 NE 36.

Tai Chi Fitness, 5 p.m., First Presbyterian Church, 221 S Barker Ave., El Reno, 603-3576.

Friday

Tai chi, 9 a.m., The Village Library, 10307 N Pennsylvania Ave., 603-3576.

World Organization of China Painters, 10 a.m., World Organization of China Painters Museum, 2641 NW 10, 745-3046.

Saturday

Oklahoma City Writers Inc., 10 a.m., Oklahoma City University, Meinders School of Business, McKinley and NW 27.

Single Again, 8 a.m., Cattlemen's Steakhouse, 1309 S Agnew Avenue, 942-7355.

Oklahoma State University-Oklahoma City Farmers Market, 10 a.m., 400 N Portland, 945-3326.

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Mustang

Continued from Page 1

"It's just time for a change," he said. "The average life expectancy for a superintendent in Oklahoma is 36 months. This is month 102 for me."

Springer took the reins of the Mustang district in 2000 after serving as an assistant superintendent in the Chickasha School District.

During his tenure, the Mustang district has grown steadily from about 6,660 students to an enrollment of more than 8,000.

Jesse Olivarez: 475-3332, jolivarez@oklahoman.com

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accomplish this," Sgt. Bob Pratt said.

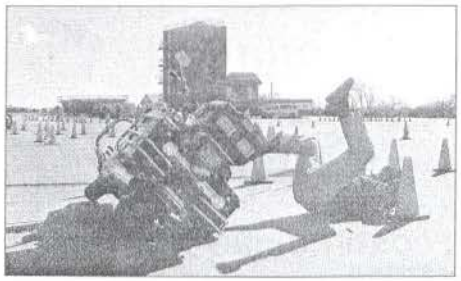
If the Edmond officers don't graduate from the school, they will go back to their previous assignments, Pratt said.

Edmond officers Jeff Meadows, Curtis Thompson and Tim Ivy are participating in the class. Officers Jason Stearns and Dan Butcher are training for their certification as in-

The first law enforcement motorcycle school in the state was in Edmond in 1977. The school was hosted by Edmond and Tulsa police departments.

"This is one of the toughest police schools," Pratt said. "It is pass or fail."

Diana Baldwin: 475-3675, dbaldwin@oklahoman.com



Public Notice

Tinker Air Force Base Invites Public Comment
Environmental Assessment
Tinker Aerospace Complex

The United States Air Force and the 72nd Air Base Wing have prepared an Environmental Assessment (EA) which is available for public review and comment.

Pursuant to the Council on Environmental Quality (CEQ) regulations and in accordance with the National Environmental Policy Act, an environmental assessment has been performed to evaluate the potential lease of the former General Motors Assembly Plant by Tinker Air Force Base.

No significant environmental impacts have been identified through the EA. The public is invited to review the draft assessment and make comments. Written comments and questions can be submitted before close of business on 7 May 2008.

The final draft for the Environment Assessment is available to the public at the Tinker Information Repository located in the Midwest City Public Library on Reno Avenue. Hours of operation are 9:00 a.m. to 9:00 p.m. Monday thru Thursday; 9:00 a.m. to 5:00 p.m., Friday and Saturday; and 1:00 to 5:00 p.m. on Sunday.

The public may submit written comments to the address below:

72d Air Base Wing Public Affairs Office
Brion Ockenfels
7460 Arnold Ave., Suite 127

Bentley takes over as skipper of VQ-3

Tim Geels
Strategic Communications Wing ONE
Public Affairs

Fleet Air Reconnaissance Squadron THREE held their squadron change of command ceremony April 18 as Cmdr. Shawn Bentley became the 39th commanding officer.

Bentley relieved Cmdr. Jeff Marshall during the ceremony held in the squadron's hangar bay.

Bentley served as the executive officer at VQ-3 for the past 11 months. He now takes command of the Navy's Ironman squadron, one of two operational squadrons under Strategic Communications Wing ONE, based at Tinker Air Force Base.

