

FINDING OF NO SIGNIFICANT IMPACT

CONSTRUCTION AND DEMOLITION FOR FOUR PROPOSED PROJECTS AT KIRTLAND AIR FORCE BASE, NEW MEXICO

The 377th Air Base Wing (377 ABW) of the Air Force Materiel Command prepared the attached Environmental Assessment (EA) to assess the potential environmental consequences of the proposed actions at Kirtland Air Force Base (AFB). The actions consist of: constructing a three-story structural mockup for fire department training and demolishing the existing training structure, relocating Truman Gate and demolishing the existing facilities, constructing a second main electrical switching station, and upgrading security at the Kirtland Underground Munitions Maintenance and Storage Complex (KUMMSC).

DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

Proposed Actions. The 377 ABW at Kirtland AFB proposes to construct and demolish various facilities on base. The purpose of the proposed actions is to provide adequate facilities to base personnel, improve traffic flow on base, and upgrade security at the base. The proposed actions are to: 1) Construct a three-story structural mockup for fire department training purposes and demolish the existing training structure, Building 20419; 2) Relocate Truman Gate by constructing new facilities south of the current location and demolishing existing Buildings, 510 and 511, thus improving traffic flow problems at the current location; 3) Construct a second main electrical switching station located within the base perimeter which would provide a more secure and redundant power system; and 4) Upgrade security at the KUMMSC which would enhance antiterrorism/force protection measures.

No-Action Alternative

The No-Action Alternative would result in no change to existing conditions on base. Fire department personnel would not have an adequate training facility, current transportation conditions at Truman Gate would continue, and base security would continue to be jeopardized.

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SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS

Proposed Actions

Implementation of the proposed actions could result in minor short-term negative impacts to air quality, noise, soils, and transportation from construction and demolition activities. Beneficial impacts are expected to occur in the areas of human health and safety, transportation and circulation, and socioeconomics. No impacts are anticipated to occur to current land uses, floodplains, water resources, vegetation, wildlife, wetlands, minority and low-income populations, cultural resources, visual resources, health and safety of children, or hazardous wastes from the proposed actions.

Human Health and Safety. Beneficial impacts to human health and safety are expected to result from all of the proposed actions. No negative impacts are expected to the health and safety of children on base because none of the proposed projects occur in areas typically associated with children.

Air Quality. Implementation of the proposed actions could result in relatively short-term negative impacts to air quality from construction and demolition activities. Construction and demolition activities that would use large vehicles producing carbon monoxide, an emission that is monitored in the Albuquerque air basin, would not result in violations of the de minimis levels set for the area. Where applicable, particulate impacts from soil disturbance would be minimized by using best management practices to reduce erosion by wind and construction traffic. Long-term impacts to air quality associated with the proposed actions would not occur since there would not be an increase in vehicular traffic.

Noise. Implementation of the proposed actions could result in short-term, minor impacts to noise from construction and demolition activities. However, those activities would be minor when compared to the noise generated on base by commercial and military aircraft overflight.

Land Use. No negative impacts are expected to current land uses from the proposed actions because land uses would remain unchanged if these actions were implemented.

Geological Resources. Implementation of the proposed actions could result in short-term negative impacts to soils from construction and demolition activities. Where applicable, impacts would be minimized by using best management practices to reduce erosion by wind and water.

Water Resources. No negative impacts are expected to water resources from the proposed actions because impacts from soil disturbing activities that could contribute to erosion into local waterways would be minimized by using best management practices to reduce erosion by wind and water. No floodplains would be affected by the proposed actions.

Biological Resources. Implementation of the proposed actions would not result in any impacts to sensitive species, vegetation, wildlife, wetlands, or listed species because the actions are occurring in areas that have a low incidence of wildlife or sensitive biological resources.

Transportation and Circulation. Beneficial impacts are expected from the relocation of Truman Gate by alleviating existing traffic problems at the current location and improving the flow of traffic in that area. Implementation of the proposed actions could result in short-term negative impacts to transportation on base from construction and demolition activities because of the trips required to deliver construction materials and personnel to the sites and to transport debris to the landfill. No long-term effects to traffic are expected because the proposed actions would not result in increased traffic on base.

Visual Resources. No negative impacts are expected to occur to visual resources from the proposed actions because the new facilities would be consistent with the current visual environment on base.

Cultural Resources. No significant cultural resources, historic or prehistoric, exist within the boundaries of the proposed projects, so no impacts to cultural resources are expected to occur. A New Mexico Historic Building Inventory Form would be completed for any building being demolished during implementation of these proposed actions.

Socioeconomics. Beneficial effects to socioeconomics from the proposed actions would be short-term in nature and would result from the purchase of construction materials,

salaries paid to construction workers, and contracts for construction equipment from the surrounding community. No negative impacts are expected to minority and low-income populations from the proposed actions because the actions would not change conditions for these populations on or off base.

Environmental Management. All equipment would be maintained in accordance with applicable regulations and hazardous materials and wastes, if generated, would be handled and disposed of safely. Nonhazardous demolition debris would be taken to a suitable landfill or recycled. There is sufficient capacity in numerous local landfills to handle the anticipated demolition debris.

No-Action Alternative

Selection of the No-Action Alternative would result in the continued use of the existing facilities discussed in this document. No construction or demolition of facilities would occur. No change to current conditions of human health and safety, air quality, noise, land use, geological resources, water resources, biological resources, transportation and circulation, visual resources, cultural resources, socioeconomics or environmental management would occur from the No-Action Alternative.

CONCLUSION

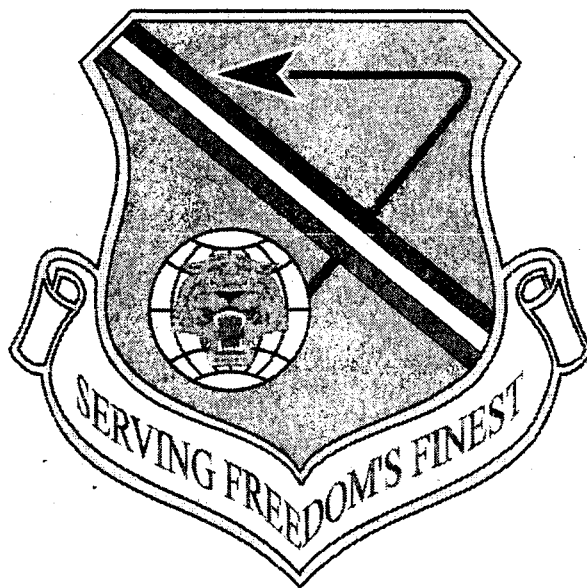
After careful review of the EA of these proposed actions, I have concluded that the proposed actions would not have a significant impact on the quality of the human environment and would not generate significant controversy. Therefore, issuance of a Finding of No Significant Impact is warranted, and an Environmental Impact Statement is not required. This analysis fulfills the requirements of the National Environmental Policy Act and the implementing regulations promulgated by the Council on Environmental Quality.

Accepted By: Cynthia L. Gooch Date: 20 JAN 03
CYNTHIA L. GOOCH, GS-12
Chief, Environmental Quality
Environmental Planning Function
Environmental Management Branch

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F I N A L

**ENVIRONMENTAL ASSESSMENT
FOR
KIRTLAND AIR FORCE BASE
2002 CONSTRUCTION AND
DEMOLITION PROJECTS**



January 2003

**Prepared for
377th Air Base Wing Air Force Materiel Command**

ACRONYMS AND ABBREVIATIONS

ABW	Air Base Wing	NEPA	National Environmental Policy Act
ADT	average daily traffic	NFA	No Further Action
AFB	Air Force Base	NHPA	National Historic Preservation Act
AFI	Air Force Instruction	NMAAQS	New Mexico Ambient Air Quality Standards
AFMC	Air Force Materiel Command	NMDGF	New Mexico Department of Game and Fish
CAA	Clean Air Act	NMEMNRD	New Mexico Energy, Minerals, and Natural Resources Department
CAWCO	City of Albuquerque Water Conservation Office	NMNHP	New Mexico Natural Heritage Program
CE	Civil Engineering	NO ₂	nitrogen dioxide
CEQ	Council on Environmental Quality	NO _x	oxides of nitrogen
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	NOI	Notice of Intent
CFR	Code of Federal Regulations	NPDES	National Pollutant Discharge Elimination System
CO	carbon monoxide	O ₃	ozone
CWA	Clean Water Act	OWS	Oil Water Separator
dB	decibels	Pb	lead
dBA	A-weighted decibel scale	PM ₁₀	particulate matter equal to or less than ten micrometers in diameter
DNL	Day-Night Average A-Weighted Sound Level	PSD	Prevention of Significant Deterioration
DoD	Department of Defense	QD	quantity-distance
DOE	Department of Energy	RPZ	runway protection zone
EO	Executive Order	SHPO	State Historic Preservation Officer
EA	Environmental Assessment	SIP	State Implementation Plan
EIAP	Environmental Impact Assessment Process	SO ₂	sulfur dioxide
EM	Environmental Management	SVOC	Semi-Volatile Organic Compound
EPA	US Environmental Protection Agency	SWP3	Storm Water Pollution Prevention Plan
°F	degrees Fahrenheit	TPH	Total Petroleum Hydrocarbons
FAA	Federal Aviation Administration	tpy	tons per year
FICON	Federal Interagency Committee on Noise	TS	Training Site
FY	fiscal year	µg/l	micrograms per liter
HHRB	Human Health Risk-Based	UST	Underground Storage Tank
HUD	US Department of Housing and Urban Development	US	United States
IRP	Installation Restoration Program	USACE	US Army Corps of Engineers
Kg	kilograms	USAF	US Air Force
KUMMSC	Kirtland Underground Munitions Maintenance and Storage Complex	USGS	US Geological Survey
LOS	Level of Service	USFS	US Forest Service
MCL	maximum contaminant level	USFWS	US Fish and Wildlife Service
MSA	metropolitan statistical area	V/C	volume-to-capacity
NAAQS	National Ambient Air Quality Standards	VOC	volatile organic compound

EXECUTIVE SUMMARY

The potential environmental impacts associated with the construction and demolition activities for four proposed projects at Kirtland Air Force Base (AFB) were evaluated in this Environmental Assessment prepared for the 377th Air Base Wing (377 ABW) of Air Force Materiel Command.

PURPOSE AND NEED FOR THE PROPOSED ACTIONS

The 377 ABW at Kirtland AFB proposes to construct and demolish various facilities on base. Construction activities are proposed to provide adequate facilities to meet expanding base requirements. The proposed actions are to:

- Construct a three-story structural mockup for fire department training purposes and demolish the existing training structure, Building 20419;
- Relocate the Truman Gate by constructing new facilities south of the current location and demolishing existing Buildings 510 and 511;
- Construct a second main electrical switching station located within the base perimeter; and
- Upgrade security at the Kirtland Underground Munitions Maintenance and Storage Complex (KUMMSC).

DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVE

The 377 ABW proposes to implement the following actions on Kirtland AFB.

Fire Department Structural Training Facility

The proposed action is to construct a new prefabricated three-story structural fire training facility along with an access road and set-up area. The training structure will be a steel frame sheet metal facility consisting of a three-story training tower measuring 22 feet by 11.5 feet with a confined space training area, a two-story portion measuring 22 feet by 23 feet and a first floor area measuring 22 feet by 14 feet. Two propane burners and smoke generators would be installed for smoke effects on both the first and second floors. The propane burners and smoke generators will meet United States Environmental Protection Agency and local air emission requirements. The existing structural fire training facility (Building 20419) would be demolished.

Truman Gate

The proposed action is to relocate Truman Gate to an area south of the current location. Construction at the new location would include a new guard gatehouse, a visitor's center, paved parking areas, security gates, signs, fencing and landscaping. The new guard gatehouse facility would be 646 square feet. The existing guard gatehouse (Building 510) and visitor's center (Building 511) would be demolished once construction was complete.

Electrical Main Switching Station

The proposed action is to construct a second electrical switching station located within the base perimeter. Construction activities would include the erection of a steel building on a 20 feet by 40 feet concrete slab. No structures have been identified for demolition in association with the proposed action.

KUMMSC

The proposed action is to construct fencing and concrete and earthen barriers around the perimeter; install perimeter lighting, sensors and intrusion detector systems; install a fire suppression system and provide a redundant chiller system and uninterruptible power system.

No-Action Alternative

The No-Action Alternative to these proposed actions would result in no change to existing conditions on base. Fire department personnel would not have an adequate training facility, current transportation conditions at Truman Gate would continue, and base security would continue to be jeopardized.

SUMMARY OF ANTICIPATED ENVIRONMENTAL EFFECTS

Proposed Actions

Implementation of the proposed actions could result in minor short-term negative impacts to air quality, noise, soils, and transportation from construction and demolition activities.

Beneficial impacts are expected to occur in the areas of human health and safety, transportation and circulation, and socioeconomics. No impacts are anticipated to occur to current land uses, floodplains, water resources, vegetation, wildlife, wetlands, minority and low-income populations, cultural resources, visual resources, health and safety of children, or hazardous wastes from the proposed actions.

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No-Action Alternative

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**FINAL
ENVIRONMENTAL ASSESSMENT
FOR THE CONSTRUCTION AND DEMOLITION OF FOUR PROPOSED
PROJECTS
AT
KIRTLAND AIR FORCE BASE**

TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
ACRONYMS AND ABBREVIATIONS	inside front cover
EXECUTIVE SUMMARY	ES-1
TABLE OF CONTENTS.....	i
1 PURPOSE AND NEED FOR THE PROPOSED ACTIONS	1-1
1.1 BACKGROUND.....	1-1
1.2 COMMUNITY CHARACTERISTICS	1-3
1.3 PURPOSE AND NEED FOR THE PROPOSED ACTIONS	1-4
1.3.1 Purpose of the Proposed Actions	1-4
1.3.2 Need for the Proposed Actions	1-4
1.3.2.1 Fire Department Structural Training Facility	1-4
1.3.2.2 Truman Gate	1-6
1.3.2.3 Electrical Main Switching Station	1-6
1.3.2.4 Kirtland Underground Munitions Maintenance and Storage Complex	1-6
1.4 DECISION TO BE MADE AND DECISION-MAKER	1-6
1.5 ALTERNATIVE IDENTIFICATION.....	1-6
1.6 REGULATORY COMPLIANCE.....	1-7
1.6.1 National Environmental Policy Act	1-7
1.6.2 Air Quality	1-7
1.6.3 Water Quality	1-8
1.6.4 Biological Resources	1-8
1.6.5 Cultural Resources	1-9

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
1.6.6 Land Use	1-10
1.6.7 Environmental Justice and Safety Risks to Children	1-10
1.6.8 Permitting, Licensing, and Consultation	1-10
1.6.9 Public Involvement	1-11
1.7 ORGANIZATION OF THIS DOCUMENT	1-11
2 DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES	2-1
2.1 DESCRIPTION OF THE PROPOSED ACTIONS	2-1
2.1.1 Fire Department Structural Training Facility	2-1
2.1.2 Truman Gate	2-1
2.1.3 Electrical Main Switching Station	2-4
2.1.4 Kirtland Underground Munitions Maintenance and Storage Complex	2-4
2.2 INFORMATION COMMON TO ALL PROJECTS	2-4
2.2.1 Construction and Demolition Activities	2-4
2.2.2 Permits and Consultations	2-7
2.3 ALTERNATIVES TO THE PROPOSED ACTIONS	2-9
2.3.1 Fire Department Structural Training Facility	2-9
2.3.2 Truman Gate	2-9
2.3.3 Electrical Main Switching Station	2-9
2.3.4 Kirtland Underground Munitions Maintenance and Storage Complex	2-9
2.4 OTHER FUTURE ACTIONS ON THE BASE	2-9
3 AFFECTED ENVIRONMENT	3-1
3.1 HUMAN HEALTH AND SAFETY	3-1
3.1.1 Definition of Resource	3-1
3.1.2 Existing Conditions	3-2
3.1.2.1 Safety Preparedness	3-2
3.1.2.2 Human Health	3-2
3.1.2.3 Industrial Hygiene	3-3
3.1.2.4 Runway Protection Zones	3-3

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
3.1.2.5 Airfield Clearance Requirements.....	3-4
3.1.2.6 Explosive Safety Zones.....	3-4
3.2 AIR QUALITY	3-6
3.2.1 Definition of Resource.....	3-6
3.2.2 Existing Conditions.....	3-8
3.2.2.1 Climate and Regional Air Quality	3-8
3.2.2.2 Air Quality in the Project Area	3-9
3.2.2.3 State Implementation Plan	3-11
3.3 NOISE.....	3-11
3.3.1 Definition of Resource.....	3-11
3.3.2 Existing Conditions.....	3-13
3.4 LAND USE.....	3-15
3.4.1 Definition of Resource.....	3-15
3.4.2 Existing Conditions.....	3-15
3.4.2.1 Kirtland AFB Land Use.....	3-17
3.4.2.2 City of Albuquerque Land Use.....	3-19
3.5 GEOLOGICAL RESOURCES	3-19
3.5.1 Definition of Resource.....	3-19
3.5.2 Existing Conditions.....	3-19
3.5.2.1 Geology.....	3-19
3.5.2.2 Soils.....	3-20
3.5.2.3 Proposed Actions	3-21
3.6 WATER RESOURCES	3-22
3.6.1 Definition of Resource.....	3-22
3.6.2 Existing Conditions.....	3-22
3.6.2.1 Surface Water.....	3-22
3.6.2.2 Floodplains.....	3-24
3.6.2.3 Groundwater	3-24
3.7 BIOLOGICAL RESOURCES	3-25
3.7.1 Definition of Resource.....	3-25
3.7.2 Existing Conditions.....	3-26
3.7.2.1 Vegetation.....	3-26

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
3.7.2.2 Wetlands	3-27
3.7.2.3 Wildlife	3-27
3.7.2.4 Threatened and Endangered Species	3-29
3.8 TRANSPORTATION AND CIRCULATION	3-36
3.8.1 Definition of Resource	3-36
3.8.2 Existing Conditions	3-37
3.8.2.1 Access Gates	3-38
3.8.2.2 Circulation at Kirtland AFB	3-38
3.8.2.3 Traffic Volumes	3-38
3.9 VISUAL RESOURCES	3-40
3.9.1 Definition of Resource	3-40
3.9.2 Existing Conditions	3-40
3.10 CULTURAL RESOURCES	3-41
3.10.1 Definition of Resource	3-41
3.10.2 Existing Conditions	3-41
3.10.2.1 Fire Department Structural Training Facility	3-42
3.10.2.2 Truman Gate	3-43
3.10.2.3 Electrical Main Switching Station	3-43
3.10.2.4 Kirtland Underground Munitions Maintenance and Storage Complex	3-43
3.11 SOCIOECONOMICS	3-43
3.11.1 Definition of Resource	3-43
3.11.2 Existing Conditions	3-44
3.11.2.1 Population	3-44
3.11.2.2 Job Growth and Unemployment	3-44
3.11.2.3 Housing	3-45
3.11.2.4 Kirtland AFB	3-46
3.11.3 Environmental Justice Considerations	3-46
3.11.3.1 Setting	3-46
3.11.3.2 Minority Population	3-47
3.11.3.3 Low-Income Population	3-48

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
3.12 ENVIRONMENTAL MANAGEMENT	3-48
3.12.1 Definition of Activity.....	3-48
3.12.2 Existing Conditions.....	3-49
3.12.2.1 Solid Waste.....	3-57
3.12.2.2 Wastewater.....	3-57
3.12.2.3 Hazardous Wastes.....	3-58
4 ENVIRONMENTAL CONSEQUENCES	4-1
4.1 HUMAN HEALTH AND SAFETY	4-1
4.1.1 Significance Criteria	4-1
4.1.2 Impacts.....	4-1
4.1.3 Fire Department Structural Training Facility	4-2
4.1.3.1 Proposed Action.....	4-2
4.1.3.2 No-Action Alternative	4-2
4.1.4 Truman Gate	4-2
4.1.4.1 Proposed Action.....	4-2
4.1.4.2 No-Action Alternative	4-3
4.1.5 Electrical Main Switching Station	4-3
4.1.5.1 Proposed Action.....	4-3
4.1.5.2 No-Action Alternative	4-3
4.1.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-3
4.1.6.1 Proposed Action.....	4-3
4.1.6.2 No-Action Alternative	4-3
4.1.7 Other Future Actions on the Base.....	4-4
4.2 AIR QUALITY	4-4
4.2.1 Significance Criteria	4-4
4.2.2 Impacts.....	4-5
4.2.3 Fire Department Structural Training Facility	4-7
4.2.3.1 Proposed Action.....	4-7
4.2.3.2 No-Action Alternative	4-7

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.2.4 Truman Gate	4-9
4.2.4.1 Proposed Action.....	4-9
4.2.4.2 No-Action Alternative	4-9
4.2.5 Electrical Main Switching Station	4-9
4.2.5.1 Proposed Action.....	4-9
4.2.5.2 No-Action Alternative	4-10
4.2.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-10
4.2.6.1 Proposed Action.....	4-10
4.2.6.2 No-Action Alternative	4-10
4.2.7 Other Future Actions on the Base.....	4-10
4.3 NOISE.....	4-10
4.3.1 Significance Criteria	4-10
4.3.2 Impacts.....	4-11
4.3.3 Fire Department Structural Training Facility	4-11
4.3.3.1 Proposed Action.....	4-11
4.3.3.2 No-Action Alternative	4-11
4.3.4 Truman Gate	4-12
4.3.4.1 Proposed Action.....	4-12
4.3.4.2 No-Action Alternative	4-12
4.3.5 Electrical Main Switching Station	4-12
4.3.5.1 Proposed Action.....	4-12
4.3.5.2 No-Action Alternative	4-12
4.3.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-13
4.3.6.1 Proposed Action.....	4-13
4.3.6.2 No-Action Alternative	4-13
4.3.7 Other Future Actions on the Base.....	4-13
4.4 LAND USE.....	4-13
4.4.1 Significance Criteria	4-13
4.4.2 Impacts.....	4-14
4.4.3 Fire Department Structural Training Facility	4-14

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.4.3.1 Proposed Action.....	4-14
4.4.3.2 No-Action Alternative	4-14
4.4.4 Truman Gate	4-14
4.4.4.1 Proposed Action.....	4-14
4.4.4.2 No-Action Alternative	4-14
4.4.5 Electrical Main Switching Station	4-15
4.4.5.1 Proposed Action.....	4-15
4.4.5.2 No-Action Alternative	4-15
4.4.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-15
4.4.6.1 Proposed Action.....	4-15
4.4.6.2 No-Action Alternative	4-15
4.4.7 Other Future Actions on the Base.....	4-15
4.5 GEOLOGICAL RESOURCES.....	4-15
4.5.1 Significance Criteria	4-15
4.5.2 Impacts.....	4-16
4.5.3 Fire Department Structural Training Facility	4-16
4.5.3.1 Proposed Action.....	4-16
4.5.3.2 No-Action Alternative	4-16
4.5.4 Truman Gate	4-16
4.5.4.1 Proposed Action.....	4-16
4.5.4.2 No-Action Alternative	4-17
4.5.5 Electrical Main Switching Station	4-17
4.5.5.1 Proposed Action.....	4-17
4.5.5.2 No-Action Alternative	4-17
4.5.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-17
4.5.6.1 Proposed Action.....	4-17
4.5.6.2 No-Action Alternative	4-17
4.5.7 Other Future Actions on the Base.....	4-17
4.6 WATER RESOURCES.....	4-18
4.6.1 Significance Criteria	4-18

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.6.2 Impacts	4-18
4.6.3 Fire Department Structural Training Facility	4-18
4.6.3.1 Proposed Action.....	4-18
4.6.3.2 No-Action Alternative	4-19
4.6.4 Truman Gate	4-19
4.6.4.1 Proposed Action.....	4-19
4.6.4.2 No-Action Alternative	4-19
4.6.5 Electrical Main Switching Station	4-19
4.6.5.1 Proposed Action.....	4-19
4.6.5.2 No-Action Alternative	4-20
4.6.6 Kirtland Underground Munitions Maintenance and Storage Complex	4-20
4.6.6.1 Proposed Action.....	4-20
4.6.6.2 No-Action Alternative	4-20
4.6.7 Other Future Actions on the Base.....	4-20
4.7 BIOLOGICAL RESOURCES	4-20
4.7.1 Significance Criteria	4-20
4.7.2 Impacts.....	4-21
4.7.3 Fire Department Structural Training Facility	4-21
4.7.3.1 Proposed Action.....	4-21
4.7.3.2 No-Action Alternative	4-21
4.7.4 Truman Gate	4-22
4.7.4.1 Proposed Action.....	4-22
4.7.4.2 No-Action Alternative	4-22
4.7.5 Electrical Main Switching Station	4-22
4.7.5.1 Proposed Action.....	4-22
4.7.5.2 No-Action Alternative	4-22
4.7.6 Kirtland Underground Munitions Maintenance and Storage Complex	4-22
4.7.6.1 Proposed Action.....	4-22
4.7.6.2 No-Action Alternative	4-23
4.7.7 Other Future Actions on the Base.....	4-23

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.8 TRANSPORTATION AND CIRCULATION	4-23
4.8.1 Significance Criteria	4-23
4.8.2 Impacts	4-24
4.8.3 Fire Department Structural Training Facility	4-24
4.8.3.1 Proposed Action	4-24
4.8.3.2 No-Action Alternative	4-25
4.8.4 Truman Gate	4-25
4.8.4.1 Proposed Action	4-25
4.8.4.2 No-Action Alternative	4-25
4.8.5 Electrical Main Switching Station	4-25
4.8.5.1 Proposed Action	4-25
4.8.5.2 No-Action Alternative	4-25
4.8.6 Kirtland Underground Munitions Maintenance and Storage Complex	4-26
4.8.6.1 Proposed Action	4-26
4.8.6.2 No-Action Alternative	4-26
4.8.7 Other Future Actions on the Base	4-26
4.9 VISUAL RESOURCES	4-26
4.9.1 Significance Criteria	4-26
4.9.2 Impacts	4-27
4.9.3 Fire Department Structural Training Facility	4-27
4.9.3.1 Proposed Action	4-27
4.9.3.2 No-Action Alternative	4-27
4.9.4 Truman Gate	4-27
4.9.4.1 Proposed Action	4-27
4.9.4.2 No-Action Alternative	4-27
4.9.5 Electrical Main Switching Station	4-28
4.9.5.1 Proposed Action	4-28
4.9.5.2 No-Action Alternative	4-28
4.9.6 Kirtland Underground Munitions Maintenance and Storage Complex	4-28
4.9.6.1 Proposed Action	4-28

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.9.6.2 No-Action Alternative	4-28
4.9.7 Future Actions on the Base	4-28
4.10 CULTURAL RESOURCES	4-29
4.10.1 Significance Criteria	4-29
4.10.2 Impacts	4-29
4.10.3 Fire Department Structural Training Facility	4-30
4.10.3.1 Proposed Action	4-30
4.10.3.2 No-Action Alternative	4-30
4.10.4 Truman Gate	4-30
4.10.4.1 Proposed Action	4-30
4.10.4.2 No-Action Alternative	4-31
4.10.5 Electrical Main Switching Station	4-31
4.10.5.1 Proposed Action	4-31
4.10.5.2 No-Action Alternative	4-31
4.10.6 Kirtland Underground Munitions Maintenance and Storage Complex	4-31
4.10.6.1 Proposed Action	4-31
4.10.6.2 No-Action Alternative	4-31
4.10.7 Other Future Actions on the Base	4-32
4.11 SOCIOECONOMICS	4-32
4.11.1 Significance Criteria	4-32
4.11.2 Impacts	4-32
4.11.3 Fire Department Structural Training Facility	4-33
4.11.3.1 Proposed Action	4-33
4.11.3.2 No-Action Alternative	4-33
4.11.4 Truman Gate	4-33
4.11.4.1 Proposed Action	4-33
4.11.4.2 No-Action Alternative	4-33
4.11.5 Electrical Main Switching Station	4-34
4.11.5.1 Proposed Action	4-34
4.11.5.2 No-Action Alternative	4-34

TABLE OF CONTENTS (continued)

<u>Section</u>	<u>Page</u>
4.11.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-34
4.11.6.1 Proposed Action.....	4-34
4.11.6.2 No-Action Alternative	4-34
4.11.7 Other Future Actions on the Base.....	4-35
4.12 ENVIRONMENTAL MANAGEMENT	4-35
4.12.1 Significance Criteria	4-35
4.12.2 Impacts.....	4-35
4.12.3 Fire Department Structural Training Facility	4-36
4.12.3.1 Proposed Action.....	4-36
4.12.3.2 No-Action Alternative	4-36
4.12.4 Truman Gate	4-36
4.12.4.1 Proposed Action.....	4-36
4.12.4.2 No-Action Alternative	4-37
4.12.5 Electrical Main Switching Station	4-37
4.12.5.1 Proposed Action.....	4-37
4.12.5.2 No-Action Alternative	4-37
4.12.6 Kirtland Underground Munitions Maintenance and Storage Complex.....	4-38
4.12.6.1 Proposed Action.....	4-38
4.12.6.2 No-Action Alternative	4-38
4.12.7 Other Future Actions on the Base.....	4-38
5 PERSONS AND AGENCIES CONSULTED.....	5-1
6 LIST OF PREPARERS.....	6-1
7 REFERENCES AND BIBLIOGRAPHY	7-1

APPENDICES

- A INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR
ENVIRONMENTAL PLANNING CORRESPONDENCE
- B PUBLIC NOTICE

LIST OF FIGURES

<u>Number</u>		<u>Page</u>
1-1	Kirtland Air Force Base and Proposed Actions Location.....	1-2
1-2	Locations of Proposed 2002 Construction and Demolition Projects, Kirtland Air Force Base.....	1-5
2-1	Fire Department Structural Training Facility, Kirtland Air Force Base.....	2-2
2-2	Truman Gate Site Plan, Kirtland Air Force Base	2-3
2-3	Electrical Switching Station Site Plan, Kirtland Air Force Base.....	2-5
2-4	Kirtland Underground Munitions Maintenance and Storage Complex Site Plan, Kirtland Air Force Base.....	2-6
3-1	Locations of Explosive Safety and Runway Protection Zones on Kirtland Air Force Base.....	3-5
3-2	Kirtland Air Force Base Land Agreements	3-18
3-3	100-Year Floodplain on Kirtland Air Force Base.....	3-23
3-4	Native Vegetation and Wetland Locations on Kirtland Air Force Base.....	3-28
3-5	Kirtland Air Force Base Access Gates.....	3-39
3-6	IRP Sites within 1,000 feet of Fire Department Structural Training Facility, Kirtland Air Force Base	3-50
3-7	IRP Sites within 1,000 feet of Electrical Main Switching Station, Kirtland Air Force Base	3-53
3-8	IRP Sites within 1,000 feet of Underground Munitions Maintenance Complex, Kirtland Air Force Base	3-56

LIST OF TABLES

<u>Number</u>		<u>Page</u>
3-1	National and New Mexico Ambient Air Quality Standards	3-7
3-2	CO Emissions Inventory of Bernalillo County (1996)	3-10
3-3	Summary of Calendar Year 2000 Air Emissions for Non-exempt Sources at Kirtland AFB	3-10
3-4	Recommended Land Use for DNL-Based Noise Zones ⁽¹⁾	3-13
3-5	Sound Levels of Typical Noise Sources and Environments	3-14
3-6	City of Albuquerque general sound-level limits	3-14
3-7	Construction-Equipment Noise Ranges	3-16
3-8	Special Status Species, Bernalillo County	3-31
3-9	Level of Service and Volume-to-Capacity Ratio Descriptions	3-37
3-10	LOS Criteria for Signalized Intersections	3-37
3-11	Kirtland AFB Traffic Analysis Data	3-40
3-12	Nonagricultural Employment in the United States, New Mexico, and the Albuquerque MSA, 1998	3-45
3-13	Local Economic Impact, Kirtland AFB, 2000	3-47
3-14	Estimates of Waste Introduced to Kirtland AFB Landfill, 1996, 1997, 1998, and January – March 1999	3-57
4-1	CO Emissions Generated by the Proposed Actions	4-8

SECTION 1

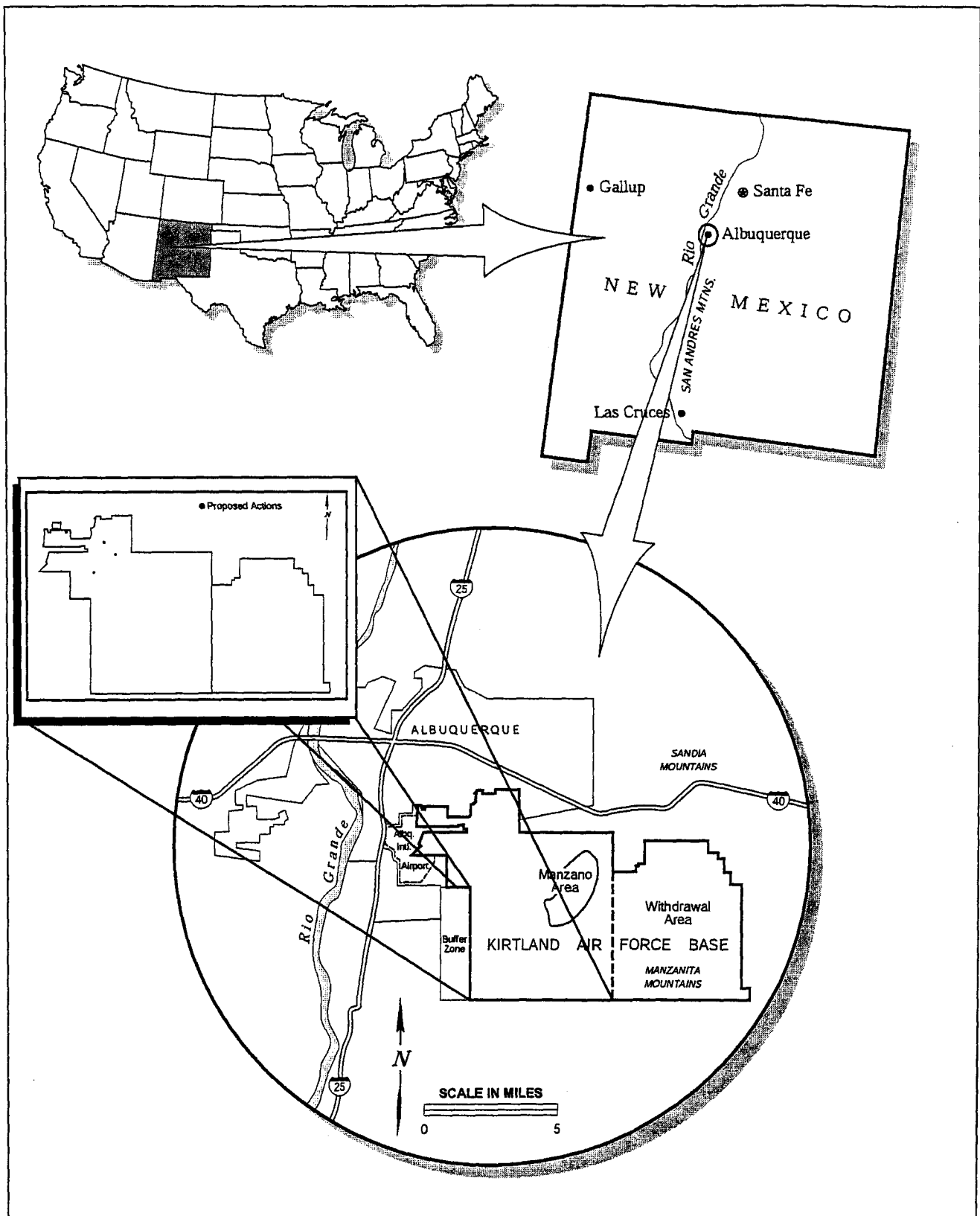
PURPOSE AND NEED FOR THE PROPOSED ACTIONS

This Environmental Assessment (EA) evaluates the potential impacts on environmental and human resources associated with the construction and demolition of selected Air Force Materiel Command (AFMC) facilities at Kirtland Air Force Base (AFB) in Albuquerque, New Mexico (Figure 1-1). This EA also describes how the No-Action Alternative would affect the resources and factors analyzed in this document. This document is part of the Environmental Impact Analysis Process (EIAP) set forth in Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, which implements the National Environmental Policy Act (NEPA) of 1969; and the regulations implementing NEPA promulgated by the President's Council on Environmental Quality (CEQ) as Title 40 of the Code of Federal Regulations (CFR) 1500-1508.

