
Military Family Housing Demolition, Construction, Renovation, and Leasing Program

Cannon AFB, New Mexico

Final Environmental Assessment

**United States Air Force
Air Combat Command**

October 2003



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ACRONYMS, ABBREVIATIONS, AND SYMBOLS

27 CES/CEV	27th Civil Engineer Squadron/Environmental Flight
27 CES/CEVC	27th Civil Engineer Squadron/Environmental Flight/Compliance Section
27 CES/CEVP	27th Civil Engineer Squadron/Environmental Flight/Pollution Prevention Section
AAQS	Ambient Air Quality Standards
ACBM	Asbestos-Containing Building Materials
AOC	Area of Concern
AQCR	Air Quality Control Region
BAH	Basic Allowance for Housing
BMP	Best Management Practice
C&D	Construction and Demolition
CAA	Clean Air Act
CAFB	Cannon Air Force Base
CCA	Chromated Copper Arsenate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
CY	Calendar Year
DCRL	Demolition, Construction, Renovation, and Leasing
DoD	Department of Defense
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EIS	Environmental Impact Statement
EPCRA	Emergency Planning and Community Right-to-Know Act
FAR	Federal Acquisition Regulation
FY	Fiscal Year
GIS	Geographic Information System
H₂S	Hydrogen Sulfide
IRP	Installation Restoration Program
LBP	Lead-based Paint
MAFR	Melrose Air Force Range
MFH	Military Family Housing
MFHP	Military Family Housing Project
MILCON	Military Construction
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NMED	New Mexico Environment Department
NO₂	Nitrogen Dioxide
NO_x	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
O₃	Ozone
OSHA	Occupational Safety and Health Administration
Pb	Lead
PM₁₀	Particulate Matter Equal to or Less Than 10 Microns in Diameter
PM_{2.5}	Particulate Matter Equal to or Less Than 2.5 Microns in Diameter
ppm	Parts per Million
SIP	State Implementation Plan
SO₂	Sulfur Dioxide
Sq	Square
SWMP	Solid Waste Management Plan
TSP	Total Suspended Particulates
µg/m³	Micrograms per Cubic Meter
U.S.	United States
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
VOC	Volatile Organic Compounds

FINDING OF NO SIGNIFICANT IMPACT

Pursuant to the Council on Environmental Quality regulations for implementing the procedural provisions of the National Environmental Policy Act (40 Code of Federal Regulations [CFR] 1500-1508), 32 CFR Part 989, and Department of Defense Directive 6050.1, the Department of the Air Force has conducted an Environmental Assessment (EA) of the probable environmental consequences for the Military Family Housing (MFH) Demolition, Construction, Renovation, and Leasing (DCRL) Program at Cannon Air Force Base (CAFB), New Mexico.

DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

The following actions were analyzed in detail in the Environmental Assessment:

Proposed Action – The Proposed Action requires the construction of 586 new units, the renovation of 660 units, and the demolition of 634 existing units. Construction and demolition (C & D) activities will occur within the Chavez Manor, Mercury Phase 4, and Gemini housing areas. Chavez Manor West units will receive minor renovations, and Mercury Phase 1-3 will receive major renovations. The total area of impact under the Proposed Action is approximately 427 acres, with 930,822 square feet (about 21 acres) undergoing demolition and 978,350 square feet (about 23 acres) of new construction. All activities will take place within the Cannon Air Force Base boundary.

Alternative 1: Minimum Housing Requirements Alternative – Similar to the Proposed Action, Chavez Manor West units will receive minor renovations, Mercury Phase 1-3 units will receive major renovations, and Mercury Phase 4 and Gemini housing units will be demolished. The difference between the Proposed Action and Alternative 1 is that Chavez Manor units will undergo whole house renovations (torn down to the base structure and rebuilt). Under Alternative 1, there will be 250 fewer demolished and newly constructed units, with 518,812 square feet (about 12 acres) undergoing demolition and 566,340 square feet (about 13 acres) of new construction. All activities will take place within the CAFB boundary.

No Action Alternative – Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Proposed Action and Alternative: The EA focused on evaluating the potential environmental impacts to areas and resources within the region of influence of the Proposed Action and Alternative. No potential impacts were identified for the following resource areas, which therefore were not evaluated in detail in the EA: land use, biological resources, cultural resources, noise, safety and occupational health, environmental justice, transportation, and solid waste. A summary of impacts to potentially affected resources follows.

Hazardous Materials/Waste – No significant impacts will occur under the Proposed or Alternative Actions. There are two areas within MFH that have been investigated by Cannon

AFB as Areas of Concern. Additionally, asbestos-containing building materials and lead-based paints were used in the construction of older MFH residences. There is also the potential for playground equipment at four MFH playground areas to contain wood treated with chromated copper arsenate. As a result, coordination with 27th Civil Engineer Squadron/Environmental Flight/Compliance section (27 CES/CEVC) for identification of Areas of Concern and for asbestos and lead-based paint will be required. All hazardous materials/waste will be handled and disposed of in accordance with CAFB's Plan 32-2, *Hazardous Waste Management Plan*.

Water Resources – No significant impacts will occur under the Proposed or Alternative Actions. The closest surface water body to the project area is approximately 900 feet from the edge of the C & D footprint. Best Management Practices (BMPs) will be implemented to prevent erosion impacts to this water body. A National Pollutant Discharge Elimination System permit and stormwater plan will be required for the Proposed and Alternative Actions.

Air Quality – No significant impacts will occur under the Proposed or Alternative Actions. Slight increases in air emissions associated with fugitive dust and operation of C & D equipment will occur. However, these emissions will be temporary.

Socioeconomics – No significant impacts will occur under the Proposed or Alternative Actions. There are currently 1,581 occupyable housing units. During the construction and demolition phase of the project, there will be a decrease of about 31 units. This is a small percentage (~2 percent) decrease in available units. Accounting for CAFB's typical occupancy rate, there will be an adequate number of available units to cover the 31-unit decrease. As a result, should there be an increase in the number of families needing rental housing off base during the project this number would be insignificant. The amount of occupyable units once the project is complete would be 1,596. As a result, there would actually be an increase in the number of occupyable units by a total of 15. As a consequence of the Proposed Action, about 15 additional families would have housing available to them on base, resulting in the potential for 15 less families seeking housing in the local community. These numbers are relatively small, and no significant adverse socioeconomic impacts to military families or to the local community will result from the Proposed Action.

Planning and Infrastructure – No significant impacts will occur under the Proposed or Alternative Actions. Coordination with local utility suppliers for line identification will be required prior to ground disturbing activities. Beneficial impacts to traffic within housing areas will result from decrease in unit densities.

Soils/Erosion – No significant impacts will occur under the Proposed or Alternative Actions. BMPs will be implemented to ensure no excessive erosion occurs during demolition/construction activities.

No Action Alternative: C & D and renovation activities will be similar to those described under Alternative 1 over a 25-35 year MILCON program. Potential impacts to resources will need to be evaluated throughout different phases of the MILCON program, as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions

undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

CONCLUSION

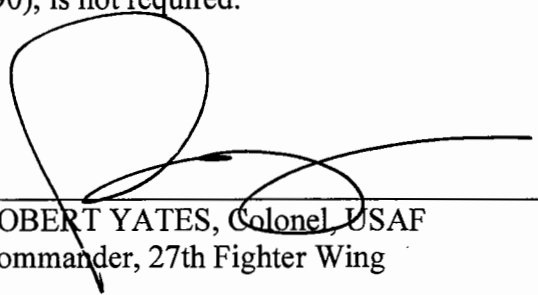
Based on the findings of this Environmental Assessment, no significant impact to human health or the natural environment is expected from implementation of the Proposed Action. Therefore, issuance of a Finding of No Significant Impact is warranted, and preparation of an Environmental Impact Statement, pursuant to the National Environmental Policy Act of 1969 (Public Law 91-190), is not required.

ROBERT YATES, Colonel, USAF
Commander, 27th Fighter Wing

Date

CONCLUSION

Based on the findings of this Environmental Assessment, no significant impacts to human health or the natural environment is expected from implementation of the Proposed Action. Therefore, issuance of a Finding of No Significant Impact is warranted and preparation of an Environmental Impact Statement pursuant to the National Environmental Policy Act of 1969 (Public Law 91-190), is not required.



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11 Dec 2003
Date

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EXECUTIVE SUMMARY

This Environmental Assessment (EA) describes the potential environmental consequences resulting from a proposed Military Family Housing (MFH) privatization project involving the demolition of 634 units, construction of 586 new units, and the renovation of 660 units at Cannon Air Force Base (CAFB), New Mexico.

ENVIRONMENTAL IMPACT ANALYSIS PROCESS

This EA has been prepared by the United States Air Force in accordance with the requirements of the National Environmental Policy Act (NEPA) of 1969, the Council on Environmental Quality (CEQ) regulations implementing NEPA, and 32 Code of Federal Regulations [CFR] 989.

PURPOSE AND NEED FOR ACTION

The Department of Defense has tasked the Air Force to upgrade all required, inadequate housing by Fiscal Year 2007. To comply with this mandate, the Air Force has launched an aggressive program to revitalize all military housing units through a combination of traditional military construction and housing privatization. Privatization will accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of Air Force personnel. Since traditional Military Construction (MILCON) funds are insufficient to meet this goal, the Air Force has determined the best solution is to use privatization to leverage available resources.

The purpose of the Proposed Action is to provide military personnel and their families safe, affordable housing in a timely manner to meet Air Force requirements. Housing improvements are needed as, with the exception of Chavez Manor West, many of the housing units on CAFB are more than 30 years old and do not meet current Air Force Housing standards.

PROPOSED ACTION AND ALTERNATIVES

The Proposed Action involves a Non-Federal Acquisition Regulation (FAR) real estate transaction with a developer under which the government will convey 1,294 existing housing units and certain associated improvements. This includes infrastructure and utilities and leasing approximately 427 acres of land divided among two parcels. In exchange, the contractor will plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage a rental housing development, to include all paving and drainage, as well as any utilities conveyed to or constructed by the developer, for 1,246 units over a period of 50 years. The Proposed Action therefore requires the construction and Air Force acceptance of 586 new units, the renovation and Air Force acceptance of 660 units, and the demolition of 634 existing units. All of these phases of the project must be completed within six years of contract closing. The new units will consist of a mixture of three- and four-bedroom structures. The mixture of buildings will favor single-family dwellings over duplexes. No triplex, fourplex, or stacked units will be constructed.

EXECUTIVE SUMMARY

The Air Force has a minimum requirement to demolish the units in the Mercury Phase 4 and Gemini Housing Areas (384 units total) and construct 336 new structures for replacement. Therefore, Alternative 1, the Minimum Housing Requirements Alternative, will be identical to the Proposed Action except that units in Chavez Manor (250 units) will undergo whole house renovation (being torn down to the base structure and rebuilt) rather than complete demolition and new construction. As a result, there will be only 384 units demolished and 336 new structures constructed.