In his comments, Bentley was humbled to be in the position he now holds.

"When I joined the Navy 19 years ago, I would have never thought that someone from the Bronx, who had always dreamed of flying would then be given the opportunity to command one of the finest Navy squadrons and some of the best Sailors in the world," Bentley said.

Bentley later addressed the men and women of VQ-3.

"So, Ironmen, I want to provide you the leadership and mentorship and tools, i.e., chess pieces that were provided to me so that you can achieve all of your dreams, no matter what they are," he said. "We will continue to use our diverse talents to support and defend the constitution of the United States and we will always strive for excellence."

Rear Admiral Arthur J. Johnson Jr., Commander, Naval Safety Center at Norfolk, Va. served as guest speaker for the day's ceremony. Johnson praised the outgoing commander, Cmdr. Marshall, for the outstanding job he did during his time as skipper.

"During his time in the command suite, Cmdr. Marshall has demonstrated some bold, inspirational leadership during times of challenge and change...including the standup of Task Force 124 Forward," Johnson said. "Since October 2006, the Ironman team has contributed significantly to the Al Udeid AB detachment and its execution of 423 sorties and 5030 flight hours in support of Multi-National Forces-Iraq and Operation Iraqi Freedom. The critical convoy over-watch communications relay you provided has been and continue to be vital to the safe and expeditious movement of personnel and supplies over land in Iraq."

In his final comments as squadron commander, Marshall thanked the Wing leadership for the opportunity he had to lead.

"Commodore (Capt. Brian Costello), Deputy (Capt. Dwight Shepherd), and Capt. Seesholtz (previous Commodore), thank you for giving me the privilege of command. As an officer still in his TACAMO first tour, I can only say thank you for the support, mentorship and advice over the last year," he said. "You were always there to support us and you let me have the maneuvering room to run."

Courtesy photo

Cmdr. Shawn Bentley became the 39th commanding officer of Fleet Air Reconnaissance Squadron THREE during a change of command ceremony April 18.

Marshall will remain at the Wing for a short time before departing to take part in a Federal Executive Fellowship program at Oxford University as an Oxford Senior Associate Member, and a Leverhulme Programme visiting fellow.

VQ-3 became the first active duty Navy operational squadron permanently located on an Air Force base when they arrived at Tinker in 1992.

TOPS employees make transition to new opportunities

Maj. Carrie Clear
OC-ALC/DPD

The Tinker Opportunity for Professional Services program presents current employees a developmental opportunity to transition from wage grade and lower level general schedule jobs into developmental GS positions based on their education, experience and performance.

More than 1,500 people applied for TOPS positions in its first year of providing these employees an opportunity to advance. Before TOPS began, transitioning from WG to GS was difficult. But now, education combined with work experience allows employees to convert to the GS system more easily.

The time it takes to be placed in a TOPS position can vary, depending on the vacancies and the number of qualified applicants. Tylar Colton, Quality Assurance Specialist, 76 Commodities Maintenance Group, and one of the first candidates selected for the program, moved from Tubing and Cable work leader just a few weeks after applying.

"I think the knowledge I gained on the floor, my presentation skills and the administrative skills I used in college helped me in the selection process," said Mr. Colton

Matthew Cousins, KC-135 Equipment Specialist, 327 Aircraft Sustainment Wing, worked as a sheet metal mechanic for six years and worked his way up to first line supervisor. He finished his master's degree in Aerospace Administration last year, attending class on-base at Southeastern Oklahoma State University.

He has been in his new position only a few months and even though it took him more than a year to be placed, he qualified for at least five positions.

"I persevered because I wanted the opportunity to make a bigger difference and have more responsibility," said Mr. Cousins. "I didn't feel that being a first line supervisor was the best opportunity for me and I wanted to use my education and experience to benefit the Air Force. Now I'm supporting the warfighter in the field as they need it."

Courtney Clark, Management and Program Analyst, 76 Maintenance Wing Business Office, began as a pneudraulic systems mechanic in the 76 MXW. After four years as a mechanic she was able to move into a Management Assistant position within the wing.