1.1 BACKGROUND

Kirtland AFB is located just southeast of Albuquerque, New Mexico at the foot of the Sandia and Manzanita Mountains (Figure 1-1). These mountains rise to over 10,000 feet and define the eastern boundary of an area locally known as the East Mesa. Kirtland AFB encompasses over 52,000 acres of East Mesa with elevations ranging from 5,200 feet to almost 8,000 feet above mean sea level (United States [US] Geological Survey 1990 a, b, c; 1991 a, b, c). Land use for areas adjacent to the base includes Cibola National Forest to the northeast and east, the Manzano Wilderness Area and the Isleta Indian Reservation to the south, and residential and business areas of the City of Albuquerque to the west and north.

Kirtland AFB was originally established in the late 1930s as a training base for the Army Air Corps. In 1941, construction of permanent barracks, warehouses, and a chapel was completed, and a B-18 bomber, Kirtland AFB's first military aircraft, arrived. Troops soon followed, and Kirtland AFB grew rapidly with US involvement in World War II. The base served as a training site for aircrews for many of the country's bomber aircraft, including the B-17, B-18, B-24, and the B-29. After the war, Kirtland AFB shifted from a training facility to a test and evaluation facility for weapons delivery, working closely with both Los Alamos National Laboratory and Sandia Army Base (Sandia National Laboratories). Kirtland AFB and its adjoining neighbor to the east, Sandia Army Base,



JAN 2003

FIGURE

EA

Kirtland Air Force Base and Proposed Actions Location

1-1

were combined in 1971. The two divisions of the base are still referred to as Kirtland West and Kirtland East, respectively.

Kirtland AFB is now operated by the 377th Air Base Wing (377 ABW) of AFMC, the proponent of the actions analyzed in this document. The 377 ABW's prime mission, as the host unit at Kirtland AFB, is munitions storage, readiness, and base operating support for approximately 200 associate organizations with personnel, resources, equipment, and facilities. The 377 ABW also provides fire protection and crash and rescue services for Albuquerque International Sunport.

Kirtland AFB serves as a center for research and development for Air Force Research Laboratory and Sandia National Laboratories. The base functions as a test and evaluation center for the Space and Missile Systems Center and Air Force Operational Test and Evaluation Center. It is also the headquarters for operational organizations such as the Air Force Inspection Agency, the Air Force Safety Center, and the Albuquerque Operations Office of the US Department of Energy (DOE). Kirtland AFB functions as a training base for the 58th Special Operations Wing of Air Education and Training Command's 19th Air Force and the 150th Fighter Wing of the New Mexico Air National Guard is stationed here.

The US Air Force (USAF) owns most of the land at Kirtland AFB, but several other ownership's and leases apply to many areas of the base both large and small. The eastern portion of Kirtland AFB is primarily Cibola National Forest land leased to the USAF by the US Forest Service (USFS). These lands have been withdrawn from public use and are known as the Withdrawal Area (refer to Figure 1-1). The DOE owns certain areas of the base and leases other areas from the USAF and the USFS (USAF 1995).

1.2 COMMUNITY CHARACTERISTICS

The area surrounding Kirtland AFB ranges from urban to unpopulated wilderness. Albuquerque, the largest city in the State of New Mexico, is adjacent to the base on the northwest; the 2000 population of Albuquerque was over 448,000 people (US Census Bureau 2000). Other surrounding communities are considerably smaller. A total of almost 517,000 people reside in communities within 50 miles of Kirtland AFB, including several Indian pueblos (US Census Bureau 2000).

Kirtland AFB's host and associate units comprise the largest single employer in New Mexico and have a major economic impact on the surrounding communities: organizations at Kirtland AFB currently employ over 28,000 people (USAF 2000a). Kirtland AFB's estimated annual economic contribution to the Albuquerque metropolitan area exceeds \$2.6 billion (USAF 2000a).

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTIONS

The 377 ABW at Kirtland AFB proposes to construct and demolish various facilities on base. Construction activities are proposed to provide adequate facilities to meet expanding base requirements. The proposed actions are to:

- Construct a three-story structural mockup for fire department training purposes and demolish the existing training structure, Building 20419;
- Relocate the Truman Gate by constructing new facilities south of the current location and demolishing existing Buildings 510 and 511;
- Construct a second main electrical switching station located within the base perimeter; and
- Upgrade security at the Kirtland Underground Munitions Maintenance and Storage Complex (KUMMSC).

Figure 1-2 shows the locations of these proposed projects.

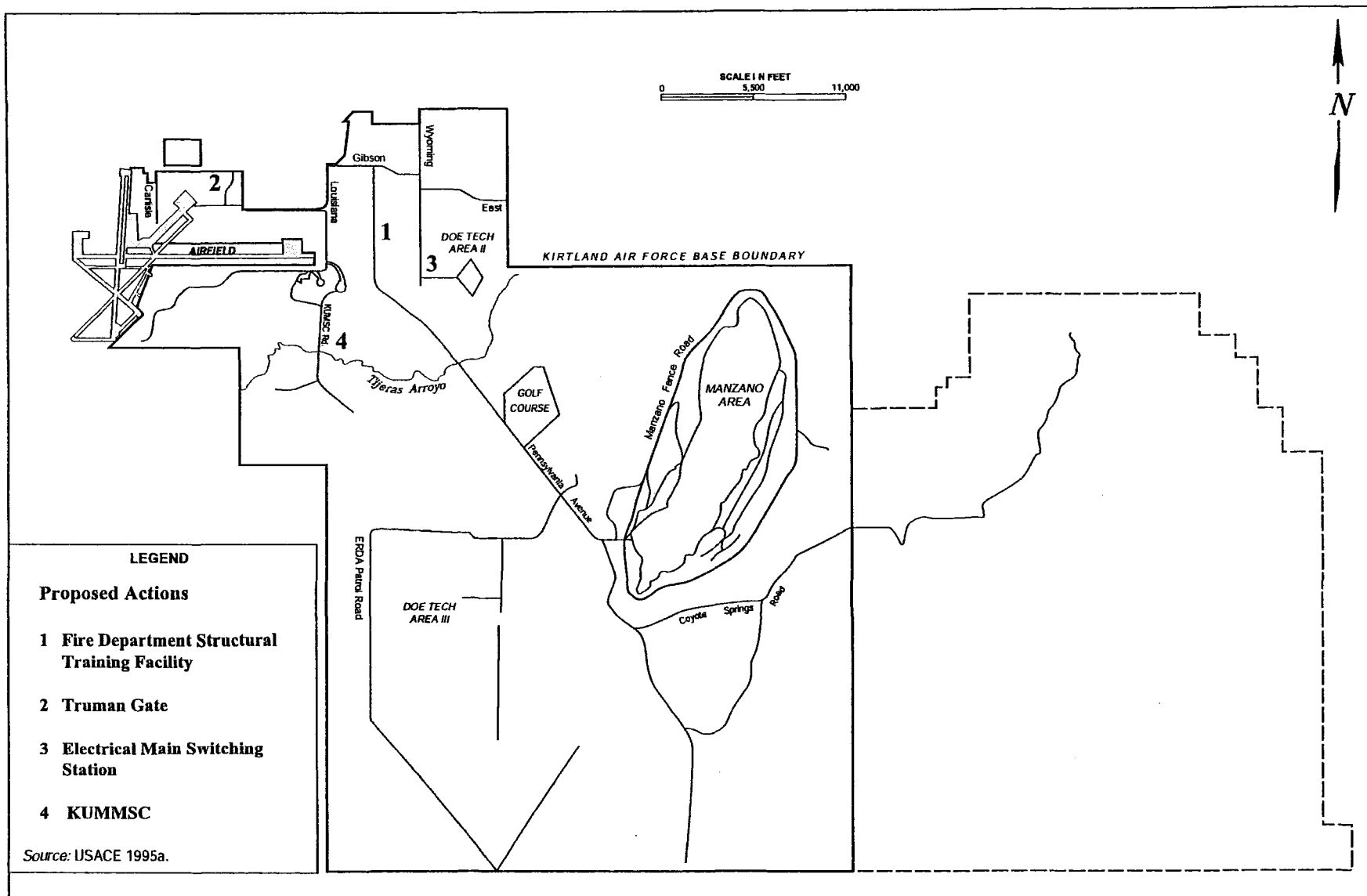
1.3.1 Purpose of the Proposed Actions

The purpose of the proposed actions is to construct new facilities, upgrade existing facilities and to meet current and future base and personnel requirements.

1.3.2 Need for the Proposed Actions

1.3.2.1 Fire Department Structural Training Facility

The structural integrity of the existing training facility has been compromised by excessive heat and, as a result, the facility has been condemned. In addition, the facility does not meet local air quality regulations. The proposed new training facility would provide a structurally sound training facility for fire department personnel and would include a smoke generator that meets, federal, and local air quality regulations.



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FIGURE

EA

**Locations of Proposed 2002 Construction and Demolition Projects,
Kirtland Air Force Base**

1-2

1.3.2.2 Truman Gate

Truman Gate is located west of the intersection of Gibson Boulevard and San Mateo Boulevard and is the primary entrance to the west side of Kirtland AFB. As it currently exists, Truman Gate poses a safety issue, does not meet security requirements and is not in compliance with the Manual on Uniform Traffic Control Devices. The proposal is to construct a new guard gate house, visitor's center, and parking area south of the present location. The existing guard gate house (Building 510) and visitor's center (Building 511) would be demolished as part of the proposed action.

1.3.2.3 Electrical Main Switching Station

The existing electrical power transmission source that serves Kirtland AFB is located outside the base perimeter, making it vulnerable to terrorist attacks. The construction of a second electrical main switching station inside the perimeter of Kirtland AFB will provide a more secure and redundant power system. Construction activities would include the erection of a steel building on a 20 feet by 40 feet concrete slab. No structures have been identified for demolition in association with the proposed action.

1.3.2.4 Kirtland Underground Munitions Maintenance and Storage Complex

Existing security at the KUMMSC does not adequately integrate camouflage, concealment, and deception methodologies. The proposed upgrade will enhance antiterrorism/force protection measures.

1.4 DECISION TO BE MADE AND DECISION-MAKER

The installation commander will make a decision regarding the best alternative to support the AFMC and Kirtland AFB.

1.5 ALTERNATIVE IDENTIFICATION

The CEQ guidelines implementing NEPA, and AFI 32-7061, which implements the USAF NEPA process, require the consideration of reasonable alternatives to a proposed action. Only those alternatives that are determined to be reasonable relative to their ability to fulfill the need for the action warrant a detailed environmental analysis. The

identification of such alternatives involves the definition of a set of criteria based on the need for the action that an alternative must meet. Once defined, these criteria must be applied consistently to each of the candidate alternatives. For the various proposed actions, alternatives were required to address the issues of safety associated with the deteriorating structures and the need for enhanced antiterrorism/force protection measures.

1.6 REGULATORY COMPLIANCE

The following section provides a brief summary of the laws, regulations, Executive Orders (EOs), and other requirements that are routinely considered in an environmental analysis for these types of proposed actions.

1.6.1 National Environmental Policy Act

NEPA requires federal agencies to consider the potential environmental consequences of proposed actions in their decision-making process. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The CEQ was established under NEPA to implement and oversee federal policies in this process. In 1979, the CEQ issued the Regulations for Implementing the Procedural Provisions of NEPA. The CEQ regulations encourage federal agencies to develop and implement procedures that address the NEPA process in order to avoid or minimize adverse effects on the environment.

AFI 32-7061 establishes the EIAP and the specific procedural requirements for the implementation of NEPA on USAF projects. EO 11514, *Protection and Enhancement of Environmental Quality*, as amended by EO 11991, *Relating to Protection and Enhancement of Environmental Quality*, set policy for directing the federal government in providing leadership in protecting and enhancing the quality of the nation's environment.

1.6.2 Air Quality

The Clean Air Act (CAA) (42 US Code, Sections 7401-7671, et seq., as amended) establishes federal policy to protect and enhance the quality of the nation's air resources

to protect human health and the environment. The CAA requires that adequate steps be taken to control the release of air pollutants and prevent significant deterioration in air quality. The 1990 amendments to the CAA require federal agencies to determine the conformity of proposed actions with respect to State Implementation Plans (SIPs) for attainment of air quality goals. The Environmental Protection Agency has set forth regulations in 40 CFR 51, Subpart W, that require the proponent of an action potentially affecting air quality to perform an analysis to determine if implementation of the action would conform with the SIP.

1.6.3 Water Quality

The Clean Water Act (CWA) of 1977 and the Water Quality Act of 1987 (33 US Code 1251, et seq., as amended) establish federal policy to restore and maintain the chemical, physical, and biological integrity of the nation's waters and, where attainable, to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water.

1.6.4 Biological Resources

The Endangered Species Act requires federal agencies that fund, authorize, or implement actions to avoid jeopardizing the continued existence of federally listed threatened or endangered species, and to avoid destroying or adversely affecting their critical habitat. Federal agencies must evaluate the effects of their actions through a set of defined procedures, which can include preparation of a biological assessment and formal consultation with the US Fish and Wildlife Service.

Section 404 of the CWA regulates development in streams and wetlands and requires a permit from the US Army Corps of Engineers for dredging and filling in wetlands.

EO 11990, *Protection of Wetlands*, requires that federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

1.6.5 Cultural Resources

AFI 32-7065, *Cultural Resources Management*, implements Air Force Policy Directive 32-70, *Environmental Quality*, and Department of Defense Directive 4710.1, *Archaeological and Historic Resources Management*. It sets guidelines for the protection and management of cultural resources, and requires compliance and coordination with NEPA, the National Historic Preservation Act (NHPA) of 1966, as amended, and related federal standards and authorities.

NEPA directs agencies to administer federal programs and resources to foster environmental quality and preservation. NEPA establishes federal policies to preserve important historic and cultural aspects of our national heritage and requires consideration of environmental concerns during project planning and execution. Compliance with NEPA may be done in coordination with compliance with the NHPA under the regulations of the Advisory Council on Historic Preservation, 36 CFR Part 800. Section 106 of the NHPA requires that every federal agency "take into account" how each of its undertakings could affect historic properties. An agency must afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on the agency's project.

The NHPA establishes policies that support and encourage the preservation of historic and prehistoric resources for present and future generations. The NHPA directs federal agencies to assume responsibility for considering historic properties (i.e., significant cultural resources) in their activities.

The Archaeological and Historic Data Preservation Act of 1974 directs federal agencies to notify the Secretary of the Interior of historic and archaeological data that may be lost as a result of federal construction or other federally licensed or assisted activities. When undertakings may cause irreparable damage to historic or archaeological resources, the agency must notify the Secretary, in writing, of the situation. The agency may undertake recovery, protection, and preservation of data with their own project funds, or they may request the Secretary to undertake preservation measures.

The Archaeological Resources Protection Act of 1979 requires a permit for any excavation or removal of archaeological resources from public lands or Indian lands. Excavations must be undertaken for the purpose of furthering archaeological knowledge

in the public interest, and resources removed remain the property of the US. The act provides both civil and criminal penalties for violation of the permit requirements.

1.6.6 Land Use

EO 11988, *Floodplain Management*, requires each federal agency to take actions to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. Where information is unavailable, agencies are encouraged to delineate the areal extent of floodplains at their site.

1.6.7 Environmental Justice and Safety Risks to Children

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs federal agencies to assess the effects of their actions on minority and low-income populations within their region of influence. Agencies are encouraged to include demographic information related to race and income in their analysis of environmental and economic effects associated with their actions and to identify any potential impacts that may disproportionately affect minority or low-income communities.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, directs federal agencies to assess the effects of their actions on children within the agencies' region of influence. Therefore, to the extent appropriate, permitted by law, and consistent with the agency's mission, federal agencies shall:

- Make it a high priority to identify and assess environmental health risks 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 risks or safety risks.

1.6.8 Permitting, Licensing, and Consultation

The proposed actions at the Truman Gate and KUMMSC would disturb more than 1, but less than 5 acres and would therefore be subject to the Storm Water Pollution Prevention

Planning requirements of the National Pollution Discharge Elimination System regulations. A Soils Disturbance Permit from the City of Albuquerque would be required for the Truman Gate project and the fire department structural training facility if the total disturbed area for each proposed site is greater than 0.75 acres. The demolition contractor would be required to obtain a City of Albuquerque Dust Control Permit before demolition of any facilities could begin. A 1541 National Emission Standards for Hazardous Air Pollutants Permit and a Notice of Asbestos Demolition/Renovation Permit (40 CFR 61, subpart M) would also be required for demolition or renovation of facilities containing asbestos. No other permits would be required for project activities.

AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, requires the USAF to coordinate and consult with local, state, and federal agencies having jurisdiction over lands or resources potentially affected by a proposed action, in accordance with EO 12372, *Intergovernmental Review of Federal Programs*. This coordination and consultation serves two purposes: 1) to seek and receive from these agencies data that are pertinent to the existing environment of the affected area; and 2) to derive from the agencies information on potential issues associated with lands or resources within their purview. In addition, there are laws and regulations governing specific resources, such as the protected biological and cultural resources described above, which require consultation efforts with agencies having specific purview over those resources.

1.6.9 Public Involvement

Section 1.6.8 of EO 12372, directs federal agencies to consult with and solicit comments from state and local government officials whose jurisdictions would be affected by federal actions. In addition, NEPA procedures and USAF policy are intended to ensure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. In order to comply with these requirements, this document will be released for public review prior to completion of the decision-making process.

1.7 ORGANIZATION OF THIS DOCUMENT

Section 1 of this EA describes the Purpose and Need for the Proposed Actions. Section 2 provides the Description of the Proposed Actions and Alternatives. Section 3 describes

the Affected Environment on a resource and factor basis. Section 4, Environmental Consequences, assesses the potential impacts of the proposed actions and alternatives on the resources and factors described in Section 3. Section 5 lists Persons and Agencies contacted in the preparation of this EA. Section 6 is the List of Preparers Section 7 contains the References and Bibliography, and Appendix A lists Interagency and Intergovernmental Coordination for Environmental Planning Correspondence and Appendix B is a copy of the Public Notice.

SECTION 2

DESCRIPTION OF THE PROPOSED ACTIONS AND ALTERNATIVES

The 377th Air Base Wing (377 ABW) of Air Force Materiel Command (AFMC) proposes to construct new facilities and demolish old facilities at Kirtland Air Force Base (AFB) in Albuquerque, New Mexico. The following section describes the proposed actions, alternatives to these actions, and other actions at Kirtland AFB that may have cumulative effects on environmental and/or human resources at the base when considered with the proposed actions addressed in this Environmental Assessment.

2.1 DESCRIPTION OF THE PROPOSED ACTIONS

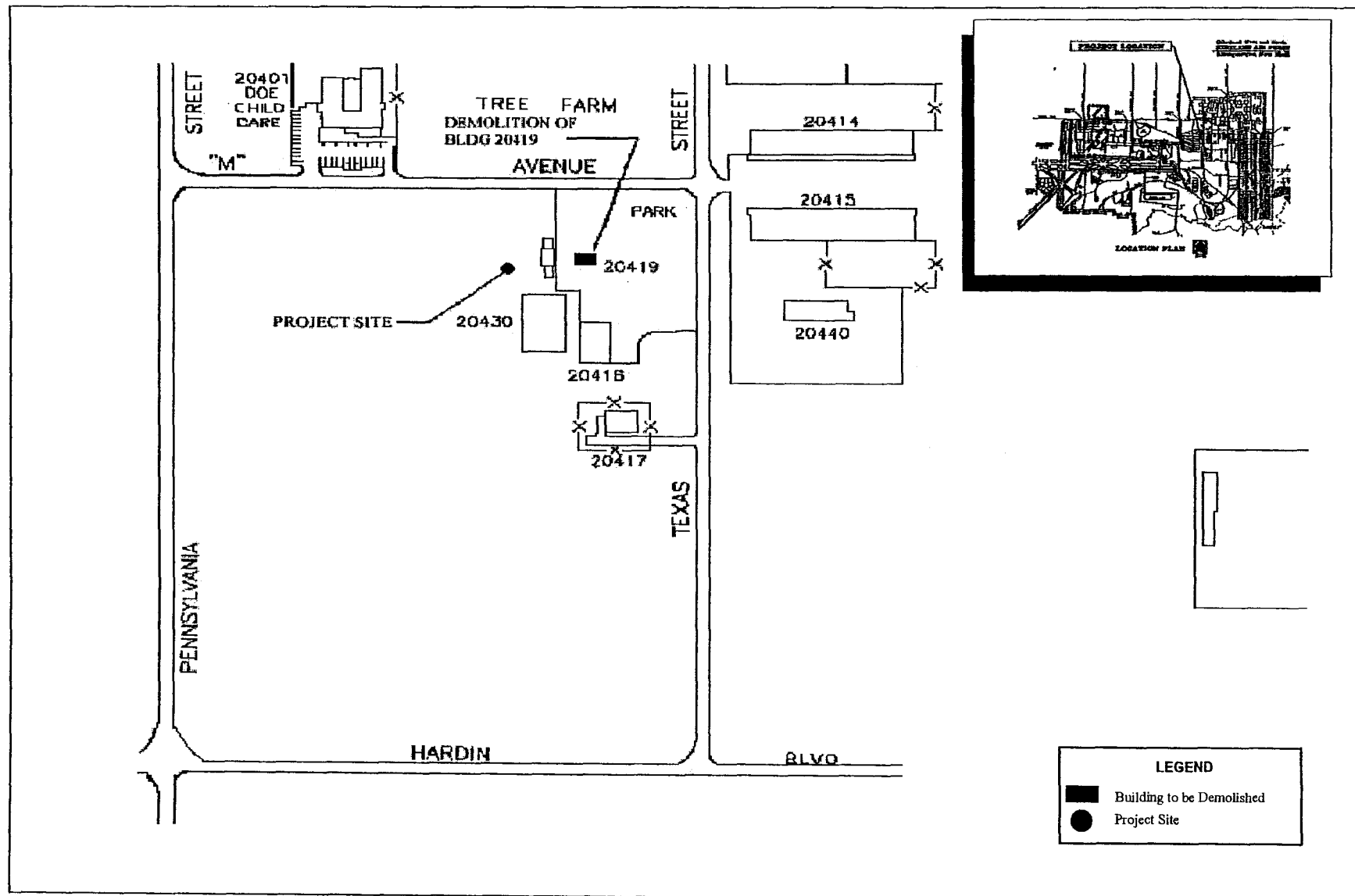
The 377 ABW proposes to implement the following actions on Kirtland AFB.

2.1.1 Fire Department Structural Training Facility

The proposed action is to construct a new prefabricated three-story structural fire training facility along with an access road and set-up area. The training structure will be a steel frame, sheet metal facility consisting of a three-story training tower measuring 22 feet by 11.5 feet with a confined space training area, a two-story portion measuring 22 feet by 23 feet and a first floor area measuring 22 feet by 14 feet. Two propane burners and smoke generators would be installed for smoke effects on both the first and second floors. The propane burners and smoke generators will meet US Environmental Protection Agency (EPA) and local air emission requirements. The existing structural fire training facility (Building 20419) would be demolished (Figure 2-1).

2.1.2 Truman Gate

The proposed action is to relocate Truman Gate to an area south of the current location (Figure 2-2). Construction at the new location would include a new guard gatehouse, a visitor's center, paved parking areas, security gates, signs, fencing and landscaping. The new guard gatehouse facility will be 646 square feet. The existing guard gatehouse (Building 510) and visitor's center (Building 511) would be demolished once construction was complete.



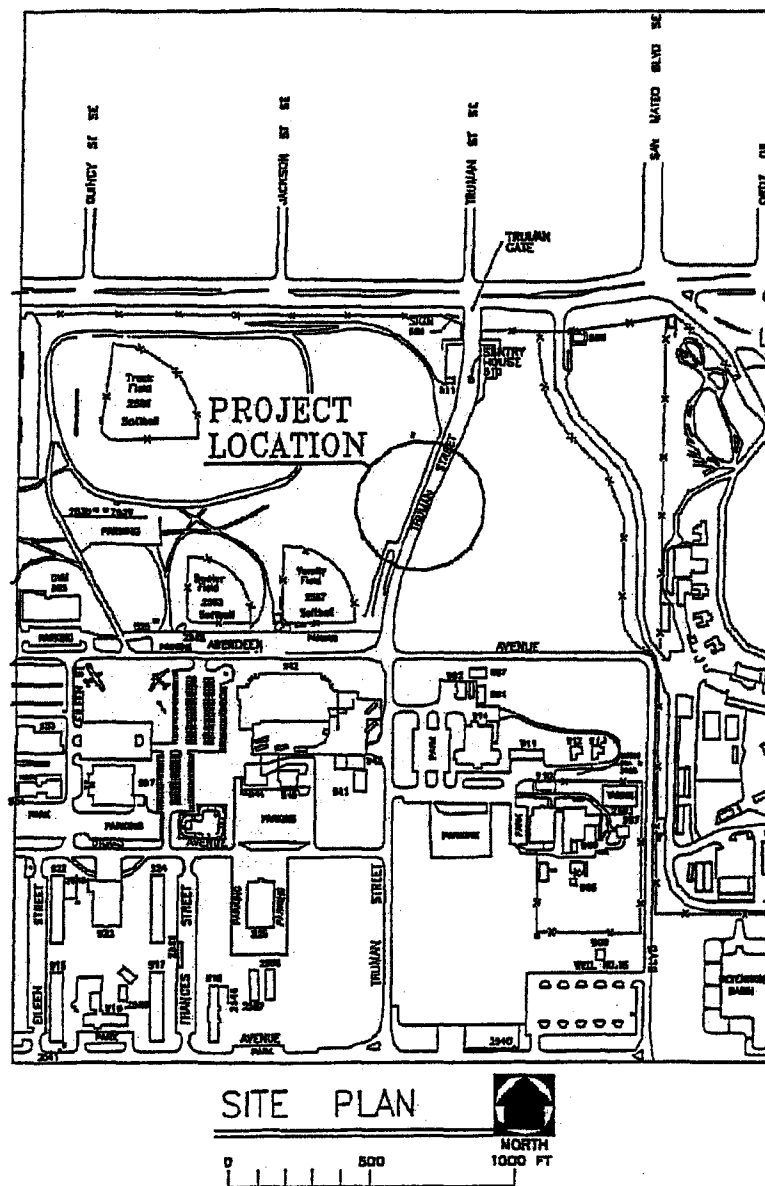
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Fire Department Structural Training Facility,
Kirtland Air Force Base

FIGURE

2-1



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Truman Gate Site Plan,
Kirtland Air Force Base

FIGURE

2-2

2.1.3 Electrical Main Switching Station

The proposed action would be to construct a second electrical main switching station located within the base perimeter (Figure 2-3). Construction activities would include the erection of a steel building on a 20 feet by 40 feet concrete slab. No structures have been identified for demolition in association with the proposed action.

2.1.4 Kirtland Underground Munitions Maintenance and Storage Complex

The proposed action would be to construct fencing and concrete and earthen barriers around the perimeter; install perimeter lighting, sensors and intrusion detector systems; install a fire suppression system and provide a redundant chiller system and uninterruptible power system (Figure 2-4).

