Environmental Impact Analysis Process

Environmental Assessment for Military Family Housing Privatization Initiative

United States Air Force
Air Combat Command
Davis-Monthan Air Force Base, Arizona

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ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/g	micrograms per gram
µg/m^3	micrograms per cubic meter
355 CES/CEV	355th Civil Engineering Squadron, Environmental
AAQS	Ambient Air Quality Standards
ACBM	asbestos containing building material
ACC	Air Combat Command
ADEQ	Arizona Department of Environmental Quality
AFB	Air Force Base
AFI	Air Force Instruction
AFPD	Air Force Policy Directive
AMARC	Aerospace Maintenance and Regeneration Center
ANSI	American National Standards Institute
AQCR	Air Quality Control Region
AT/FP	anti-terrorism/force protection
AZ	Arizona
AZGF	Arizona Department of Game and Fish
AZPDES	Arizona Pollutant Discharge Elimination System
BEA	U.S. Bureau of Economic Analysis
BMP	Best Management Practice
CAA	Clean Air Act
CATM	Combat Arms Training Maintenance
CEQ	Council on Environmental Quality
CEVA	Environmental Analysis Element
CFR	Code of Federal Regulations
CO	carbon monoxide
CSAR	Combat Search and Rescue
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibel
DNL	Day-Night Average Sound Level
DoD	Department of Defense
DRMO	Defense Reutilization Marketing Office
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FAMCamp	Family Camping
FEMA	Federal Emergency Management Agency
FICUN	Federal Interagency Committee on Urban Noise
FONSI	Finding of No Significant Impact
HAP	hazardous air pollutant
HHW	household hazardous waste
HRMA	Housing Requirements and Market Analysis
I-10	Interstate 10
I-19	Interstate 19
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
JP	Jet Propellant
kV	kilovolt
LBP	lead-based paint
LQG	large quantity generator
MFH	Military Family Housing
mg/kg	milligram per kilogram
MGD	million gallons per day
MILCON	Military Construction
MSGP	multi-sector general permit
MSL	mean sea level
MXS	Maintenance Squadron
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFA	No Further Action
NO_2	nitrogen dioxide
NOI	Notice of Intent
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
O_3	ozone
OSD	Office of the Secretary of Defense
OSHA	Occupational Safety and Health Administration
OSS	Operations Support Squadron
P.L.	Public Law
Pb	lead
PCB	polychlorinated biphenyl
PDEQ	Pima County Department of Environmental Quality
PM_{10}	respirable particulate matter less than or equal to 10 micrometers in diameter
$PM_{2.5}$	respirable particulate matter less than or equal to 2.5 micrometers in diameter
POL	petroleum, oil, and lubricant
POV	personally-owned vehicle
ppm	parts per million
PSD	Prevention of Significant Deterioration
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RQG	Rescue Squadron
SFS	Security Forces Supply
SIP	State Implementation Plan
SO_2	sulfur dioxide
SO_x	sulfur oxides
SOQ	Senior Officer's Quarters

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FINDING OF NO SIGNIFICANT IMPACT

NAME OF THE PROPOSED ACTION

Environmental Assessment (EA) for Military Family Housing (MFH) Privatization Initiative for Davis-Monthan Air Force Base (AFB), Tucson, Arizona.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

The United States Air Force (USAF) will privatize its MFH at Davis-Monthan AFB, in Tucson, Arizona. Under this proposal, 1,256 housing units would be conveyed to a private developer, who would demolish 936 housing units that no longer meet requirements, construct 609 new units, and renovate 123 existing units, to reach the required 929 MFH units for the Base. All proposed construction will occur in the existing MFH area.

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Earth Resources. Under the Proposed Action, approximately 285 acres will be temporarily disturbed during demolition of existing units and depending on density, 100 to 250 acres will be redeveloped with 609 new housing units. Impervious surface will not increase and is likely to actually decrease since the final number of housing units will decrease by almost 25 percent. Best Management Practices (BMPs) will be used to limit soil movement, stabilize runoff, and control sedimentation. Impacts to earth resources will not be significant.

Water Resources. Under the proposal, there will be a net decrease in impervious surface at the Base as a result of fewer housing units. This decrease in impervious surface will result in a minor decrease in storm water runoff at the Base. The Base will update their Storm Water Pollution Prevention Plan (SWPPP) to include these projects. Under contract to the USAF, the privatization developer will obtain coverage under Construction General Permit AZG2003-001 for storm water. Adherence to the requirements of the Base's SWPPP and the permit will include implementation of BMPs to minimize the potential for exposed soils or other contaminants from construction activities to reach nearby surface waters. Impacts to water resources will not be significant.