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table ES-1. Summary of Potential Environmental Consequences of the Proposed Action and Alternatives

CANNON AFB MFH PROJECT RESOURCE IMPACT SUMMARY			
Resource	Proposed Action	Alternative 1	No Action
Hazardous Materials/Waste	No significant impacts. Coordination with 27 CES/CEVC for identification of Areas of Concern and for asbestos and lead-based paint environmental health and safety issues will be required. All hazardous materials/waste will be handled and disposed of in accordance with CAFB's Plan 32-2, <i>Hazardous Waste Management Plan</i> .	Same as Proposed Action	C & D and renovation activities will be similar to those described under Alternative 1 over a 25-35 year MILCON process. Potential impacts to resources will need to be evaluated throughout different phases of the MILCON project, as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.
Water Resources	No significant impacts. A National Pollutant Discharge Elimination System permit and stormwater plan is required. Best Management Practices (BMPs) will be implemented to prevent erosion impacts to golf course surface waters.		
Air Quality	No significant impacts. Slight short-term and temporary air emissions associated with C & D activities.		
Socioeconomics	No significant impacts. Potential displacement of not more than 46 families/personnel during the project. There is sufficient housing off base (rentals) to accommodate this potential. Beneficial impacts to military families from better housing units.		
Planning and Infrastructure	No significant impacts. Coordination with local utility suppliers for line identification will be required prior to ground disturbing activities. Beneficial impacts to traffic within housing areas will result from decrease in unit densities.		
Soil/Erosion	No significant impacts. BMPs will be implemented to ensure no excessive erosion during C & D activities.		

1. PURPOSE AND NEED FOR ACTION

1.1 INTRODUCTION

The United States Air Force at Cannon Air Force Base (CAFB) (Figure 1-1) proposes to convey 1,294 existing housing units (distributed among five different neighborhoods) (Figure 1-2) and certain associated improvements, including infrastructure and utilities, to a private contractor. Infrastructure improvements include whole house renovations (torn down to the base structure and rebuilt), minor renovations (new finishes, updated appliances, etc.), major renovations (increased square footage, updated finishes, garage additions, etc.), and construction and demolition. Under the Proposed Action, 634 units will be demolished, 586 new units will be constructed, and 660 units will undergo renovations. An alternative to the Proposed Action (Alternative 1, Minimum Housing Requirements) meets the Air Force's minimum requirements and involves the renovation of 910 units and the construction of 336 new units.

This Environmental Assessment (EA) has been prepared to analyze the potential environmental consequences associated with the Proposed Action, Alternative 1, and the No Action Alternative in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code 4321 et seq.). In addition, this document was prepared in accordance with the following:

- Regulations established by the Council on Environmental Quality (CEQ) (40 CFR 1500-1508)
- 32 Code of Federal Regulations [CFR] 989, which implements Section 102 (2) of NEPA

1.2 BACKGROUND

Cannon AFB is located approximately 7 miles west of Clovis, New Mexico, and 17 miles west of the Texas-New Mexico state line (Figure 1-1). An accurate base boundary description can be found in the Military Family Housing DCRL Program Request for Proposal by contacting the CAFB housing office. The base comprises 4,543 acres, including easements, and administers the Melrose Air Force Range (MAFR), which is located about 30 miles west of Cannon AFB.

The project involves a Non-Federal Acquisition Regulation (FAR) real estate transaction with a contractor wherein the Government will convey 1,294 existing housing units and certain associated improvements, including infrastructure and utilities, and lease approximately 427 acres of land divided among two parcels (labeled Parcel A and Parcel B). The entire project area is composed of five residential areas constituting CAFB family housing. Two of these areas (Chavez Manor and Chavez Manor West), which constitute Parcel A, are located north of U.S. Highway 60/84. Parcel A, while physically separated from the base proper, is part of the Cannon AFB installation. The remaining three areas are collectively referred to as Joe Cannon Estates and constitute Parcel B (Gemini, Mercury Phases 1-3, and Mercury Phase 4). These areas are shown in Figure 1-2. Accurate housing area boundary descriptions can be found in the Military Family Housing DCRL Program Request for Proposal by contacting the CAFB housing office.

An Environmental Baseline Survey (EBS) was conducted as part of this effort to identify any potential environmental contamination concerns associated with the property conveyance. The findings of the Final EBS (U.S. Air Force 2003) were incorporated into this document.

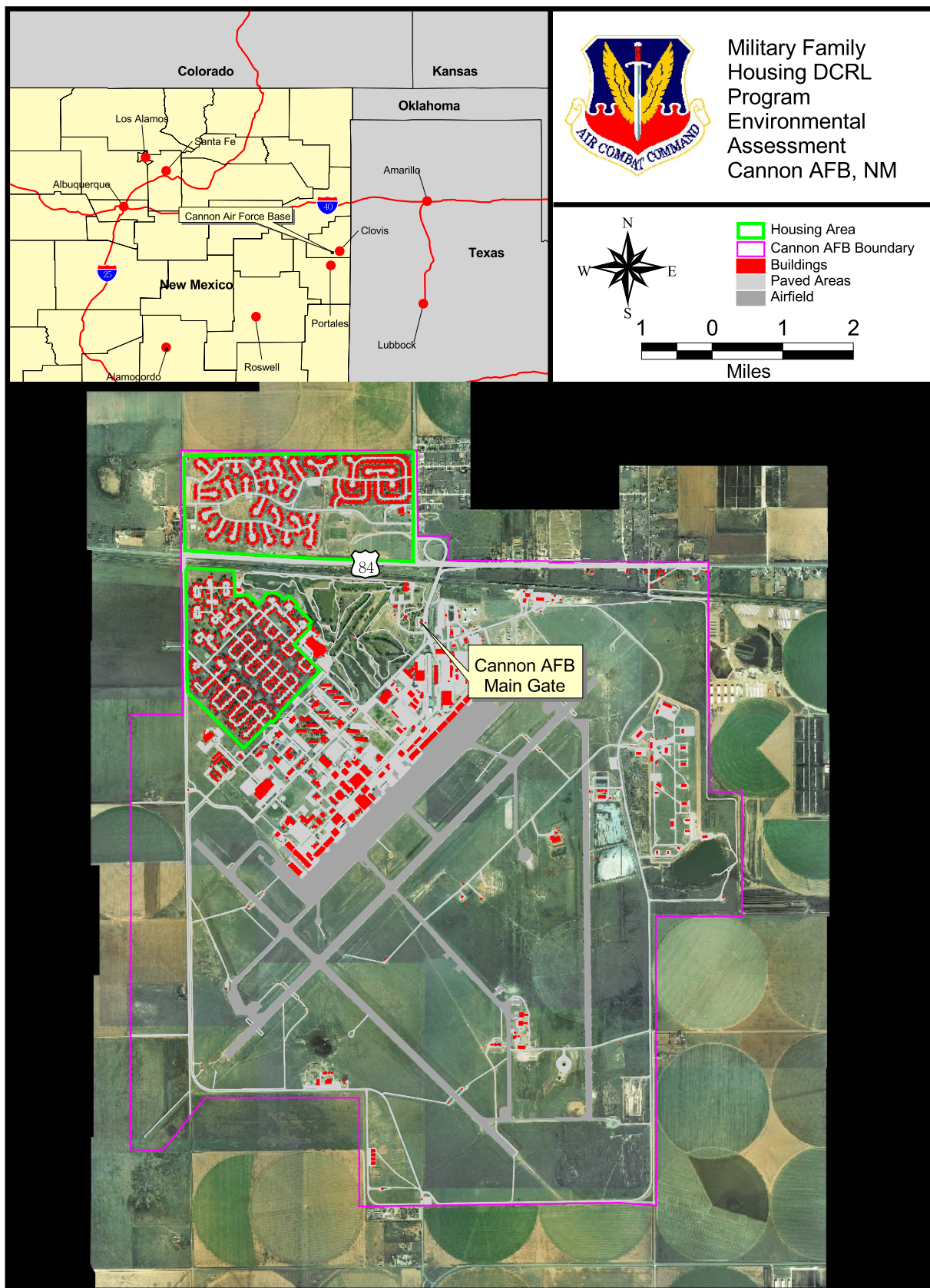


Figure 1-1. Location of Cannon AFB

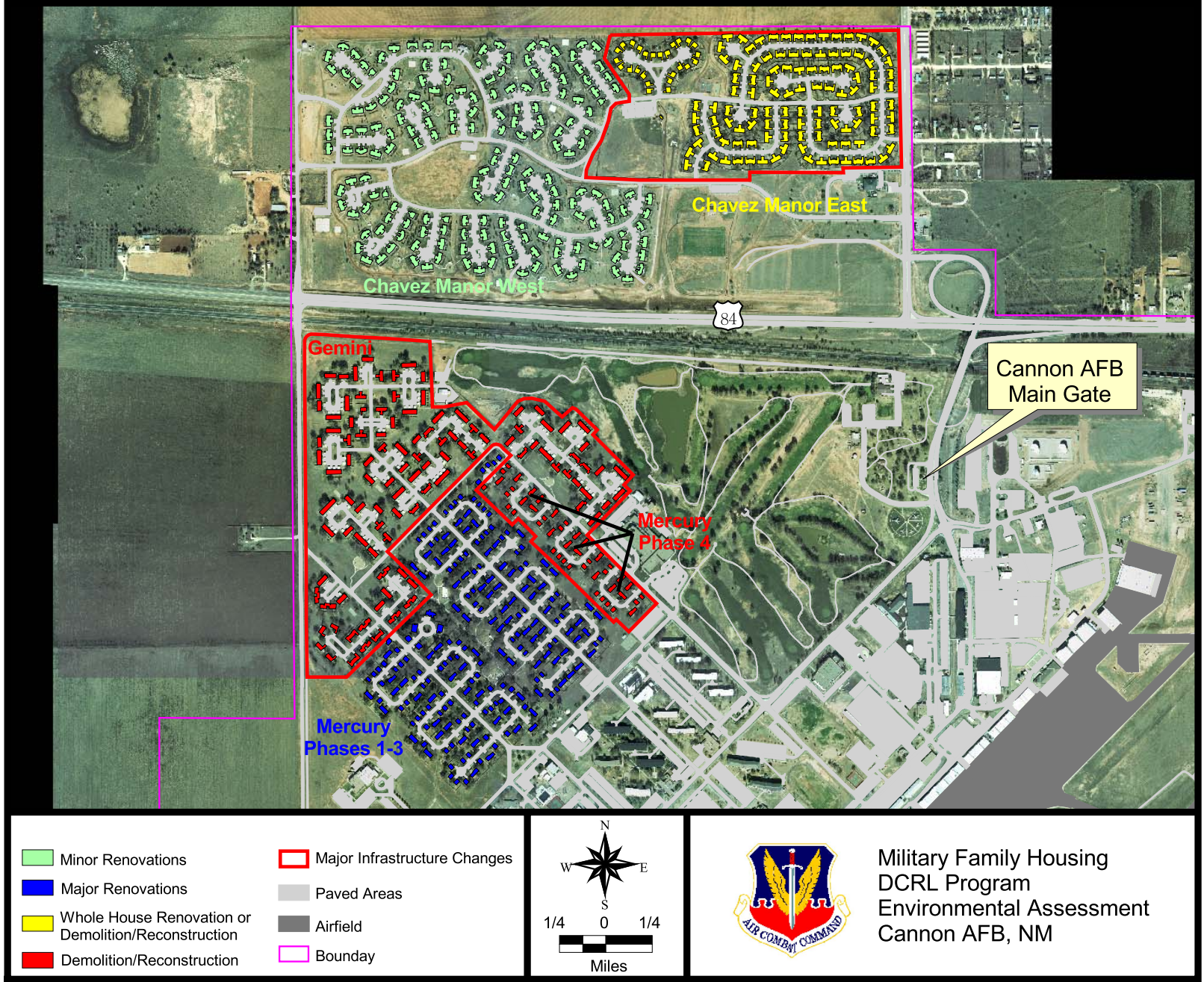


Figure 1-2. Location of Project Area

1.3 PURPOSE AND NEED

The Department of Defense (DoD) has tasked the Air Force to upgrade all required, inadequate housing by Fiscal Year (FY) 2007. To comply with this mandate, the Air Force has launched an aggressive program to revitalize all military housing units through a combination of traditional military construction and housing privatization. Privatization will accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of Air Force personnel. Since traditional Military Construction (MILCON) funds are insufficient to meet this goal, the Air Force has determined the best solution is to use privatization to leverage available resources.