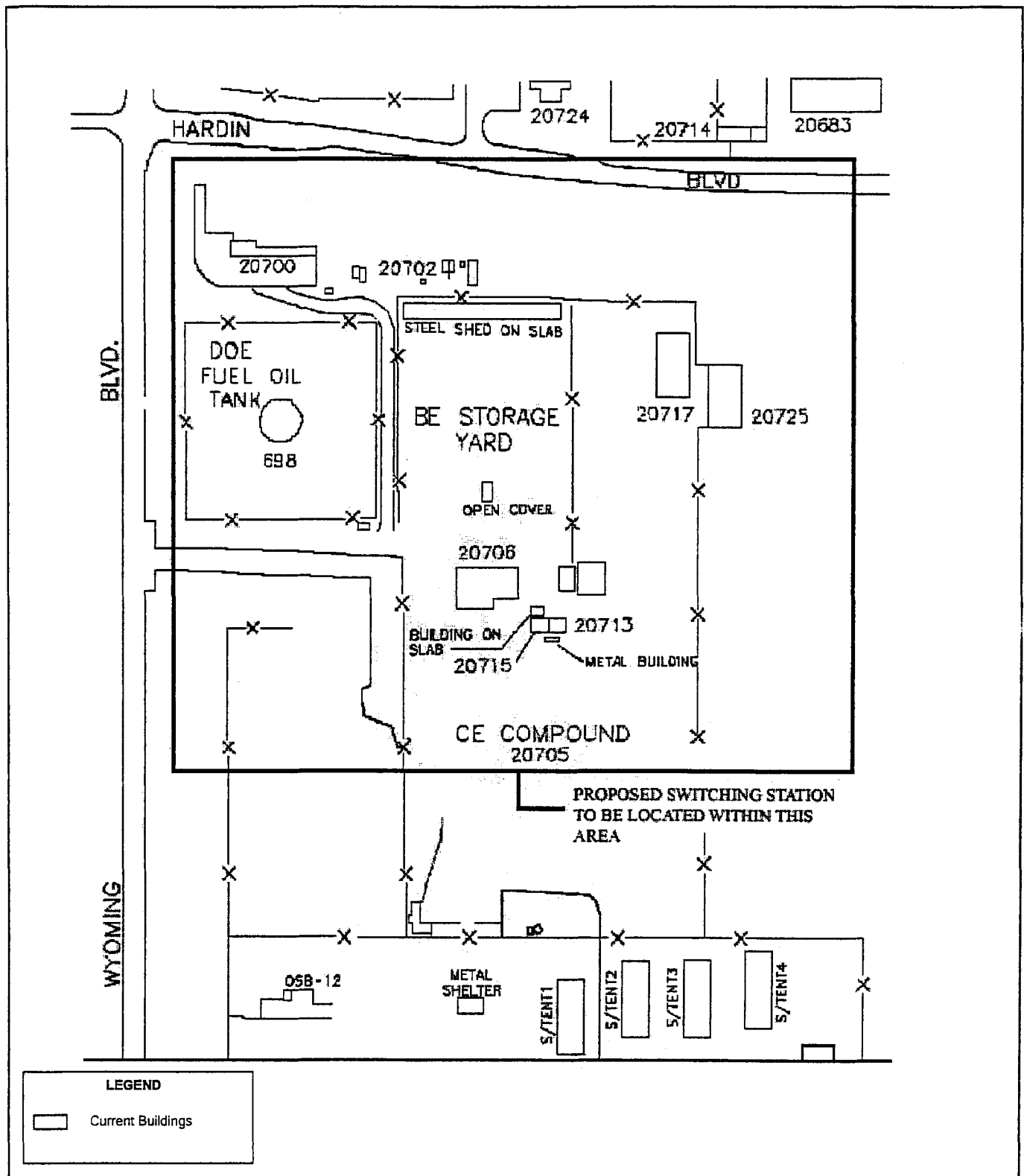
2.2 INFORMATION COMMON TO ALL PROJECTS

2.2.1 Construction and Demolition Activities

The construction and demolition activities that would be required for the 377 ABW and AFMC proposed projects have many characteristics in common. Bulldozers, backhoes, and front-end loaders would be on site throughout periods of excavation and/or site preparation (e.g., road building). Dump trucks would be on site intermittently, as would concrete-mixers and asphalt vehicles and associated machinery. Sufficient amounts of fuels, hydraulic fluids, and oils and lubricants required to support contractor vehicles and machinery would be stored on site during the project. No other hazardous materials or solvents would be stored on site.

All materiel needs (e.g., steel, concrete, asphalt) would be supplied by off-site vendors. Each of the projects would require small amounts of electricity for the construction activities. No natural gas or steam would be required.

Equipment such as bulldozers, backhoes, front-end loaders, dump trucks, associated tractor-trailers, and generators also would be required to support each of the proposed projects during demolition phases. Demolition activities would generally include the removal of non-hazardous materials such as asphalt, concrete, wood, and metals. For all of the military construction projects, non-hazardous construction and demolition debris



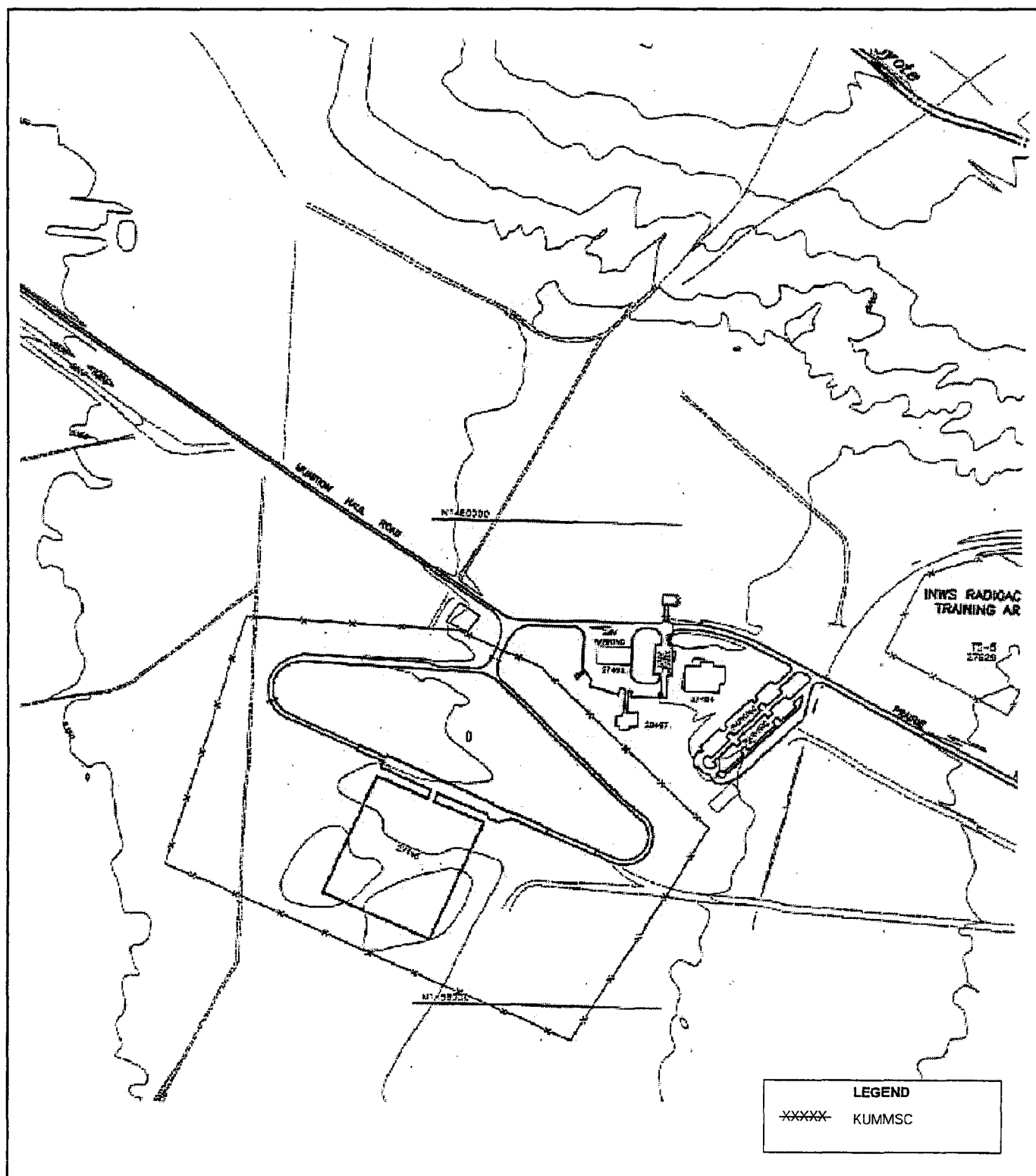
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**Electrical Switching Station Site Plan,
Kirtland Air Force Base**

FIGURE

2-3



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EA

2-6

**KUMMSC Site Plan,
Kirtland Air Force Base**

F I G U R E

2-4

would be transported to the Kirtland AFB landfill for disposal. Kirtland AFB, in an effort to meet Department of Air Force waste diversion standards, requests monthly reports by item description and weight of any materials removed for recycling or reuse by the contractor. An on-site dumpster would be provided by the contractor for other non-hazardous municipal solid waste (e.g., plastics, paper, and food waste) that could be generated by worker activity at the project sites. When the dumpster is full, the debris would be transported to a permitted Subtitle D landfill. Any cardboard waste would be separated and delivered to the base landfill or the Sandia National Laboratories, Solid Waste Transfer Station where a roll-off unit is available for cardboard recycling.

In accordance with Department of Defense Instruction 4715.4, *Pollution Prevention*, paragraph F.2.c.(3)(f), salvageable metal debris resulting from construction or demolition activities would be removed and transported to the Defense Reutilization and Marketing Office, located at Kirtland AFB, for recycling or to any certified recycling facility. If a dust nuisance or hazard occurs during the activities, water, supplied by Kirtland AFB, would be used for dust control.

A survey for hazardous materials (e.g., asbestos, lead-based paint) would take place prior to the beginning of demolition activities for all projects. Should any hazardous materials be identified, they would be handled and disposed of in accordance with the Kirtland AFB Asbestos Management Plan (United States Air Force [USAF] undated), and the 377 ABW, Environmental Management Division, Kirtland AFB Lead-based Paint Management Plan (USAF 1995) and Hazardous Waste Management Plan (USAF 2000b).

Adequate parking would be available for worker vehicles on locations at and adjacent to the project sites. Potable water would be available to the workers in coolers furnished by either the general contractor or individual crews. Restroom facilities would consist of portable chemical toilets. No additional potable water or disposition of wastewater would be required.

2.2.2 Permits and Consultations

National Pollutant Discharge Elimination system (NPDES) Storm Water General Permit – Construction (Greater than 5 Acres): Individual construction sites (or common sites of development) that will result in disturbance of five (5) or more acres of total land area, require the preparation of a Notice of Intent (NOI) to discharge and a Storm Water

Pollution Prevention Plan (SWP3) in accordance with the NPDES requirements of the Clean Water Act (CWA). The permit language for the NPDES General Permit for Storm Water Discharges from Construction Activities is detailed in the Federal Register, Monday July 6, 1998, pages 36489 through 36515. Permits are obtained from EPA Region VI and are coordinated through the Environmental Management (EM) Office.

Phase II – NPDES Storm Water General Permit – Construction (1 to 5 Acres): Individual construction sites (or common sites of development) that will result in disturbance of one (1) to five (5) acres of total land area, require the preparation of a NOI to discharge and a SWP3 in accordance with the Phase II Storm Water NPDES requirements of the CWA. These 1 to 5 acre construction activities will be permitted through the Kirtland AFB EM Flight.

The proposed actions at the Truman Gate and the Kirtland Underground Munitions Maintenance and Storage Complex (KUMMSC) would disturb more than 1, but less than 5 acres and would require the preparation of a NOI to discharge and a SWP3 in accordance with the Phase II NPDES requirements and the State of New Mexico general NPDES permit guidelines. These activities would be permitted through the Kirtland AFB EM Flight. Currently, Kirtland AFB maintains a NPDES General Storm Water permit for industrial activities.

The proposed actions at the fire department structural training facility and the electrical main switching station will not disturb more than 1 acre and, therefore, are exempt from NPDES SWP3 requirements.

A 1541 National Emission Standards for Hazardous Air Pollutants Permit and a Notice of Asbestos Demolition/Renovation Permit (40 Code of Federal Regulations 61, subpart M) would be required for demolition or renovation of those facilities containing asbestos. In addition, the construction contractor would be required to obtain a Soils Disturbance (Dust) Permit from the City of Albuquerque for those projects that would disturb in excess of 0.75 acre.

2.3 ALTERNATIVES TO THE PROPOSED ACTIONS

2.3.1 Fire Department Structural Training Facility

The No-Action Alternative is to leave the existing structural training facility in place and allow existing conditions to prevail, resulting in the inability of fire fighting personnel to meet their minimum training requirements and maintain their certification.

2.3.2 Truman Gate

The No-Action Alternative is to leave the gate in its current location allowing existing conditions to prevail, resulting in continuing traffic congestion and the compromise of base security.

2.3.3 Electrical Main Switching Station

The No-Action Alternative consists of not installing the electrical main switching station and allowing existing conditions to prevail, leaving Kirtland AFB vulnerable to terrorist attacks on the base power supply.

2.3.4 Kirtland Underground Munitions Maintenance and Storage Complex

The No-Action Alternative is to not upgrade the current conditions at the KUMMSC. As a result, existing conditions of compromised security would continue.

2.4 OTHER FUTURE ACTIONS ON THE BASE

There are no current or reasonably foreseeable actions in the vicinity of the proposed actions that should be considered as contributing to potential cumulative impacts in this document.

SECTION 3 AFFECTED ENVIRONMENT

3.1 HUMAN HEALTH AND SAFETY

3.1.1 Definition of Resource

Health and safety issues are defined as those that directly affect the continued ability to protect and preserve life and property. Health and safety issues pertain to hazards that arise from physical conditions in the workplace and the actions of people working. The field of safety is focused on prevention of accidents and mitigation of damages resulting from accidents. An accident is an undesirable, unplanned event resulting in physical harm to people, damage to property, or interruption of business. An accident may be the result of an unsafe act or unsafe condition. Each worker must make a conscious effort to work safely, despite any adverse conditions of the work environment. A high degree of safety awareness must be maintained so that safety factors involved in a task become an integral part of that task.

Safety issues typically associated with and specific to military airfields include the potential for mid-air aircraft mishaps, aircraft collisions with objects on the ground (e.g., towers, buildings, or mountains), weather-related accidents, and bird-aircraft collisions. However, since the proposed actions analyzed in this Environmental Assessment (EA) do not affect the type or frequency of aircraft operations conducted at Kirtland Air Force Base (AFB) or Albuquerque International Sunport, this safety analysis focuses only on ground-based safety issues. Because of the project's location near the runways, the distribution and significance of runway protection zones (RPZs) at the ends of the runways are discussed.

Siting requirements for munitions and ammunition storage and handling facilities are based on safety and security criteria. Air Force Manual 91-201, *Explosive Safety Standards*, requires that defined distances be maintained between munitions storage areas and other types of facilities. These distances, called quantity-distance (QD) arcs, are determined by the type and quantity of explosive material to be stored. Each explosive material storage or handling facility has QD arcs extending outward from its sides and corners for a prescribed distance. Within these QD arcs, development is either restricted or prohibited altogether in order to ensure safety of personnel and minimize potential for

damage to other facilities in the event of an accident. In addition, explosive material storage and handling facilities must be located in areas where security of the munitions can be maintained at all times.

Because children may suffer disproportionately from environmental health risks and safety risk, Executive Order (EO) 13045, *Protection of Children From Environmental Health and Safety Risks*, was introduced in 1997 to prioritize the identification and assessment of environmental health risks and safety risks that may affect children and to ensure that federal agencies' policies, programs, activities, and standards address environmental risks and safety risks to children. This section identifies the distribution of children and locations where numbers of children may be proportionately high (e.g., schools) in relation to areas potentially affected by implementation of the proposed actions.

3.1.2 Existing Conditions

3.1.2.1 Safety Preparedness

Kirtland AFB has a general safety policy relating to the performance of all activities on the base. Individuals, supervisors, managers, and commanders are expected to give full support to safety efforts. Safety awareness and strict compliance with established safety standards are expected. In the event of a mishap, incidents are investigated, lessons learned are documented, and corrective action is taken. Safety is an integral part of mission performance at Kirtland AFB, and supervisors and managers are strongly encouraged to prevent mishaps. In addition, the Kirtland AFB Disaster Preparedness Operation Plan (Kirtland AFB 1993) establishes procedures to respond to and recover from disasters or accidents, created or natural, affecting assigned and associate organizations at Kirtland AFB, as well as the surrounding area. This plan includes procedures for responding to hazardous material spills and severe weather.

3.1.2.2 Human Health

Contractor personnel for the proposed actions at Kirtland AFB would be responsible for ensuring ground safety and compliance with all applicable occupational health and safety regulations, and worker compensation programs. Contractors would also be required to

conduct construction and demolition activities in a manner that would not pose any risks to personnel in the project vicinity.

3.1.2.3 Industrial Hygiene

Exposure to hazardous materials, use of personnel protective equipment, and availability of Material Safety Data Sheets are managed under industrial hygiene programs. Industrial hygiene is the joint responsibility of bioenvironmental engineering and contractor safety departments, as applicable. These responsibilities include: reviewing all potentially hazardous workplace operations; monitoring exposure to workplace chemicals (e.g., asbestos, lead (Pb), and hazardous materials), physical (e.g., noise and radiation), and biological agents (e.g., infectious waste); recommending and evaluating controls to ensure personnel are properly protected (e.g., ventilators and respirators); and ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to exposure to workplace hazards.

3.1.2.4 Runway Protection Zones

At Department of Defense (DoD) owned airfields, land use compatibility and RPZs are addressed under the Air Installation Compatible Use Zone Program (United States Air Force [USAF] 1994). The USAF further divides RPZs into clear zones and accident potential zones. For joint use airfields, such as Albuquerque International Sunport, RPZs are established in accordance with Federal Aviation Administration (FAA) regulations. RPZs are trapezoidal zones that extend outward from the ends of active runways at commercial airports. They delineate areas recognized as having the greatest risk of aircraft mishaps, most of which occur during takeoff or landing. Development restrictions within RPZs are intended to preclude incompatible land use activities from being established in these areas that are subject to increased accident potential.

The following land uses are generally restricted or prohibited within RPZs:

- Uses that release substances into the air that would impair visibility or otherwise interfere with aircraft operation,
- Uses that emit light or reflections that would interfere with pilot vision,
- Uses that produce electrical emissions that would interfere with pilot vision,
- Uses that produce electrical emissions that would interfere with aircraft communication or navigation systems,

- Uses that attract birds or waterfowl,
- Uses that provide for structures within 10 feet of aircraft approach, departure, or transitional surfaces, and
- High population density functions such as multi-story buildings, places of assembly (e.g., churches, restaurants, schools, theaters), and high-density office uses.

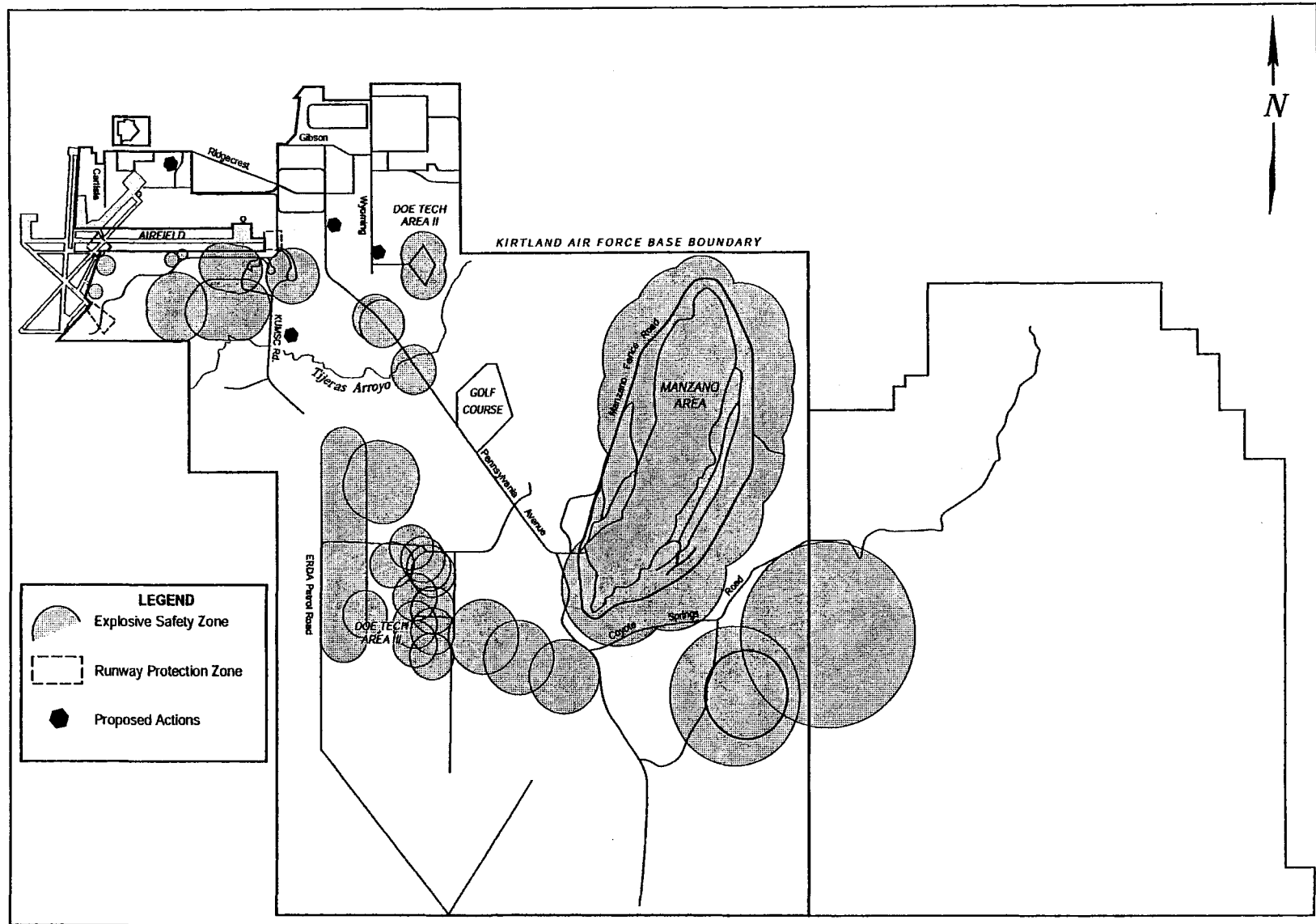
Presently, no incompatible land use is occurring in RPZs associated with the Albuquerque Sunport and current zoning designations would prohibit such development in the future. The proposed actions are not within any of these zones as shown on Figure 3-1.

3.1.2.5 Airfield Clearance Requirements

Airport obstruction-free areas and “imaginary surfaces” relative to runways and taxiways, defined by Federal Aviation Regulation Part 77.28, *Military Airport Imaginary Surfaces*, impose constraints on facilities adjacent to the runways. Aeronautical charts indicate the locations of most transmission lines and obstructions 200 feet above ground level or higher. Further, potentially hazardous obstructions are listed in the special operating procedures of the DoD Flight Information Publication AP-1B used by aviators and navigators. However, the proposed project sites are not adjacent to the runways nor would they result in tall new structures or above ground utility transmission lines that would interfere with aircraft on approach or departure.

3.1.2.6 Explosive Safety Zones

The installation requires explosive safety zones around facilities containing potentially explosive materials. Within these safety zones, other structures or activities are restricted. Figure 3-1 also shows the locations of the explosive safety; and RPZs on Kirtland AFB. The proposed actions would not be located within any of these zones (Figure 3-1).



JAN 2003

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**Locations of Explosive Safety and Runway Protection Zones
on Kirtland Air Force Base**

FIGURE

3-1

3.2 AIR QUALITY

3.2.1 Definition of Resource

Air quality in a given location is described by the concentration of various pollutants in the atmosphere. The United States (US) Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants, including ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter equal to or less than ten micrometers in diameter (PM₁₀), and Pb. The Clean Air Act (CAA) requires that all states attain compliance through adherence to the NAAQS, as demonstrated by the comparison of measured pollutant concentrations and the NAAQS.

The NAAQS represent the maximum levels of background pollution that are considered acceptable, with an adequate margin of safety to protect public health and welfare. These pollutants are typically quantified in units of parts per million, milligrams per cubic meter, or micrograms per cubic meter. The State of New Mexico has adopted additional standards for air quality, the New Mexico Ambient Air Quality Standards (NMAAQS), which apply a more stringent standard for CO, SO₂, and for the 24-hour standard for NO₂. Both the NAAQS and NMAAQS are depicted in Table 3-1.

An area where air quality is better than the NAAQS for a particular pollutant is referred to as an "attainment" area for that pollutant. An area where ambient air quality is characterized by repeated exceedances of the NAAQS is referred to as a "nonattainment" area for that pollutant. An area can be considered an attainment area for certain pollutants and a nonattainment area for others. Any area that cannot be classified on the basis of available information as meeting or not meeting the national primary or secondary ambient air quality standard for the pollutant(s) is referred to as "unclassifiable." The State of New Mexico uses the NAAQS for attainment determinations; the NMAAQS are used for permitting purposes only.

Air quality at a given location is a function of several factors, including the quantity and dispersion rates of pollutants in the region, temperature, wind speed, wind direction, the presence or absence of inversions, and topographic and geographic features of the region. For the purposes of this EA, Bernalillo County forms the region of concern for air quality.

Table 3-1. National and New Mexico Ambient Air Quality Standards

Pollutant	Averaging Time	NAAQS ^a (Primary) ^b	NMAAQs ^c
O ₃	1-hour	0.12 ppm (235 µg/m ³)	0.12 ppm (235 µg/m ³)
	8-hour	0.08 ppm (157 µg/m ³)	0.08 ppm (157 µg/m ³)
CO	8-hour	9 ppm (10 µg/m ³)	8.7 ppm (9.9 µg/m ³)
	1 hour	35 ppm (40 µg/m ³)	13.1 ppm (14.9 µg/m ³)
NO ₂	Annual	0.053 ppm (100 µg/m ³)	0.053 ppm (100 µg/m ³)
	24-hour	None	0.10 ppm (200 µg/m ³)
SO ₂	Annual	0.03 ppm (80 µg/m ³)	0.02 ppm (52 µg/m ³)
	24-hour	0.14 ppm (365 µg/m ³)	0.10 ppm (260 µg/m ³)
	3-hour	0.50 ppm (1300 µg/m ³)	0.50 ppm (1300 µg/m ³)
PM ₁₀ ^d	Annual	50 µg/m ³	60 µg/m ³
	24-hour	150 µg/m ³	150 µg/m ³
PM _{2.5}	Annual	15 µg/m ³	15 µg/m ³
	24-hour	65 µg/m ³	65 µg/m ³
Pb	Quarter	1.5 µg/m ³	1.5 µg/m ³

Source: EPA 2002. Title 40, Part 50 of the Code of Federal Regulations (CFR).

- Notes: ^a National standards, other than those based on annual averages or annual geometric means, are not to be exceeded more than once per year.
- ^b National Primary Standards express the level of air quality necessary to protect the public from any known or anticipated adverse effects of a pollutant, allowing for a margin of safety to protect sensitive members of the population.
- ^c Standards are presented for pollutant data reported in the State of New Mexico Air Quality Bureau annual report summaries.
- ^d Particulate matter equal to or less than ten microns in diameter.

NAAQS = National Ambient Air Quality Standards

O₃ = Ozone

µg/m³ = micrograms per cubic meter

NO_x = nitrogen dioxide

PM₁₀ = particulate matter equal to or less than ten micrometers in diameter

Pb = lead

NMAAQs = New Mexico Ambient Air Quality Standards

ppm = parts per million

CO = carbon monoxide

SO₂ = sulfur dioxide

PM_{2.5} = particulate matter equal to or less than 2.5 micrometers in diameter

EPA = Environmental Protection Agency

3.2.2 Existing Conditions

3.2.2.1 Climate and Regional Air Quality

The climate in the Albuquerque area is mild, sunny, and dry. High temperatures at Kirtland AFB average 90 degrees Fahrenheit (°F) and low temperatures average 58°F during the summer months. Winters are substantially cooler, with an average daily low temperature of 27°F and an average daily high temperature of 58°F (October to April). Annual average precipitation in Bernalillo County ranges from 8 inches in the county's arid valley and mesa areas to 30 inches in the mountains east of Kirtland AFB. Precipitation increases with increasing elevation and occurs primarily during the summer months (US Department of Agriculture 1977). Half of the average annual precipitation falls from July to October, with an average of 44 heavy thunderstorms occurring each year, mostly during this period. Average annual snowfall ranges from approximately 10 inches in the valley to 3 feet in the foothills and up to 10 feet in the higher mountains. The snow season in the valley extends from November to early April, but snow seldom stays on the ground for more than 1 day.

Prevailing winds in the area are from the north during the winter months, and from the south along the river valley in the summer. The average annual wind speed is 9 miles per hour, with the spring months being the windy season. Gusts up to 50 miles per hour can occur in Tijeras Canyon from the release of heavy cold air held back by the Sandia and Manzanita Mountains. The Albuquerque metropolitan area and Kirtland AFB are within New Mexico's Air Quality Control Region No. 2, which is one of 8 regions in the state. Region No. 2 includes all of northwestern New Mexico. The Albuquerque Environmental Health Department performs air quality functions in Albuquerque, and they are governed by the Albuquerque-Bernalillo County Air Quality Control Board.

In the past, NAAQS and NMAAQs violations have occurred at major intersections and in uptown Albuquerque as a result of high volumes of automobile emissions. The City of Albuquerque has been designated as being in maintenance status for CO as of 15 June 1996 and is currently in attainment for all other federally regulated pollutants (EPA 2002). CO levels are currently at their lowest since the 1970s (CO levels were consistently violated during the 1970s and 1980s). O₃ levels have been increasing since 1990 and have exceeded standards twice in 1999 (primarily oxides of nitrogen [NO_x] and

volatile organic compounds [VOCs] from automobile emissions and industry) (Albuquerque Environmental Health Department 2000).

There are ten air-monitoring sites in Bernalillo County. Five of these sites measure CO, seven measure O₃, one site measures NO_x, nine sites measure PM₁₀ (seven are gravimetric, two are automated), and five sites measure particulate matter equal to or less than 2.5 microns in diameter (two are gravimetric, three are automated).

CO emissions have decreased as a result of improved automobile technology and unusually warmer weather conditions in the area, which disperses CO emissions. Bernalillo County places restrictions on wood burning, has an oxygenated fuel programs, and enforces inspection and maintenance of automobiles, which all help to reduce CO emissions.

Fugitive dust is also a contributor to air pollution within the region because of New Mexico's dry climate. Windblown dust from local fields, streets, roads, and construction zones contributes particulate matter to the local airshed. The State of New Mexico's Air Quality Bureau is currently working with local communities to identify human-caused sources of windblown dust and taking steps to minimize dust emissions. Table 3-2 displays 1996 CO emissions data for Bernalillo County. These data are the latest available. The Albuquerque Environmental Health Department Air Quality Division has submitted an updated air emissions inventory for all criteria pollutants to the EPA. Public distribution of this inventory will be available once it is approved by the EPA.

3.2.2.2 Air Quality in the Project Area

Air quality in and around the project area is a function of normal climatic conditions in the region, combined with airborne pollutants from a variety of sources. An inventory was completed at Kirtland AFB in which a list of facilities with air emissions (both criteria pollutants and hazardous pollutants) was developed. All of the pollutants were then quantified for facilities on the list. There are a number of facilities located on the installation that generate periodic emissions. The inventory calculated the total potential air emissions using the quantities of hazardous and toxic pollutants maintained at each facility. Based upon the results of the emissions study, Kirtland AFB is subject to Title III and Title V permitting requirements of the CAA, respectively. Kirtland AFB is currently a minor source of Hazardous Air Pollutants under Title III of the CAA.