After earning her bachelor's degree in Finance with a minor in Accounting from the University of Central Oklahoma in 2006, she applied for TOPS.

"I loved what I was doing, but it was a dead end and I didn't want to settle. I wanted to use my education and to be a 343 (Program Analyst). I also think it's important to be a role model for others and would like to encourage people to participate in this program."

Preparing yourself for career opportunities such as this takes motivation and dedication, and working towards your degree while holding down a full-time job can be challenging.

"I took night classes and studied during breaks and lunch. The last few classes were only available during the day so I had to file a hardship so I could leave early enough to get to class," said Ms. Clark.

After watching their employees complete their degrees while excelling in their jobs, all three participants were encouraged by their supervisors to apply for the positions.

"My supervisor saw my management potential and wanted to see me progress," Mr. Colton said.

Mr. Cousins added, "If you aren't happy in your job, do what you can to make yourself a candidate worth promoting."

Public Notice

Tinker Air Force Base Invites Public Comment
Environmental Assessment
Tinker Aerospace Complex

The United States Air Force and the 72nd Air Base Wing have prepared an Environmental Assessment, which is available for public review and comment.

Pursuant to the Council on Environmental Quality regulations and in accordance with the National Environmental Policy Act, an environmental assessment has been performed to evaluate the potential lease of the former General Motors Assembly Plant by Tinker Air Force Base.

No significant environmental impacts have been identified through the EA.

The public is invited to review the draft assessment and make comments. Written comments and questions can be submitted before close of business on May 7.

The final draft for the Environment Assessment is available to the public at the Tinker Information Repository located in the Midwest City Public Library on Reno Avenue. Hours of operation are 9 a.m. to 9 p.m. Monday thru Thursday; 9 a.m. to 5 p.m. Friday and Saturday; and 1 to 5 p.m. Sunday.

The public may submit written comments to the address below:

72nd Air Base Wing Public Affairs Office
Brion Ockenfels
7460 Arnold Ave., Suite 127
Tinker Air Force Base, OK 73145
Phone: 405-739-2027/26
E-mail: brion.ockenfels@tinker.af.mil

Appendix C

Biological Resources

Scientific Names of Faunal Species Noted to Occur in the Project Area

SCIENTIFIC NAMES OF FAUNAL SPECIES NOTED TO OCCUR IN THE PROJECT AREA

Common Name	**Scientific Name**
Birds and Mammals	
American kestrel	*Falco sparverius*
American robin	*Turdus migratorius*
armadillo	*Dasypus novemcinctus*
barred owl	*Strix varia*
barn swallow	*Hirundo rustica*
blue jay	*Cyanocitta cristata*
bobcat	*Felis rufus (Schreber*)
Carolina chickadee	*Parus carolinensis*
common crow	*Corvus corax*
Cooper's hawk	*Accipiter cooperii*
Coyote	*Canis latrans*
deer mouse	*Peromyscus maniculatus*
Eastern bluebird	*Sialia sialis*
Eastern cottontail	*Sylvilagus floridanus*
Eastern kingbird	*Tyrannus tyrannus*
Eastern woodrat	*Neotoma floridana*
European starling	*Sturnus vulgaris*
field sparrow	*Spizella pusilla*
fox squirrel	*Scirus niger*
great blue heron	*Ardea herodias*
great egret	*Casmerodius albus*
great horned owl	*Bubo virginianus*
hispid cotton rat	*Sigmadon hispidus*
kinglets	*Regulus sp.*
mallard	*Anas platyrhynchos*
Mississippi kite	*Ictinia mississippiensis*
mourning dove	*Zenaida macroura*
Northern bobwhite quail	*Colinus virginianus*
Northern cardinal	*Cardinalis cardinalis*
Northern mockingbird	*Mimus polyglottos*
opossum	*Didelphis virginiana*
plains pocket gopher	*Geomys bursarius*
raccoon	*Procyon lotor*
red-headed woodpecker	*Melanerpes formicivorus*
red-tailed hawk	*Bueto jamaicensis*
rock dove	*Colomba lilvia*

scissor-tailed flycatcher	*Tyrannus forficatus*
striped skunk	*Mephitis mephitis*
tufted titmouse	*Parus bicolor*
Western kingbird	*Tyrannus verticalis*
White-tailed deer	*Odocoileus virgianus*
Yellow-billed cuckoo	*Coccyzus americanus*