The purpose of the Proposed Action is to provide military personnel and their families safe, affordable housing in a timely manner meeting Air Force requirements. With the exception of Chavez Manor West, housing improvements are required as various units on CAFB are more than 30 years old and do not meet current Air Force Housing standards.

1.4 PUBLIC AND AGENCY INVOLVEMENT

Reviews of pertinent documents, site visits, and interviews with CAFB personnel found no identified threatened and endangered species or cultural resources within the project area. As a result, no consultations with regulatory agencies for cultural resources or threatened or endangered species are required for this action.

A National Pollutant Discharge Elimination System (NPDES) Permit, required for construction activities covering more than one acre of land area, will be required for implementing the Proposed Action.

To facilitate public involvement in this project, the Air Force prepared and issued a Notice of Availability for the draft final version of the EA. Lists of agencies contacted and entities that received the draft final EA are contained in Appendix A. A public notice was published in both the Portales News Tribune and the Clovis News Journal on June 7, 2003, to disclose the completion of the Draft Final EA for the above mentioned Environmental Assessment, to include selection of the preferred alternative. The notice served to invite public comments during the 14-day pre-decisional public review period. The 14-day public review period ended on June 27, 2003, with the comments required to be received at the Cannon Air Force Base Environmental Management Office no later than June 29, 2003. No comments were received during this period.

2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

As required by federal regulation, this Environmental Assessment (EA) addresses the possible environmental impacts of the following:

- Proposed Action
 - Chavez Manor: Construction and demolition
 - Chavez Manor West: Minor renovations
 - Mercury Phase 1-3: Major renovations
 - Mercury Phase 4 and Gemini: Construction and demolition
- Alternative 1, Minimum Housing Requirements
 - The same as the Proposed Action except Chavez Manor units will receive whole house renovations rather than demolition and new construction.
- No Action Alternative
 - Renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. This will not meet the need to provide adequate housing in a timely manner as mandated by the DoD.

Section 2.5 provides a summary of the issues and potential impacts associated with the Proposed Action, Alternative 1, and No Action Alternative.

2.1 PROPOSED ACTION

The Proposed Action involves a non- FAR real estate transaction with a developer wherein the government will convey 1,294 existing housing units and certain associated improvements. This includes infrastructure and utilities and leasing of approximately 427 acres of land divided among two parcels labeled as Parcel A and Parcel B (Figure 1-2). In exchange, the contractor will plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage a rental housing development, to include all paving and drainage, as well as any utilities conveyed to or constructed by the developer, for 1,246 military families over a period of 50 years. The 1,246 required housing units are referred to as the “privatized units.” The privatized units will consist of 361 existing dwellings in Parcel A, 299 existing structures in Parcel B, and 586 newly constructed buildings distributed throughout Parcels A and B. All privatized units will be designated for occupancy by pay grade, and rent will not exceed the Basic Allowance for Housing (BAH) at the dependent rate for the designated military pay grade, minus an amount sufficient to cover 110 percent of average estimated utility charges. At the closing of the transaction, the Air Force will convey its interest in 1,294 family housing units constructed in various phases since 1956. Table 2-1 provides a list of the base neighborhoods, the number of existing units to be conveyed to the developer, and final disposition of the existing structures.

Table 2-1. Projected Housing Developments Under the Proposed Action.

Existing Housing Area	Current Number Of Units	Year Built	Project-Related Activities	New Construction	Total End-State Units
Chavez Manor (Parcel A)	250	1974	Demolition	586 new units within existing housing area	1,246
Chavez Manor West (Parcel A)	361	1994	Minor renovations (new finishes, updated appliances, etc.)		
Mercury Phase 1-3 (Parcel B)	299	1956	Major renovations (increased square footage, updated finishes, garage additions, etc.)		
Mercury Phase 4 (Parcel B)	63	1956	Demolition		
Gemini (Parcel B)	321	1966			
TOTAL	1,294				

Source: CAFB Housing Office, 2002.

The Proposed Action requires the construction and Air Force acceptance of 586 new units, the renovation and Air Force acceptance of 660 structures, and the demolition of 634 existing dwellings. All phases of the project must be completed within six years of contract closing. The new units will consist of a mixture of three- and four-bedroom structures. The mixture of buildings will favor single-family dwellings over duplexes. No triplex, fourplex, or stacked units will be constructed. The numbers above are based on the *Final Housing Requirements Market Analysis*, March 2003.

Establishing new infrastructure (e.g., roads, utilities, etc.) will be required. Site design plans are currently unavailable and will not be submitted until the Military Family Housing Project (MFHP) finishes the proposal stage. Therefore, construction of new units, as well as infrastructure improvements, could take place anywhere within the identified project areas. This results in difficulty determining the exact size and location of construction footprints. As a result, estimations were made by comparing the square footage to be demolished associated with current bedroom count by pay grade to future square footage requirements by pay grade and bedroom count. This gives an estimation of the number and size of units to be constructed under the Proposed Action. Table 2-2 provides this data.

Table 2-2. Estimated Total Net Square (Sq) Footage of C & D for the Proposed Action

Number of Bedrooms	Pay Grade	Demolition		Construction		
		# of Units	Total Net Sq Footage	# of Units	Max Net Sq Footage/Unit	Total Net Sq Footage
2	E1-E6	26	930,822	0	-	978,350
	O1-O3	0		1	1,440	
3	E1-E6	178		207	1,420	
	E7-E8	41		101	1,650	
	O1-O3	0		17	1,650	
	E-9/O4-O5	4		5	1,850	
4	E1-E6	254		180	1,790	
	E7-E8	61		46	2,020	
	O1-O3	32		0	2,020	
	E-9/O4-O5	34		25	2,180	
	O6	4		4	2,350	

Source: CAFB Housing Office, 2002.

For the purposes of analysis it is assumed that the maximum net square footage based on DoD bedroom count size standards by pay grade will be constructed. At this time, there is no information available regarding the square footage of driveways and/or roadways to be constructed or demolished, as this information will be provided during the proposal phase of the procurement process. It is therefore assumed there will be changes to the locations of impervious surface areas (e.g., driveways and parking areas), but no net increase in the amount of impervious surface areas.

2.2 ALTERNATIVE 1: MINIMUM HOUSING REQUIREMENTS

The Air Force has a minimum requirement to demolish the units in the Mercury Phase 4 and Gemini Housing Areas (384 units total) and construct 336 new units for replacement. Therefore, Alternative 1 will be identical to the Proposed Action except units in Chavez Manor will undergo whole house renovation (torn down to the base foundation and rebuilt), rather than complete C & D of new units. As a result, there will be only 384 units demolished and 336 new units constructed. Tables 2-3 and 2-4 provide the details for Alternative 1.

Table 2-3. Proposed Housing Developments Under Alternative 1

Existing Housing Area	Current Number Of Units	Project-Related Activities	New Construction	Total End-State Units
Chavez Manor (Parcel A)	250	Whole-house renovations	336 new units within existing housing area	1,246
Chavez Manor West (Parcel A)	361	Minor renovations		
Mercury Phase 1-3 (Parcel B)	299	Major renovations		
Mercury Phase 4 (Parcel B)	63	Demolition		
Gemini (Parcel B)	321			
TOTAL	1,294			

Source: CAFB Housing Office, 2002.

Table 2-4. Estimated Total Net Square Footage of C & D for Alternative 1

Number of Bedrooms	Pay Grade	Demolition		Construction		
		# of Units	Total Net Sq Footage	# of Units	Max Net Sq Footage/Unit	Total Net Sq Footage
2	E1-E6	26	518,812	0	-	566,340
	O1-O3	0		1	1,440	
3	E1-E6	178		206	1,420	
	E7-E8	41		101	1,650	
	O1-O3	0		17	1,650	
	E-9/O4-O5	4		5	1,850	
4	E1-E6	76		2	1,790	
	E7-E8	15		0	2,020	
	O1-O3	32		0	2,020	
	E-9/O4-O5	8		0	2,180	
	O6	4		4	2,350	

Source: CAFB Housing Office, 2002.

As with the Proposed Action, it is assumed under Alternative 1 the maximum net square footage based on DoD bedroom count size standards by pay grade will be constructed. At this time,

there is no information available regarding the square footage of driveways and/or roadways to be constructed or demolished, as this information will be provided during the proposal phase of the procurement process. It is therefore assumed there will be changes to the locations of impervious surface areas (e.g., driveways and parking areas), but no net increase in the amount of impervious surface areas.

2.3 NO ACTION ALTERNATIVE

Under the No Action Alternative, renovations will occur through the MILCON process over a 25-35 year time period. This will not meet the need to provide adequate housing in a timely manner as mandated by the DoD.

2.4 ENVIRONMENTAL ISSUES IDENTIFIED DURING THE SCOPING PROCESS

Issues Eliminated From Analysis

After preliminary screening of environmental issues during the scoping process, the following environmental issues were eliminated from analysis due to the nature and location of the project.

Biological Resources – Habitat within the housing area mainly consists of cultivated landscaped plants and areas associated with small recreational sites/parks consisting of semi-improved grassland maintained to a height of 7–14 inches. Information obtained through document reviews and personnel interviews indicates no known presence of sensitive or threatened/endangered species or associated habitat on or near the project area. Open spaces within the project area, such as recreational areas, do not serve as habitat for wildlife. Based on this information, it is believed that no impacts to vegetation, protected species or other wildlife will occur from the MFHP.

Cultural Resources – Information obtained through document reviews and personnel interviews indicates no known presence of either listed or potentially eligible cultural resource sites on or near the project area (U.S. Air Force, 1996). Given the available information, no impacts to cultural resources will occur from the MFHP.

Noise – Potential noise impacts will be related to the use of construction equipment. Construction activities will occur only during regular working hours, and construction workers will use proper hearing protection. Consequently, noise was eliminated as an issue warranting further analysis, as construction noise will not significantly contribute to the current noise environment of CAFB and there will be no impacts to human health or safety.

Safety and Occupational Health – Potential safety and occupational health impacts are related to construction activities at the site of the Proposed Action or Alternative Action. Construction workers will use hearing protection during work hours and will follow Occupational Safety and Health Association (OSHA) standards and procedures. The contractor is responsible for ensuring all employees (and subcontractors) comply with applicable OSHA standards. As a result, there will be no impacts to the safety and occupational health of construction workers or other persons in the area of the Proposed Action or Alternative Action during construction activities. Therefore, this issue was eliminated from further detailed analysis.

Environmental Justice – There are no off-installation human health concerns related to the MFHP, and there are no low-income or minority individuals or communities that are anticipated to be adversely impacted by the execution of the project.