Table 3-2. CO Emissions Inventory of Bernalillo County (1996)

Source Category	CO Emissions (tpy)
On Road Sources ^a	97,450.99
Agricultural Equipment	NA
Off Road Motorcycles	1.643
Lawn and Garden Equipment	NA
Recreation (boats, snowmobiles, etc.)	NA
Aircraft	3,104.14
Construction Equipment	8,456.50
Industrial Equipment	6,985.55
Railroads	28.84
Area Sources ^b	24,524.17
Major Stationary Sources	1,432.26
TOTAL	141,984.09

Source: Albuquerque Environmental Health Department 2002.

Notes: ^aOn Road Sources include Light and Heavy Duty Gasoline and Diesel Vehicles and Trucks and Motorcycles.

^bArea Sources include residential woodburning, agricultural burning, open burning cigarette smoking, fires, natural gas combustion and propane combustion as well as small stationary point sources.

tpy = tons-per-year

A Title V permit application was submitted in December 1995 to the Albuquerque-Bernalillo County Air Pollution Control District and deemed complete in June 1996. Table 3-3 summarizes the CO emissions inventory for Kirtland AFB.

Table 3-3. Summary of Calendar Year 2000 Air Emissions for Non-exempt Sources at Kirtland AFB

Pollutant	Emissions	
	Actual ^b (tpy)	Allowable ^b (tpy)
CRITERIA POLLUTANTS AND PRECURSORS		
CO	44.2	170.0
NO _x	60.1	167.4
PM	15.3	46.9
PM ₁₀ ^a	15.2	46.3
SO _x	5.2	23.3
VOC	85.9	162.5
HAPs	5.9	12.0

Source: USAF 2001.

Notes: ^a Particular matter $\leq \mu\text{m}$ is a subset of particulate matter.

^b These cumulative totals include emissions from 20 New Mexico Administration Code Title, Section 11.41 Authority to Construct permitted sources and Title V sources.

tpy = tons-per-year

PM = particulate matter

VOC – volatile organic compounds

CO = carbon monoxide

PM₁₀ = particulate matter equal to

or less than 10 micrometers in diameter

NO_x = oxides of nitrogen

SO_x = sulfur oxides

HAPs = hazardous air pollutants

3.2.2.3 State Implementation Plan

The CAA Amendments of 1990 place most of the responsibility on the states to achieve compliance with the NAAQS. The primary vehicle for implementation is the State Implementation Plan (SIP), which the EPA requires each state to prepare. A SIP is a compilation of goals, strategies, schedules, and enforcement actions that would lead the state into compliance with all federal air quality standards. Changes to the compliance schedule or plan must be incorporated into the SIP, which outlines measures by which the state can attain the NAAQS for criteria pollutants. Areas not in compliance with a standard can be declared a nonattainment area by the EPA and/or the appropriate state or local agency.

Estimated air quality measurements that apply to the air quality in the vicinity of Kirtland AFB are taken from air monitoring stations located near the installation. The closest of these stations, located about 4,000 feet north of the base, monitors CO and PM₁₀. These air-monitoring stations are operated and maintained by the Albuquerque Environmental Health Department.

The primary source of air pollutants at Kirtland AFB is privately owned vehicles. Kirtland AFB, through its transportation management program, is engaged in a phased conversion of government-owned gasoline-powered vehicles to natural gas. Other primary emission sources on the installation include aircraft operations and fire fighting training. Major hydrocarbon emission sources include fuel evaporative losses from fuel storage, transfer, and use.

3.3 NOISE

3.3.1 Definition of Resource

Noise is defined as unwanted sound or, more specifically, as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying (Federal Interagency Committee on Noise [FICON] 1992). Human response to noise varies according to the type and characteristics of the noise, distance between the noise source and the receptor, sensitivity of the receptor and time of day.

Due to wide variations in sound levels, sound is measured in decibels (dB), which is a unit of measure based on a logarithmic scale (e.g., 10-dB increase corresponds to a 100 percent increase in perceived sound). Under most conditions, a 5-dB change is necessary for noise increases to be noticeable to humans (EPA 1978). Sound measurement is further refined by using an A-weighted decibel scale (dBA) that emphasizes the range of sound frequencies that are most audible to the human ear (between 1,000 and 8,000 cycles per second).

A noise-sensitive receptor is defined as a land use where people involved in indoor or outdoor activities may be subject to stress or considerable interference from noise. Such locations or facilities often include residential dwellings, hospitals, nursing homes, educational facilities, and libraries. Sensitive receptors may also include noise-sensitive domestic animals or wildlife species.

A Day-Night Average A-Weighted Sound Level (DNL) is a noise metric that averages A-weighted sound levels over a 24-hour period, with an additional 10-dB penalty added to noise events occurring between 10:00 p.m. and 7:00 a.m. This penalty is intended to compensate for generally lower background noise levels at night and the annoyance of nighttime noise events. DNL is the preferred noise metric of the US Department of Housing and Urban Development (HUD), US Department of Transportation, FAA, EPA, the Veterans' Administration, and DoD. The HUD uses guidelines established by FICON to determine acceptable levels of noise exposure for various types of land use (Table 3-4).

Ambient background noise in urbanized areas typically varies from 60 to 70 dBA, but can be higher; suburban neighborhoods experience ambient noise levels of approximately 45 to 50 dBA (EPA 1978). Table 3-5 identifies noise levels associated with common indoor and outdoor activities and settings. This table further identifies subjective human judgment of noise levels, specifically the perception of noise levels doubling or being halved.

Table 3-4. Recommended Land Use for DNL-Based Noise Zones⁽¹⁾

Land Use	Noise Zones		
	Zone I (DNL < 65)	Zone II (DNL 65-75)	Zone III (DNL > 75)
Residential	Acceptable	Generally unacceptable ⁽²⁾	Unacceptable
Manufacturing	Acceptable	Acceptable	Acceptable ⁽³⁾
Transportation communication, and utilities	Acceptable	Acceptable	Acceptable
Trade	Acceptable	Acceptable	Acceptable ⁽³⁾
Public services	Acceptable	Generally unacceptable ⁽²⁾	Unacceptable
Cultural, recreational, and entertainment	Acceptable	Generally unacceptable ⁽²⁾	Unacceptable
Agricultural	Acceptable	Acceptable	Acceptable
Livestock farming and animal breeding	Acceptable	Acceptable	Unacceptable

Source: FICON 1992

Notes: ⁽¹⁾ DNL is the dBA level averaged over a 24-hour period.

⁽²⁾ Use is generally discouraged; however, if allowed, sound attenuation techniques should be required.

⁽³⁾ For a DNL level above 75 dBA, sound attenuation techniques should be required.

DNL = Day-Night Average A-Weighted Sound Level

3.3.2 Existing Conditions

The City of Albuquerque's Noise Ordinance of 1994 outlines noise regulations for the city. Table 3-6 shows general sound-level limits for the city. Localized sources of noise in the area, both on and off base, include military and civilian aircraft operations at Albuquerque International Sunport and vehicle traffic at Kirtland AFB. The proposed actions assessed in this EA would have no effect on aircraft noise, but aircraft noise is mentioned because commercial and military aircraft operations at Albuquerque International Sunport are the primary sources of noise in the area. The Albuquerque International Sunport requires that all aircraft implement certain noise abatement procedures, which include restricted use of runways for aircraft at certain times and restrictions of time and locations of night engine runups. Airport officials also conduct noise monitoring at certain sites and monitor land use patterns for compatibility with City of Albuquerque Land Use Guidance (Albuquerque Economic Development Inc. 1996).

Table 3-4. Recommended Land Use for DNL-Based Noise Zones⁽¹⁾

Land Use	Noise Zones		
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Manufacturing	Acceptable	Acceptable	Acceptable ⁽³⁾
Transportation communication, and utilities	Acceptable	Acceptable	Acceptable
Trade	Acceptable	Acceptable	Acceptable ⁽³⁾
Public services	Acceptable	Generally unacceptable ⁽²⁾	Unacceptable
Cultural, recreational, and entertainment	Acceptable	Generally unacceptable ⁽²⁾	Unacceptable
Agricultural	Acceptable	Acceptable	Acceptable
Livestock farming and animal breeding	Acceptable	Acceptable	Unacceptable

Source: FICON 1992

Notes: ⁽¹⁾ DNL is the dBA level averaged over a 24-hour period.

⁽²⁾ Use is generally discouraged; however, if allowed, sound attenuation techniques should be required.

⁽³⁾ For a DNL level above 75 dBA, sound attenuation techniques should be required.

DNL = Day-Night Average A-Weighted Sound Level

3.3.2 Existing Conditions

The City of Albuquerque's Noise Ordinance of 1994 outlines noise regulations for the city. Table 3-6 shows general sound-level limits for the city. Localized sources of noise in the area, both on and off base, include military and civilian aircraft operations at Albuquerque International Sunport and vehicle traffic at Kirtland AFB. The proposed actions assessed in this EA would have no effect on aircraft noise, but aircraft noise is mentioned because commercial and military aircraft operations at Albuquerque International Sunport are the primary sources of noise in the area. The Albuquerque International Sunport requires that all aircraft implement certain noise abatement procedures, which include restricted use of runways for aircraft at certain times and restrictions of time and locations of night engine runups. Airport officials also conduct noise monitoring at certain sites and monitor land use patterns for compatibility with City of Albuquerque Land Use Guidance (Albuquerque Economic Development Inc. 1996).

volumes entering and exiting the base through the Gibson Boulevard gate occur between the hours of 6:30 a.m. and 8:30 a.m. and between the hours of 3:30 p.m. and 5:30 p.m. Traffic noise on Gibson Boulevard results in a 65-dBA DNL contour estimated to be about 750 feet from the roadway centerline (Military Traffic Management Command 1993). The south end of San Mateo Avenue is a small, local road on a portion of the base that experiences far less traffic than does Gibson Boulevard. In addition, it lies immediately adjacent to the primary east-west runway on base and aircraft noise dominates the local noise environment.

The proposed construction projects will generate noise from construction equipment and construction vehicles. Table 3-7 shows typical noise levels generated from various types of construction equipment.

3.4 LAND USE

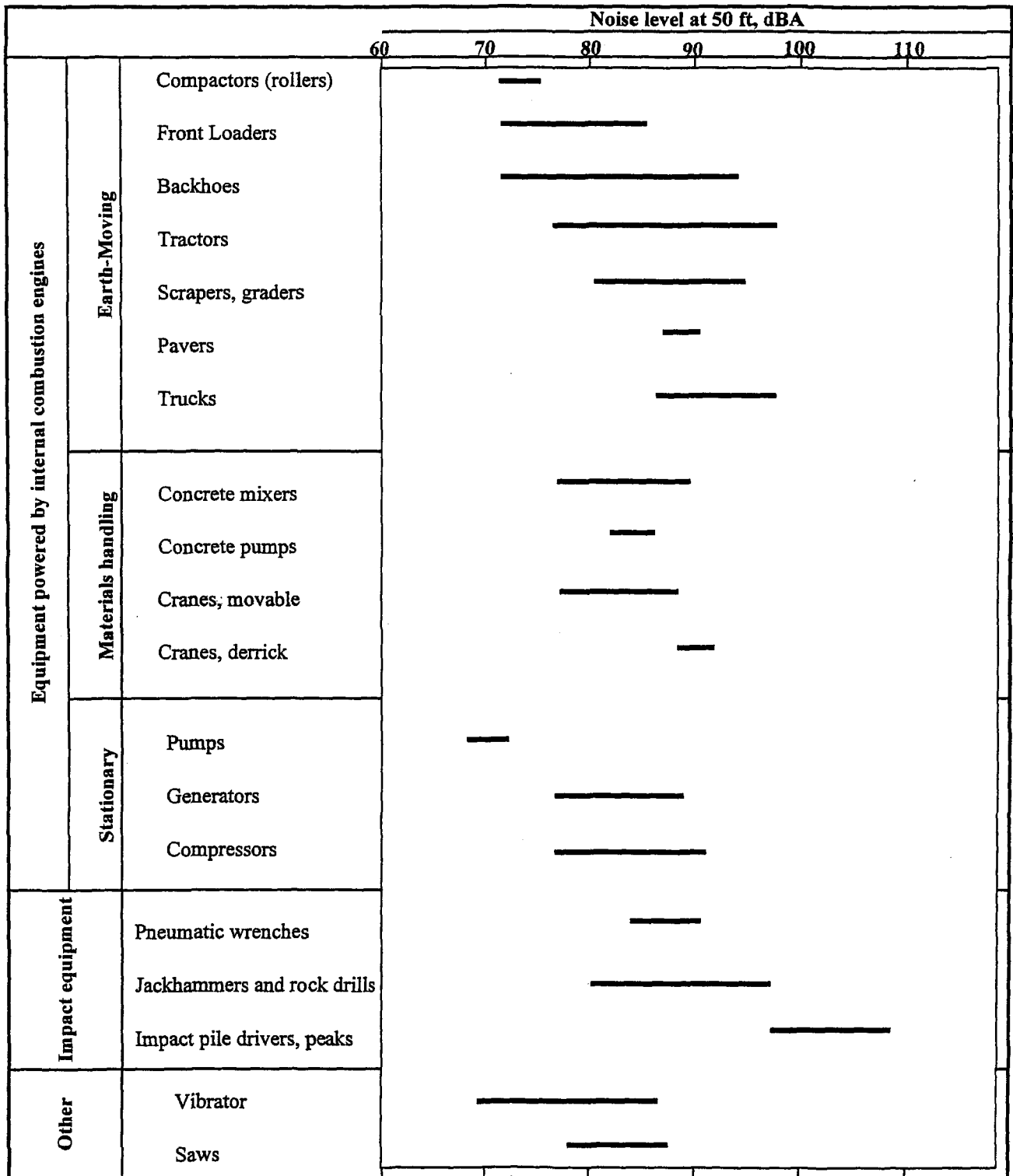
3.4.1 Definition of Resource

Land use is the classification of either natural or human-modified activities occurring at a given location. Natural land use includes rangeland and other open or undeveloped areas. Human-modified land use classifications include residential, commercial, industrial, communications and utilities, agricultural, institutional, recreational, and other developed areas. Land use is regulated by management plans, policies, regulations, and ordinances (e.g., zoning) that determine the type and extent of land use allowable in specific areas and protect specially designated or environmentally sensitive areas.

3.4.2 Existing Conditions

In the vicinity of Kirtland AFB, land use varies from urban to open rangeland. Kirtland AFB is bordered on the north and west by the City of Albuquerque and its suburbs and on the south by the Isleta Pueblo, with the Cibola National Forest bordering the east. Immediately north of the installation, land use is predominantly urban. Open spaces and forestland are present northeast of the base. West of Kirtland AFB, land use is a mixture of urban areas and open space. South of the installation, the Isleta Pueblo lands are generally open space and forest or vacant land.

Table 3-7. Construction-Equipment Noise Ranges



Source: EPA 1972.

Notes: Based on limited available data samples

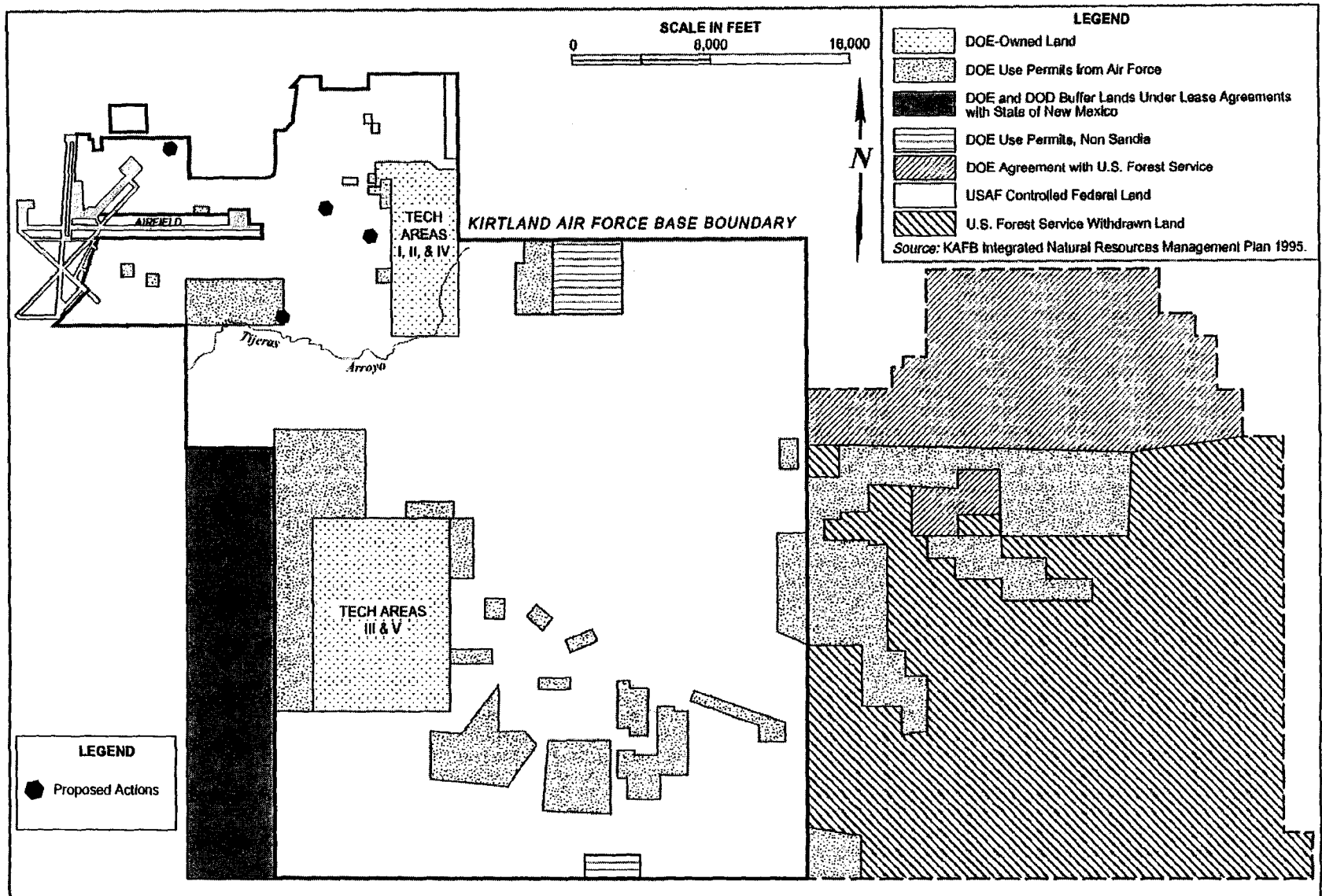
3.4.2.1 Kirtland AFB Land Use

Kirtland AFB currently provides support for a variety of missions that include every primary mission traditionally fulfilled by the USAF, as well as many specialized activities less common to other USAF bases. In particular, Kirtland AFB is one of the nation's leading research, development, test, and evaluation facilities, with more than three-fourths of the base devoted to these activities. Kirtland AFB is among the largest bases (land area) owned by the USAF at over 52,000 acres.

As the host organization at Kirtland AFB, the 377th Air Base Wing (377 ABW) supports more than 200 associate organizations and provides support for wartime mobility requirements in various critical specialties. The two largest tenants are Sandia National Laboratories New Mexico and the Air Force Research Laboratory. Other major tenants include the Air Force Operational Test and Evaluation Center, the Field Command Defense Special Weapons Agency, the Air Force Safety Center, the Air Force Inspection Agency, and the Air Force Security Police Agency.

Kirtland AFB manages a wide variety of land ownerships and land use agreements with multiple state and federal agencies (Figure 3-2). The land at Kirtland AFB is primarily owned by the USAF, but several other ownerships and leases apply. The eastern portion of Kirtland AFB is primarily Cibola National Forest land leased to the USAF by the US Forest Service. These lands have been withdrawn from public use and are known as the Withdrawal Area. The US Department of Energy owns certain areas of the base and leases other areas from the USAF (USAF 1995). A buffer zone along the western boundary, known as McCormick Ranch, is USAF land operated by Air Force Research Laboratory (Dow 1998).

The airfield complex serving Kirtland AFB is shared with Albuquerque International Sunport, located adjacent to the northwest corner of the base. Airfield operations and aircraft support facilities are concentrated in the airfield complex area. The remainder of the intensive development on base (e.g., administrative, housing, medical, and commercial services) is located north and east of the airfield complex but limited to the northwest corner of the base in the cantonment area. The proposed actions are within this area.



JAN 2003

EA

Kirtland Air Force Base Land Agreements

FIGURE

3-2

3.4.2.2 City of Albuquerque Land Use

Kirtland AFB is located southeast of Albuquerque, adjacent to the Albuquerque International Sunport. Residential areas in the north and east sections of Albuquerque contain both single-family and multi-family dwellings. These neighborhoods include public and private grade schools and public parks. The University of New Mexico, the New Mexico State Fairgrounds, and numerous commercial businesses make up the central business district, which lies adjacent to the north and west boundaries of Kirtland AFB. St. Joseph's, Presbyterian, and Memorial Hospitals are located just west of Kirtland AFB.

Southwest of Kirtland AFB, land is primarily vacant. Montesa Park, which is located within the Tijeras Arroyo, is in this southern section and contains a number of public facilities. Land uses just to the east of the Rio Grande River, which runs north-to-south through the City of Albuquerque, range from vacant marshland to commercial and industrial areas. West of the Rio Grande River, land uses consist primarily of single-family residential with some commercial and industrial areas. Schools and parks are also located in this area. The southwest section of Albuquerque contains commercial, industrial, and residential land uses, as well as the Rio Grande Zoological Park.

3.5 GEOLOGICAL RESOURCES

3.5.1 Definition of Resource

The geological resources of an area consist of all soil and rock materials. For the purpose of this study, the terms "soil" and "rock" refer to unconsolidated and consolidated earth materials, respectively. The geology of an area includes mineral deposits, notable landforms, tectonic features, and fossil remains.

3.5.2 Existing Conditions

3.5.2.1 Geology

Kirtland AFB is situated in the eastern portion of the Albuquerque Basin, one of the largest of a series of north-trending basins measuring 90 miles long and 30 miles wide (Fenneman 1931). The basin extends from the gently sloping area near the Rio Grande

River to the steep foothills and slopes of the Sandia and Manzanita Mountains. The basin is demarcated to the south by the Socorro Channel, to the north by the Nacimiento Uplift, to the west by the Puerco Plateau and Lucero Uplift, and to the east by the Sandia and Manzanita Mountains. The Albuquerque Basin is at its widest point in the Kirtland AFB area and tapers off at its north and south ends. Large-scale faulting which occurred between 11.2 and 5.3 million years ago deepened the basin and tilted the local mountains. As a result, basin deposits (and those at Kirtland AFB) are a mixture of volcanic and sedimentary rocks (Energy Research and Development Administration 1977). Different landforms within the basin include mesas, benches, stream terraces, low hills, ridges, and graded alluvial slopes (Lozinsky et al. 1991; Kelley 1977; Kelley and Northrup 1975). Elevations at Kirtland AFB range from 5,200 feet in the west to almost 8,000 feet in the Manzanita Mountains. Several canyons are found within the boundary of Kirtland AFB. Lurance Canyon and Sol se Mete Canyon are located in the northeastern portion of the base, near the boundary with the Cibola National Forest in the Withdrawal Area.

Most of the Albuquerque Basin consists of poorly consolidated sediments that eroded from the surrounding mountains following previous faulting and geologic activity. These sediments, known as the Santa Fe Group, are overlain in places by the 5.3 to 1.6-million-year-old Ortiz Gravel deposits. In certain places, Rio Grande River and volcanic deposits are interspersed.

3.5.2.2 Soils

The dominant soils of Albuquerque Basin, in which Kirtland AFB is located, are well drained and loamy, with minor amounts of gravelly and stony soils along the mountains and arroyos. A variety of soil associations occur on Kirtland AFB: Bluepoint-Kokan association, Gila-Vinton-Brazito association, Madurez-Wink association, Tijeras-Embudo association, Seis-Orthids association, and Kolob-Rock outcrop association.

The Gila-Vinton-Brazito and Bluepoint-Kokan soil associations are deep, level to steep, soils on flood plains dissected terraces. They are well drained to excessively drained loamy, sandy and gravelly soils. Elevations range from 4,900 to 6,000 feet. These soil associations are moderately to severely susceptible to water erosion.

The Madurez-Wink and Tijeras-Embudo soil associations are deep, level to moderately steep, soils on mesas. They are well drained loamy and gravelly soils. Elevations range

from 4,800 to 6,500 feet. These soil associations are slightly to moderately susceptible to water erosion.

The Seis-Orthids and Kolob-Rock soil associations are shallow to deep soils on mountains and footslopes. They are well drained very cobbly, stony, very stony and loamy soils. Elevations range from 6,000 to 10,500 feet. These soil associations are moderately to severely susceptible to water erosion.

3.5.2.3 Proposed Actions

Fire Department Structural Training Facility. The major soil type that occurs in the general area of the proposed action is Embro gravelly fine loam. Embro gravelly fine loam is a deep, well drained soil. The soil is moderately alkaline. Permeability is moderate in the upper 20 inches and very rapid below. Available water capacity is 3 to 4 inches. Runoff is medium and the hazard of water erosion is moderate.

Truman Gate. The major soil type that occurs in the general area of the proposed action is Latene sandy loam. Latene sandy loam is a deep, well drained soil. The soil is strongly calcareous and moderately alkaline. Permeability is moderate and available water capacity is 6 to 7 inches. Runoff is medium and the hazard of water erosion and soil blowing is moderate.

Electrical Main Switching Station. The major soil type that occurs in the general area of the proposed action is Embro gravelly fine loam. Embro gravelly fine loam is a deep, well drained soil. The soil is moderately alkaline. Permeability is moderate in the upper 20 inches and very rapid below. Available water capacity is 3 to 4 inches. Runoff is medium and the hazard of water erosion is moderate.

Kirtland Underground Munitions Maintenance and Storage Complex (KUMMSC). The major soil type that occurs in the general area of the proposed action is Tome very fine sandy loam. Tome very fine sandy loam is a deep, well drained soil. The soil is moderately to strongly alkaline. Permeability is moderately slow and available water capacity is 9.5 to 10.5 inches. Runoff is medium and the hazard of water erosion is moderate.

3.6 WATER RESOURCES

3.6.1 Definition of Resource

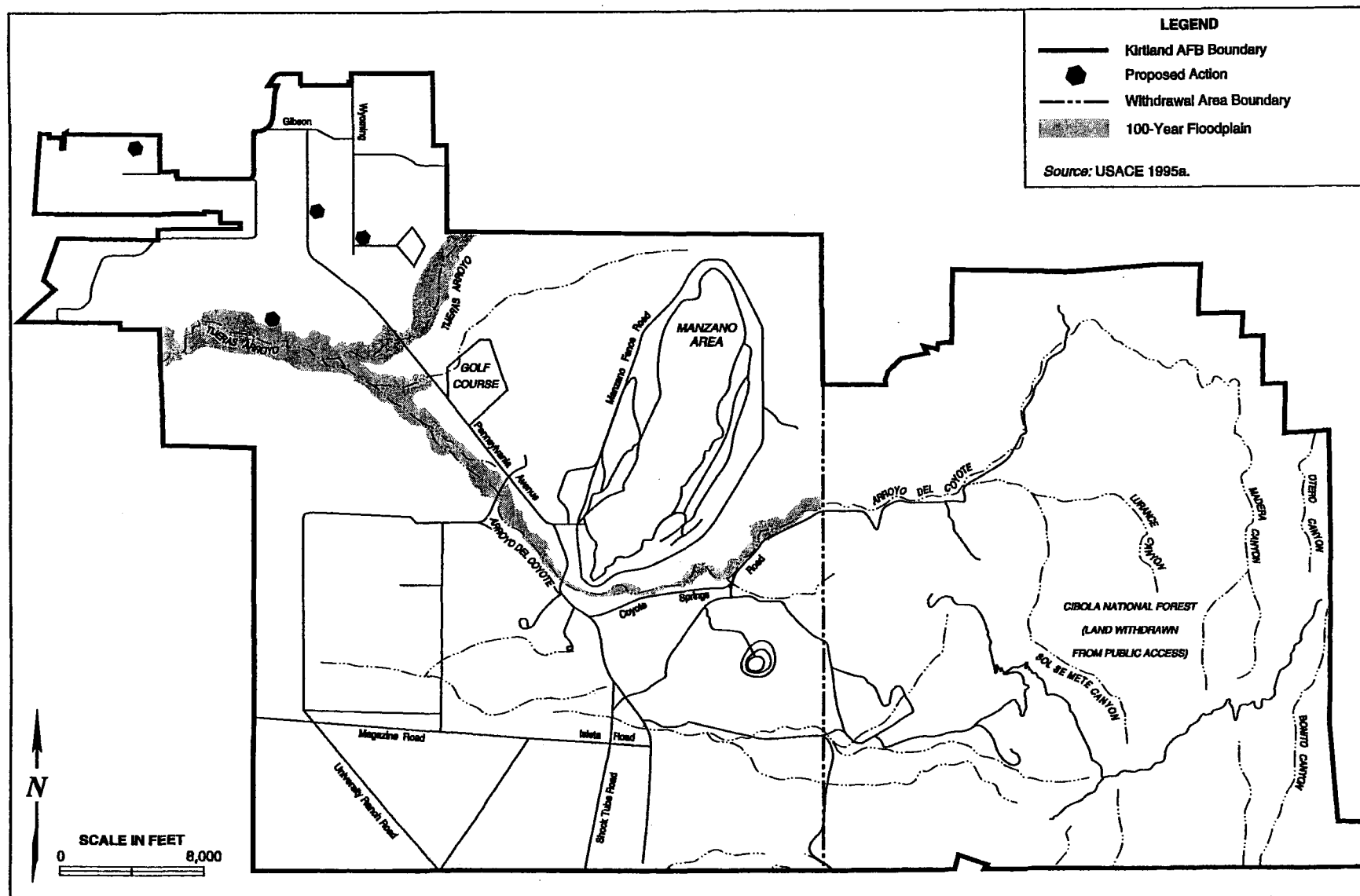
Water resources include all surface and groundwater resources located within the proposed project area. Surface water resources are comprised of lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Groundwater comprises the subsurface hydrologic resources of the physical environment and is an essential resource in many areas. Groundwater is commonly used for potable water consumption, agricultural irrigation, and industrial applications. Groundwater properties are often described in terms of depth to aquifer, aquifer or well capacity, water quality, and surrounding geologic composition.

Other issues relevant to water resources include watershed areas affected by existing and potential runoff and hazards associated with 100-year floodplains. Floodplains are often belts of low, level ground present on one or both sides of a stream channel and are subject to either periodic or infrequent inundation by floodwater. Inundation dangers associated with floodplains have prompted federal, state, and local legislation that limit development in these areas largely to recreation and preservation activities. The 100-year floodplain on Kirtland AFB is shown on Figure 3-3.

3.6.2 Existing Conditions

3.6.2.1 Surface Water

The Rio Grande River is the major surface hydrologic feature in central New Mexico, flowing north to south through Albuquerque approximately 5 miles west of Kirtland AFB. The East Mesa, on which Kirtland AFB is located, has a west-southwest ground surface slope of about 250 feet per mile near the mountains to 20 feet per mile near the Rio Grande River. The mesa's width ranges from 3 miles in its northern section to 9 miles in its southern section. Minor surface water bodies exist on the East Mesa as small wetlands, such as Coyote Springs and Sol se Mete Spring or as small reservoirs such as the ponds located at Tijeras Arroyo Golf Course.



JAN 2003

EA

100-Year Floodplain on Kirtland Air Force Base

FIGURE

3-3

East Mesa surface water occurs in the form of storm water sheet flow that drain into small gullies when it rains. The primary surface channels that drain runoff from Kirtland AFB to the Rio Grande River are the Tijeras Arroyo and Arroyo del Coyote. These arroyos are both water-carved channels that are dry for most of the year. Precipitation reaches these arroyos through a series of storm drains, flood canals, and unnamed smaller arroyos. Surface water enters Tijeras Arroyo where it crosses the northeast corner of Kirtland AFB and then flows south of Albuquerque International Sunport, draining eventually into the Rio Grande River (USAF 1991). Arroyo del Coyote drains into Tijeras Arroyo approximately one mile west of the Tijeras Arroyo Golf Course and receives surface water from the eastern portion of the base and from the Manzanita Mountains.