(no document text this page)

Scientific Names of Floral Species Noted to Occur in the Project Area

SCIENTIFIC NAMES OF FLORAL SPECIES NOTED TO OCCUR IN THE PROJECT AREA

Species Common Name	**Scientific Name**
American Elm	*Ulmus ameriana*
Bermuda grass	*Cynodon dactylon*
Big bluestem	*Andropogon gerardii*
Barnyard grass	*Echinochloa crusgalli*
box elder	*Acer negundo*
bristle grass	*Setaria geniculata*
Canada goldenrod	*Solidago canadensis*
Canadian wild rye	*Elymus canadensis*
cocklebur	*Xanthium strumarium.*
coneflower	*Dracopis amplexicaulis*
cottonwood	*Populus deltoids*
common broomweed	*Gutierrezia dracunculoides*
common sunflower	*Helianthus annuus*
curly dock	*Rumex crispus*
curlycup gumweed	*Grindelia squarrosa*
dallis grass	*Paspalum dilalatum*
downy goldenrod	*Solidago petiolaris*
dwarf sumac	*Rhus copallina*
eastern red cedar	*Juniperus virginiana*
fescue	*Festuca arundinacea*
giant ragweed	*Ambrosia trifida*
green ash	*Fraxinus pennsylvanica*
horse weed	*Conyza canadensis*
Illinois bundleflower	*Desmanthus illinoensis*
Indian grass	*Sorghastrum nutans*
Western ironweed	*Vernonia baldwinii*
Johnson grass	*Sorghum halepense*
Little blue stem	Schijzachyrium scdoparium
Maximillian sunflower	*Helianthus maximilliani*
narrow-leaved cattail	*Typha angustifolia*
showy partridge pea	*Cassia chamaecrista*
persimmon	*Diospyros virginiana*
plains coreopsis	*Coreopsis tinctoria*
poison ivy	*Toxicodendron radicans*
pokeweed	*Phytolacca americana*
prairie goldenrod	*Solidago missouriensis*
prairie acacia	*Acacia angustissima*
red mulberry	*Morus rubra*
redbud	*Cercis canadensis*
rough-leaved dogwood	*Cornus drummondii*

sideoats gramma	*Bouteloua curtipendula*
stiff goldenrod	*Solidago rigida*
snow-on-the-mountain	*Euphorbia marginata*
sugarberry	*Celtis laevigatga*
switchgrass	*Panicum virgatum*
slender crabgrass	*Digitaria filiformis*
sideoats gramma	*Boutelova curtipendula*
silver bluestem	*Andropogon saccharoides*
slippery elm	Ulmus rubra
sugarberry	*Celtis laevigata*
switchgrass	*Panicum virgatum*
sycamore	*Platanus occidentalis*
roadside thistle	*Cirsium altissimum*
Virginia creeper	*Parthenocissus quinquefolia*
wavy-leaf thistle	*Cirsium undulatum*
western ironweed	*Vemonia baldwinii*
white prairie clover	*Dalea candidum*
yarrow	*Achillea millefolium*

(no document text this page)

Appendix D

Air Pollutant Emissions Calculations

Summary of Estimated Yearly Emissions - Proposed Action

YEAR	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
2008	22.9	32.8	49.6	5.3	11.3
2009	27.5	92.0	54.9	5.8	55.6
2010	2.3	0.46	5.7	0.60	11.6
2011	4.0	0.79	9.9	1.0	20.3
2012	4.9	1.0	12.1	1.3	24.6
2013	1.3	0.25	3.1	0.33	6.3
2014	2.2	0.43	5.4	0.56	11.0
2015	2.7	0.52	6.6	0.69	13.4
Total	**67.8**	**128.2**	**147.3**	**15.6**	**154.1**