Land Use – The MFH area is classified as single/multifamily residential. This classification will not change as a result of the MFHP. As a result, there will be no impacts to land use from the proposed project.

Transportation – Because there will be a net decrease in the number of houses, and therefore the number of families, within the residential areas of CAFB, no net increases in amounts of traffic will be expected. Potential transportation issues associated with the MFHP involve intermittent stoppages within residential areas associated with movement of construction equipment. These stoppages will only occur during the day and are likely to last only a few minutes. As a result, no significant impacts to transportation will occur from the MFHP, and further analysis was not conducted.

Solid Waste – Based on document reviews and personnel interviews, the only potential issue associated with solid waste is the disposal of solid waste and construction and demolition (C&D) materials during project activities. Contractor compliance with the CAFB Solid Waste Management Plan (SWMP) and coordination with the 27th Civil Engineer Squadron/Environmental Flight/Pollution Prevention Section (CES/CEVP) will alleviate any potential impacts. As a result, no impacts from solid waste will occur.

Issues Carried Forward for Analysis

The following are issues carried forward in this EA for further analysis, as potential impacts were identified.

Hazardous Materials/Waste – Document reviews and personnel interviews indicated that there are no Installation Restoration Program (IRP) sites located at the subject property; however, there are two areas within MFH that have been investigated by Cannon AFB as Areas of Concern (AOC). Analysis considers the potential for ground disturbing activities in the project area to create adverse impacts associated with disturbing these AOC sites. The presence of hazardous building materials such as asbestos and lead-based paint and the potential for adverse health and safety impacts is also analyzed.

Although not classified as a hazardous material in the traditional sense, indoor mold and associated potential impacts to environmental health and safety has become an issue of concern in western states. Large accumulations of unseen mold growing in areas such as air ducts, basement spaces, attics, and wall cavities can cause health problems due to extended exposure to secretions of mycotoxins, which enter the body through inhalation, ingestion, or absorption through the skin. When left untreated mold can multiply, with infestations producing enough organic compounds to cause allergic reactions, sickness, and in extreme cases even death (more of a possibility with infants). The most common indoor mold types are cladosporium, penicillium, alternaria, aspergillus, and mucor, the growth of which is encouraged by warm and humid conditions, although it can grow during cold weather. Most molds found indoors come

from outdoor sources. Needing moisture to grow, mold typically becomes a problem only where there is water damage, high humidity, or dampness. There is no evidence of a mold problem in any of the CAFB housing areas, and the climate at CAFB is arid, which is not conducive to mold growth. Mold is not considered an issue of concern in this document, and is therefore not analyzed.

Water Resources – Analysis of water resources focuses on potential stormwater impacts associated with construction activities and the increase in impervious surface area under the Proposed Action. The closest surface water body to the project area is a golf course pond approximately 900 feet from the edge of the C & D footprint (Figure 1-2). This pond has been designated as a “Water of the U.S.” Analysis focuses on the potential for erosion associated with construction activities to impact this water body.

With regard to wetlands and floodplains, document reviews, site reconnaissance, and personnel interviews indicated no presence of wetlands and/or floodplains on or adjacent to the project areas. As a result, no impacts to these resources will occur.

No impacts to groundwater will occur from MFHP actions. Actions related to the MFHP will be limited to a few feet of the ground surface, with the water table at CAFB typically 280 feet below the ground surface. Also, there will be no net increase in the number of housing units and therefore no net increase in the amount of consumptive use of potable water.

In general, the number of housing units will decrease under the MFHP, creating less of a flow to the CAFB wastewater facility and not adversely impacting the facility in terms of capacity.

Air Quality – The air quality issues associated with the MFHP are related to construction equipment emissions and fugitive dust emissions from construction and demolition activities. Analysis focuses on estimating emissions from construction activities and identifying any potential impacts to air quality from the Proposed Action and Alternative.

Socioeconomics – C & D activities may displace residents during the transition phase of the project. Analysis focuses on identifying the potential for displacement to occur and the potential for adverse impacts to occupancy rates and housing availability due to the net decrease in number of units on base.

Planning and Infrastructure – The main concerns in this issue area are the establishment of utility lines and proper access to the housing area. Analysis focuses on identifying potential problem areas and the appropriate coordination and planning procedures to minimize potential conflicts.

Soils/Erosion – Construction and the subsequent presence of new structures may contribute to the erosion potential of surrounding soils due to soil/ground disturbance. Excess stormwater runoff resulting from the addition of impervious surfaces may also contribute to soil erosion. Areas likely to be impacted by erosion are identified based on parameters such as soil type and extent and proximity of vegetative cover to the affected area. Potential impacts are then described as they relate to the contribution to erosion potential.

2.5 COMPARATIVE SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-5 summarizes issues associated with the Proposed Action and Alternatives and potential impacts.

Table 2-5. Summary Matrix of Issues Related to the Proposed Action and Alternatives, and Potential Impacts

Issue	Proposed Action	Alternative 1	No Action
Hazardous Materials/Waste	No significant impacts. Coordination with 27 CES/CEVC for identification of Areas of Concern and for asbestos and lead-based paint environmental health and safety issues will be required. All hazardous materials/waste will be handled and disposed of in accordance with CAFB's Plan 32-2, <i>Hazardous Waste Management Plan</i> .	Same as Proposed Action	C & D and renovation activities will be similar to those described under Alternative 1 over a 25-35 year MILCON process. Potential impacts to resources will need to be evaluated throughout different phases of the MILCON project as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.
Water Resources	No significant impacts. A National Pollutant Discharge Elimination System permit and stormwater plan will be required. Best Management Practices (BMPs) will be implemented to prevent erosion impacts to golf course surface waters.		
Air Quality	No significant impacts.		
Socioeconomics	No significant impacts. Potential displacement of not more than 31 additional families/personnel during the project. There is sufficient rental housing off base to accommodate this potential. Beneficial impacts to military families will result from better housing units.		
Planning and Infrastructure	No significant impacts. Coordination with local utility suppliers for line identification will be required prior to ground disturbing activities. Beneficial impacts to traffic within housing areas will result from decrease in unit densities.		
Soils/Erosion	No significant impacts. BMPs will be implemented to ensure no excessive erosion during demolition/ construction activities.		

3. AFFECTED ENVIRONMENT

This chapter defines, inventories, and generally characterizes the nature and condition of the physical, biological, and anthropogenic resources occurring within the region of influence of the Proposed Action and Alternative. As a result, this chapter focuses on those resources that may be potentially impacted by the Proposed Action or Alternative with respect to the issues identified earlier in Section 2.4.

Cannon AFB is located approximately 7 miles west of Clovis, New Mexico, and 17 miles west of the Texas-New Mexico state line (Figure 1-1). The base comprises 4,543 acres (754 acres of which is an easement) and administers the MAFR, which is located about 30 miles west of Cannon AFB.

3.1 HAZARDOUS MATERIALS/WASTE

An Environmental Baseline Study (EBS) was conducted for this project as part of the property transfer process. The purpose of the EBS was to document the apparent environmental conditions at MFH areas located on Cannon AFB, New Mexico. The EBS documents whether there is any evidence to suggest possible contamination on the subject property, either in the soil or groundwater.

Routine household hazardous wastes are generated in MFH areas. Used oil may also be generated as part of "do-it-yourself" vehicle maintenance activities. Residents are responsible for disposing of their household hazardous waste and used oil. Used oil can be taken to the Auto Skills Center for recycling or can be disposed of at the Clovis landfill. An information pamphlet provided by the base to new residents presents instructions for proper disposal of used oil, batteries, tires, and fluorescent light bulbs (U.S. Air Force, 2003).

A review of available data indicates no obvious evidence of contamination at the subject property associated with its past or present use or from adjacent agricultural/commercial activities currently in operation. There are no Installation Restoration Program (IRP) sites located at the subject property; however, there are two areas within MFH that have been investigated by Cannon AFB as Areas of Concern (AOC). These areas were identified using aerial photographs taken during the 1950s that showed ground disturbance in these areas, possibly associated with landfill activities. Comprehensive site inspections initiated during 1998 determined that the level of contaminants detected at these AOCs posed no unacceptable risk to human health or the environment (U.S. Air Force, 2003).

Asbestos-containing building materials (ACBM) and lead-based paints (LBP) were used in the construction of older MFH residences. Some ACBM and LBP have been abated by the installation as part of renovation/reconstruction activities conducted over the years. Cannon AFB maintains detailed records indicating the location of ACBM and LBP still remaining in MFH residences. Spills of hazardous materials and petroleum products have occurred in the subject area; however, these spills have been small in quantity and have posed minimal environmental risks. Finally, there is a potential that playground equipment at four MFH

playground areas is constructed of wood treated with chromated copper arsenate (CCA). No follow-up sampling has been conducted to confirm the presence of CCA (U.S. Air Force, 2003). No other obvious environmental concerns were noted for the property; therefore, a Phase II Environmental Baseline Survey is not warranted based on current findings for the site.

3.2 WATER RESOURCES

Surface Water

Document reviews, site reconnaissance, and personnel interviews indicated no presence of wetlands, floodplains, or surface water bodies on or adjacent to the project areas. The closest surface water body to the project area is a golf course pond approximately 900 feet from the edge of the C & D footprint. This pond has been designated as a “Water of the U.S.” Drainage from the housing area runs southeast, in the direction of the golf course, at a slope of about 2.5 percent.

The only other permanent surface water body on CAFB is North Playa Lake, a playa in the eastern corner of CAFB that receives the majority of treated wastewater from CAFB’s wastewater treatment plant. CAFB obtains its water supply entirely from groundwater. Groundwater occurs under unconfined conditions at CAFB. The base is underlain by a portion of the Ogallala Aquifer, which developed in the unconsolidated sediments of the Ogallala Formation (U.S. Air Force, 1997).

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are utilized in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains Aquifer, which extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east central New Mexico, the Ogallala Aquifer rests on the Dockum Group redbeds, which serve as the basal confining layer. The Ogallala Aquifer has a southeasterly regional gradient of about 13 feet/mile. At Cannon AFB, the depth to groundwater is approximately 280 feet, and the Ogallala Aquifer has an average saturated thickness of 120 feet based on mid-1960s data. Saturated thickness ranges from 93 to 143 feet and is influenced by the configuration of the erosional nonconformity surface marking the top of the Dockum Group. Recharge to the Ogallala is primarily through precipitation. The local groundwater gradient is southeasterly at 7.5 feet/mile (USACE, 1998).

3.3 AIR QUALITY

Air quality in a given location is described by the concentration of various pollutants in the atmosphere, generally expressed in units of parts per million (ppm) or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Air quality is determined by the type and amount of pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing meteorological conditions.

Pollutant concentrations are compared to federal and state ambient air quality standards to determine potential affects. These standards represent the maximum allowable atmospheric concentration that may occur and still protect public health and welfare, with a reasonable

margin of safety. The National Ambient Air Quality Standards (NAAQS) are established by the U.S. Environmental Protection Agency (USEPA). In order to protect public health and welfare, the USEPA has developed numerical concentration-based standards or NAAQS for six “criteria” pollutants (based on health-related criteria) under the provisions of the Clean Air Act Amendments of 1970 (CAA). There are two kinds of NAAQS: primary and secondary standards. Primary standards prescribe the maximum permissible concentration in the ambient air to protect public health including the health of “sensitive” populations such as asthmatics, children, and the elderly. Secondary standards prescribe the maximum concentration or level of air quality required to protect public welfare including protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

NAAQS have been established for: 1) ozone (O₃), 2) nitrogen dioxide (NO₂), 3) carbon monoxide (CO), 4) sulfur dioxide (SO₂), 5) lead (Pb), and 6) particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM₁₀) (Table 3-1). The NAAQS are the cornerstone of the CAA. Although not directly enforceable, they are the benchmark for the establishment of emission limitations by the states for the pollutants that USEPA determines may endanger public health or welfare.