Both Arroyo del Coyote and Tijeras Arroyo flow intermittently during heavy thunderstorms and spring snowmelt (US Army Corps of Engineers [USACE] 1979a). However, nearly 95 percent of the precipitation that flows through the Tijeras Arroyo evaporates before it reaches the Rio Grande River. The remaining 5 percent is equally divided between runoff and groundwater recharge (USAF 1991). The proposed actions are located approximately one mile or greater north of the Tijeras Arroyo waterway. The Kirtland AFB Storm Water Pollution Prevention Plan includes these areas of the base.

3.6.2.2 Floodplains

Flooding on Kirtland AFB generally occurs between May and October during high-intensity thunderstorms (USACE 1979b). Tijeras Arroyo and Arroyo del Coyote floods are characterized by high peak flows, small volumes, and short duration. Although flooding occurs infrequently, vegetation can encroach into these arroyos' channels, obstructing the flow of water leading to flooding. A 100-year floodplain encompasses these arroyos and follows their path. The locations for the proposed actions lie three-fourths of a mile or greater outside of the 100-year floodplain associated with the Tijeras Arroyo.

3.6.2.3 Groundwater

Kirtland AFB is located within the limits of the Rio Grande Underground Water Basin, which has been defined by the State of New Mexico as a natural resource area and has been designated as a "declared underground water basin." The state regulates it as a sole

source of potable water. The average depth to groundwater beneath Kirtland AFB is 450 to 550 feet. The Rio Grande Basin's source of groundwater is the Santa Fe Aquifer. The volume of recoverable fresh groundwater in the Rio Grande Basin is estimated at 2.3 billion-acre feet.

Albuquerque relies on groundwater as its sole potable water source. The municipal water system of Albuquerque has a total city system capacity of 289 million gallons-per-day; the current city usage is less than 40 percent of the total city system capacity. A localized change in the direction of flow of the regional groundwater flow beneath Kirtland AFB has occurred towards Albuquerque because of Albuquerque's extensive water pumping. Recharge of the Santa Fe Aquifer is most likely to occur east of the installation in the Manzanita Mountains where the sediment material favors rapid infiltration (USAF 1991).

The US Geological Survey (USGS) performed a study in 1993-1994 to provide an understanding of the Albuquerque basin groundwater supply. Public supply, industrial, and military requirements (Kirtland AFB) in the Albuquerque area are primarily met by groundwater supply. Recent studies indicate that the most productive zone of the aquifer system is much less extensive than was formerly assumed. Water level declines, greater than those predicted by hydrologic investigations in the early 1960s, have occurred in the basin. A study by the City of Albuquerque Water Conservation Office (CAWCO) cites the USGS 1993 study and notes that water levels have dropped as much as 160 feet since the 1960s (CAWCO 1997). In the fall of 1994, the city developed a comprehensive water policy that targets a 30 percent reduction in use through conservation. This plan was adopted in March 1995 with a goal of reducing water use per person by 30 percent from 250 to 175 gallons-per-day by 2004 (CAWCO 1998).

3.7 BIOLOGICAL RESOURCES

3.7.1 Definition of Resource

Biological resources include native or naturalized plants and animals and the habitats in which they occur, and native or introduced species found in landscaped or disturbed areas. Protected species are defined as those listed as threatened, endangered, or proposed or candidate for listing by the US Fish and Wildlife Service (USFWS); New Mexico Energy, Minerals, and Natural Resources Department (NMEMNRD); and/or New Mexico Department of Game and Fish (NMDGF). Federal species of concern,

formerly known as candidate category 2 species, are not protected by law; however, these species could become listed, and therefore are given consideration when addressing biological resource impacts of an action. The New Mexico Natural Heritage Program (NMNHP) also maintains a listing of threatened or endangered species. NMEMNRD holds the responsibility for identifying and listing sensitive plant species considered in this analysis. Animal species of special concern to the NMDGF are also considered.

Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the Endangered Species Act and sensitive ecological areas as designated by state or federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer/winter habitats).

Jurisdictional wetlands are those subject to regulatory authority under Section 404 of the Clean Water Act (CWA) and EO 11990, *Protection of Wetlands*. Wetlands are defined by the USACE (Federal Register 1982) and EPA (Federal Register 1980) as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3(b), 1984).

3.7.2 Existing Conditions

Kirtland AFB lies at the intersection of 4 major North American physiographic and biotic provinces: the Great Plains, Great Basin, Rocky Mountains, and Chihuahuan Desert. Vegetation and wildlife found within Kirtland AFB are influenced by each of these provinces, the Great Basin being the most dominant.

3.7.2.1 Vegetation

The vegetation scheme at Kirtland AFB consists of four main plant communities: grassland, pinyon-juniper, ponderosa, and riparian/wetland/arroyo. Transitional areas are found between these communities and contain a mixture of representative species from each bordering vegetation zone. Two transitional zones have been delineated in the grassland community and include the juniper-grassland and sagebrush steppe. The grassland and pinyon-juniper are the dominant vegetative communities at Kirtland AFB.

The riparian/wetland/arroyo community is confined to isolated areas inundated by surface water during at least some part of the year. Native vegetation communities are shown in Figure 3-4. Only the grassland community is described in this section because of the locations of the proposed actions.

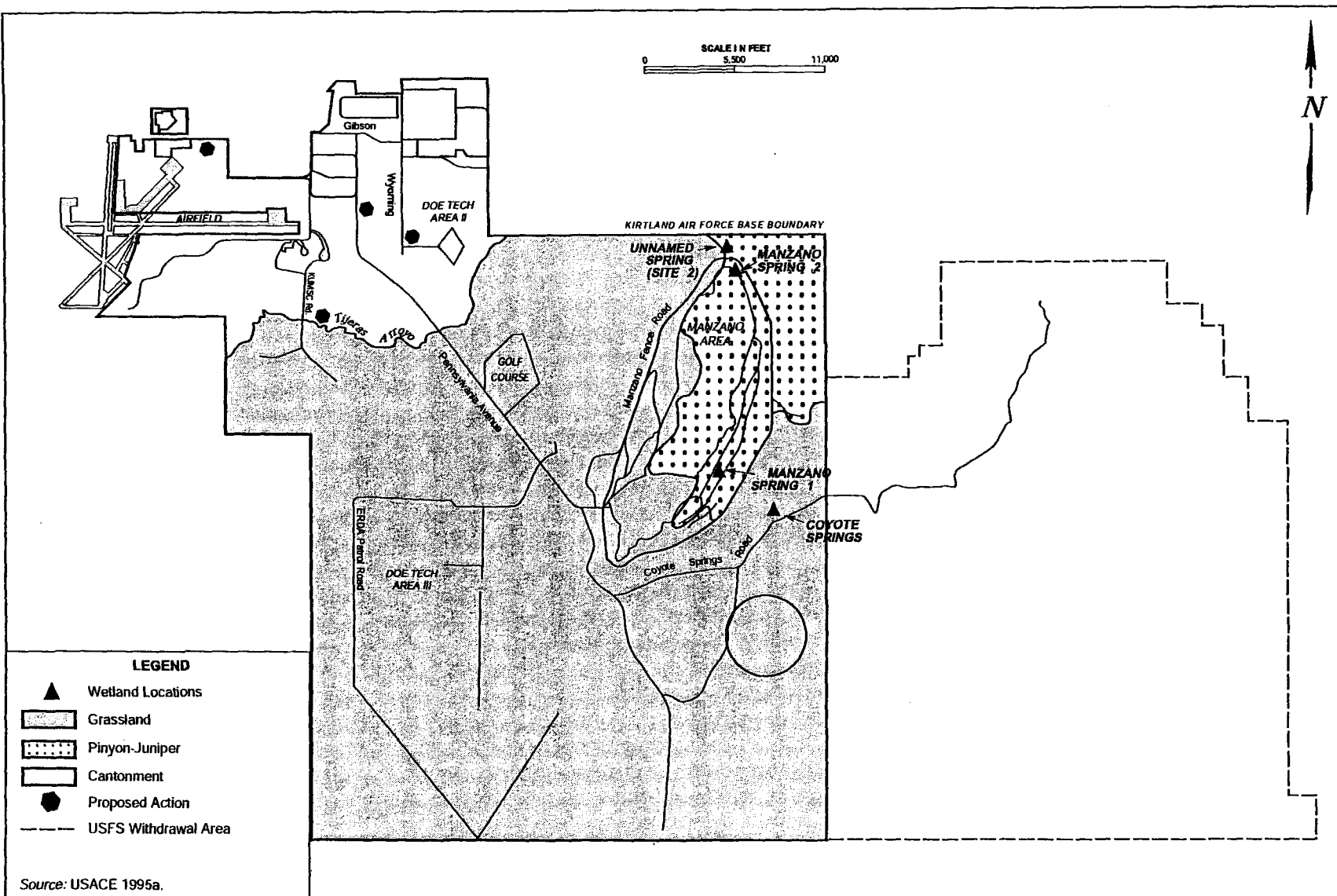
Site locations for the various proposed actions are either currently occupied by existing buildings or are located in semi-improved areas that consist largely of annual weeds, early successional perennials, and some native grasses and shrubs with areas of bare ground. Vegetation typical of the surrounding grassland community includes broom snakeweed (*Gutierrezia sarothrae*), Great Plains yucca (*Yucca glauca*), Indian ricegrass (*Oryzopsis hymenoides*), purple three-awn (*Artemisia purpurea*), black grama (*Bouteloua eriopoda*), blue grama (*Bouteloua gracilis*), galleta (*Hilaria jamesii*), foxtail barley (*Hordeum jubatum*), four-wing saltbush (*Atriplex canescens*), sand sagebrush (*Artemisia filifolia*), needle-and-thread grass (*Stipa comata*), globemallows (*Sphaeralcea* spp.), Siberian elm (*Ulmus pumila*), Mormon tea (*Ephedra trifurca*), New Mexican bitterweed (*Senecio nemorensis*), ring muhly (*Muhlenbergia torreyi*), plains prickly-pear (*Opuntia polyacantha*), and bottlebrush squirrel tail (*Elymus longifolius*).

3.7.2.2 Wetlands

The USACE Albuquerque District has prepared a map of Kirtland AFB showing known wetland locations, a description of waters of the US regulated pursuant to Section 404 of the CWA, and a restatement of the location of the 100-year floodplain determined in a 1979 study (USACE 1995). (Floodplains are discussed in Section 3.6, Water Resources). The wetlands recorded on base are adjacent to 6 springs located north and east of the Manzano Base Area. There are no wetlands or riparian areas in the vicinity of the proposed facilities (refer to Figure 3-4).

3.7.2.3 Wildlife

Wildlife communities at Kirtland AFB are typical of woodland and grassland types of habitat within the central New Mexico region. The proposed actions lie within the grassland association and are located in the northwestern region of Kirtland AFB. Common birds associated with the grassland association at Kirtland AFB include horned lark (*Eremophila alpestris*), scaled quail (*Callipepla squamata*), Mourning dove (*Zenaidura macroura*), greater roadrunner (*Geococcyx californianus*), American crow (*Corvus*



JAN 2003

EA**Native Vegetation and Wetland Locations on Kirtland Air Force Base**

FIGURE

3-4

brachyrhynchos), northern mockingbird (*Mimus polyglottos*), curved-billed thrasher (*Toxostoma curvirostre*), lark sparrow (*Chordestes grammacus*), black-throated sparrow (*Amphispiza bilineata*), western meadowlark (*Sturnella neglecta*), brown-headed cowbird (*Molothrus ater*), and house finch (*Carpodacus mexicanus*).

The birds of prey, or raptors, most commonly found in the grassland association include northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), prairie falcon (*F. mexicanus*), long-eared owl (*Asio otus*), and great horned owl (*Bubo virginianus*). A common scavenger in this habitat type is the turkey vulture (*Cathartes aura*).

The grassland association has a mammal community dominated by rodents, rabbits, and hares. These include the desert cottontail (*Sylvilagus audubonii*), Gunnison's prairie dog (*Cynomys gunnisoni*), white-footed deer mouse (*Peromyscus maniculatus*), silky pocket mouse (*Perognathus flavus*), Merriam's kangaroo rat (*Dipodomys merriami*), and the northern grasshopper mouse (*Onychomys leucogaster*). Mammalian predators found in the grassland association include the coyote (*Canis latrans*), badger (*Taxidea taxus*), kit fox (*Vulpes macrotis*), striped skunk (*Mephitis mephitis*) and bobcat (*Lynx rufus*).

Amphibians and reptiles found on the grasslands at Kirtland AFB include the following: Woodhouse's toad (*Bufo woodhousii*), New Mexico spadefoot (*Spea multiplicata*), coachwhip snake (*Masticophis flagellum*), whiptail lizards (*Cnemidophorus spp.*), lesser earless lizard (*Holbrookia maculata*), and the western rattlesnake (*Crotalus viridis*). Many of these species have extensive periods of dormancy during dry conditions and rapid breeding cycles when temporary ponds occur after rains.

3.7.2.4 Threatened and Endangered Species

Thirty-three state and federally listed species could occur in Bernalillo County, seventeen of which are listed as either threatened or endangered. Several of these species have the potential to occur on Kirtland AFB or within the Withdrawal Area. Federally threatened and endangered species are legally protected under the Endangered Species Act. In New Mexico, threatened and endangered animal species are protected by the New Mexico Wildlife Act. The NMEMNRD maintains listings of state threatened and endangered plants, which are protected under the New Mexico Endangered Plant Species Act.

Table 3-8 lists species found in Bernalillo County and their potential for occurring on base or in the Withdrawal Area.

Of the seventeen species listed threatened or endangered for Bernalillo County, seven of these species could not occur on Kirtland AFB or in the Withdrawal Area due to habitat restrictions. The federally endangered Rio Grande silvery minnow (*Hybognathus amarus*) is found only within its critical habitat in the Rio Grande River. The state threatened neotrophic cormorant (*Phalacrocorax brasilianus*) is attracted to large water bodies, such as Elephant Butte Reservoir in Sierra County, south of Kirtland AFB (NMDGF 2001). Farther to the north, the neotrophic cormorant is only found along the Rio Grande River. No large water bodies that could attract neotrophic cormorants are located at Kirtland AFB. The state threatened common black-hawk (*Buteogallus anthracinus anthracinus*) occupies dense, well-developed riparian corridors along permanent streams and rivers (NMDGF 2001). These habitats contain the necessary prey base to support this bird species. Surface drainage's at Kirtland AFB are sporadic and do not contain water year round; therefore, well-developed riparian areas are not found at Kirtland AFB. The Bell's vireo (*Vireo bellii*) a state threatened bird, prefers riparian habitats similar to that of the common black-hawk. This species prefers dense riparian corridors along permanent grassland streams (NMDGF 2001). Permanent streams are not present within the grasslands at Kirtland AFB. Lack of adequate riparian habitat also prevents the federally endangered southwestern willow flycatcher (*Empidonax trailii extimus*) from occurring at Kirtland AFB. During a survey for southwestern willow flycatchers conducted 1994 to 1996, this species was discovered in riparian habitat along the Rio Grande River near Albuquerque, but not at Kirtland AFB (USAF 1998).

The last two of the seven species that could not occur on Kirtland AFB due to habitat restrictions are the whooping crane and the black-footed ferret. The federally endangered whooping crane (*Grus americana*) is only known in New Mexico from three experimental populations. The populations that migrate through New Mexico primarily travel to the shores of the Gulf of Mexico (NMDGF 2001). These birds are known to frequent riparian and aquatic habitats along the Rio Grande River, but are not known to occur at Kirtland AFB. The federally endangered black-footed ferret (*Mustela nigripes*) could occur within a 50-mile radius of Kirtland AFB, but it has never been reported in the area (USAF 1991). The black-footed ferret is presumed to be extirpated from Bernalillo County (NMDGF 2001).

Table 3-8. Special Status Species, Bernalillo County

Common Name	Scientific Name	Status	Occurrence at Kirtland AFB	Occurrence Within Withdrawal Area	Habitat	Season	Behavior
FISH							
Rio Grande silvery minnow	<i>Hybognathus amarus</i>	FE, SE, PCH	No	No	AQ	AY	Breeds
REPTILES							
Texas horned lizard	<i>Phrynosoma cornutum</i>	FSC	Potential	Potential	G, PJ	AY	Breeds
BIRDS							
Neotrophic cormorant	<i>Phalacrocorax brasilianus</i>	ST	No	No	R, AQ	SP, SM	Breeds
white-faced ibis	<i>Plegadis chihi</i>	FSC	No	No			
bald eagle	<i>Haliaeetus leucocephalus</i>	FT, ST	Potential	Potential	G, PJ, P	SP, F	Transient
Northern goshawk	<i>Accipiter gentilis</i>	FSC	No	Potential	PJ, P	SP, SM, F	Transient, breeds in summer
common black-hawk	<i>Buteogallus anthracinus</i>	ST	No	No	R	SM	Breeds
Ferruginous hawk	<i>Buteo regalis</i>	FSC	Potential	Potential	G, PJ, P		
whooping crane	<i>Grus americana</i>	FE, SE	No	No	G, R, AQ	W	Transient
mountain plover	<i>Charadrius montanus</i>	PT	Potential	No	R	SP, SM	Breeds
Black tern	<i>Chlidonias niger surinamensis</i>	FSC	No	No			
Burrowing owl	<i>Athene cunicularia hypugaea</i>	FSC	Yes	Yes	G, PJ	SP, SM, F	Transient, nest in summer
Mexican spotted owl	<i>Strix occidentalis lucida</i>	FT, CH	Potential	Potential	PJ, P	AY	Transient, breeds in summer
white-eared hummingbird	<i>Hylocharis leucotis borealis</i>	ST	No	Potential	P	SM	Transient
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FE, SE, CH	No	No	R	SP, SM, F	Breeds
Loggerhead shrike	<i>Lanius ludovicianus</i>	FSC	Yes	Yes	G, PJ, R	AY	Transient, nests in summer, winter resident
American peregrine falcon	<i>Falco peregrinus anatum</i>	ST	Potential	Potential	G, PJ, P	SP, SM, F	Transient
Bell's vireo	<i>Vireo bellii</i>	ST	No	No	R	SM	Breeds
gray vireo	<i>Vireo vicinior</i>	ST	Potential	Yes	PJ	SP, SM	Transient, breeds in summer
Baird's sparrow	<i>Ammodramus bairdii</i>	ST	Potential	No	G, PJ	F	Transient

Table 3-8. Special Status Species, Bernalillo County (continued)

Common Name	Scientific Name	Status	Occurrence at Kirtland AFB	Occurrence Within Withdrawal Area	Habitat	Season	Behavior
MAMMALS							
black-footed ferret	<i>Mustela nigripes</i>	FE	No	No	G, PJ	AY	Breeds
spotted bat	<i>Euderma maculatum</i>	ST	No	Potential	R, PJ, P	SM	Transient
Western small-footed myotis bat	<i>Myotis ciliolabrum melanorhinus</i>	FSC	No	Potential	R	SM	Breeds
Yuma myotis bat	<i>Myotis yumanensis yumanensis</i>	FSC	No	No			
Occult little brown myotis bat	<i>Myotis lucifugus occultus</i>	FSC	No	No			
Long-legged myotis bat	<i>Myotis volans interior</i>	FSC	No	Potential	PJ, P	SM	Breeds
Fringed myotis bat	<i>Myotis thysanodes</i>	FSC	No	No			
Pale Townsend's big-eared bat	<i>Plecoyus townsendii pallescens</i>	FSC	No	No			
Big free-tailed bat	<i>Nyctinomops macrotis</i>	FSC	No	No			
Arizona black-tailed prairie dog	<i>Cynomys ludoficianus arizonicus</i>	C	No	No	G, PJ		
Pecos River muskrat	<i>Ondatra zibethicus ripensis</i>	FSC	No	No			
New Mexican jumping mouse	<i>Zapus hudsonius luteus</i>	ST	Potential	No	R	AY	Breeds
PLANTS							
Great Plains ladies'-tresses orchid	<i>Spiranthes magnicamporum</i>	SE	No	Potential	R, PJ	AY	Grows

Sources: NMDGF 1999, NMDGF 2002, NMNHP 2002

Notes:

FE = Federal Endangered
 FT = Federal Threatened
 C = Federal Candidate
 SE = State Endangered
 AY = All Year

ST = State Threatened
 FSC = Federal Species of Concern
 PCH = Proposed Critical Habitat
 CH = Critical Habitat

G = Grassland
 PJ = Pinyon/Juniper
 P = Ponderosa
 R = Riparian

AQ = Aquatic
 SP = Spring
 SM = Summer
 F = Fall

Two federal species of concern are known to occur at Kirtland AFB and the Withdrawal Area. The western burrowing owl (*Anthene cunicularia hypugaea*) inhabits the disturbed grasslands at Kirtland AFB and is typically associated with Gunnison's prairie dog towns. Burrowing owls have the potential to be found throughout Kirtland AFB but typically inhabit the disturbed grasslands surrounding Albuquerque's Sunport flight lines as well as other open areas about the cantonment area. During a 2001 burrowing owl survey, four burrowing owl nesting sites were found within the perimeter fence of the KUMMSC, and in 2000 an owl burrow was located 49 feet west of the fire tower proposed for demolition (Dow 2002). An active nesting burrow is located west of the

proposed new Truman Gate between the varsity ball fields and the gym (Dow 2002). The loggerhead shrike, another federal species of concern, is also commonly observed throughout Kirtland AFB. This species can be found throughout the grassland community as long as there is a shrub component present. It is a year round resident and likely breeds at Kirtland AFB during the spring and summer.

Ten of the threatened or endangered species listed for Bernalillo County occur, or have the potential to occur, at Kirtland AFB or in the Withdrawal Area. Brief descriptions of these species are provided below.

Bald eagle

The bald eagle (*Haliaeetus leucocephalus*), a federally threatened species, is endemic to North America and is the only North American representative of the fish or sea eagles. The bald eagle prefers aquatic or riparian habitats, but requires a large area to support its prey base. Prey is primarily fish, small mammals, or carrion. In winter, bald eagles congregate in areas that are close to open water and offer good perch trees and night roosts (USAF 1998). The bald eagle could be found at Kirtland AFB as a fall transient in grassland, pinyon-juniper, and ponderosa pine habitats.

Mountain plover

The mountain plover (*Charadrius montanus*), recently proposed for federal listing as threatened, forages on insects and occupies short-grass prairies and prairie dog towns. Mountain plovers breed in New Mexico and spend their winters primarily in California (NMDGF 2001). These birds were once known to breed in Bernalillo County, but now may be extirpated from the county (NMDGF 2001).

There is an historical record (period from 1864 to 1994) of mountain plovers breeding in northeast Bernalillo County and a 1995 nest site just north of there in Sandoval County. Results of a 1995 survey suggested that the species may be more numerous and widespread than expected, however, they were not found to inhabit Kirtland AFB (USAF 1998). Although mountain plovers have never been observed on Kirtland AFB, their distribution range is nearby and appropriate habitat occurs on base.

Mexican spotted owl

The federally threatened Mexican spotted owl (*Strix occidentalis lucida*) forages on small to medium-sized rodents and primarily inhabits unmanaged, closed canopy forests dominated by conifers. In New Mexico, Mexican spotted owls occur in mixed conifer forests, ponderosa pine (*Pinus ponderosa*) forests, rocky canyons, and associated riparian forests (NMDGF 2001). Habitat for Mexican spotted owls occurs in the Withdrawal Area's ponderosa pine vegetation community and in the pinyon-juniper woodlands. Mexican spotted owls are known to inhabit the Sandia and Manzanita Mountains, which are very near Kirtland AFB (NMDGF 2001).

American Peregrine Falcon

The state threatened American peregrine falcon (*Falcon peregrinus anatum*) occurs near cliffs or bluffs near open areas such as grassy meadows, lakes, mountain parks, and large river systems. Their main food items are small to medium sized birds and therefore generally associated with areas that contain dense concentrations of this prey base. Peregrine falcons are considered to be rare to uncommon residents in all New Mexican mountain ranges (NMDFG 2001). The potential exist for the falcon to occur as a transient throughout Kirtland AFB and the Withdrawal Area especially in the pinyon-juniper and ponderosa pine habitats.

White-eared hummingbird

The white-eared hummingbird (*Hylocharis leucotis borealis*) is a state-threatened bird that inhabits montane habitats in New Mexico. It is found primarily within pine and pine-oak woodlands as well as moist montane canyons (NMDGF 2001). The ponderosa pine habitat in the Withdrawal Area contains habitat for white-eared hummingbirds. This species has been listed as a rare transient in the Sandia and Manzanita Mountains and the potential exists for it to inhabit Kirtland AFB in the Withdrawal Area (NMDGF 2001).

Gray vireo

The gray vireo (*Vireo vicinior*) is a state-threatened species known to occur in the Withdrawal Area. In 1993 and 1994, NMNHP personnel found gray vireos during a threatened and endangered species survey of Kirtland AFB and the Withdrawal Area

(NMNHP 1995). According to the survey report (NMNHP 1995), gray vireos were found in ungrazed juniper woodland at the base of the western foothills of the Manzanita Mountains in an elevational belt of 5,900 to 6,600 feet. These birds primarily occurred in areas with a somewhat open canopy. Most of the vireos were observed in the Withdrawal Area, with few occurring in the easternmost portion of the base. In the Withdrawal Area, gray vireos were found in open juniper grassland/savanna habitat, along cobbly hillsides, and dry washes of juniper-dominated mesas. During the summer, the Withdrawal Area has the largest gray vireo colony in New Mexico (USAF 2000c). Potential gray vireo habitat has been delineated for Kirtland AFB and the Withdrawal Area and includes portions of the pinyon-juniper community.

Baird's sparrow

The state threatened Baird's sparrow (*Ammodramus bairdii*) is a migrant in New Mexico that occurs primarily in the eastern plains and southern lowlands. It may winter in some areas of the state, but usually winters in Mexico (NMDGF 2001). This species occupies desert grasslands and feeds primarily on seeds and insects. This species is considered very rare in New Mexico with a recent high of 3 individuals found within the state in 1994 (NMDGF 2001). Due to the large amount of grassland habitat at Kirtland AFB and the transient behavior of this species, it has the potential to occur on base.

Spotted bat

The spotted bat (*Euderma maculatum*) is found in New Mexico from the Rio Grande valley westward where it occupies various habitats including riparian areas, pinyon-juniper woodlands, and ponderosa pine forests – often near cliffs (NMDGF 2001). Since these habitat types are found in the Withdrawal Area, the spotted bat may potentially be found here. A specimen of this state-threatened species has been collected in the City of Albuquerque, adjacent to Kirtland AFB. Records of spotted bats in New Mexico were all documented during warmer months. While a number of specimens have been collected throughout New Mexico, evidence suggests that the animals were en route to winter quarters (NMDGF 2001).

New Mexican jumping mouse

The state threatened New Mexican jumping mouse (*Zapus hudsonius luteus*) is known to occur in the central Rio Grande valley and has been documented near Isleta and Belen, south of Kirtland AFB (NMDGF 2001). This mouse prefers wetland and riparian habitats with permanent moisture and vegetation such as grasses, sedges, and forbs. This species is known to inhabit cattail (*Typha latifolia*) stands and areas with high soil moisture (NMDGF 2001). Several of the small wetlands at Kirtland AFB are fed by springs that provide permanent moisture to these sites. However, these wetlands are very small and isolated, and provide limited habitat for the New Mexican jumping mouse.

Great Plains ladies'-tresses orchid

The Great Plains ladies'-tresses orchid (*Spiranthes magnicamporum*) is common to the Great Plains, but rare in New Mexico. This state-endangered orchid has been reported in Bernalillo County and is found in moist, riparian areas of pinyon-juniper woodlands (NMEMNRD 1999). This plant may be found in riparian habitat in the Withdrawal Area and Kirtland AFB.

3.8 TRANSPORTATION AND CIRCULATION

3.8.1 Definition of Resource

Transportation and circulation refer to the movement of vehicles throughout a roadway network. Developmental and construction projects as well as other activities can have an impact on local and regional traffic patterns and transportation systems. Roadway operating conditions and the capacity of the system to accommodate vehicles are described in terms of volume-to-capacity (V/C) ratio, which is a comparison of average daily traffic (ADT) volume to roadway capacity for highways (Table 3-9). The V/C ratio corresponds to a Level of Service (LOS) rating. LOS refers to a measurement of traffic stream that characterizes acceptable degrees of congestion and includes speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience (Transportation Research Board 2000). LOS ranges from free-flowing traffic conditions (LOS "A") for a V/C of less than 30 percent, to congested "stop-and-go" conditions (LOS "F") for a V/C at or near 100 percent.

Table 3-9. Level of Service and Volume-to-Capacity Ratio Descriptions

LOS	Quality of Traffic Operation	V/C Ratio
A	Free flow – low traffic – no delay	< 0.30
B	Free flow – additional traffic	0.3 – 0.5
C	Stable flow – increasing flow rate	0.5 – 0.75
D	Unstable flow – traffic congestion	0.75 - 0.90
E	Near Capacity/Unstable - Restrictive flow	0.9 - 1.0
F	Forced or Breakdown flow – stop-and-go	> 1.0

Source: Highway Capacity Manual, Highway Research Board Special Report 209, National Academy of Sciences, Washington, DC, 1994.

Notes: LOS = level of service V/C = volume-to-capacity

Table 3-10 is included to show LOS criteria for signalized intersections that include the majority of intersections identified in the 1999 CAA Transportation Intermodal Study report for Kirtland AFB. Control delay is the service measure that defines LOS for signalized intersections. Control delay is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. LOS criteria for traffic signals represent the average control delay per vehicle, which is about a 15-minute analysis period (Transportation Research Board 2000).

Table 3-10. LOS Criteria for Signalized Intersections

LOS	Control Delay per Vehicle (s/veh)
A	≤10
B	>10 - 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	>80

Source: Transportation Research Board, Highway Capacity Manual 2000.

Notes: LOS = Level of Service s/veh = saturation flow rate (veh/h)

3.8.2 Existing Conditions

Kirtland AFB lies about 4 miles east of Interstate 25 and 2 miles south of Interstate 40. Principal access to the cantonment area is provided by Wyoming Boulevard on the north, Gibson Boulevard on the west, and Eubank Boulevard on the east. These boulevards link directly with the surface street grid system of southeast Albuquerque, although no limited access expressways serve the base directly.

Much of the region's peak traffic occurs inbound (toward central Albuquerque) in the morning and outbound (away from the central area) in the afternoon. Traffic tends to be especially heavy near the junction of the interstate highways and at arterial intersections with the interstates. Significant congestion in the area is greatest during morning and afternoon peak hours on major arterials and surface streets where urban conditions, such as high vehicle volumes and signalized intersections, tend to slow traffic. Major modifications along the Interstate 25 corridor have added to the morning and evening congestion, but will improve traffic flow in the future.