2008 Estimated Pollutant Emissions From Proposed Action [a]

New Construction Area	-	ft^2	**No. Sites**	1	
Renovation Area[b]	1,750,000.0	ft^2	**No. Stories**	2	**S/M**
Asphalt Area[c]	1,017,000.0	ft^2	**Depth**	2	**inches**
Gravel/Dirt Area[d]	11,250.0	ft^2	**Depth**	6	**inches**
Concrete Area[e]	11,250.0	ft^2	**Depth**	10	**inches**
Demolition Building Area	156,204.0	ft^2			

Site Preparation for road construction

Total Area of Site[f]	4.10	**Acres (area disturbed by ground breaking)**
Project Duration[g]	180	**Days**

Construction Emissions

Construction Activity	CO (tons)	VOC (tons)	NO_X (tons)	SO_X (tons)	PM_{10} (tons)
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	7.0848
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	19.9624	3.3869	45.2607	4.8247	3.0162
Building Demolition	1.4522	0.2842	3.5767	0.3726	1.1046
Asphalt Paving Operations	1.3434	29.1238	0.3674	0.0361	0.0269
Gravel/Dirt Paving Operations	0.0100	0.0022	0.0252	0.0027	0.0017
Concrete Paving Operations	0.1376	0.0244	0.3237	0.0353	0.0205
Total Emissions	**22.9056**	**32.8215**	**49.5538**	**5.2715**	**11.2547**

Notes:

a Pollutant emissions from fence construction and installation of gate areas would be minimal.

b Conservatively assumed that half of the entire 3.5 million square foot TAC 9000 facility is renovated in 2008.

c Conservatively assumed that entire south parking lot will have to be resurfaced.

d Construction of 450 feet of temporary access road connecting Perimeter Road southwest of B-976 to Midwest Blvd. Assumed two lane roadway 25 feet wide.

e Construction of 450 feet of permanent roadway connecting Perimeter Road southwest of B-976 to Midwest Blvd. Assumed same 450 feet by 25 feet as temporary gravel road. Assumed concrete road for worst case emissions.

f Assumed that 0.5 acres would be disturbed by roadway construction (see notes a and b). This is twice the area that the road will occupy. Includes 3.6 acres of demolition of facilities on Tinker AFB.

g Assumed that roadway construction and parking lot resurfacing would occur during entire third and fourth quarters (180 days).

2009 Estimated Pollutant Emissions From Proposed Action

New Construction Area	-	ft^2	**No. Sites**	1	
Renovation Area[b]	1,750,000.0	ft^2	**No. Stories**	2	**S/M**
Asphalt Area[c]	3,070,992.0	ft^2	**Depth**	2	**inches**
Gravel/Dirt Area[d]	590,676.0	ft^2	**Depth**	6	**inches**
Concrete Area[e]	111,000.0	ft^2	**Depth**	10	**inches**
Demolition Building Area	174,989.0	ft^2			

Site Preparation for New Construction

Total Area of Site[f]	29.51	**Acres (area disturbed by ground breaking)**
Project Duration[g]	180	**Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	50.9933
Emissions from Construction Equipment					
New Building Construction	0.0000	0.0000	0.0000	0.0000	0.0000
Existing Building Renovation	19.9624	3.3869	45.2607	4.8247	3.0162
Building Demolition	1.6268	0.3184	4.0068	0.4174	1.2374
Asphalt Paving Operations	4.0565	87.9438	1.1096	0.1091	0.0813
Gravel/Dirt Paving Operations	0.5258	0.1173	1.3217	0.1399	0.0914
Concrete Paving Operations	1.3579	0.2412	3.1939	0.3486	0.2025
Total Emissions	**27.5295**	**92.0076**	**54.8927**	**5.8399**	**55.6220**