CAFB is located in the Pecos-Permian Basin Intrastate Air Quality Control Region (federal AQCR 155). The USEPA has classified this AQCR as attainment/unclassifiable for all criteria pollutants. Unclassifiable areas are those areas that cannot be classified on the basis of available information as meeting or not meeting the NAAQS for a particular pollutant and are treated as attainment until proven otherwise. Attainment areas are those that are in compliance with the NAAQS. Since Curry County is an attainment area for all criteria pollutants, major new or modified stationary sources on and in the area of CAFB are subject to Prevention of Significant Deterioration review, a permitting program used to ensure that these sources are operated without causing significant adverse deterioration of the clean air in the area. A major new source is defined as one that has the potential to emit any pollutant regulated under the CAA in amounts equal to or exceeding specific major source thresholds: 100 or 250 tons/year based on the source’s industrial category.

Under the CAA, state and local agencies may establish ambient air quality standards (AAQS) and regulations of their own, provided these are at least as stringent as the federal requirements. For selected criteria pollutants, the State of New Mexico has established state AAQS, which are somewhat more stringent than the federal standards (New Mexico Department of Environmental Improvement, 1996). New Mexico AAQS are more restrictive than federal standards for CO, NO₂, and SO₂. New Mexico does not have state standards for PM₁₀, O₃, or Pb. In addition, New Mexico has established AAQS for total suspended particulates, hydrogen sulfide (H₂S), and total reduced sulfur – three pollutants for which there are no federal standards. A summary of the federal and New Mexico AAQS that apply to the proposed project area is presented in Table 3-1.

Table 3-1. National and State Ambient Air Quality Standards Applicable to the Proposed Action

Criteria Pollutant	Averaging Time	Federal Primary NAAQS ^{1,2,3}	Federal Secondary NAAQS ^{1,2,4}	New Mexico
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm (10 µg/m ³) 35 ppm (40 µg/m ³)	No standard No standard	8.7 ppm (10 µg/m ³) 13.1 ppm (15 µg/m ³)
Lead (Pb)	Quarterly	1.5 µg/m ³	1.5 µg/m ³	No standard
Nitrogen Dioxide (NO ₂)	Annual 24-hour	0.053 ppm (100 µg/m ³) No standard	0.053 ppm (100 µg/m ³) No standard	0.05 ppm (100 µg/m ³) 0.10 ppm (190 µg/m ³)
Ozone (O ₃)	1-hour ⁵ 8-hour ⁶	0.12 ppm (235 µg/m ³) 0.08 ppm (157 µg/m ³)	0.12 ppm (235 µg/m ³) 0.08 ppm (157 µg/m ³)	No standard No standard
Particulate Matter ≤10 Micrometers (PM ₁₀)	Annual 24-hour ⁷	50 µg/m ³ 150 µg/m ³	50 µg/m ³ 150 µg/m ³	No standard No standard
Particulate Matter ≤2.5 Micrometers (PM _{2.5})	Annual 24-hour ⁸	15 µg/m ³ 65 µg/m ³	15 µg/m ³ 65 µg/m ³	No standard No standard
Total Suspended Particulates (TSP)	Annual 30-day 7-day 24-hour	No standard No standard No standard No standard	No standard No standard No standard No standard	60 µg/m ³ 90 µg/m ³ 110 µg/m ³ 150 µg/m ³
Hydrogen Sulfide (H ₂ S)	½-hour	No standard	No standard	0.10 ppm
Total Reduced Sulfur	½-hour	No standard	No standard	0.01 ppm
Sulfur Dioxide (SO ₂)	Annual 24-hour 3-hour	0.03 ppm (80 µg/m ³) 0.14 ppm (365 µg/m ³) No standard	No standard No standard 0.50 ppm (1300 µg/m ³)	0.02 ppm (55 µg/m ³) 0.10 ppm (260 µg/m ³) No standard

1. National standards (other than ozone, particulate matter, and those based on annual averages or annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1. The USEPA has been given the authority by the federal courts to proceed with the implementation of the new 8-hour ozone standard and the PM_{2.5} standard; however, they have not been implemented at this point and are included for information only.
2. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury; ppm refers to parts per million by volume.
3. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
4. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
5. The ozone 1-hour standard still applies to areas that were designated nonattainment when the ozone 8-hour standard was adopted in July 1997.
6. The ozone 8-hour standard is attained when the fourth highest 8-hour concentration in a year, averaged over 3 years, is equal to or less than the standard.
7. The PM₁₀ 24-hour standard is attained when 99 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.
8. The PM_{2.5} 24-hour standard is attained when 98 percent of the daily concentrations, averaged over 3 years, are equal to or less than the standard.

Identifying the affected area for an air quality assessment requires knowledge of pollutant types, source emissions rates and release parameters, proximity relationships of project emission sources to other emissions sources, and local and regional meteorological conditions. For inert pollutants (those that do not participate in photochemical reactions; i.e., all pollutants other than ozone and its precursors), the affected area is generally limited to an area extending a few miles downwind from the source.

The affected area for emissions of O₃ precursors (volatile organic compounds [VOCs] and nitrogen oxides [NO_x]) from the project will be the airshed surrounding CAFB, the Pecos-Permian Basin (AQCR 155) that includes Curry County. However, because of the large size of the air quality control region, the affected area for O₃ and its precursors for this analysis are defined as Curry County. Therefore, site-related emissions of VOCs and NO_x are compared to emissions generated within the county. The affected area for the inert pollutants that do not undergo a chemical reaction in the atmosphere (CO, SO₂, Pb, PM₁₀) is limited to the immediate vicinity of the base and also compared to the Curry County portion of the AQCR emissions as a means of assessing potential changes in air quality.

The fundamental method by which the USEPA tracks compliance with the NAAQS is the designation of a particular region as “attainment,” “nonattainment,” or “unclassifiable.” Areas meeting or having better air quality than the NAAQS are said to be in attainment. Areas that exceed the NAAQS are said to be in nonattainment. Areas that cannot be classified on the basis of available information as attainment or nonattainment are defined as unclassifiable and are treated as attainment areas. Attainment areas can be further classified as maintenance areas. Maintenance areas are areas that were previously nonattainment but have reduced pollutant concentrations below the standard and must maintain some of the nonattainment area plans to stay in compliance.

An air emissions inventory is an effort to qualitatively and quantitatively describe the amount of emissions from a facility or within an area. Inventories are designed to locate pollution sources, define the type and size of sources, define and characterize emissions from each source, determine relative contributions to air pollution problems by classes of sources and by individual sources, and determine the adequacy of regulations. The air emissions inventory is an estimate of total mass emissions of pollutants generated from a source or sources over a period of time, normally a year. Accurate inventories are needed for estimating the interrelationship between emissions sources and air quality and for determining whether an emission source requires an operating permit based on actual emissions or the potential to emit.

Although mission activities at CAFB result in diverse sources and emission rates, the regional air quality is good, attaining both federal and state standards. The input of air emissions from land areas within Curry County is small due to the lack of heavy industry. Air pollutants are emitted from mobile and stationary sources such as general maintenance activities, government and privately owned vehicles, jet engine testing, and aircraft operations (USEPA, 1998). Table 3-2 provides the 1999 calendar year (CY99) air emissions for Curry County for the criteria pollutants (and their precursors) covered by federal and state standards (USEPA, 2003).

Table 3-2. Total Air Emissions for Curry County During CY99

Emissions	Tons/Year
Carbon Monoxide	15,116
Nitrogen Dioxide	3,222
Volatile Organic Compounds	3,818
Particulate Matter	19,578
Sulfuric Dioxides	526

Source: USEPA, 2003

In accordance with Section 176(c), USEPA promulgated the General Conformity Rule that is codified at 40 CFR 93, Subpart B. The Conformity Rule only affects Federal actions occurring in nonattainment (does not meet NAAQS) and maintenance areas (nonattainment area reclassified to attainment status and under a maintenance plan). Since the Proposed and Alternative Actions are located in an attainment area, the Air Force will not need to prepare a conformity determination for the Proposed or Alternative Actions on CAFB.

3.4 SOCIOECONOMICS

The towns of Clovis and Portales, in eastern New Mexico's Curry and Roosevelt Counties, respectively, are the largest population centers near Cannon AFB. Combined, these towns provide 350 Section 801 houses to military personnel, 200 in Clovis and 150 in Portales. Section 801 was a housing authority (currently expired) given to the DoD by Congress to address housing needs via private construction and ownership of housing developments for the exclusive use of military families. They are owned by the developer and leased back to the Government under an exclusive contract. With respect to Cannon's 801 houses, the Government's leases run out in 2012 and 2013. These units will continue to be leased until the end of their lease terms, at which time the Air Force will determine the best way to accommodate the requirement for those 350 units (CAFB Housing Office, 2002).

The latest socioeconomic data estimates from the 2000 U.S. Census for the City of Clovis indicate a population of 32,667. Demographic data show the population to be about 56 percent White, 33 percent Hispanic/Latino, 7 percent Black/African American, and all other races comprising the remaining 4 percent of the population. The median annual income per household in Clovis was about \$29,000 in 1999, with about 17 percent of families having incomes below the poverty level. Clovis has 14,269 housing units with a rental vacancy rate of about 12 percent (U.S. Bureau of the Census, 2003).

The city of Portales' population estimate was 11,131. Demographic data show the population to be about 57 percent White, 38 percent Hispanic/Latino, 2 percent Black/African American, and all other races comprising the remaining 3 percent of the population. The median annual income per household in Portales was about \$25,000 in 1999, with about 19 percent of families having incomes below the poverty level. Portales has 4,862 housing units with a rental vacancy rate of about 13 percent (U.S. Bureau of the Census, 2003).

3.5 PLANNING AND INFRASTRUCTURE

There is an extensive array of utility lines throughout the housing areas, consisting of natural gas, water, sewer, and electrical (shown in Figure 4-2 in Chapter 4). Currently, electrical power is provided by Excel Energy, natural gas is provided by PNM of New Mexico, and potable water and sewer are provided by Cannon AFB. All utility distribution and maintenance is performed by Cannon AFB.

3.6 SOILS/EROSION

Surface Soils - The most common soil type on the base is the Amarillo fine sandy loam. This soil type is present on all relatively flat surfaces at the base, but is also found on slopes associated with playas. The Amarillo series consists of very deep, well-drained, moderately permeable soils. These soils are derived from loamy eolian sediments from the Blackwater Draw Formation of Pleistocene age. These soils are on nearly level to gently sloping plains; slope ranges from 0 to 5 percent (USACE, 1998). Soil maps of CAFB and MAFR (Melrose Air Force Range) are found in the Curry and Roosevelt counties soil surveys.