3.8.2.1 Access Gates

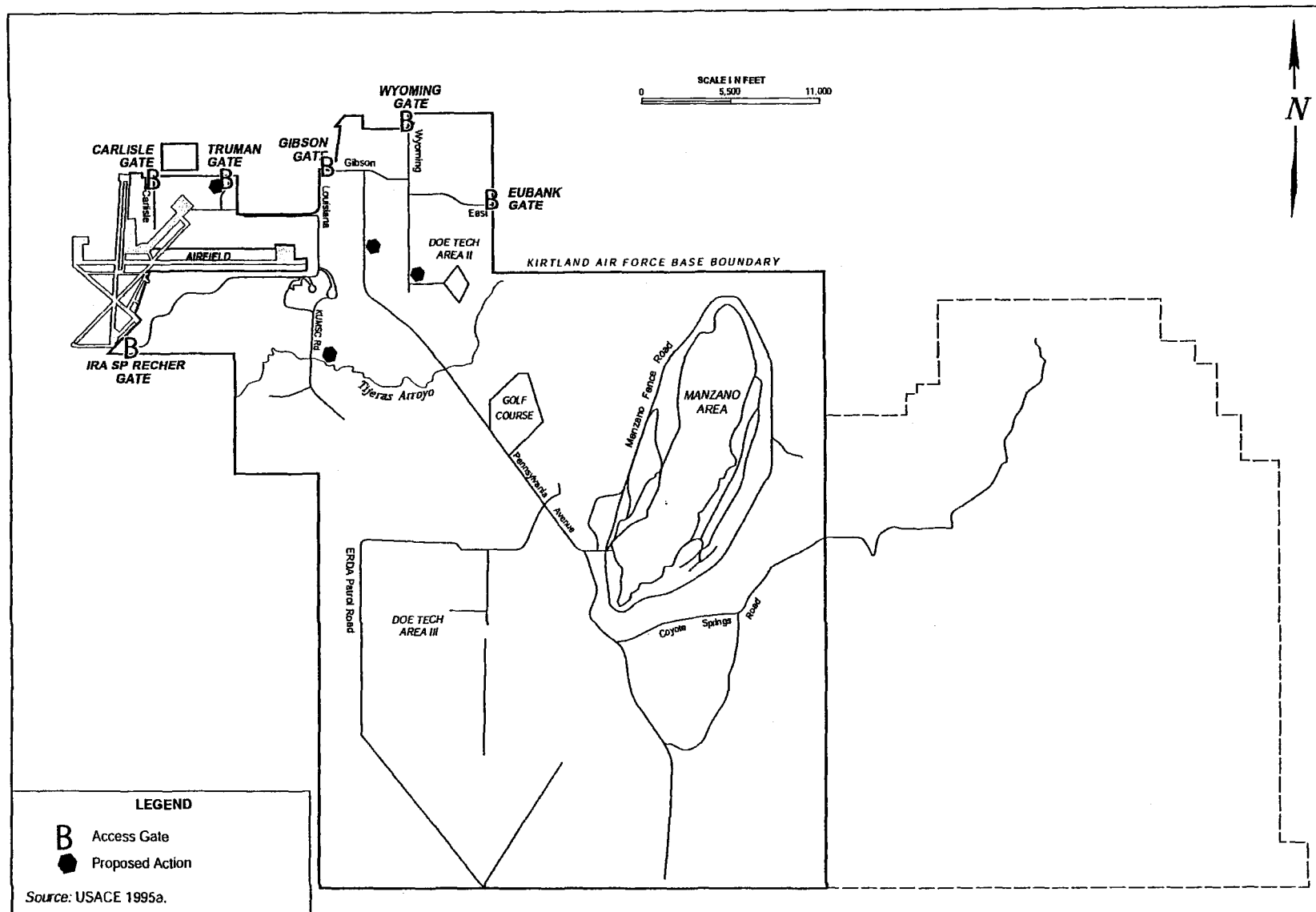
Access to Kirtland AFB is gained through six entrance/exit gates shown on Figure 3-5. The Carlisle, Truman (at San Mateo Boulevard), and Gibson (at Louisiana Boulevard) gates provide access to the installation from the west and north along Gibson Boulevard. The installation can be accessed from the south through the gate at Ira Sprecher Drive. The gates at Eubank and Wyoming Boulevards provide access to Kirtland AFB from the east and north, respectively.

3.8.2.2 Circulation at Kirtland AFB

Traffic flows relatively smoothly in the western portion of the cantonment area due to light traffic volumes and favorable intersection operations. A greater portion of the base population is located in the eastern portion of the cantonment area and many signalized intersections have been installed to control traffic. Traffic problems on Kirtland AFB generally occur during peak traffic periods (6:30 – 8:30 a.m. and 3:30 – 5:30 p.m.). The 1999 CAA Transportation Intermodal Study report for Kirtland AFB showed Pennsylvania Street (south of Gibson Blvd.), Wyoming Boulevard (south of M Avenue), Pennsylvania Street (north of Hardin Drive, and Truman Street (south of Truman Gate) were unacceptably congested during peak hours.

3.8.2.3 Traffic Volumes

Table 3-11 shows the traffic volumes for the 12 major intersections within Kirtland AFB. Because the base is the largest employer in the Albuquerque area, it is the principal destination for commuters in the southern side of the city. As a result, traffic tends to converge on the base gates with high ADT volumes and occasionally poor LOS ratings.



JAN 2003

EA

Kirtland Air Force Base Access Gates

FIGURE

3-5

Table 3-11. Kirtland AFB Traffic Analysis Data

Intersection	ADT ^a	Peak Hour	Peak Car/hr.	Avg. Car/hr.	LOS ^b
Carlisle Blvd. And Aberdeen Dr.	4,512	6:45 a.m.	903	188	B
San Mateo Blvd. And Randolph Ave.	6,768	6:45 a.m.	903	282	B
Pennsylvania St. and Gibson Blvd.	13,512	4:00 p.m.	1,803	563	B (a.m.) C (p.m.)
Truman and Aberdeen Dr.	8,904	6:45 a.m.	1083	371	A (a.m.) B (p.m.)
Pennsylvania St. and Hardin Dr.	8,976	7:00 a.m.	1,196	374	B
Texas St. and Gibson Blvd.	9,720	4:00 p.m.	1,299	405	B
Wyoming Blvd. And Gibson Blvd.	14,016	4:00 p.m.	1,869	584	C
Wyoming Blvd. And F Ave.	14,016	7:00 a.m.	18,70	584	B
Wyoming Blvd. And Hardin Dr.	8,832	7:00 a.m.	1,176	368	B
9 th St. and Hardin Dr.	6,480	7:00 a.m.	867	270	B
14 th St. and Hardin Dr.	9,072	7:00 a.m.	1211	378	D
20 th St. and Gibson Blvd.	16,394	6:45 a.m.	2,490	812	A (a.m.) B (p.m.)

Source: Kirtland AFB 1999.

Notes: ^a ADT is defined as the number of vehicles in a 24-hour period.

^b LOS (from Highway Capacity Manual, Highway Research Board Special Report 209, National Academy of Sciences, Washington, DC, 1994).

ADT = average daily traffic

LOS = level of service

3.9 VISUAL RESOURCES

3.9.1 Definition of Resource

Visual resources are defined as the natural and manufactured features that constitute the aesthetic qualities of an area. These features form the overall impression that an observer receives of an area (i.e., its landscape character). An area's susceptibility to visual impacts is related to visual sensitivity. Highly sensitive resources include national parks, recreation areas, historic sites, wild and scenic rivers, designated scenic roads and other areas specifically noted for aesthetic qualities.

3.9.2 Existing Conditions

The visual environment at Kirtland AFB is characteristic of military and civilian airfields. Structures include hangars, maintenance and support facilities and navigational equipment. The area surrounding the installation predominantly varies from urban to open rangeland. Open spaces and forests occur to the northeast and east. South of the installation, the Isleta Pueblo lands are generally open space, forests or vacant land. The

proposed project sites are developed industrial areas with facilities similar to those proposed by the 377 ABW.

3.10 CULTURAL RESOURCES

3.10.1 Definition of Resource

Historic properties (i.e., significant cultural resources) are classified as buildings, sites, districts, structures, or objects. A building is created to shelter any form of human activity. A structure is distinguished from a building in that it is a construction designed for purposes other than creating human shelter. Objects are constructions that are primarily artistic in nature or are relatively small and simply constructed. A site is the location of a significant event, a prehistoric or historic activity, or a building or structure whose location possesses value. A district is a concentration or linkage of sites, buildings, structures, or objects that are united historically or aesthetically by plan or development.

The criteria for establishing significance are set forth in Title 36 CFR Part 60.4. Procedures for the application of the National Register criteria for evaluation are found in various National Park Service bulletins. These bulletins provide guidelines so that decisions concerning significance, integrity, and treatment can be reliably made.

3.10.2 Existing Conditions

Over 500 historic and prehistoric cultural resources are known on Kirtland AFB. These include historic buildings, structures, and sites dating from European contact, ca. AD 1540, through the Cold War, ca. AD 1945-1991. Prehistoric sites dating from the Paleo-Indian Period to the Pueblo Period have been recorded.

Under Section 106 of the National Historic Preservation Act (NHPA) the Air Force is required to assess the effects of undertakings prior to their initiation to ensure that there will be no adverse effects on historic properties (36 CFR 800). Section 110 of the NHPA requires the Air Force to complete an inventory of historic properties located on its land (36 CFR 60, 63, 78, 79, and 800).

The base cantonment has been subject to repeated surface and ground modifications, and extensive ground disturbances. Several cultural resource inventories were conducted within the cantonment area and concluded that the presence of significant cultural resources does not exist due to the level of disturbance (Evaskovich 1993; Peyton 1992; Sullivan and Schilz 1999a and 1999b; and Sullivan et al. 1999).

3.10.2.1 Fire Department Structural Training Facility

In this area grazing was the dominant land use before 1928. From then until 1937, it was the site of the original Albuquerque Airport, known as Oxnard Field (Alberts and Putnam 1982; Alberts 1987, pp 46; Sullivan and Schilz 1999c). During and after World War II the area was graded or paved to accommodate runways and taxiways, aircraft parking areas, and aircraft maintenance structures (Alberts and Putnam 1982; Alberts 1987, pp 56 and 59-79).

There are no archaeological sites located within a one-mile radius of the proposed project.

3.10.2.2 Truman Gate

This proposed action is in an area of the cantonment that has been graded and leveled for road, fence, and athletic field construction.

There are no archaeological sites located within a one-mile radius of the proposed project.

3.10.2.3 Electrical Main Switching Station

As with the Fire Department Structural Training Facility grazing was the dominant land use at this site before 1928. From then until 1937, it was the location of the original Albuquerque Airport, known as Oxnard Field (Alberts and Putnam 1982; Alberts 1987, pp 46; Sullivan and Schilz 1999c). During and after World War II the area was graded or paved to accommodate runways and taxiways, aircraft parking areas, and aircraft maintenance structures (Alberts and Putnam 1982; Alberts 1987, pp 56 and 59-79).

There are no archaeological sites located within a one-mile radius of the proposed undertaking.

3.10.2.4 Kirtland Underground Munitions Maintenance and Storage Complex

An archaeological survey of the KUMMSC was conducted, covering 62 acres, and no cultural resources were discovered. Twelve archeological sites are located within a 1-mile radius of the proposed project. However, these sites are not within the project area. Therefore, they will not be disturbed by the proposed project and there will be no adverse effects to historic properties.

3.11 SOCIOECONOMICS

3.11.1 Definition of Resource

Socioeconomics are defined as the basic attributes and resources associated with the human environment, particularly population, housing, and economic activity. Economic activity encompasses employment, personal income, and economic growth. Impacts on these fundamental socioeconomic components can also influence other issues, such as housing availability and public service provision. The Council on Environmental Quality defines "human environment" including socioeconomic concerns as including the natural and physical environment and the relationship of people with that environment.

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued to focus attention of federal agencies on human health and environmental conditions in minority and low-income communities and to ensure that disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. To provide a thorough environmental justice evaluation, particular attention is given to the distribution of race and poverty status in areas potentially affected by implementation of the proposed action. In 1997, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was issued and is discussed in the safety section of this document.

3.11.2 Existing Conditions

3.11.2.1 Population

The Albuquerque metropolitan statistical area (MSA), which includes Bernalillo, Sandoval, and Valencia counties, had an estimated population of nearly 712,738 in 2000. This is an increase of 16 percent from 1990. In 2000, the population of Bernalillo County was 556,678 (US Census Bureau 2000), or about 31 percent of New Mexico's total population, estimated at 1,819,046 in 2000.

Migrations to New Mexico come primarily from California, Texas, Arizona, Colorado, Florida, and New York. Most of the city's growth is expected to occur in areas on the west side of the river and the northeast quadrant.

New Mexico has the highest proportion of Hispanics (40 percent) of any state in the nation. The Hispanic or Latino population accounted for 42 percent in 2000. The non-Hispanic white population fell from 50.4 percent of the 1990 total to 44.7 percent in 2000. The Black or African American population accounted for 2 percent of the total population, the American Indian and Alaska Native population accounted for 10 percent, the Asian population accounted for 1 percent, and the other populations accounted for 17 percent (US Census Bureau 2000).

3.11.2.2 Job Growth and Unemployment

Kirtland AFB plays an important role in the economy of the Albuquerque metropolitan area; the base is the largest employer in New Mexico. Kirtland AFB has approximately 8,583 military employees and 15,204 civilian employees (USAF 2000a). The goods and services purchased by base employees in the local area create secondary jobs and wages, further adding to the total economic importance to the local area. The economic contribution of Kirtland AFB to the Albuquerque area in fiscal year (FY) 2000 was estimated at \$2.6 billion (USAF 2000a).

Annual average unemployment rates in 1998 and 1999 within the Albuquerque MSA were at 4.5 percent, and 3.9 percent, respectively. The State of New Mexico ranks 49th among the states in terms of per capita income. In 1998 New Mexico's per capita income

was \$19,936. Average annual wages in 1999 was \$29,675. Table 3-12 shows nonagricultural employment within the Albuquerque MSA.

Table 3-12. Nonagricultural Employment in the United States, New Mexico, and the Albuquerque MSA, 1998

Industry	United States		New Mexico		Albuquerque MSA	
	1998 Annual Average*	Percent of Total	1998 Annual Average	Percent of Total	1998 Annual Average	Percent of Total
Total Nonagricultural Employment	125,832	100.0%	721,000	100.0%	338,600	100.0%
Manufacturing	18,716	14.9%	45,100	6.3%	28,700	8.5%
Mining	575	0.5%	15,100	2.1%	**	**
Construction	5,965	4.7%	43,500	6.0%	21,700	6.4%
Transportation & Public Utilities	6,549	5.2%	33,400	4.6%	16,200	4.8%
Wholesale & Retail Trade	29,300	23.3%	170,600	23.7%	81,800	24.2%
Finance Insurance and Real Estate	7,341	5.8%	31,800	4.4%	17,000	5.0%
Services & Miscellaneous	37,525	29.8%	203,400	28.2%	107,600	31.8%
Government	19,862	15.8%	178,100	24.4%	65,600	19.4%

Source: New Mexico Department of Labor 2000

* Preliminary. (Source: "Employment and Earnings," US Department of Labor, Bureau of Labor Statistics March 1999.)

** The mining series is combined with the construction series for Albuquerque only.

Note: Data reflects number of jobs, by place of work.

Detail may not sum to total due to rounding.

The median household income in the Albuquerque metropolitan area for 2000 was \$36,853.

3.11.2.3 Housing

Bernalillo County contained 239,074 housing units in 2000. There were 2.47 persons per owner-occupied unit in Bernalillo County. This is a 19 percent change from 1990. The home ownership rate in Bernalillo County in 2000 was 64 percent (US Census Bureau 2000).

3.11.2.4 Kirtland AFB

Kirtland AFB expenditures in FY 2000, including payroll, totaled over \$800 million. Total economic impact from the annual operating expenditures from Kirtland AFB was estimated to be over \$2.6 billion. Table 3-13 provides additional information relating to the economic impact of Kirtland AFB activities on the local community (USAF 2000a).

Full-time employment at Kirtland AFB totaled 28,680 at the end of FY 2000. The DoD workforce reached 8,583, of which 4,249 employees were active duty military and Air National Guard personnel. Federal civilian employees totaled 3,783 in 2000. The contractor work force at Kirtland AFB by the end of FY 2000 totaled 10,705. Total personnel associated with Kirtland AFB in 2000 was 28,680 (USAF 2000a).

By the end of FY 2000, 1,677 military personnel (both active duty and guard/reserve) were living in family housing at Kirtland AFB, and 6,906 military personnel were living off base (USAF 2000a).

3.11.3 Environmental Justice Considerations

In order to evaluate potential impacts to minority and low-income populations as required by EO 12898, a 50-mile radius circle centered on Kirtland AFB was superimposed on 1990 Census tract maps and population and income characteristics of this area.

3.11.3.1 Setting

According to the 2000 Census, there were 516,813 persons living within 50 miles of Kirtland AFB. Most of the population within the 50-mile radius resides in various cities, towns, and census designated places. Albuquerque is the most populated community, with 448,607 in 2000. An unincorporated area known as the South Valley, located immediately southwest of Albuquerque and due west of Kirtland AFB, was the second largest community in the area, with a 2000 population of 35,701, more than 70 percent of whom were Hispanics. Rio Rancho, northwest of Albuquerque in south central Sandoval County, was third largest with 32,505 persons in 2000.

Table 3-13. Local Economic Impact, Kirtland AFB, 2000

Category	Amount
PAYROLL	
Military payroll	\$222,723,033
Federal Civilian payroll	\$248,601,991
Other Civilian/contractor payroll	<u>\$743,217,206</u>
TOTAL ANNUAL PAYROLL	\$1,214,542,230
ANNUAL EXPENDITURES IN THE LOCAL COMMUNITY	
Construction projects	\$19,973,000
Local service contracts	\$34,150,000
Local procurement (supplies, equipment and materials)	<u>\$755,696,436</u>
TOTAL ANNUAL EXPENDITURES	\$809,819,436
TOTAL ESTIMATED ANNUAL DOLLAR VALUE OF JOBS CREATED	\$659,098,780
TOTAL ANNUAL ECONOMIC IMPACT ESTIMATE	
	\$2,683,460,446

Source: USAF 2000a

3.11.3.2 Minority Population

Virtually every tract within the 50-mile radius had a population in 2000 in which at least 25 percent of persons were minority or nonwhites. North and south of Albuquerque, along the Rio Grande River, are a number of towns and villages, most with primarily Hispanic populations, including Belen (6,901 persons in 2000, 69 percent Hispanic); Bernalillo (6,611 persons, 75 percent Hispanic); Bosque Farms (3,931 persons, 30 percent Hispanic); Corrales (7,334 persons, 26 percent Hispanic); Los Chaves (5,033 persons, 54 percent Hispanic); Los Lunas (10,034 persons, 59 percent Hispanic); Tome-Adelino (2,211 persons, 63 percent Hispanic); and Valencia (4,500 persons, 50 percent Hispanic) (US Census Bureau 2000).

There are also nine primarily American Indian communities within a 50-mile radius. A major portion of the northern boundary of the Isleta Indian Reservation coincides with the southern boundary of Kirtland AFB, but the Isleta people primarily live near the Rio Grande, several miles from the boundary between the reservation and the base. Seven additional Indian Reservations, with persons residing in dense settlements known as pueblos, are located in the Sandoval County portion of the 50-mile radius. These reservations include Sandia Pueblo with 344 residents in 2000; Santa Ana Pueblo with 479 residents in 2000; San Felipe Pueblo with 2,080 residents; Santo Domingo Pueblo

with 2,550 residents; Cochiti Pueblo with 507 residents; Zia Pueblo with 646 residents; and Jemez Pueblo with 1,953 residents (US Census Bureau 2000).

3.11.3.3 Low-Income Population

In 2000, persons with low incomes were not nearly as prevalent throughout the 50-mile radius in 1990 as were minority persons. In the Albuquerque area, high poverty levels were found primarily in the southern half of the city, with the greatest concentration of low-income persons situated in the southwest quadrant, in the unincorporated area known as the South Valley, with its 77 percent Hispanic population (US Census Bureau 1991). High levels of poverty were found in Native American communities in rural Sandoval County (13.2 percent), and western and southern Bernalillo County (15.5 percent); and Valencia, with 18 percent below poverty level (New Mexico Department of Labor 2000).

The most notable socioeconomic characteristic of the Indian communities is the large number of low-income persons. Based on 1989 incomes, the percentage of persons below the poverty level for each reservation was as follows: Isleta (27 percent), Sandia (19 percent), Santa Ana (13 percent), San Felipe (42 percent), Santo Domingo (34 percent), Cochiti (25 percent), Zia (33 percent), Jemez (37 percent) and Cañoncito Navajo Reservation (60 percent) (US Census Bureau 1991). In 1996, the proportion of New Mexicans that were living in poverty was 20 percent, the fifth highest poverty rate in the US (New Mexico Department of Labor 2000).

3.12 ENVIRONMENTAL MANAGEMENT

3.12.1 Definition of Activity

Environmental management activities at Kirtland AFB include the treatment and/or disposal of sanitary sewage, municipal solid waste, and industrial waste, including hazardous waste. In addition to the activities related to currently generated waste, the Installation Restoration Program (IRP) is intended to identify, confirm, quantify, and remediate problems caused by past management of hazardous wastes at USAF facilities.

Hazardous wastes are defined as any solid, liquid, contained gaseous, or semisolid waste, or any combination of wastes, that pose a substantial present, or potential, hazard to human health or the environment.

To protect people and habitats from inadvertent and potentially harmful releases of hazardous substances, DoD has dictated that all facilities develop and implement Hazardous Waste Management Plans and/or Spill Prevention, Control, and Countermeasure Plans. Also, DoD has developed the IRP, intended to facilitate thorough investigation and cleanup of contaminated sites located at military installations. These plans and programs, in addition to established legislation (e.g., the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] of 1980) are intended to protect human health and the ecosystems on which living organisms depend.

3.12.2 Existing Conditions

IRP sites located within 1,000 feet of the proposed action sites are listed by proposal below.

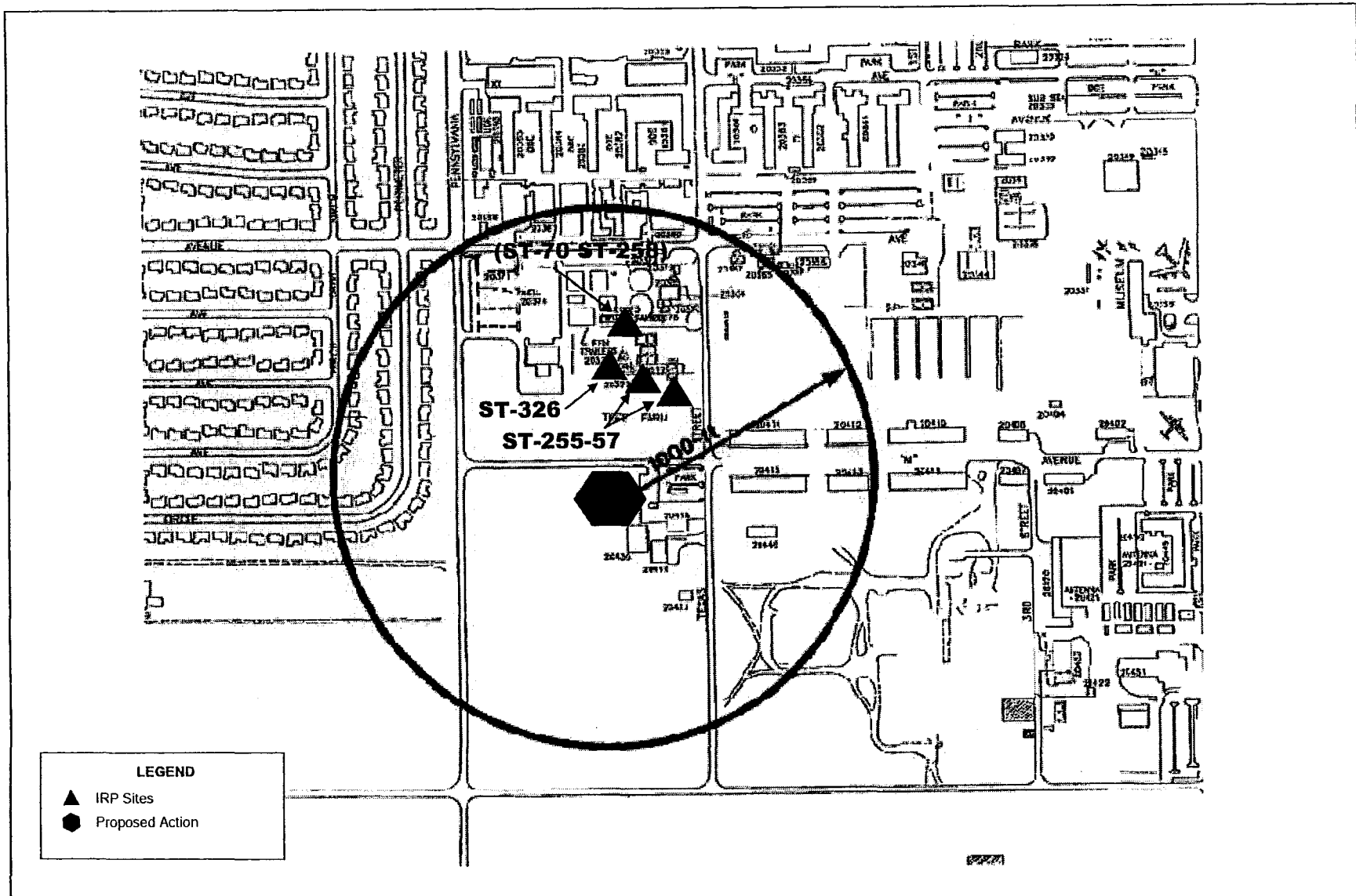
Fire Department Structural Training Facility

Oil Water Separator (OWS) ST-258 (SWMU ST-70) is located at the Auto Hobby Shop (Building 20375) and north of the proposed action (Figure 3-6). The OWS is associated with the vehicle wash rack located at the north end of the building. The OWS drains to a sanity sewer lateral on the south end of the building.

A site investigation was performed at the site in 1994. Three boreholes were drilled adjacent to the OWS and sampled for Total Petroleum Hydrocarbons (TPH). None of the compounds detected were above the Region 6 human health risk-based (HHRB) screening levels.

A second site investigation was performed in 1996 to determine the vertical and lateral extent of possible diesel-range organics contamination. Five boreholes were drilled and samples were collected and analyzed for TPH. TPH was not detected in any of the samples. Kirtland AFB has recommended No Further Action (NFA) for the OWS site.

An underground storage tank (UST) (UST-91, SWMU ST-326) was located at the southeast corner of the Auto Hobby Shop (Building 20375) and north of the proposed action (refer to Figure 3-6). The UST was used for storing used engine oil and cleaning solvent prior to being disposed of off site. A pipeline connected a disposal drain located in a bay in the Auto Hobby Shop to the UST. The UST was removed in June of 1996.



JAN 2003

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IRP Sites within 1,000 feet of Fire Department Structural Training Facility,
Kirtland Air Force Base

FIGURE

3-6

Site investigations were performed at the site in 1993 and 1994. Five boreholes were drilled adjacent to the UST to a depth five feet below the UST base. Two samples were collected from each boring and analyzed for metals, VOCs, Semi-volatile organic compounds (SVOCs) and TPH.

Metals, VOCs and SVOCs were detected in several samples. None of the compounds detected were above the Region 6 HHRB screening levels. TPH was not detected in any of the samples.

Additional soil samples were collected during the removal of the UST in 1996. Analytical results of these samples did not show any evidence that the UST had leaked. Kirtland AFB was granted closure for the site by the New Mexico Environment Department's UST Section. The site has been recommended for NFA.

OWS/Line ST-225 (SWMU 10-7) is located in the east end of the Auto Hobby Shop (Building 20375) north of the proposed action (refer to Figure 3-6). The OWS receives surface drainage from a grate-covered channel along the north and east end of the building. The channel collects surface drainage from the service bays located in the building. The OWS line discharges to a sanitary sewer lateral line located south and east of the building.

OWS/Line ST-256 (SWMU 10-7) is located in the east end of the Auto Hobby Shop (Building 20375) north of the proposed action (refer to Figure 3-6). The OWS receives drainage from the eastern auto maintenance bay floor drain. The OWS line from the unit runs west where it combines with two other lines before discharging into a sanitary sewer lateral line located east of the building.

OWS/Line ST-257 (SWMU 10-7) is located in the west end of the Auto Hobby Shop (Building 20375) north of the proposed action (refer to Figure 3-6). The OWS receives drainage from the western service bay located in the building. The OWS line from the unit runs east where it combines with two other lines before discharging into a sanitary sewer lateral line located east of the building.

Due to the close proximity of ST-255, ST-256, and ST-257, these sites were investigated as one site during 1995. Five boreholes were drilled at the site to a depth five feet below

the lines. One sample was collected from each boring and analyzed for metals, VOCs, SVOCs and TPH.

Metals, one VOC and one SVOC were detected in several samples. None of the compounds detected were above the Region 6 HHRB screening levels. TPH was not detected in any of the samples.

All three sites have been recommended for NFA.

Truman Gate

There are no IRP sites within 1,000 feet of this proposed action.

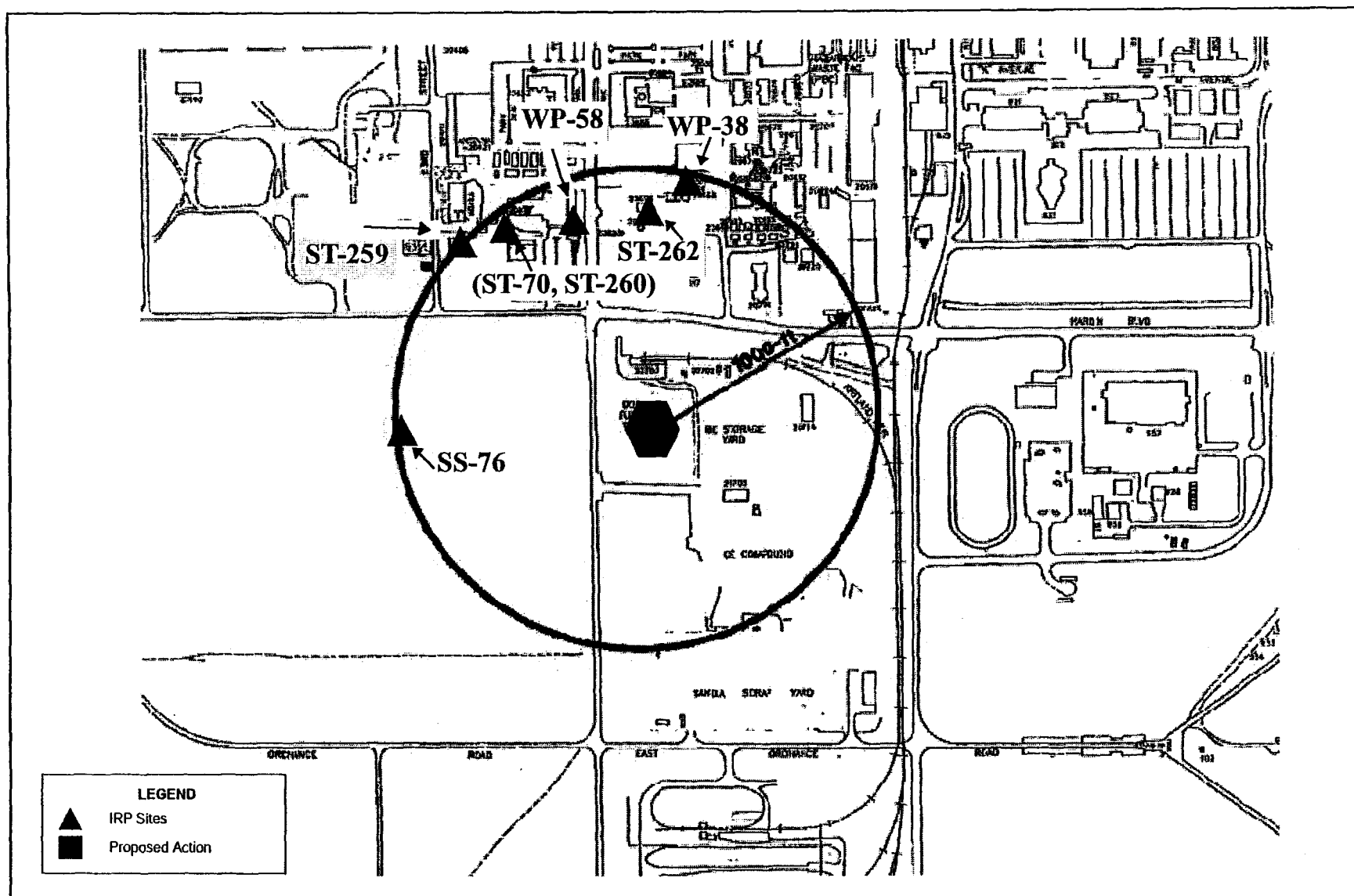
Electrical Main Switching Station

The Fuel Tank Burn Area (SWMU SS-76) is located west of the site of the proposed action (Figure 3-7). The Fuel Tank Burn Area is a 6-acre site that was reportedly used to incinerate World War II aircraft fuel tanks and associated equipment.