Notes:

a Pollutant emissions from fence construction and installation of gate areas would be minimal.

b Conservatively assumed that half of the entire 3.5 million square foot TAC 9000 facility is renovated in 2009.

c Conservatively assumed that entire 70.5 acres of existing parking will be resurfaced.

d Conservatively assumed that the entire 13.56 acres of graveled areas are reworked in 2009.

e Construction of 4,000 feet of permanent roadway connecting existing TAC 9000 roadways and with Midwest Blvd. Assumed two lane roadway 25 feet wide. Includes 11,000 square foot foundation for T-9 test cells.

f In addition to graveled areas (13.56 acres), it was assumed that 5 acres are disturbed for construction of roadways, 6.7 acres are disturbed during the demolition of existing railroad tracks, 4.0 acres from the demolition of facilities on Tinker AFB, and 0.25 acres for the T-9 test cell foundation footprint.

g Assumed that roadway construction, parking lot resurfacing, and gravel area rework would occur during two quarters (180 days).

2010 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area 250,166.0 **ft^2**

Site Preparation for New Construction

Total Area of Site 5.70 **Acres (area disturbed by ground breaking)**

Project Duration[a] 180 **Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	9.8496
Emissions from Construction Equipment					
Building Demolition	2.3257	0.4552	5.7282	0.5968	1.7690
Total Emissions	**2.3257**	**0.4552**	**5.7282**	**0.5968**	**11.6186**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

2011 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area 433,227.0 **ft^2**

Site Preparation for New Construction

Total Area of Site 9.95 **Acres (area disturbed by ground breaking)**

Project Duration[a] 180 **Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	17.1936
Emissions from Construction Equipment					
Building Demolition	4.0276	0.7882	9.9199	1.0334	3.0635
Total Emissions	**4.0276**	**0.7882**	**9.9199**	**1.0334**	**20.2571**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

2012 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area 528,514.0 **ft^2**

Site Preparation for New Construction

Total Area of Site 12.10 **Acres (area disturbed by ground breaking)**

Project Duration[a] 180 **Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	20.9088
Emissions from Construction Equipment					
Building Demolition	4.9135	0.9616	12.1017	1.2608	3.7373
Total Emissions	**4.9135**	**0.9616**	**12.1017**	**1.2608**	**24.6461**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

2013 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area	136,684.0	**ft^2**
	Site Preparation for New Construction	
Total Area of Site	3.10	**Acres (area disturbed by ground breaking)**
Project Duration[a]	180	**Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	5.3568
Emissions from Construction Equipment					
Building Demolition	1.2707	0.2487	3.1297	0.3261	0.9665
Total Emissions	**1.2707**	**0.2487**	**3.1297**	**0.3261**	**6.3233**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

2014 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area 234,618.5 **ft^2**

Site Preparation for New Construction

Total Area of Site 5.40 **Acres (area disturbed by ground breaking)**

Project Duration[a] 180 **Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	9.3312
Emissions from Construction Equipment					
Building Demolition	2.1812	0.4269	5.3722	0.5597	1.6591
Total Emissions	**2.1812**	**0.4269**	**5.3722**	**0.5597**	**10.9903**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

2015 Estimated Pollutant Emissions from Demolition Activities

Demolition Building Area 287,306.5 **ft^2**

Site Preparation for New Construction

Total Area of Site 6.60 **Acres (area disturbed by ground breaking)**

Project Duration[a] 180 **Days**

Construction Emissions					
Construction Activity	**CO (tons)**	**VOC (tons)**	**NO_X (tons)**	**SO_X (tons)**	**PM_{10} (tons)**
Site Preparation/Ground Disturbance/Demo	0.0000	0.0000	0.0000	0.0000	11.4048
Emissions from Construction Equipment					
Building Demolition	2.6710	0.5227	6.5786	0.6854	2.0317
Total Emissions	**2.6710**	**0.5227**	**6.5786**	**0.6854**	**13.4365**

Notes:

a It was assumed that actual demolition activities would take place for half of the year.

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