Biological Resources. In general, the areas associated with proposed construction and/or demolition are currently developed and have been previously disturbed. Any remaining natural vegetation is typical of surrounding Sonoran desert scrub plant community and does not provide important or rare habitat. There are no known sensitive plant or animal species in the MFH area. There are no sensitive plant species known to occur on Base, and animal species that would be found in specific project areas are well-adapted to the human environment. The Base will coordinate with appropriate state and federal agencies regarding western burrowing owls, cave myotis, peregrine falcon, lesser long-nosed bat, and Pima pineapple cactus, should there be a need. Additionally, the Base will comply with the Arizona Native Plant Law regarding all sensitive native plants. Prior to construction and/or demolition activities, a qualified field biologist will survey the sites to determine whether sensitive species are present. Impacts to biological resources will not be significant.

Air Quality. Annual emissions related to construction/demolition activities associated with the MFH proposal will vary over the 7-year construction period with the highest emissions anticipated to be in 2008, and the lowest being in the final year, 2012. Annual emissions (in tons per year [TPY]) will range as follows: carbon monoxide (CO) will range from 0.4 to 25.5; volatile organic compounds (VOCs) from 0.3 to 7.0; nitrogen oxides (NO_x) from 3.9 to 80.0; (SO_x) from <0.1 to 1.1; and respirable particulate matter less than 10 micrometers in diameter (PM_{10}) from 0.2 to 9.8. In general, combustive and fugitive dust emissions will produce localized, short-term elevated air pollutant concentrations, which will not result in any long-term impacts on the air quality in Pima County (Air Quality Control Region [AQCR] 015). The total CO emissions are below the conformity threshold of 100 TPY. Impacts to air quality in the County will not be significant.

Noise. Under the Proposed Action, vehicles and equipment involved in demolition, facility construction, and finishing work will generate noise. Residents within and surrounding the construction and demolition areas will be exposed to noise from redevelopment activities. The resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent over the construction period, and will not result in long-term impacts. Construction noise emanating off-site as a result of the proposed projects will probably be noticeable in the immediate site vicinity, but is not be expected to create adverse impacts. The acoustic environment on and near Davis-Monthan AFB is expected to remain relatively unchanged from existing conditions, and will continue to be dominated by aircraft activities. Impacts from noise will not be significant.

Socioeconomics/Environmental Justice. It is unlikely that the socioeconomic characteristics of the region of influence (ROI) will be substantially affected by the construction employment and income that will result under the Proposed Action. Construction accounts for 6 percent of total employment in 2005 and 8 percent of total earnings in 2003. Given the phased approach to the project and simultaneous other military construction (MILCON) projects, this will not result in a significant impact on employment or earnings in the area. The Proposed Action will have no substantial impact on specific minorities. Given standard safety precautions, there are no impacts anticipated to children who may reside or go to school in the vicinity of the proposed activities.

Safety. All proposed activities and workers at the construction site will comply with Occupational Safety and Health Administration (OSHA) standards and requirements, and will be required to conduct construction activities in a manner that will not pose any risks to personnel at or near the construction site. All materials and equipment will be used in accordance with industry and regulatory standards. All construction areas will be fenced to preclude public access. Given these measures, risks to personnel and the public would be minimized. Construction contractors will be required to develop a plan addressing traffic and safety concerns. The plan will identify haul routes through neighborhoods, set speed limits on construction-related vehicles, and define other protocols to ensure safety of residents and children. Impacts to safety will not be significant.

Hazardous Materials and Waste Management. New Davis-Monthan AFB housing units will be constructed utilizing normal residential construction methods, which will limit the use of hazardous materials to the extent possible. Petroleum, oil, and lubricant (POL) products and other hazardous materials (e.g., paints) will be used during construction/renovation activities, as necessary. These materials will be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. There is a single Environmental Restoration Program (ERP) site (SD-19) situated within the south and west edge of Palo Verde Village. There is no further action required at this site. Should any unusual odor, soil, or groundwater coloring be encountered during activities in any other areas, the Davis-Monthan AFB Environmental Flight will be contacted immediately. Neither asbestos containing building materials (ACBMs), nor lead-based paint (LBP) will be used for any new construction; therefore, there will be an overall beneficial result to residents upon the removal of potential exposure to ACBM and LBP. The proposed construction and demolition will generate construction and demolition waste that will be recycled and/or taken to the local landfill, as appropriate. There are no capacity issues with the existing landfills. Hazardous materials and wastes will be handled, stored, and disposed of in accordance with applicable regulations. Impacts to hazardous materials and waste management will not be significant.