A site investigation was performed at the site during 1997. Soil samples were collected throughout the site. The samples were analyzed for metals, VOCs and SVOCs. No VOCs or SVOCs were detected in the soil samples. Metal contamination exceeding background concentrations was detected in soil samples collected in the top 6 inches of the soil in the burn areas and surrounding zone of discolored surface soil. Kirtland AFB has recommended NFA at the Fuel Tank Burn Area site.

The East Laundry (SWMU WP-58) is located north of the proposed action (Figure 3-7). The east laundry, Building 20451, is thought to have operated as the Sandia Army Base laundry from 1950 to the mid-1960's. The building was renovated in 1983 and used as offices.

Washers, dryers, steam presses and a water-softening unit were used during the building's operation. It is not known if the laundry operated a dry-cleaning service. Effluent from the washers was discharged to a central concrete sump that discharged to a sanitary sewer. A smaller sump was located next to the former water softening units and



JAN 2003

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IRP Sites within 1,000 feet of Electrical Main Switching Station,
Kirtland Air Force Base

FIGURE

3-7

also discharged to a sanitary sewer. Kirtland AFB has recommended NFA for the East Laundry Site.

The Entomology Shop Drain and Outflow Line (SWMU WP-38) is located in the southeast area of Building 20687 and north of the proposed site (Figure 3-7). The Entomology Shop drain received runoff from the Entomology Shop and discharged via the outflow line to the sanitary sewer located west and north of the site. The drain and outflow are currently inactive.

A site investigation was performed at the site in 1995. One borehole was drilled adjacent to the drain to a depth 5 feet below the bottom of the drain and one borehole was drilled adjacent to the outflow line to a depth of 5 feet. One sample was collected from each boring and analyzed for metals, VOCs, SVOCs, TPH, pesticides and herbicides.

Arsenic was the only contaminant detected in the samples at concentrations above the HHRB action levels. The arsenic concentrations were consistent with naturally occurring arsenic levels found at Kirtland AFB. The site was recommended for NFA.

Area Drain Line ST-262 (SWMU 10-7) is located outside a heavy equipment wash rack just east of Building 20442 and northwest of the proposed action (refer to Figure 3-7). The site consists of a concrete drain located in the middle of the wash rack. The drain collected wash down fluids from the wash rack and discharged them to OWS-260. The wash rack is no longer in use.

Samples were collected from the perimeter of the drain in 1995. Analytical results were not indicative of a release from the drain. The site has been recommended for NFA.

OWS ST-260 (SWMU ST-70) is located outside the heavy equipment wash rack east of Building 20422 and northwest of the proposed action (refer to Figure 3-7). The OWS discharges to a sanitary sewer lateral east of the building. The OWS receives liquids from floor drains in Building 20422 and surface runoff.

A site investigation was performed at the site in 1994. Three boreholes were drilled adjacent to the OWS and sampled for VOCs, SVOCs, TPH, metals, and soil pH. The only compound detected in the samples above HHRB screening levels was beryllium. Beryllium levels appear to be naturally elevated throughout Kirtland AFB.

A second site investigation was performed in 1996 to determine if contamination was present in subsurface soils adjacent to the OWS discharge point. Four boreholes were drilled and samples were collected and analyzed for SVOCs, TPH, and metals. Again, beryllium was the only contaminant detected above HHRB screening levels and also appears to be naturally occurring. Kirtland AFB has recommended NFA for the OWS site.

OWS/Line ST-262 (SWMU 8-55) is located on the west side of the Civil Engineering (CE) wash rack (Building 20698) and north of the proposed action (refer to Figure 3-7). The wash rack is used by CE and the entomology shop to wash vehicles and equipment. The wash rack drains flow to OWS ST-262 which discharges to the sanitary sewer.

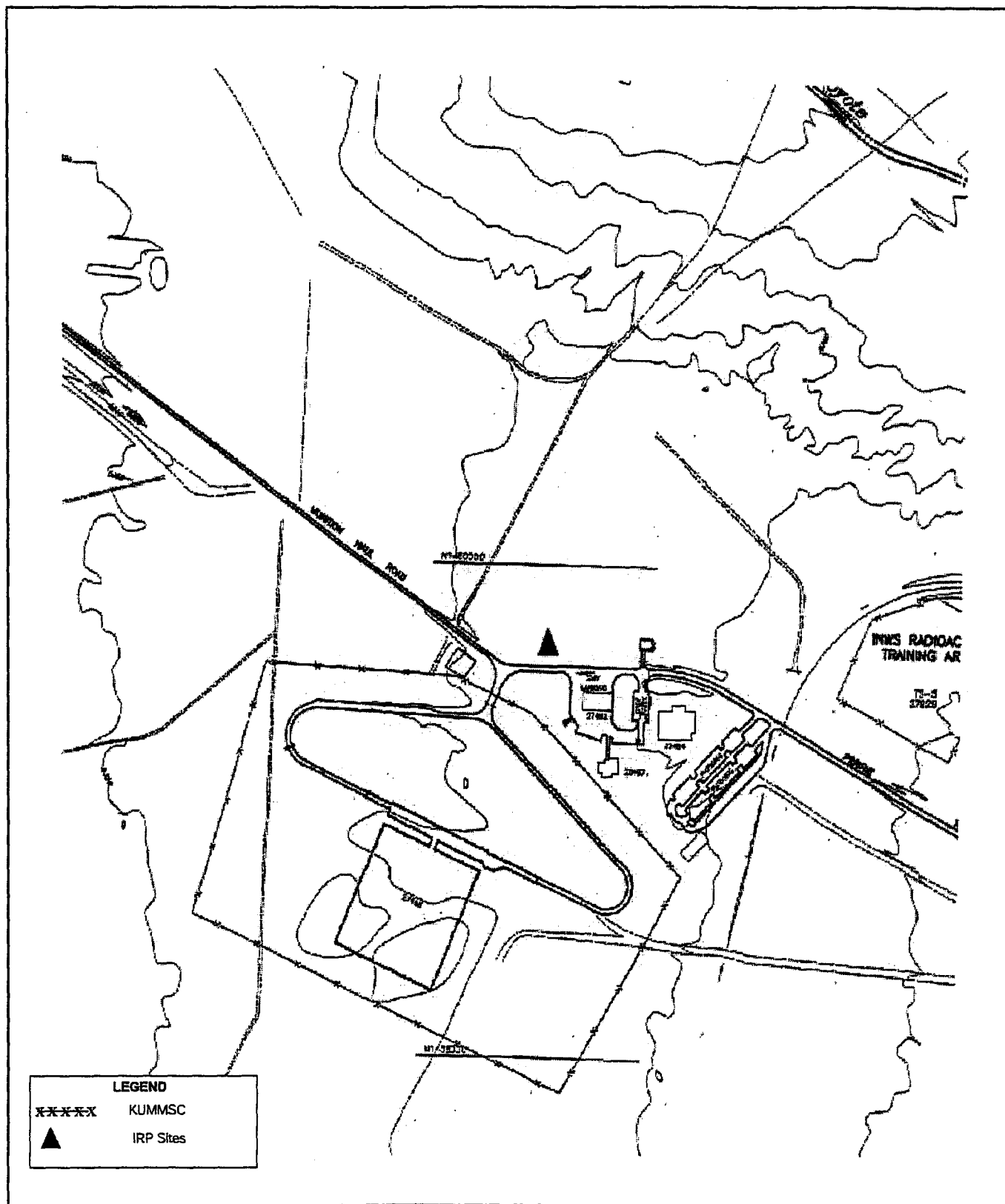
A site investigation was performed at the site in 1995. Four boreholes were drilled to a depth 5 feet below the discharge lines. One sample was collected from each boring and analyzed for VOCs, SVOCs, TPH and metals.

There were no VOCs, SVOCs or TPH detected in any of the samples collected.

Arsenic and beryllium were detected in the samples at concentrations above the HHRB action levels. The arsenic and beryllium concentrations were consistent with naturally occurring arsenic and beryllium levels found at Kirtland AFB. The site was recommended for NFA.

KUMMSC

Radiation Training Sites (TS) 5-8 (SWMU OT-10) are four closed and inactive radiation TS previously utilized by the Defense Special Weapons School. TS 5, 6 & 7 are located northeast of the proposed action (Figure 3-8). TS 5 is approximately 13.4 acres over which 611.1 kilograms (kg) of thorium oxide sludge was spread from 1961 to 1990. TS 6 is approximately 19 acres over which 871.4 kg of thorium oxide sludge was spread. TS 7 is approximately 8 acres over which 101 kg of thorium oxide sludge was spread from 1961-1990. The four sites are considered a high relative risk. Each site is fenced, marked with radiation warning signs and are regularly patrolled by Kirtland AFB Security Police. Kirtland AFB has submitted a Decommissioning Plan to the Nuclear Regulatory Commission for remediation of the sites.



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**IRP Sites within 1,000 feet of Underground Munitions Maintenance Complex,
Kirtland Air Force Base**

FIGURE

3-8

The following sections describe solid waste, wastewater, and hazardous waste management at Kirtland AFB.

3.12.2.1 Solid Waste

Solid municipal waste from the base is sent to an off-base disposal site at the Cerro Colorado Landfill operated by the City of Albuquerque. Non-hazardous construction and demolition debris is disposed of in the Kirtland AFB landfill. The estimated rate of landfill usage on Kirtland AFB is shown in Table 3-14. All solid waste are disposed of in accordance with USAF, Kirtland AFB, and applicable federal, state, and local regulations.

Table 3-14. Estimates of Waste Introduced to Kirtland AFB Landfill, 1996, 1997, 1998, and January – March 1999

Units	1996	1997	1998	January – March 1999
Cubic Yards	226,822	102,119	109,125	39,738
Tons	90,729	40,848	43,650	15,895

Source: Kitt 1999.

Note: Waste estimated at 800 pounds (0.4 tons) per cubic yard.

3.12.2.2 Wastewater

Kirtland AFB does not have separate industrial and municipal wastewater systems. The City of Albuquerque treats most of the sanitary sewage produced by Kirtland AFB. By the end of 1996, the base contributed 2.27 million gallons-per-day of wastewater to the city facility (USAF 1991). Sewage from base installations south of the Tijeras Arroyo is collected in individual septic tanks (USAF 1991), but a project to replace the septic tanks with a connection to Albuquerque's sanitary sewer is under way. An industrial pretreatment program administered by the City of Albuquerque regulates industrial discharges from the base to sewer lines. A City of Albuquerque Wastewater Permit was reissued to Kirtland AFB in 1997 under the Sewer Usage and Wastewater Control Ordinance, bringing the base's total number of wastewater permits issued by the city to four. Kirtland AFB's permits are issued by the City of Albuquerque's publicly owned treatment works, which is currently regulated by a National Pollutant Discharge Elimination System (NPDES) Permit. Four manholes located on the base are used for

monitoring the discharged water quality (USAF 1990). Kirtland AFB does not have an NPDES industrial discharge permit.

3.12.2.3 Hazardous Wastes

A number of potentially hazardous wastes are used and stored at Kirtland AFB. An annually updated management plan is followed for the collection, storage, and disposal of hazardous waste in accordance with applicable federal, state, and local standards. Special guidance documents are followed for the disposal of asbestos, hydrazine, and radioactive materials, and for the prevention of spills (USAF 1990).

Hazardous wastes generated at Kirtland AFB are associated with operation of industrial shops and research and development laboratories, pesticide and herbicide application, radiological testing, fire control training, and fuel management. Wastes generated by these activities vary from year to year, depending on research activities and mission assignments. Hazardous wastes generated at the base include petroleum, oil and lubricants, acids and bases, and non-halogenated and halogenated solvents, and organic compounds. Hazardous wastes that are recycled include surplus chemicals such as halogenated solvents and silver-bearing photographic materials.

Kirtland AFB operates as a large-quantity generator of hazardous waste and as a treatment, storage, and disposal facility. A Resource, Conservation Recovery Act Part B Permit issued by the State of New Mexico to Kirtland AFB, regulates the collection and storage of hazardous waste. Hazardous waste collection and storage sites are operated by the Defense Reutilization and Marketing Office, which arranges off-site disposal of the waste. Some wastes are collected by outside contractors at designated collection points. Photographic laboratory wastes are discharged to sanitary sewers following silver recovery and neutralization. Asbestos and asbestos-containing materials found in numerous buildings at the base are handled in accordance with the Kirtland AFB Asbestos Management Plan (USAF undated).

The IRP at Kirtland AFB forms the basis for assessment and response action under provisions of CERCLA. As of March 2002, 77 IRP sites and 15 Areas of Concern had been identified at the base (Sillerud 2002).

SECTION 4

ENVIRONMENTAL CONSEQUENCES

4.1 HUMAN HEALTH AND SAFETY

4.1.1 Significance Criteria

An impact to safety would be considered significant if implementation of the proposed action would substantially increase risks associated with mishap potential or safety relevant to the public or the environment. For example, if implementation of the proposed action would render existing base facilities incompatible with safety criteria (e.g., runway protection zones [RPZs] or explosive safety zones), safety impacts would be considered significant.

An impact to children from environmental health risks or safety risks would be considered significant if the proposed action would result in a disproportionate adverse impact to the health or safety of children.

4.1.2 Impacts

Changes in safety resulting from the proposed actions were quantified by examining the project sites in relation to the explosive safety zones and RPZs present on the base. Encroachment on these zones was assessed compared with the risk of the actions involved.

Analysis of potential impacts to children included: 1) identification and description of hazards that could potentially affect children; 2) examination of the proposed actions and the potential effects these actions could have on children; and 3) assessment of the significance of potential impacts. If potential impacts are identified, mitigation measures are proposed to minimize or alleviate the impacts.

Contractor personnel would be responsible for complying with all applicable occupational health and safety regulations and would be required to conduct construction activities in a manner that would not pose any risks to personnel at or near the construction sites.

There would be no disproportionate increase in environmental health and safety risks to children from the proposed actions, because children would not be present in the areas of the construction or demolition activities. The increased security, safety and health protection would benefit children on base and at the airport. Therefore, possible disproportionate negative impacts to children identified in Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, would not occur.

4.1.3 Fire Department Structural Training Facility

4.1.3.1 Proposed Action

Implementation of the proposed action would improve human health and the current safety environment at Kirtland Air Force Base (AFB). The proposed action would allow fire personnel to meet their training requirements and maintain their certifications. The new facility would be compliant with all current building codes and safety requirements. New smoke generators would reduce air pollution and the health problems associated with it.

4.1.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in continued use of the existing facility. Fire fighting personnel would not be able to meet their minimum training requirements and maintain their certification. There would be no change to current conditions of health or safety risks to children on base.

4.1.4 Truman Gate

4.1.4.1 Proposed Action

Implementation of the proposed action would greatly improve human health and the current safety environment at Kirtland AFB. The proposed action would alleviate current traffic congestion and decrease traffic accidents. It would increase base security by meeting security requirements and the requirements of the Manual on Uniform Traffic Control Devices.

4.1.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in continued use of the existing facility. Traffic congestion on base would continue to be a problem and base security would continue to be compromised. There would be no change to current conditions of health or safety risks to children on base.

4.1.5 Electrical Main Switching Station

4.1.5.1 Proposed Action

Implementation of the proposed action would improve human health and the current safety environment at Kirtland AFB. The proposed action would increase safety by providing a secure, adequate, reliable, maintainable and redundant power system.

4.1.5.2 No-Action Alternative

If the No-Action Alternative were selected the second electrical main switching station would not be constructed. Existing conditions would prevail and the electrical system at Kirtland AFB would continue to be vulnerable to terrorist attacks. There would be no change to current conditions of health or safety risks to children on base.

4.1.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.1.6.1 Proposed Action

Implementation of the proposed action would improve human health and the current safety environment at Kirtland AFB. The proposed action would increase safety by enhancing security against terrorist activity.

4.1.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in continued use of the existing facility. Upgrades would not be performed on the facility and security would continue to be jeopardized. There would be no change to current conditions of health or safety risks to children on base.

4.1.7 Other Future Actions on the Base

The proposed actions discussed in this document would have a beneficial impact to human health and safety. Therefore, when considered with the health and safety effects of the other future actions; they are not expected to have any significant cumulative negative impacts to health and safety at the base.

4.2 AIR QUALITY

4.2.1 Significance Criteria

The 1990 amendments to the Clean Air Act (CAA) require federal agencies to conform to the affected State Implementation Plan (SIP) with respect to achieving and maintaining attainment of the National Ambient Air Quality Standards (NAAQS) and addressing air quality impacts. An air quality impact resulting from a proposed action would be significant if it would: (1) increase concentrations of ambient criteria pollutants or ozone (O₃) precursors to levels exceeding NAAQS, (2) increase concentrations of pollutants already at nonattainment levels, (3) lead to establishment of a new nonattainment area by the governor of the state or the United States Environmental Protection Agency (EPA), or (4) delay achievement of attainment in accordance with the SIP.

General Conformity Rule. The initial step in determining applicability of the General Conformity Rule is to compare projected pollutant emissions associated with the proposed federal action with threshold limits, or de minimis emission levels to determine if a conformity determination should be accomplished. If the proposed action's emissions would not exceed the de minimis threshold for the applicable pollutant and the proposed action's emissions would be less than 10 percent of the total emissions for the region, the Conformity Rule is not applicable.

Because Kirtland AFB is covered by a carbon monoxide (CO) maintenance plan, the applicable de minimis level for CO is 100 tons-per-year (tpy). Furthermore, total CO emissions in the Albuquerque-Bernalillo County air basin are estimated to be 111,107 tpy. Therefore, CO emissions from mobile, area, and stationary, as well as construction phase emissions associated with a project at Kirtland AFB would not be considered regionally significant unless they were in excess of 11,111 tpy (10 percent of 111,107). The CAA conformity rule states that only net emissions must be considered.

National Environmental Policy Act (NEPA). NEPA requires that emission of pollutants for which an area is in attainment be considered as well. Direct and indirect emissions of criteria pollutants for which an area is in attainment, or precursors to those pollutants, associated with a proposed action must be calculated, which include mobile, area, and stationary, as well as construction phase emissions. The Albuquerque-Bernalillo County air basin is in attainment for particulate matter equal to or less than ten micrometers in diameter, sulfur dioxide, oxides of nitrogen (NO_x) and volatile organic compounds. The conformity analysis significance levels for these pollutants are also appropriate for determining significance of air quality impacts under NEPA. The significance level for all of these attainment pollutants in this air basin is 100 total tpy. However, even if the emissions are less than these significance levels, the emissions can still be considered significant if the total exceeds more than 10 percent of the area's total emissions.

4.2.2 Impacts

Under the CAA, new stationary sources that are proposed for areas are subject to the requirements of the Prevention of Significant Deterioration (PSD) regulations. The PSD regulations require new stationary sources with emissions of criteria pollutants above 250 tpy, or 100 tpy for specific source categories, to conduct an air quality impact analysis and demonstrate compliance with Best Available Control Technology requirements. Under the CAA Amendments Title V Operating Permits Program, all sources in attainment areas with emissions of criteria pollutants above 100 tpy must obtain a federal operating permit. The PSD/Title V major source threshold of 100 tpy for attainment pollutants was used to evaluate the proposed action's significance for air quality impacts, in accordance with the requirements of 40 Code of Federal Regulations (CFR) § 51.853.

A conformity applicability analysis is required to determine whether a federally proposed action is subject to requirements for a conformity determination under EPA's General Conformity Rule. The initial step in determining applicability of the General Conformity Rule is to compare projected pollutant emissions with baseline emissions (40 CFR § 51.853[b]). Conformity determinations are conducted to ensure that NAAQS would not be exceeded and that the proposed action would comply with all federal and state air quality regulations, goals, and plans. The threshold limits to determine if a conformity determination should be accomplished are identified in 40 CFR § 93.153. If the area is designated nonattainment for a pollutant, but the proposed action's emissions would not

exceed the de minimis threshold and would be less than 10 percent of the total emissions budget for the region, a record of non-applicability is prepared.

Under Section 176(c) of the CAA, a framework is provided to ensure that federal actions conform to appropriate state or federal implementation plans. Before a federal agency or department engages in, supports, finances, licenses, permits, or approves any activity, that agency must ensure that such actions conform to the applicable implementation plan. According to the 1990 CAA amendments, the purpose of an air quality implementation plan is to eliminate or reduce the severity and number of violations of NAAQS and achieving expeditious attainment of these standards. Federal actions must not conflict with the implementation plan by causing or contributing to any new violation, increasing the frequency or severity of any existing violation, or delaying timely attainment of a standard or required interim milestone. If the proposed action does not conform to the SIP, they cannot be approved or allowed to proceed.

For all regulated emission sources in nonattainment areas, direct and indirect emissions of criteria pollutants (and precursors to those pollutants) must be calculated. Mobile, area, and stationary, as well as construction-phase emissions sources must be considered. All emissions are calculated in tpy. The CAA conformity rule states that only net emissions must be considered.

The 1990 CAA amendments require a conformity analysis for actions potentially affecting air quality in nonattainment and maintenance areas. If total direct and indirect emissions are estimated to exceed emissions thresholds, a conformity determination is required. The calculation of total direct and indirect emissions does not have to make specific reference to conventional emission source categories (i.e., stationary, area, and mobile sources). The total direct and indirect emissions of criteria pollutants attributable to the proposed action (e.g., O₃ precursors) must be considered. O₃ precursors include volatile reactive organic compounds and NO_x. Indirect emissions that must be considered are limited to emissions that could be practicably controlled.

The greater Albuquerque area, including Kirtland AFB, is in attainment for all NAAQS, although the area was reclassified from nonattainment to maintenance status for CO. As a result, CO emissions are still being tracked. The EPA defines an action as regionally significant when that action contributes at least 10 percent of a nonattainment area's total

emissions for any criteria pollutant. Table 4-1 shows potential CO emissions from the proposed projects.

4.2.3 Fire Department Structural Training Facility

4.2.3.1 Proposed Action

The proposed action would have a temporary short-term adverse effect as a result of increased air emissions from construction equipment, dust during construction and demolition activities, emissions from vehicles and heavy-duty equipment, and fugitive dust emissions from soil disturbance. Currently, the old training facility has been condemned due to unsafe structural conditions and because emissions from the smoke generator violated local air quality restrictions. The new training facility would use propane burners for its smoke generator and would have a positive impact on air emissions because it would meet air quality regulations, whereas the old training facility did not comply with hydrocarbon emissions. This proposed action would not change the regional or site-specific air quality as described in Section 3.

Emissions from the proposed action may temporarily affect sensitive receptors on base. Emissions from vehicles and equipment would be temporary. Estimated CO emissions from construction vehicles and equipment are outlined in Table 4-1. Dust emissions could be reduced using standard dust control measures, such as watering, soil stabilization, and planting rapidly growing vegetation in construction areas. CO emissions could be reduced around sensitive receptors by taking alternative driving routes to get to and from the project site. Using alternative fuel vehicles would also contribute to reduced emissions.

4.2.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in continued use of the existing facility. As a result, air quality regulations would still not be met. There would be no change to current air quality conditions on base.

Table 4-1. CO Emissions Generated by the Proposed Actions

Categories	CO Emission Factors ^a	Total CO Emissions
	g/hphr	g/hphr per year
Contractor-Owned Vehicles ^b	30.02 (lb/hr)	28,829 (lb-hr)
Bore/Drill Rigs	9.20	8,832
Cement and Mortar Mixers	4.60	4,416
Off-Highway Trucks	2.80	2,688
Rollers	3.10	2,976
Scrapers	5.00	4,800
Paving Equipment	4.60	4,416
Cranes	4.20	4,032
Excavators	5.20	4,992
Crushing/Proc. Equipment	9.20	8,832
Graders	3.80	3,648
Tractors/Loaders/Backhoes	6.80	6,528
Dumpers/Tenders	2.80	2,688
Other Construction Equipment	9.20	8,832
Total	40.48 g/hphr + 30.02 lb/hr	67,670 g/hphr + 28,829 lb/hr

Albuquerque/Bernalillo County Standard ^c	200,000 lb/hr
EPA Standard ^d	200,000 lb/hr

Notes:

^a Emission Factors for heavy-duty, diesel-powered construction equipment were obtained from the Nonroad Engine and Vehicle Emission Study-Report, Office of Air And Radiation, US Environmental Protection Agency, November 1991.

^b Calculation of the Contractor Owned Vehicles Category will be calculated using the US Air Force Air Conformity Applicability Model.

^c Standard obtained from Ambient Air Quality Standards and Air Quality Control Regulations for Albuquerque/Bernalillo County, Albuquerque - Bernalillo County Air Quality Control Board, January 1995 compilation.

^d 40 CFR 93.153(B)(1) - Carbon Monoxide Standard for Non-Attainment Areas.

Assumptions:

The work period for each of the categories of equipment was calculated for two pieces of equipment running 8 hours per day for 5 days per week for 12 weeks. Each project would generate specific amounts of CO, based on the duration of the project. The amount of CO emitted is tabulated both individually by project, and combined as if all construction project activities occurred concurrently.

CO = carbon monoxide g/hphr = grams/per horsepower hour

g/hphr per year = grams/per horsepower hour per year

EPA = Environmental Protection Agency

4.2.4 Truman Gate

4.2.4.1 Proposed Action

The proposed action would have a temporary short-term adverse affect as a result of increased air emissions from construction equipment, dust during ground disturbance and site preparation and construction and demolition activities. There would also be temporary emissions from vehicles and heavy-duty equipment, and fugitive dust emissions from soil disturbance. This proposed action would not change the regional or site-specific air quality as described in Section 3.

Emissions from vehicles and equipment would be temporary and localized. Estimated CO emissions from construction vehicles and equipment are outlined in Table 4-1. Dust emissions could be reduced using standard dust control measures, such as watering, and soil stabilization.

4.2.4.2 No-Action Alternative

No changes to air quality would result from selection of the No-Action Alternative.

4.2.5 Electrical Main Switching Station

4.2.5.1 Proposed Action

The proposed action would have a temporary short-term adverse affect as a result of increased air emissions from dust during ground disturbance and site preparation activities, and emissions from vehicles and heavy-duty equipment. This proposed action would not change the regional or site-specific air quality as described in Section 3.

Emissions from vehicles and equipment would be temporary. Estimated CO emissions from construction vehicles and equipment are outlined in Table 4-1. Dust emissions could be reduced using standard dust control measures, such as watering, soil stabilization, and planting rapidly growing vegetation in construction areas.

4.2.5.2 No-Action Alternative

No changes to air quality would result from selection of the No-Action Alternative because no construction activities would occur.

4.2.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.2.6.1 Proposed Action

The proposed action would have a temporary short-term adverse affect as a result of increased air emissions from dust during ground disturbance and site preparation activities, and emissions from vehicles and heavy-duty equipment. This proposed action would not change the regional or site-specific air quality as described in Section 3.

Emissions from vehicles and equipment would be temporary and localized. Estimated CO emissions from construction vehicles and equipment are outlined in Table 4-1. Dust emissions could be reduced using standard dust control measures, such as watering, soil stabilization, and planting rapidly growing vegetation in construction areas.

4.2.6.2 No-Action Alternative

No changes to air quality would result from selection of the No-Action Alternative.

4.2.7 Other Future Actions on the Base

The combined emissions from the proposed actions, when considered with potential emissions from other future actions at the base, are not expected to have any significant cumulative negative impacts to air quality.

4.3 NOISE

4.3.1 Significance Criteria

Noise impact analyses typically evaluate potential changes to existing noise environments that would result from implementation of a proposed action. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors

exposed to unacceptable noise levels), negligible (i.e., if the number of sensitive receptors exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels). Noise impacts would be considered significant if health and safety standards are violated, if sensitive receptors are disproportionately affected, or if damage results to personal property.

4.3.2 Impacts

Land use guidelines established by the United States Department of Housing and Urban Development and based on findings of the Federal Interagency Committee on Noise recommend acceptable levels of noise exposure for various types of land uses. Projected noise impacts from the proposed actions and alternatives were evaluated quantitatively against these acceptable noise levels.

4.3.3 Fire Department Structural Training Facility

4.3.3.1 Proposed Action

The proposed action would cause a temporary increase in noise around the construction site. Noise generation would last only for the duration of construction activities, and would be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (i.e., between 7 a.m. and 5 p.m.). Other mitigation measures include making sure that mobile equipment meets noise emission standards. Noise produced by construction at the proposed site may temporarily affect sensitive receptors on base. However, noise associated with the proposed construction activities would be minor when compared to the noise generated on base by commercial and military aircraft overflights.

4.3.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to the noise environment on base.

4.3.4 Truman Gate

4.3.4.1 Proposed Action

The proposed action would cause a temporary increase in noise around the construction and demolition sites. Noise would come from vehicles and heavy-duty construction equipment. Noise could be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (i.e., between 7 a.m. and 5 p.m.). Other mitigation measures include making sure that mobile equipment meets noise emission standards. Noise associated with the proposed construction and demolition activities would be minor when compared to the noise generated on base by commercial and military aircraft overflights; therefore, the proposed action would not significantly impact noise receptors.

4.3.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to the noise environment on base.

4.3.5 Electrical Main Switching Station

4.3.5.1 Proposed Action

The proposed action would have a temporary noise impact during construction activities from construction vehicles and heavy-duty construction equipment. Noise could be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (i.e., between 7 a.m. and 5 p.m.). Other mitigation measures include making sure that mobile equipment meets noise emission standards. Noise associated with the proposed construction activities would be minor when compared to the noise generated on base by commercial and military aircraft overflights; therefore, the proposed action would not significantly impact noise receptors.

4.3.5.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to the noise environment on base.

4.3.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.3.6.1 Proposed Action

Noise from vehicles and heavy-duty construction equipment would be minor and short-term. Noise could be reduced through the use of equipment exhaust mufflers and restriction of construction activity to normal working hours (i.e., between 7 a.m. and 5 p.m.). Other mitigation measures include making sure that mobile equipment meets noise emission standards. Noise associated with the proposed construction activities would be minor when compared to the noise generated on base by commercial and military aircraft overflights; therefore, the proposed action would not significantly impact noise receptors.

4.3.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to the noise environment on base.

4.3.7 Other Future Actions on the Base

The combined noise impacts from the proposed actions, when considered with potential impacts from other future actions at the base, are not expected to have any significant cumulative negative impacts to sensitive noise receptors.

4.4 LAND USE

4.4.1 Significance Criteria

Potential impacts to land use are evaluated by determining if an action is compatible with existing land use and in compliance with adopted land use plans and policies. In general, land use impacts would be considered significant if they would: (1) be inconsistent or noncompliant with applicable land use plans and policies, (2) prevent continued use or occupation of an area, or (3) be incompatible with adjacent or nearby land use to the extent that public health or safety is threatened.

4.4.2 Impacts

Potential land use impacts were analyzed by: (1) identifying and describing land uses that could affect or be affected by the projects, (2) examining the effects these actions may have on the resource, (3) assessing the significance of potential impacts, and (4) providing measures to mitigate potentially significant impacts.

4.4.3 Fire Department Structural Training Facility

4.4.3.1 Proposed Action

Under the proposed action, less than 1 acre of land would be disturbed. Land use under the proposed action would remain compatible with existing land uses. Construction of the proposed new facility would not have any significant impact on land use, as it is located in the same area as the old training facility.

4.4.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to current land use.