Site Geology - The near-surface geology at Cannon AFB is composed of the Late Miocene-Late Pliocene-age Ogallala Formation and the Early Triassic Dockum Group stratigraphic units. The Ogallala Formation is composed of unconsolidated poorly sorted gravel, sand, silts, and clays. The base of the Ogallala is generally marked by a gravel, cobble, and boulder deposit. The Ogallala Formation was laid down as stream and overbank deposits formed within coalescing alluvial fans. As is typical of alluvial deposits, Ogallala internal stratigraphy varies vertically and horizontally over short distances. The Formation varies from 360 feet to 415 feet in thickness. The Dockum Group underlying the Ogallala consists of three formations. The stratigraphically lowest unit is the Santa Rosa Sandstone. Overlying the Santa Rosa Sandstone are the Chinle and Redonda Formations. The Chinle and Redonda formations are composed mainly of red shales with lesser interbedded sands and are known locally as "redbeds" (USACE, 1998).

4. ENVIRONMENTAL CONSEQUENCES

Chapter 4 provides an assessment of the potential environmental consequences of implementing the Proposed Action, Alternative 1, or the No Action Alternative within the designated project area. The analysis presented in this chapter is based on the project details and potential impacts of the Proposed Action or Alternatives identified in Chapter 2 and on the baseline conditions described in Chapter 3. The potential cumulative effects of the Proposed Action or Alternatives with other past, present, and reasonably foreseeable future actions within the region of influence are presented in Chapter 5.

PROPOSED ACTION

The Proposed Action requires the construction and Air Force acceptance of 586 new units, the renovation and Air Force acceptance of 660 units, and the demolition of 634 existing units. C & D activities will occur within the Chavez Manor, Mercury Phase 4, and Gemini Housing Areas. Chavez Manor West units will receive minor renovations, and Mercury Phase 1-3 will receive major renovations. The total area of impact under the Proposed Action is approximately 427 acres, with 930,822 square feet (about 21 acres) undergoing demolition and 978,350 square feet (about 23 acres) of new construction. All activities will take place within the CAFB boundary (Figure 4-1).

ALTERNATIVE 1: MINIMUM HOUSING REQUIREMENTS ALTERNATIVE

The Air Force has a minimum requirement to demolish the units in the Mercury Phase 4 and Gemini Housing Areas and construct 336 new units for replacement. Similar to the Proposed Action, Chavez Manor West units will receive minor renovations, Mercury Phase 1-3 units will receive major renovations, and Mercury Phase 4 and Gemini housing units will be demolished. The difference between the Proposed Action and Alternative 1 is that Chavez Manor units will undergo whole house renovations. Under Alternative 1 there will be 250 fewer demolished and newly constructed units, with 518,812 square feet (about 12 acres) undergoing demolition and 566,340 square feet (about 13 acres) of new construction. All activities will take place within the CAFB boundary (Figure 4-1).

NO ACTION ALTERNATIVE

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1.

4.1 HAZARDOUS MATERIALS/WASTE

This section focuses on assessing potential impacts to human health and the environment from hazardous materials, IRP sites, and wastes associated with the Proposed Action and Alternatives.

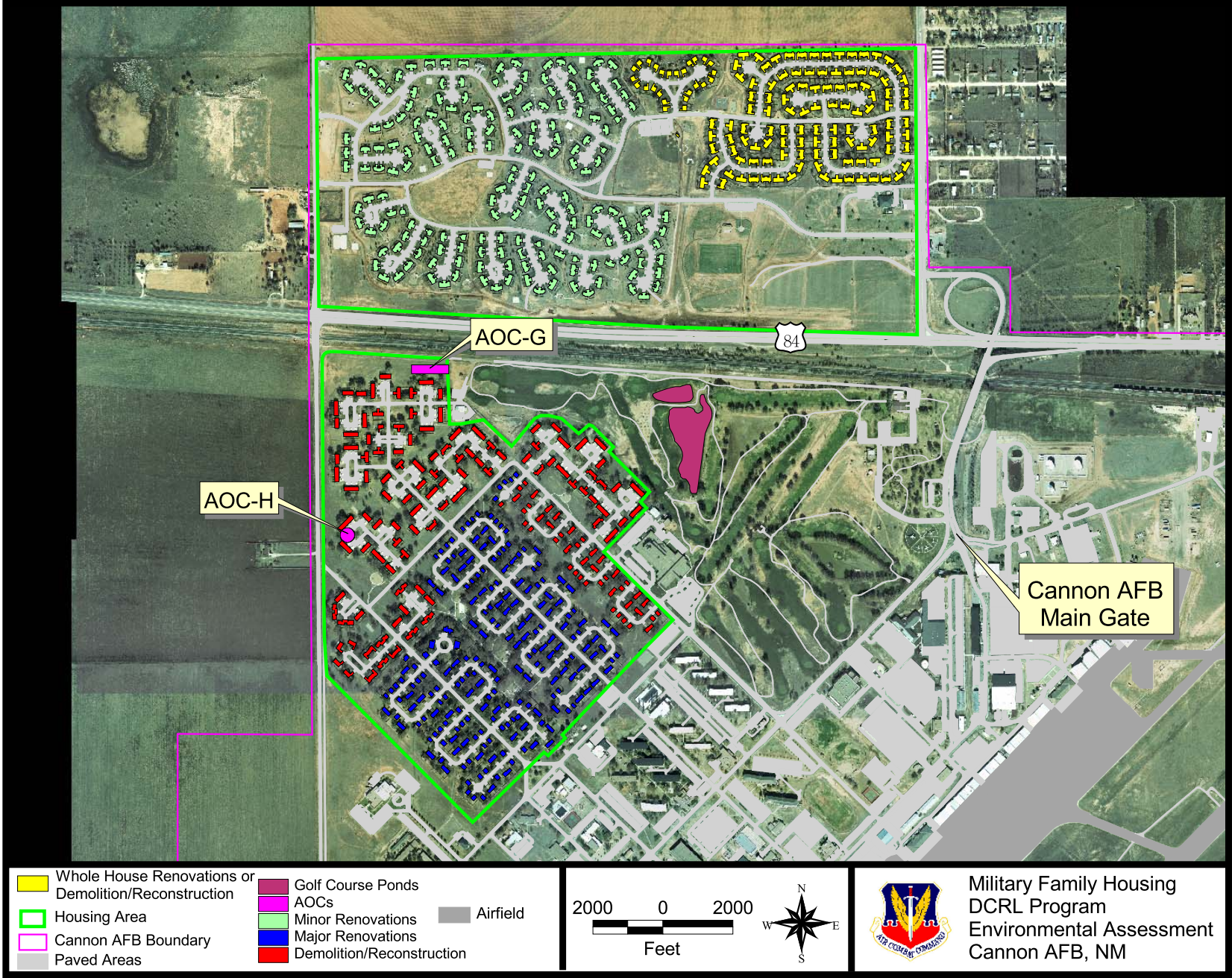


Figure 4-1. IRP and Surface Water Body Locations

4.1.1 Proposed Action

An Environmental Baseline Survey was conducted in conjunction with this project to inventory potential hazardous materials associated with the subject property. The EBS found no obvious evidence of contamination at the subject property. There are no IRP sites located at the subject property; however, there are two areas within MFH that have been investigated by CAFB as AOCs, AOC-G and AOC-H (Figure 4-1). These areas were identified using aerial photographs taken during the 1950s showing ground disturbance in these areas, possibly associated with landfill activities. Coordination with the 27 CES/CEVC prior to C & D activities in these areas will be required to ensure that ground disturbance will not impact these sites.

ACBM and LBP were used in the construction of older MFH residences. Some ACBM and LBP have been abated by the installation as part of renovation/reconstruction activities conducted over the years. CAFB maintains detailed records indicating the location of ACBM and LBP still remaining in MFH residences. Prior to project activities, coordination with 27 CES/CEVC for identification of these areas and for environmental health and safety issues will be required. All hazardous materials/waste will be handled and disposed of in accordance with CAFB's Plan 32-2, *Hazardous Waste Management Plan*, which details procedures for such actions to ensure that no impacts to humans or the environment will occur. As a result, no significant impacts associated with hazardous materials or wastes are anticipated from the Proposed Action.

The development contractor will be responsible for taking measures to prevent spills or accidental or careless releases of hazardous substances such as oil, anti-freeze, etc. The contractor will also be responsible for ensuring spills of hazardous substances such as oil, anti-freeze, etc., are prevented from contaminating soil, surface water or ground water. Additionally, the development contractor will be responsible for annually reporting the use and/or storage of hazardous chemicals (as defined by 40 CFR 372.65 and 29 CFR 1910.1200 (c)) to the 27th Civil Engineer Squadron/Environmental Flight (27 CES/CEV) in sufficient detail that threshold determinations required by the Emergency Planning and Community Right-to-Know Act (EPCRA) can be performed.

4.1.2 Alternative 1: Minimum Housing Requirements Alternative

Because Alternative 1 is similar in scope to the Proposed Action, all issues and potential impacts associated with hazardous materials/waste are the same as those described under the Proposed Action. Therefore, no significant impacts in this issue area from Alternative 1 are anticipated.

4.1.3 No Action Alternative

Under the No Action Alternative renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Due to the large temporal span of activities associated with the No Action Alternative, potential impacts associated with hazardous materials/waste will need to be evaluated throughout different phases of the MILCON program as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

4.2 WATER RESOURCES

Analysis of water resources assess the potential for the Proposed Action and Alternatives to impact surface and groundwater quality from erosion from C & D activities and the potential for increases in consumptive use.

4.2.1 Proposed Action

Document reviews, site reconnaissance, and personnel interviews indicated no presence of wetlands, floodplains, or surface water bodies on or adjacent to the project areas. The closest surface water body to the project area is a golf course pond approximately 900 feet from the edge of the C & D footprint (Figure 4-1). This pond has been designated as a “Water of the U.S.” Drainage from the housing area runs southeast, in the direction of the golf course, at a slope of about 2.5 percent. Implementation of best management practices (BMPs) such as silt fencing and hay bales during construction, a minimal slope, and grass cover between the pond and the project footprint ensure no erosion impacts to the golf course pond will occur.

A National Pollutant Discharge Elimination System (NPDES) permit will be required for the Proposed Action, as C & D activities will cover more than one acre of land area. At this time, there is no information available regarding the square footage of driveways and/or roadways to be constructed or demolished, as this information will be provided during the proposal phase of the procurement process. It is therefore assumed there will be changes to the locations of impervious surface areas (e.g., driveways and parking areas), but no net increase in the amount of impervious surface areas. Any improvements involving ground disturbance would require the BMPs mentioned previously. Once site designs have been approved, the privatization contractor will be responsible for obtaining and complying with Storm Water Construction National Pollutant Discharge Elimination System permits in accordance with the Federal Clean Water Act.

No impacts to groundwater will occur from MFHP actions. Actions related to the MFHP will be limited to a few feet of the ground surface, with the water table at CAFB typically 280 feet below the ground surface. There will be no net increase in the number of housing units and therefore no net increase in the amount of consumptive use of potable water. A ground water test well is located on the northwest corner of the Joe Cannon Estates Housing area (Parcel B). The well is used solely for ground water testing by 27 CES/CEV and cannot be used for other purposes. 27 CES/CEV will require access to this well as required for ground water monitoring.

Other issues regarding water resources associated with this project are related to coordination between 27 CES/CEV and development contractor regarding processing fees, maintenance, and general ownership of the housing wastewater and potable water systems. The development contractor will be solely responsible for all permitting actions related to surface and ground water resources.

4.2.2 Alternative 1: Minimum Housing Requirements Alternative

Under Alternative 1 there will be no demolition or new construction in the Chavez Manor housing area, which results in approximately 412,010 square feet (~9.5 acres) less demolition and new construction activity. While this will reduce overall erosion potentials for the entire

project, C & D activities in Mercury Phase 4 and Gemini housing areas will still be required to implement erosion control BMPs to minimize the potential for impacts to the golf course pond. As with the Proposed Action, no significant erosion impacts to the golf course pond are anticipated from Alternative 1. Alternative 1 is similar in scope to the Proposed Action. As a result, all other issues and potential impacts associated with other water resources are the same as those described under the Proposed Action.

4.2.3 No Action Alternative

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON program over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Due to the large temporal span of activities associated with the No Action Alternative, potential impacts associated with water resources will need to be evaluated throughout different phases of the MILCON project, as environmental conditions and laws and regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

4.3 AIR QUALITY

Analysis of air quality focuses on identifying air emissions from C & D activities (e.g., fugitive dust and construction equipment) associated with the Proposed Action and Alternatives and the potential for these emissions to adversely impact air quality.

4.3.1 Proposed Action

Project generated air emissions were analyzed to determine if:

- There will be a violation of a NAAQS.
- Emissions contributed to an existing or projected air quality violation.
- Sensitive receptors were exposed to substantial pollutant concentrations.
- There was an increase of 10 percent or more in Curry County criteria pollutants emissions.
- Any significant criteria established by the New Mexico State Implementation Plan was exceeded.
- A permit to operate or a change to an existing permit was required.

Under existing conditions, the ambient air quality in Curry County is classified as attainment for all criteria pollutants.

The primary emission source category associated with the Proposed and Alternative Actions is construction activity. Construction-related activities will generate both combustive emissions from heavy equipment usage and fugitive dust (particulate matter) emissions from construction and ground-disturbing (land clearing, ground excavation, cut and fill operations, etc.) activities. Fugitive emissions will be greatest during site clearing and grading activities and will vary from

day to day depending on the amount of land being worked, the level of C & D activity, the specific operations, and the prevailing meteorological conditions.

The methods selected to analyze air quality effects depend on the type of emission source being examined. Since construction phase emissions are generally considered temporary, analysis is limited to estimating the amount of uncontrolled fugitive dust and the amount of combustive emissions that may be emitted from construction equipment during C & D of housing units and ground disturbing activities (land clearing, grading, cut and fill operations, etc.).

New Mexico has developed a State Implementation Plan (SIP) as required by Section 110 of the CAA to provide for the implementation, maintenance, and enforcement of the NAAQS for each air quality region within the state. The SIP is the primary vehicle used by USEPA for enforcement of federal air pollution legislation.

Section 176(c) of the CAA provides the basis for the relationship between the SIP and federal projects. It states that no federal agency shall support or approve any activity or action that does not conform to an implementation plan after the plan has been approved or promulgated under Section 110. This means that federally supported or funded activities will not 1) cause or contribute to any new violation of any air quality standard, 2) increase the frequency or severity of any existing violation of any standard, or 3) delay the timely attainment of any standard or any required interim emission reductions or other milestones in any area. In accordance with Section 176(c), USEPA promulgated the General Conformity Rule that is codified as 40 CFR 51, Subpart W. The provisions of this rule apply to state review of all federal general conformity determinations submitted to the state pursuant to 40 CFR 51, Subpart W, and incorporated by reference at Title 20, Chapter 2, Part 98, of the New Mexico Administrative Code. The Conformity Rule only affects federal actions occurring in nonattainment and maintenance areas. Since Cannon AFB is located in an attainment area, the Air Force does not plan to prepare a conformity determination for the proposed housing project at CAFB.

Even though a conformity determination is not required, the federal action must still comply with the conformity requirements of Section 176(c); that is, the federal action may not exceed the threshold and criteria outlined above. Therefore, the impact analysis used the 10 percent criteria found in the Conformity Rule to assess possible air quality impacts. For impacts screening in this analysis, a more restrictive criterion than found in the General Conformity Rule was used. Rather than comparing emissions from project activities to 10 percent of regional inventories, emissions were compared to 10 percent of Curry County's CY99 emissions (a more restrictive comparison).

For this project, it was assumed that 634 housing units will be demolished, 127 acres (5 housing units per acre) will be subject to ground disturbing activities, 586 new units will be built, and 660 units will be renovated. Table 4-1 summarizes the estimated total emissions for the housing project. As can be seen from the information presented, increased annual emissions are extremely small when compared to the Curry County emissions inventory and are well below the 10 percent criteria described above. Any construction-related emission effects will be temporary and will fall off rapidly with distance from the construction site. Due to the short-term effect of construction-related fugitive and combustive emissions and the relative small area affected, there will be no adverse cumulative decrease in air quality associated with this alternative.

Table 4-1. Total Construction Emissions for the Cannon AFB Housing Project (Tons/Year)

Pollutant Emission Source	CO	NO₂	PM₁₀	SO₂	VOCs
Cannon AFB Housing Construction	3.73	202.38	15.4	16.03	70.84
Curry County Total Emissions	15,116.00	3,222.00	19,578.00	526.00	3,818.00
Percent of Curry County Air Emissions Inventory	0.02%	6.28%	0.08%	3.04%	1.86%

Source: USEPA, No Date. Air and Radiation web site (www.epa.gov/air/)

4.3.2 Alternative 1: Minimum Housing Requirements Alternative

Fugitive dust C & D activities and combustive emissions from construction will be generated during this alternative. However, there will be no demolition or new construction in the Chavez Manor housing area, which results in approximately 412,010 square feet less demolition and new construction activity. Therefore, there will be less C & D related emissions. Any annual air quality impacts will be less than those estimated for the Proposed Action and will be well below the 10 percent criteria described above. Due to the short-term effect of construction-related fugitive and combustive emissions and the relative small area affected, there will be no adverse cumulative decrease in air quality associated with this alternative.

4.3.3 No Action Alternative

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Fugitive dust from C & D activities and combustive emissions from construction activities will be generated during this alternative. Potential impacts to air quality will actually be less than those described under Alternative 1, as the activities will be spread out over a much longer time span. Therefore, annual emissions generated during construction activities will be well below the 10 percent criteria described above. Due to the short-term effect of construction-related fugitive and combustive emissions and the relatively small area affected, there will be no adverse cumulative decrease in air quality associated with this alternative.

4.4 SOCIOECONOMICS

4.4.1 Proposed Action

Although the CAFB Family Housing office administers 1,644 total units, to include 350 Section 801 housing units (200 in Clovis and 150 in Portales), the 63 Mercury Phase 4 units are considered “unoccupable.” As a result, these units are not considered as part of the available housing units. Therefore, CAFB Family Housing administers 1,581 total occupiable units. A minimum of 1,550 units will be made available during the project’s duration (including the 350 Section 801 units). This results in a loss of only 31 units available for occupancy during the duration of the construction and demolition phase of the project. This is only a small percentage decrease (~2 percent) in occupiable units, which equates to only a small increase in personnel that may need housing in the local community. Even so, there is adequate rental housing

available off base to cover the unavailable units. Additionally, the base's current MFH occupancy rate is typically 97 percent. Therefore, there are typically about 1,534 units occupied at any one time. Given the typical occupancy rate at CAFB and the minimum number of units that are to be made available during the duration of the project, it is unlikely that there would be any significant increase in the number of personnel having to find housing in the local community, and therefore no significant impacts to assigned families or the local community.

The amount of occupiable units once the project is complete, to include the 350 Section 801 housing units, would be 1,596. Given that there are currently 1,581 units that are currently occupiable, this means that there would actually be an increase in the number of occupiable units by a total of 15. The additional units represent an increase in the overall total number of occupiable units of approximately one percent. As a consequence of the Proposed Action, about 15 additional families would have housing available to them on base, resulting in the potential for 15 less families seeking housing in the local community. These numbers are relatively small, and no significant adverse socioeconomic impacts to military families or to the local community will result from the Proposed Action.

Should displacement of a few families or personnel to off-base housing occur during the project, slight economic benefits will occur to the local community as some property owners may collect rental fees from these families. Additional minor socioeconomic benefits will occur from the use of local contractors, laborers, and material suppliers for project activities.

4.4.2 Alternative 1: Minimum Housing Requirements Alternative

Under Alternative 1, availability of housing during the project will be the same as the Proposed Action, as will the number of end-state units. As a result, socioeconomic impacts associated with Alternative 1 will be the same as those under the Proposed Action.

4.4.3 No Action Alternative

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Due to the large temporal span of activities associated with the No Action Alternative, potential impacts associated with socioeconomics will need to be evaluated throughout different phases of the MILCON program as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

4.5 PLANNING AND INFRASTRUCTURE

Planning and infrastructure analysis focuses on identifying planning coordination requirements with regard to the need for new roadways and/or utilities (e.g., wastewater, potable water, electricity, gas, etc).

4.5.1 Proposed Action

As seen in Figure 4-2, there is an extensive array of utility lines throughout the housing areas, consisting of natural gas, water, sewer, and electrical lines. This can be problematic in the sense that all of these lines must be precisely located prior to any ground disturbance activities. While Figure 4-2 provides a generalized representation of the location of these utility lines, the locations are not exact. As a result, prior to any excavation or ground disturbing activities, all utility lines must be marked. Coordination with 27 CES and the local utility authorities in this regard will be required prior to project initiation.

In general, the number of housing units will decrease under the MFHP, creating less of a flow to the CAFB wastewater facility and not adversely impacting the facility in terms of capacity. This same principle will apply to potable water consumptive use, electricity, and natural gas. No increases in utility use are anticipated, and no adjustments to Cannon AFB wastewater and consumptive use permitting will be required. The developer of the housing areas is responsible for coordinating with the county utility authorities to establish all needed permits for utility use.

At this time, there is no information available regarding the square footage of driveways and/or roadways to be constructed or demolished, as this information will be provided during the proposal phase of the procurement process. It is therefore assumed there will be changes to the locations of impervious surface areas (e.g., driveways and parking areas), but no net increase in the amount of impervious surface areas. While there may be intermittent traffic stoppages in the housing areas associated with movement of construction equipment, there should be no significant impacts to the level of service of roadways within the area. In fact, the realignment of units and decrease in unit density in the housing areas will serve to improve roadway access, as currently the streets in some sections of the housing areas are somewhat crowded due to high unit density and cars parked on the street due to inadequate parking.

4.5.2 Alternative 1: Minimum Housing Requirements Alternative

Alternative 1 is similar in scope to the Proposed Action. As a result, all potential impacts and requirements associated with infrastructure and planning are the same as those described under the Proposed Action.