4.4.4 Truman Gate

4.4.4.1 Proposed Action

The proposed action would impact between 1-2 acres of land and would have a slight impact on surrounding land use. There are three softball athletic fields (Facilities Number 2566, 2553, and 2567, respectively) within close proximity to the proposed project site. They are about 1 acre each.

4.4.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to current land use.

4.4.5 Electrical Main Switching Station

4.4.5.1 Proposed Action

Under the proposed action, approximately 1-2 acres of land would be disturbed. Land use under the proposed action would remain compatible with existing land uses surrounding the site.

4.4.5.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to current land use.

4.4.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.4.6.1 Proposed Action

Under the proposed action, land use would remain compatible with existing land uses. The action consists of upgrading the existing facility; as a result, no significant impacts to land use are expected.

4.4.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to current land use.

4.4.7 Other Future Actions on the Base

No impacts to current land use would occur from the proposed actions addressed in this document. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to land use from the other future actions, are not expected to have a significant cumulative negative impact on land use.

4.5 GEOLOGICAL RESOURCES

4.5.1 Significance Criteria

An impact to geological resources would be considered significant if implementation of

the proposed action would violate a federal, state, or local law or regulation protecting geological resources (e.g., impacted unique landforms or rock formations), or result in uncontrolled erosion over a larger area than that allowed by regulations protecting soil resources.

4.5.2 Impacts

Protection of unique geologic features and minimization of soil erosion are considered when evaluating impacts of a proposed action on geological resources. Generally, such impacts are not considered significant if proper construction techniques and erosion control measures can be implemented to minimize short- and long-term disturbance to soils and overcome limitations imposed by earth resources.

4.5.3 Fire Department Structural Training Facility

4.5.3.1 Proposed Action

Implementation of the proposed action would result in no impacts to regional geological resources. The region's infrequent seismic activity would create no significant threat to construction workers given the use of standard construction procedures for facilities of this size and type.

4.5.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current geological resources at Kirtland AFB.

4.5.4 Truman Gate

4.5.4.1 Proposed Action

Implementation of the proposed action would result in no impacts to regional geological resources. The region's infrequent seismic activity would create no significant threat to construction workers given the use of standard construction procedures for facilities of this size and type.

4.5.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of geological resources at Kirtland AFB.

4.5.5 Electrical Main Switching Station

4.5.5.1 Proposed Action

Implementation of the proposed action would result in no impacts to regional geological resources. The region's infrequent seismic activity would create no significant threat to construction workers given the use of standard construction procedures for facilities of this size and type.

4.5.5.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current geological resources at Kirtland AFB.

4.5.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.5.6.1 Proposed Action

Implementation of the proposed action would result in no impacts to regional geological resources. The region's infrequent seismic activity would create no significant threat to construction workers given the use of standard construction procedures for facilities of this size and type.

4.5.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current geological resources at Kirtland AFB.

4.5.7 Other Future Actions on the Base

No impacts to regional geological resources would occur from the proposed actions

addressed in this document or other currently known future actions. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to geological resources from the other future actions, are not expected to have a significant cumulative negative impact on geological resources.

4.6 WATER RESOURCES

4.6.1 Significance Criteria

Criteria for determining the significance of impacts to water resources is based on water availability, quality, and use; existence of floodplains and wetlands; and applicable regulations. An impact to water resources would be considered significant if it would: (1) reduce or interfere with water availability to existing users, (2) create or contribute to overdraft of groundwater basins, (3) exceed safe annual yield of water supply sources, (4) adversely affect water quality or otherwise endanger public health, (5) threaten or damage unique hydrologic characteristics, or (6) violate established laws or regulations that have been adopted to protect or manage water resources. Impacts to floodplains would be considered significant if a proposed action would alter flow within a floodplain.

4.6.2 Impacts

Potential impacts to water resources were analyzed by: (1) identifying and describing the effects these actions may have on the resource, (2) examining the effects these actions may have on the resource, (3) assessing the significance of potential impacts, and (4) providing measures to mitigate potentially significant impacts.

4.6.3 Fire Department Structural Training Facility

4.6.3.1 Proposed Action

Under the proposed action, impacts to water resources are not expected. The new Fire Department Structural Training Facility would use similar amounts of water as the old training facility. Temporary water use for dust suppression during construction may be conducted depending on site conditions. Construction activities at this site are located more than three-fourths of a mile away from Tijeras Arroyo, which is well outside the floodplain for this surface channel. Runoff from the construction site would be

controlled using erosion control methods discussed under Section 4.5, Geological Resources.

4.6.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to current water resources.

4.6.4 Truman Gate

4.6.4.1 Proposed Action

Under the proposed action, the new Truman Gate and Visitor Center would utilize the same amount of industrial and potable water as the old facilities. Therefore, water use is not expected to change. Temporary water use for dust suppression may be conducted depending on site conditions. Construction activities at this site are located more than a mile away from Tijeras Arroyo, which is well outside the floodplain for this surface channel. Runoff from the construction site would be controlled using erosion control technologies discussed under Section 4.5, Geological Resources.

4.6.4.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to current water resources.

4.6.5 Electrical Main Switching Station

4.6.5.1 Proposed Action

Under the proposed action, impacts to water resources are not expected to be significant. Temporary water use for dust suppression may be conducted depending on site conditions. Construction activities at the Electrical Main Switching Station are located more than three-fourths of a mile away from Tijeras Arroyo which is well outside the floodplain for this surface channel. Runoff from the construction site would be controlled using erosion control technologies discussed under Section 4.5, Geological Resources.

4.6.5.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to current water resources.

4.6.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.6.6.1 Proposed Action

Under the proposed action, impacts to water resources are not expected to be significant. Temporary water use for dust suppression may be conducted depending on site conditions. The facility proposed for upgrading is located more than three-fourths of a mile away from Tijeras Arroyo, which is well outside the floodplain for this surface channel. Runoff from the construction site would be controlled using erosion control technologies discussed under Section 4.5, Geological Resources.

4.6.6.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to current water resources.

4.6.7 Other Future Actions on the Base

No impacts to water resources would occur from the proposed actions addressed in this document. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to water resources from future actions are not expected to have a significant cumulative negative impact on water resources in the area.

4.7 BIOLOGICAL RESOURCES

4.7.1 Significance Criteria

Determination of the significance of impacts to biological resources is based on: (1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource; (2) the proportion of the resource that would be affected relative to its occurrence in the region; (3) the sensitivity of the resource to proposed activities; and (4) the duration of ecological ramifications. Impacts to biological resources are considered significant if species or habitats of high concern are adversely affected over relatively large areas, or

disturbances cause reductions in population size or distribution of a species of special concern.

Determination of the significance of wetland impacts is based on: (1) the function and value of the wetland, (2) the proportion of the wetland that would be affected relative to the occurrence of similar wetlands in the region, (3) the sensitivity of the wetland to proposed activities, and (4) the duration of ecological ramifications. Impacts to wetland resources are considered significant if high value wetlands would be adversely affected.

4.7.2 Impacts

Sensitive species or habitats in the vicinity of the project sites were identified and potential impacts to biological resources, such as habitat loss and noise, resulting from implementation of the proposed actions were evaluated.

4.7.3 Fire Department Structural Training Facility

4.7.3.1 Proposed Action

Under the proposed action, less than 1 acre of land would be disturbed. Due to the already developed nature of the site, no significant impacts to vegetation or wildlife would occur. There are no wetlands located near the proposed action. A historical burrowing owl nest is located within 49 feet of the old training facility. To avoid disturbances to potential nesting burrowing owls, a survey would be conducted prior to any construction activities. If owls are present, construction and demolition activities would only commence after the owls have migrated from the area (i.e. October 15 – March 15). Additionally, nesting burrows would be flagged and avoided during construction and demolition activities, so that the nesting sites could still be viable after activities are completed. Following these guidelines, burrowing owls nesting at Kirtland AFB would not be significantly impacted from the construction and demolition activities associated with the new fire training facility. No other sensitive species are known to occur in the area. Therefore, significant impacts to sensitive species would not occur.

4.7.3.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to biological resources.

4.7.4 Truman Gate

4.7.4.1 Proposed Action

Under the proposed action, less than 2 acres of land would be disturbed. Due to the already developed nature of the site, impacts to vegetation and wildlife would be insignificant. Wetlands are not known to occur in the area. An active burrowing owl nest is located 1,148 feet west of the proposed relocation site. Avoidance measures outlined in section 4.7.3.1 of this document would be implemented, to prevent any impacts to this species. No other sensitive species are known to occur in the area, therefore no significant impacts would occur.

4.7.4.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to biological resources.

4.7.5 Electrical Main Switching Station

4.7.5.1 Proposed Action

Under the proposed action, less than 2 acres of land would be disturbed. Due to the already developed nature of the site, impacts to vegetation and wildlife would be insignificant. Wetlands and sensitive species are not known to occur in the area; therefore, significant impacts to these biological resources would not occur.

4.7.5.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to biological resources.

4.7.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.7.6.1 Proposed Action

Under the proposed action, upgrades to the existing security infrastructure would occur. Due to the already developed nature of the site, impacts to vegetation and wildlife would be insignificant. Wetlands are not known to occur in the area. Four active burrowing

owl nests are located within the perimeter fence. Avoidance measures outlined in section 4.7.3.1 of this document would be implemented, to prevent any impacts to this species. No other sensitive species are known to occur in the area; therefore no significant impacts would occur.

4.7.6.2 No-Action Alternative

Under the No-Action Alternative, there would be no changes to biological resources.

4.7.7 Other Future Actions on the Base

No impacts to current biological resources would occur from the proposed actions addressed in this document. Burrowing owls would not be adversely impacted from the proposed actions as long as the guidelines provided above are followed. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbance to biological resources from other future actions, are not expected to have a significant impact on biological resources in the area.

4.8 TRANSPORTATION AND CIRCULATION

4.8.1 Significance Criteria

Impacts to transportation and circulation are assessed by determining an action's potential to change current transportation patterns, systems, service, and safety. Impacts may arise from physical changes to circulation (e.g., closing, rerouting, or creating roads), construction activity disrupting existing local-area traffic patterns (e.g., introduction of construction-related traffic on local roads), or changes in daily or peak-hour traffic volumes created by workforce and population changes related to installation activities. An impact on roadway capacities would be considered significant if a road with no history of over-capacity were forced to operate at or beyond its design capability. An impact would also be considered significant if the action would increase traffic on roads already experiencing traffic problems.

4.8.2 Impacts

Potential impacts to transportation and circulation were analyzed by: (1) identifying and describing transportation and circulation that could affect or be affected by the projects, (2) examining the effects these actions may have on the resource, (3) assessing the significance of potential impacts, and (4) providing measures to mitigate potentially significant impacts.

Non-hazardous construction and demolition debris would be transported to the Kirtland AFB landfill or a suitable off-site landfill for disposal. An on-site dumpster would be provided by the contractor for other non-hazardous municipal solid waste (e.g., plastics, paper, and food waste) that could be generated by worker activity at the project sites. When the dumpster is full, the debris would be transported to a permitted Subtitle D landfill. Any cardboard waste that is generated would be separated and delivered to the base landfill or the Sandia National Laboratories, Solid Waste Transfer Station. In accordance with Department of Defense Instruction 4715.4, paragraph F.2.c.(3)(f), salvageable metal debris resulting from construction or demolition activities would be removed and transported to the Defense Reutilization and Marketing Office, located at Kirtland AFB, for recycling or to any certified recycling facility.

Construction from the proposed actions would result in increased construction worker and material-hauling vehicle trips to and from the project sites as well as dump truck trips to landfills. Using off-peak hours for construction vehicle trips would help alleviate the congestion that these streets experience. If off-base landfills were utilized, avoiding main interchanges as much as possible and traveling in off-peak times would help to decrease the impacts of the proposed actions.

4.8.3 Fire Department Structural Training Facility

4.8.3.1 Proposed Action

The proposed action would have a temporary short-term impact as a result of increased traffic from construction and demolition vehicles and heavy equipment. Traffic may be impacted around the construction area as vehicles traveling to and from the project site deliver construction materials and haul demolition debris from the area. Utilizing mitigation measures mentioned in section 4.8.2 may reduce impacts.

4.8.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current transportation and circulation conditions at Kirtland AFB.

4.8.4 Truman Gate

4.8.4.1 Proposed Action

The proposed action would have a positive impact on current traffic. This proposed action would alleviate current traffic problems at the current location and improve the flow of traffic in that area. Traffic from construction and demolition activities would be temporary and short-term.

4.8.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current transportation and circulation conditions on base. Traffic congestion would continue to be hazardous at the intersection of Gibson Blvd. and San Mateo Blvd.

4.8.5 Electrical Main Switching Station

4.8.5.1 Proposed Action

The proposed action would have a temporary short-term impact on transportation and circulation during construction activities from vehicles and heavy-duty construction equipment. No significant impacts to transportation and circulation are expected.

4.8.5.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current transportation and circulation conditions at Kirtland AFB.

4.8.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.8.6.1 Proposed Action

The proposed action would have a temporary short-term impact on transportation and circulation as a result of increased traffic from construction vehicles and heavy-equipment. No significant impacts to transportation and circulation are expected.

4.8.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current transportation and circulation conditions at Kirtland AFB.

4.8.7 Other Future Actions on the Base

No long term negative impacts to transportation and circulation would occur from the proposed actions addressed in this document. Beneficial impacts would occur from implementation of the Truman Gate relocation. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to transportation and circulation from the other future actions, are not expected to have a significant cumulative negative impact on transportation and circulation.

4.9 VISUAL RESOURCES

4.9.1 Significance Criteria

Criteria for determining the significance of impacts to visual resources are based on the level of visual sensitivity in an area. Visual sensitivity is defined as the degree of public interest in visual resources and concern over adverse changes in the quality of that resource. In general, an impact on a visual resource would be considered significant if implementation of an action would substantially alter a sensitive visual setting.

4.9.2 Impacts

After assessing the visual character and relative sensitivity of the affected setting, changes to the landscape associated with the proposed actions and alternatives were analyzed in terms of their potential to noticeably alter existing viewsheds.

4.9.3 Fire Department Structural Training Facility

4.9.3.1 Proposed Action

Construction and demolition would occur with implementation of the proposed action. These activities would occur in the cantonment area. The new facility would be compatible with the current visual conditions present in the cantonment area. Since the action would not degrade the current visual conditions present at the project location, no adverse impacts to visual resources would occur.

4.9.3.2 No-Action Alternative

No changes to visual resources would result from selection of the No-Action Alternative.

4.9.4 Truman Gate

4.9.4.1 Proposed Action

Construction and demolition would occur with implementation of the proposed action. These activities would occur in the cantonment area. The new facilities would be compatible with the current visual conditions present in the cantonment area. Since the action would not degrade the current visual conditions present at the project locations, no adverse impacts to visual resources would occur.

4.9.4.2 No-Action Alternative

No changes to visual resources would result from selection of the No-Action Alternative.

4.9.5 Electrical Main Switching Station

4.9.5.1 Proposed Action

Construction activities would occur with implementation of the proposed action. This activity would occur in the cantonment area. The new facility would be compatible with the current visual conditions present in the cantonment area. Since the action would not degrade the current visual condition present at the project location, no adverse impacts to visual resources would occur.

4.9.5.2 No-Action Alternative

No changes to visual resources would result from selection of the No-Action Alternative.

4.9.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.9.6.1 Proposed Action

Construction activities would occur with implementation of the proposed action. This activity would occur in the cantonment area. Upgrades done on the facility would be compatible with the current visual conditions present in the cantonment area. Since the action would not degrade the current visual condition present at the project location, no adverse impacts to visual resources would occur.

4.9.6.2 No-Action Alternative

No changes to visual resources would result from selection of the No-Action Alternative.

4.9.7 Future Actions on the Base

No impacts to visual resources would occur from the proposed actions addressed in this document. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to visual resources from the other future actions, are not expected to have any significant cumulative negative impacts.

4.10 CULTURAL RESOURCES

4.10.1 Significance Criteria

The National Historic Preservation Act of 1966, as amended, establishes the National Register of Historic Places and Title 36 CFR Section 60.4 defines the criteria used to establish significance and eligibility to the National Register as follows:

“The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and,

- (a) That are associated with events that have made a significant contribution to the broad patterns of our history; or
- (b) That are associated with the lives of persons significant in our past; or
- (c) That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
- (d) That have yielded, or may be likely to yield, information important in prehistory or history.”

4.10.2 Impacts

Analysis of potential impacts to significant cultural resources considers both direct and indirect impacts. Impacts may occur by: (1) Physically altering, damaging, or destroying all or part of a resource; (2) Altering the characteristics of the surrounding environment that contribute to resource significance; (3) Introducing visual, audible, or atmospheric elements that are out of character with the property or alter its setting; or (4) Neglecting the resource to the extent that it is deteriorating or destroyed.

Impacts are assessed by identifying the types and locations of proposed actions and determining the exact locations of cultural resources that could be affected.

4.10.3 Fire Department Structural Training Facility

4.10.3.1 Proposed Action

No significant cultural resources, historic or prehistoric are known to exist within the proposed project boundaries. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the proposed action. The area within the proposed project site has been disturbed by earlier development.

Building 20419 was built in 1976 as a fireman training facility. This facility does not meet the exceptional importance requirement for the National Register of Historic Places Criterion Consideration G. Therefore, this action will have no adverse effect to historic properties.

4.10.3.2 No-Action Alternative

No changes to cultural resources would result from selection of the No-Action Alternative.

4.10.4 Truman Gate

4.10.4.1 Proposed Action

No significant cultural resources, historic or prehistoric, are known to exist within the proposed project boundaries. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the proposed action. The area within the proposed action area has been disturbed by earlier development.

Historic Building Inventory Forms have been completed for Building 510 and 511. Both buildings would be demolished if this proposed action were implemented. The State Historic Preservation Office determined the buildings not eligible to the National Register of Historic Places in July 2002. Therefore, the proposed action will have no adverse effect to historic properties.

4.10.4.2 No-Action Alternative

No changes to cultural resources would result from selection of the No-Action Alternative.

4.10.5 Electrical Main Switching Station

4.10.5.1 Proposed Action

No significant cultural resources, historic or prehistoric, are known to exist within the proposed project boundaries. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the proposed action. The area within the proposed action area has been disturbed by earlier development.

4.10.5.2 No-Action Alternative

No changes to cultural resources would result from selection of the No-Action Alternative.

4.10.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.10.6.1 Proposed Action

No significant cultural resources, historic or prehistoric, are known to exist within the proposed project boundaries. As a result, no impacts are anticipated to occur to known cultural resources from implementation of the proposed action. The area within the proposed action area has been disturbed by earlier development.

4.10.6.2 No-Action Alternative

No changes to cultural resources would result from selection of the No-Action Alternative.

4.10.7 Other Future Actions on the Base

No impacts to cultural resources would occur from the proposed actions addressed in this document. Therefore, the cumulative effects of the proposed actions, when considered with potential disturbances to cultural resources from the other future actions, are not expected to have significant cumulative negative impacts.

4.11 SOCIOECONOMICS

4.11.1 Significance Criteria

Impacts of population and expenditures are assessed by determining an action's direct effect on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly depending on the location of a proposed action; for example, the termination of an operation that employs 25 people in a major metropolitan area may be virtually unnoticed while the same action would have significant adverse impacts in a small community. A socioeconomic impact would be considered significant if implementation of an action would substantially shift population trends, employment, housing, and adversely affect regional spending patterns.

An impact to Environmental Justice (Section 3) would be considered significant if an action would result in a disproportionate adverse impact to minority or low-income populations in the project vicinity.

4.11.2 Impacts

Potential impacts to socioeconomic resources were analyzed by: (1) identifying and describing socioeconomic resources that could affect or be affected by the projects, (2) examining the effects these actions may have on the resource, (3) assessing the significance of potential impacts, and (4) providing measures to mitigate potentially significant impacts.

4.11.3 Fire Department Structural Training Facility

4.11.3.1 Proposed Action

Socioeconomic impacts from implementation of the proposed action would be beneficial overall, but minor and short-term in nature. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a temporary, beneficial impact. These impacts would be negligible in a metropolitan area the size of Albuquerque.

4.11.3.2 No-Action Alternative

No changes to the socioeconomic environment or to minority or low-income populations would result from selection of the No-Action Alternative.

4.11.4 Truman Gate

4.11.4.1 Proposed Action

Socioeconomic impacts from implementation of the proposed action would be beneficial overall, but minor and short-term in nature. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a temporary, beneficial impact. Socioeconomic impacts would be negligible in a metropolitan area the size of Albuquerque.

4.11.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no changes to the socioeconomic environment or to the minority or low-income populations in the Albuquerque area. Public safety would continue to be a hazard at Truman Gate with traffic congestion and pedestrian walkway hazards.

4.11.5 Electrical Main Switching Station

4.11.5.1 Proposed Action

Socioeconomic impacts from implementation of the proposed action would be beneficial overall as construction of the switching station would provide backup power to housing and recreational facilities located within the base. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a temporary, beneficial impact. These impacts would be negligible in a metropolitan area the size of Albuquerque.

4.11.5.2 No-Action Alternative

Selection of the No-Action Alternative would not result in any changes to socioeconomics or to the minority or low-income populations in the Albuquerque area.

4.11.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.11.6.1 Proposed Action

Socioeconomic impacts from implementation of the proposed action would be beneficial overall, but minor and short-term in nature. Purchase of construction materials and salaries paid to construction workers would constitute a minor, temporary, beneficial impact on the local economy. Contracts for construction equipment would also have a temporary, beneficial impact. These impacts would be negligible in a metropolitan area the size of Albuquerque. There would be no negative impacts to minority and low-income populations.

4.11.6.2 No-Action Alternative

Selection of the No-Action Alternative would not result in any changes to socioeconomics or to the minority or low-income populations in the Albuquerque area.

4.11.7 Other Future Actions on the Base

The overall impacts on socioeconomics from the proposed actions would be beneficial in nature, but negligible. Minority and low-income populations off base would not be affected. Effects on socioeconomics from the proposed actions, when combined with the other future actions, are not expected to significantly impact the area's socioeconomic environment.

4.12 ENVIRONMENTAL MANAGEMENT

4.12.1 Significance Criteria

Numerous local, state, and federal laws regulate the storage, handling, disposal, and transportation of hazardous materials and wastes; the primary purpose of these laws is to protect public health and the environment. The significance of potential impacts associated with hazardous substances is based on toxicity, ignitability, reactivity, and corrosivity. Generally, impacts associated with hazardous materials and wastes would be considered significant if implementation of the proposed action would involve the storage, use, transportation, or disposal of hazardous substances that would substantially increase human health risks or environmental exposure. For example, if implementation of the proposed actions would exacerbate conditions at an existing area of contamination associated with the Installation Restoration Program (IRP), impacts would be considered significant.

A reduction in the quantity of hazardous substances used and/or generated would be a beneficial impact: a substantial increase in the quantity and/or toxicity of hazardous substances used or generated could be potentially significant. Significant impacts would result if a substantial increase in human health risks and/or environmental exposure were generated and such impacts could not be mitigated to acceptable local, state, and federal levels.

4.12.2 Impacts

Analysis of potential impacts to hazardous materials and wastes typically includes: 1) a comparative analysis of existing and proposed hazardous materials and waste management practices to evaluate potential changes resulting from implementation of the

proposed actions and alternatives, 2) assessment of the significance of potential impacts, and 3) provision of mitigation measures in the event that potentially significant impacts are identified.

4.12.3 Fire Department Structural Training Facility

4.12.3.1 Proposed Action

As part of the construction process, a short-term increase in non-hazardous and hazardous waste generation would occur. Non-hazardous construction and demolition wastes (e.g., concrete and metal fencing) would be disposed of at the Kirtland AFB landfill, which has adequate excess capacity to accommodate construction-related waste. Additional non-hazardous waste (e.g., plastics and paper) generated by increased worker activity under the proposed project would be collected in on-site dumpsters and transported to the City of Albuquerque's Cerro Colorado Landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by the construction of the new facility.

The installation of the new propane burners/smoke generator would have a positive impact by bringing the facility into compliance with, federal, and local air quality requirements and would result in no negative impacts to air quality.

4.12.3.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of environmental management at Kirtland AFB.

4.12.4 Truman Gate

4.12.4.1 Proposed Action

As part of the construction process, a short-term increase in non-hazardous and hazardous waste generation would occur. Non-hazardous construction and demolition wastes (e.g., concrete and metal fencing) would be disposed of at the Kirtland AFB landfill, which has adequate excess capacity to accommodate construction-related waste. Additional non-

hazardous waste (e.g., plastics and paper) generated by increased worker activity under the proposed project would be collected in on-site dumpsters and transported to the City of Albuquerque's Cerro Colorado Landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by the construction of the new facilities.

4.12.4.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of environmental management at Kirtland AFB.

4.12.5 Electrical Main Switching Station

4.12.5.1 Proposed Action

As part of the construction process, a short-term increase in non-hazardous and hazardous waste generation would occur. Non-hazardous construction and demolition wastes (e.g., concrete and metal fencing) would be disposed of at the Kirtland AFB landfill, which has adequate excess capacity to accommodate construction-related waste. Additional non-hazardous waste (e.g., plastics and paper) generated by increased worker activity under the proposed project would be collected in on-site dumpsters and transported to the City of Albuquerque's Cerro Colorado Landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by the construction of the new facilities.

4.12.5.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of environmental management at Kirtland AFB.

4.12.6 Kirtland Underground Munitions Maintenance and Storage Complex

4.12.6.1 Proposed Action

As part of the construction process, a short-term increase in non-hazardous and hazardous waste generation would occur. Non-hazardous construction and demolition wastes (e.g., concrete and metal fencing) would be disposed of at the Kirtland AFB landfill, which has adequate excess capacity to accommodate construction-related waste. Additional non-hazardous waste (e.g., plastics and paper) generated by increased worker activity under the proposed project would be collected in on-site dumpsters and transported to the City of Albuquerque's Cerro Colorado Landfill. Recyclable wastes would be separated for pickup in accordance with the Kirtland AFB Qualified Recycling Program. With the exception of fuel, oils, and lubricants used by construction equipment, no additional hazardous wastes would be generated by the construction of the new facilities.

4.12.6.2 No-Action Alternative

Selection of the No-Action Alternative would result in no change to current conditions of environmental management at Kirtland AFB.

4.12.7 Other Future Actions on the Base

As part of the construction process, a short-term increase in non-hazardous and hazardous waste generation would occur for the proposed actions and all future actions. Because all of the hazardous wastes and IRP sites would be handled in accordance with the rules and regulations governing these materials, no negative impacts to their management would be associated with the proposed actions. All non-hazardous wastes would be recycled or taken to permitted landfills for disposal. Therefore, the proposed actions, when considered with other future actions, are not expected to have a significant cumulative negative impact on environmental management concerns on base.

SECTION 5
PERSONS AND AGENCIES CONSULTED

Terry Cooper
EMC Branch Chief/Air Quality
Kirtland AFB

Pat Montano
377 MSG/CEVC
Water Program Manager
Kirtland AFB

Chris Albrecht
Permitting Officer
City of Albuquerque Environmental
Health Dept.
Air Quality Division

Valerie Butler
377 MSG/CEVQ
Cultural Resources Management
Kirtland AFB

Fabian Macias
Supervisor – Air Quality Monitoring
City of Albuquerque Environmental
Health Dept.
Air Quality Division

Jim Barr
AEHD
Air Quality Division
Lead Planner

Bob E. Dow
377 ABW/EM
Kirtland AFB

Greg Janssen
US EPA
Office of Mobile Sources

SECTION 6
LIST OF PREPARERS

This report was prepared for and under the direction of, the 377th Air Base Wing Command of Kirtland Air Force Base by the LOPEZGARCIA Group. The members of the professional staff of the LOPEZGARCIA Group who participated in the development and technical review of this document are listed below.

<u>Preparers</u>	<u>Education</u>	<u>Environmental Experience</u>
Walter L. Moore Manager Colorado/ New Mexico Operations	<i>B.S., Zoology</i>	<i>22 years</i>
Richard A. Singer Environmental Scientist	<i>B.S., Forestry</i>	<i>20 years</i>
Kristine J. Andrews Environmental Scientist/ Noise Analyst	<i>B.A., in Geography and Environmental Studies and Energy Science</i>	<i>4 years</i>
Robert D. Frei Environmental Scientist/ Biologist	<i>B.S., Biology</i>	<i>4 years</i>
Rebecca L. Klundt Document Editor	<i>Document Manager</i>	<i>4 years</i>

SECTION 7

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APPENDIX A

**INTERAGENCY AND INTERGOVERNMENTAL
COORDINATION FOR ENVIRONMENTAL PLANNING
CORRESPONDENCE**

APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR
ENVIRONMENTAL PLANNING CORRESPONDENCE

Karen S Baker
377 MSG/CEVS
Environmental Management

Valerie Butler
377 MSG/CEVQ
Environmental Management

Chris Catechis
Sandia National Laboratories

Terry W Cooper
377 MSG/CEVC
Environmental Management

Debbie Garcia Sanchez
Department of Energy

TSgt David Desmet
377 AMDS/SGPB
Bioenvironmental

Rana Evans
58 MXG/MXE
Environmental Flight

Gerald Simnacher
Air Force Operations Test and
Evaluation Center (AFOTEC)

Cynthia Gooch
377 MSG/CEVQ
Environmental Management

Michelle Hedrick
Air Force Research Laboratories/DEOS

Holly O'Grady
Air Force Research Laboratories/DEOS

Steve R James
377 MSG/CEC
Engineering

Jeff Robbins
Department of Energy
Albuquerque/Environmental

Joe Bonaguidi
Sandia National Laboratories

Joe Price
United States Forest Service
Cibola National Forest

Joseph V Guerrero
Sandia National Laboratories

Major Jude Oliva
377 ABW/JA
Judge Advocate Office

Mark Sifuentes
Department of Energy Albuquerque

Major Marsha Julian
New Mexico Army National Guard
Environmental Office

Capt. Michael Dunlop
377 AMDS/SGPB
Bioenvironmental

Robert (Steve) Milligan
377 MSG/CEVR
Environmental Management Public
Affairs

Perry Mitchell
377 ABW/SEW
Base Safety Office

Nadine Williams
Sandia National Laboratories
Real Estate

Wayne Ragan
377 ABW/SEG
Base Safety Office

Jeff Reynolds
377 ABW/JA
Judge Advocate

Robert Sanchez
377 MSG/CEE
Civil Engineer

Jerry Sillerud
377 MSG/CEVR
Restoration Branch

Jean Stark
377 MSG/CERR
Civil Engineering Real Estate

Susan Lacy
DOE/AL
Albuquerque Area Office

Thomas Van Alstyne
Defense Threat Reduction Agency

Larry Zezza
377 ABW/XPO
Manpower/Planning



APPENDIX B

PUBLIC NOTICE



PUBLIC NOTICE

KIRTLAND AIR FORCE BASE

THE 377TH AIR BASE WING AT KIRTLAND AIR FORCE BASE, A PART OF AIR FORCE MATERIEL COMMAND HAS PUBLISHED A DRAFT ENVIRONMENTAL ASSESSMENT (EA) AND FINDING OF NO SIGNIFICANT IMPACT (FONSI). THESE DOCUMENTS ARE OPEN FOR PUBLIC REVIEW AND COMMENT AND CAN BE REVIEWED AT THE TVI MONTOYA CAMPUS LIBRARY, 4700 MORRIS NE.

• EA FOR PROPOSED CONSTRUCTION PROJECTS

1) Construct a four-story structural mockup for fire department training purposes and demolish the existing structure, Bldg. 20419; 2) Relocate Truman Gate by constructing new facilities south of the current location and demolishing existing buildings 510 and 511, thus improving traffic flow; 3) Construct a second main electrical switching station located within the base perimeter which would provide a more secure and redundant power system; and 4) Upgrade security at the KUMMSC which would enhance antiterrorism and force protection.

The comment period for this EA and FONSI will end October 11th. For information or to make comments, please contact Marsha Carra, National Environmental Policy Act program manager at (505) 846-4377.