4.5.3 No Action Alternative

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Due to the large temporal span of activities associated with the No Action Alternative, potential impacts associated with planning and infrastructure will need to be evaluated throughout different phases of the MILCON program, as environmental conditions and laws and regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

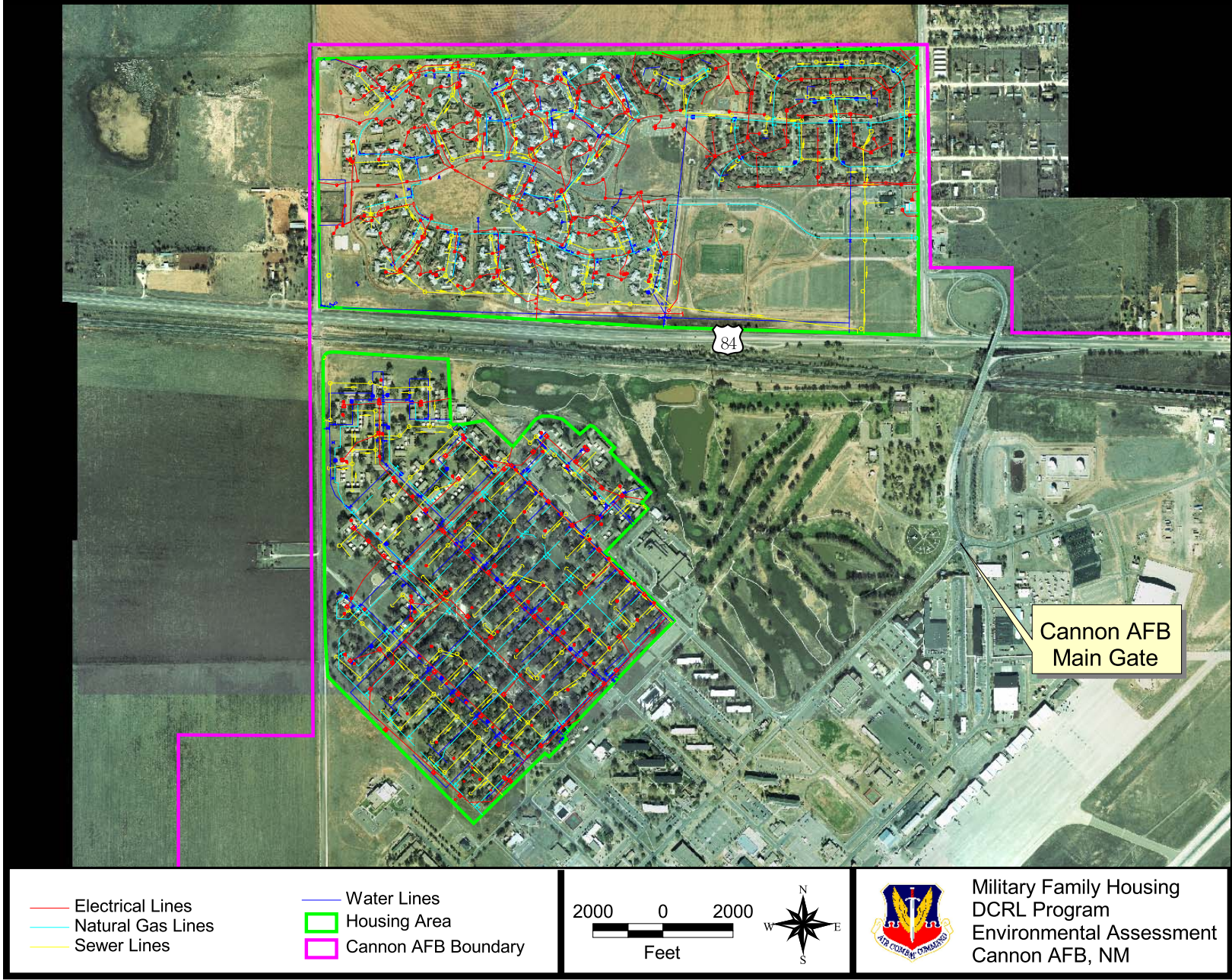


Figure 4-2. Location of Utility Lines

4.6 SOILS/EROSION

Construction and demolition of housing units and paved areas, as well as the routing of utilities, will result in the disturbance of soils, and subsequently the potential for erosion. Analysis of soils and erosion focuses on assessing the potential for erosion impacts associated with these activities under the Proposed Action and Alternatives and identifying BMPs that could be implemented to minimize the potential for impacts.

4.6.1 Proposed Action

The total area of impact under the Proposed Action is approximately 427 acres, with 930,822 square feet (about 21 acres) undergoing demolition and 978,350 square feet (about 23 acres) of new construction.

The closest surface water body to the project area is a golf course pond approximately 900 feet from the edge of the C & D footprint (Figure 4-1). This pond has been designated as a “Water of the U.S.” Drainage from the housing area runs southeast, in the direction of the golf course, at a slope of about 2.5 percent. Implementation of best management practices (BMPs) such as silt fencing and hay bales during construction, a minimal slope, and grass cover between the pond and the project footprint ensure no erosion impacts to the golf course pond will occur. Additionally, establishment of a stormwater plan will ensure that paved surface areas will be constructed with a grade, or slope, to direct potential runoff toward stormwater collection points.

The development contractor will not remove any soil from the site without appropriate environmental testing and without written consent from NMED. Prior to occupancy of renovated or newly constructed housing where soil was disturbed, the contractor will be responsible for having a competent risk assessor carry out a representative sampling of soil immediately surrounding the housing and likely children’s play areas. If the results exceed screening values, the contractor will conduct a complete risk assessment. The results of screening, sampling or a risk assessment will be provided to the Government for approval prior to occupancy.

4.6.2 Alternative 1: Minimum Housing Requirements Alternative

Under Alternative 1, there will be 250 fewer demolished and newly constructed units, with 518,812 square feet (about 12 acres) undergoing demolition and 566,340 square feet (about 13 acres) of new construction.

All potential impacts associated with soils and erosion are the same as those described under the Proposed Action. As a result, the use of BMPs and establishment of a stormwater plan will be required.

4.6.3 No Action Alternative

Under the No Action Alternative, renovations and C & D activities will occur through the MILCON process over a 25-35 year time period, with renovation and C & D activities similar to those described under Alternative 1. Due to the large temporal span of activities associated with the No Action Alternative, potential impacts associated with soils and erosion will need to be

evaluated throughout different phases of the MILCON program as environmental conditions and laws/regulations may change over time. It can reasonably be assumed that actions undertaken within the next 5-6 years will have the same potential impacts as those described under Alternative 1.

5. CUMULATIVE EFFECTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE EFFECTS

According to Council on Environmental Quality (CEQ) regulations, cumulative effects analysis in an EA should consider the potential environmental impacts resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7).

5.1.1 Definition of Cumulative Effects

Cumulative effects may occur when there is a relationship between a Proposed Action and other actions expected to occur in a similar location or during a similar time period. This relationship may or may not be obvious. Actions overlapping with or in close proximity to the Proposed Action can reasonably be expected to have more potential for cumulative effects on “shared resources” than actions that may be geographically separated. Similarly, actions that coincide temporally will tend to offer a higher potential for cumulative effects.

In this EA, an effort has been made to identify all actions on or near the action area that are being considered and are in the planning stage at this time. To the extent details regarding such actions exist and the actions have a potential to interact with the Proposed Action outlined in this EA, these actions are included in the cumulative analysis.

5.1.2 Past, Present, and Reasonably Foreseeable Actions

This EA applies a stepped approach to provide decision-makers with not only the cumulative effects of the Proposed Action and Alternative, but also the incremental contribution of past, present, and reasonably foreseeable actions.

Past and Present Actions Relevant to the Proposed Action and Alternative

Construction of the Chavez Manor West area was evaluated in the *F/EF-111 Basing at Cannon AFB, NM Final Environmental Impact Statement* (May 1992). This activity was included as part of the Proposed Action and is referenced in Section 2.1.4 of the EIS. The construction of this area was found to have no significant impact on the environment. No other actions, either past or present, in or near the Cannon AFB housing areas were found to be relevant to the Proposed Action or Alternatives (e.g., large developments or construction projects) (Santee, 2002).

Reasonably Foreseeable Future Actions

Interviews with the Curry County Assessor’s Office have identified no reasonably foreseeable future large development or construction actions relevant to the Proposed Action or Alternatives. Housing unit developments have been identified for the city of Clovis, which may increase housing availability in the area, but these developments have no direct relationship to the Proposed Action or Alternatives (Williams, 2003).

5.1.3 Analysis of Cumulative Impacts

As stated previously, the past construction of the Chavez Manor West area was evaluated in the *F/EF-111 Basing at Cannon AFB, NM Final Environmental Impact Statement* conducted in May of 1992, and the scope of this Proposed Action within Chavez Manor West is less than that of the EIS (i.e., minor renovations versus construction). There are no known present or reasonably foreseeable future actions relevant to the Proposed or Alternative Actions. As a result, no cumulative impacts have been identified.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA requires that environmental analysis includes identification of any irreversible and irretrievable commitments of resources that will be involved in the Proposed Action should it be implemented. Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource such as energy and minerals that cannot be replaced within a reasonable time frame. Irretrievable resource commitments involve the loss in value of an affected resource that cannot be restored as a result of the action such as extinction of a threatened or endangered species or the disturbance of a cultural site.

Proposed Action and Alternatives

For the Proposed Action and Alternatives, most resource commitments are neither irreversible nor irretrievable. Most environmental consequences such as air emissions from construction are short-term and temporary or longer lasting but negligible (e.g., utility increases).

Construction of the new housing units required for the Proposed Action or Alternatives will require consumption of limited amounts of materials typically associated with interior and exterior construction, such as concrete, wiring, insulation, and windows. The amount of these materials used is not expected to significantly decrease the availability of the resources.

6. LIST OF PREPARERS

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Name/Qualifications	Contribution	Experience
<i>Kevin Akstulewicz</i> BS – Environmental Science	Project Manager Author GIS	6 Years Environmental Science
<i>Diaz, Luis</i> B.S. Aerospace Engineering M.S. Environmental Engineering	Author	10 years of Environmental Engineering Safety, Pollution Prevention, and Waste Minimization
<i>MacKinlay, Alexandra M.</i> M. Environmental Management B.S. Biology	Author	3½ years environmental science
<i>Nemzoff, Eloise</i>	Editor	35 years experience in document writing, editing, and production
<i>O'Steen, Diana</i>	Document Management Specialist	13 years document management

7. LIST OF CONTACTS

The following Cannon AFB subject matter expert personnel were interviewed to determine the potential for the MFHP to impact natural and anthropogenic resources associated with Cannon AFB.

Address:

506 N DL Ingram Blvd
Cannon AFB, NM 88103-5003

Mr. Bob Pedigo – 27 CES/CEH (Base Housing Office)

Mr. Rick Crow – 27 CES/CEV (Chief, Environmental Flight)

Mr. Mike Rierson – 27 CES/CEVR (NEPA/ESOH CAMP)

Mr. Dave Davis – 27 CES/CEVR (Biological Resources)

Mr. Rick Chandler – 27 CES/CEVR (Cultural Resources)

Mr. Denny Timmons – 27 CES/CEVC (Chief, Environmental Compliance/IRP)

Ms. Carla Givens – 27 CES/CEVP (Solid Waste)

Ms. Vera Wood – 27 CES/CEV (Hazardous Waste)

Mr. John Rebman – 27 CES/CEV (Wetlands/Water/Waste Water)

Mr. Don White – 27 CES/CEV (Chief, Pollution Prevention/Air Quality)

Mr. John Santee – 27 CES/CECP (Planning and Infrastructure)

Mr. Bill Hamilton – 27 CES/CEVC (LBP, ACM)

Mr. Gene Smith – 27 CES/CEVC (USTs/ASTs, EPCRA)

The following civilian individual was also contacted in regard to information for the EA:

Mr. Randy Williams – Curry County Assessor's Office
700 North Main, Suite 6
Clovis, NM 88101

8. REFERENCES AND APPLICABLE DOCUMENTS

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