Infrastructure. Implementation of the Proposed Action will not alter traffic circulation on most of the Base. Haul routes for proposed demolition and construction have not been established, but will be routed on the primary roads in and out of the Base and through family housing areas, to the extent possible. There may be some minor traffic inconveniences, but these impacts will be of short duration. In general, utility usage on Base will decrease as a result of the Proposed Action; however these savings would be offset off-Base and therefore there should be no substantial net change in utility consumption as a result of the Proposed Action. Impacts to infrastructure will not be significant.

No-Action Alternative: Under the No Action Alternative, the USAF would not implement the MFH privatization initiative at Davis-Monthan AFB. Instead, Davis-Monthan AFB would continue to manage and maintain military family housing in accordance with existing USAF policy. Based on the Housing Requirements Market Analysis, Davis-Monthan AFB has a requirement to supply 929 housing units. Therefore, under the No Action Alternative, at a minimum, the number of housing units would be reduced by 327 units to achieve this number. It is also reasonable to assume that, in the near future under the No Action Alternative, Davis-Monthan AFB would implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. As a result, should the No Action Alternative be selected, any impacts associated with it would be less than or equivalent to those described for the Proposed Action.

CONCLUSION

Based on the findings of this EA conducted in accordance with the requirements of the National Environmental Policy Act (NEPA) (42 United States Code [USC] 4321-4347), Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] §§ 1500-1508), and 32 CFR 989, et seq., *Environmental Impact Analysis Process* (formerly known as Air Force Instruction [AFI] 32-7061), and after careful review of the potential impacts, I conclude implementation of the Proposed Action would not result in significant impacts to the quality of the human or the natural environment. Therefore, a Finding of No Significant Impact (FONSI) is warranted, and an Environmental Impact Statement (EIS) is not required for this action.

MICHAEL W. SPENCER
Colonel, USAF
Commander, 355 WG

Date

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1.0 PURPOSE AND NEED

1.1 PURPOSE AND NEED FOR THE PROPOSED ACTION

The United States Air Force (USAF), Air Combat Command (ACC) proposes to privatize its Military Family Housing (MFH) at Davis-Monthan Air Force Base (AFB), Arizona (Figure 1.1-1). The purpose of the Proposed Action is to provide access to safe, quality, well-maintained housing in a community where USAF members and their families will choose to live. In evaluating its current stock of housing units to accommodate this need, the Department of Defense (DoD) has determined that the current condition of DoD-owned housing is poor (Office of the Secretary of Defense [OSD] 2005). About 60 percent of DoD units need to be renovated or replaced (OSD 2005). At Davis-Monthan AFB, nearly 75 percent of the base's housing units are between 30 and 55 years old and do not meet current USAF housing standards (personal communication, Whitaker 2005).

To meet the overall DoD need for safe, quality, well-maintained MFH, the National Defense Authorization Act of 1996 gave DoD the authority to engage private sector businesses through a process of housing privatization, whereby DoD would rely on private sector housing developers to renovate or demolish existing housing units, build new units, and provide the infrastructure needed to support such developments.

As part of a previous, unrelated action to improve Davis-Monthan AFB housing under military construction (MILCON) appropriation, 93 units in the Palo Verde, Kachina Village, and the Senior Officer's Quarters (SOQ) were approved for demolition, and construction was approved for 93 new units (personal communication, Whitaker 2005). These actions were to occur under a phased approach between Fiscal Years 2004–2006. This project is currently underway, with anticipated completion of this MILCON in October 2005.

For the purposes of the Proposed Action, as a result of previously approved actions and anticipated completion of new MILCON construction, Davis-Monthan AFB's housing inventory would be considered at 1,256 units at the time of conveyance to the private developer.

- Kachina Village (approximately 151 acres): 552 units
- Palo Verde (approximately 222 acres): 585 units
- Sonoran Vista (approximately 34 acres): 110 units
- SOQ (approximately 16 acres): 9 units

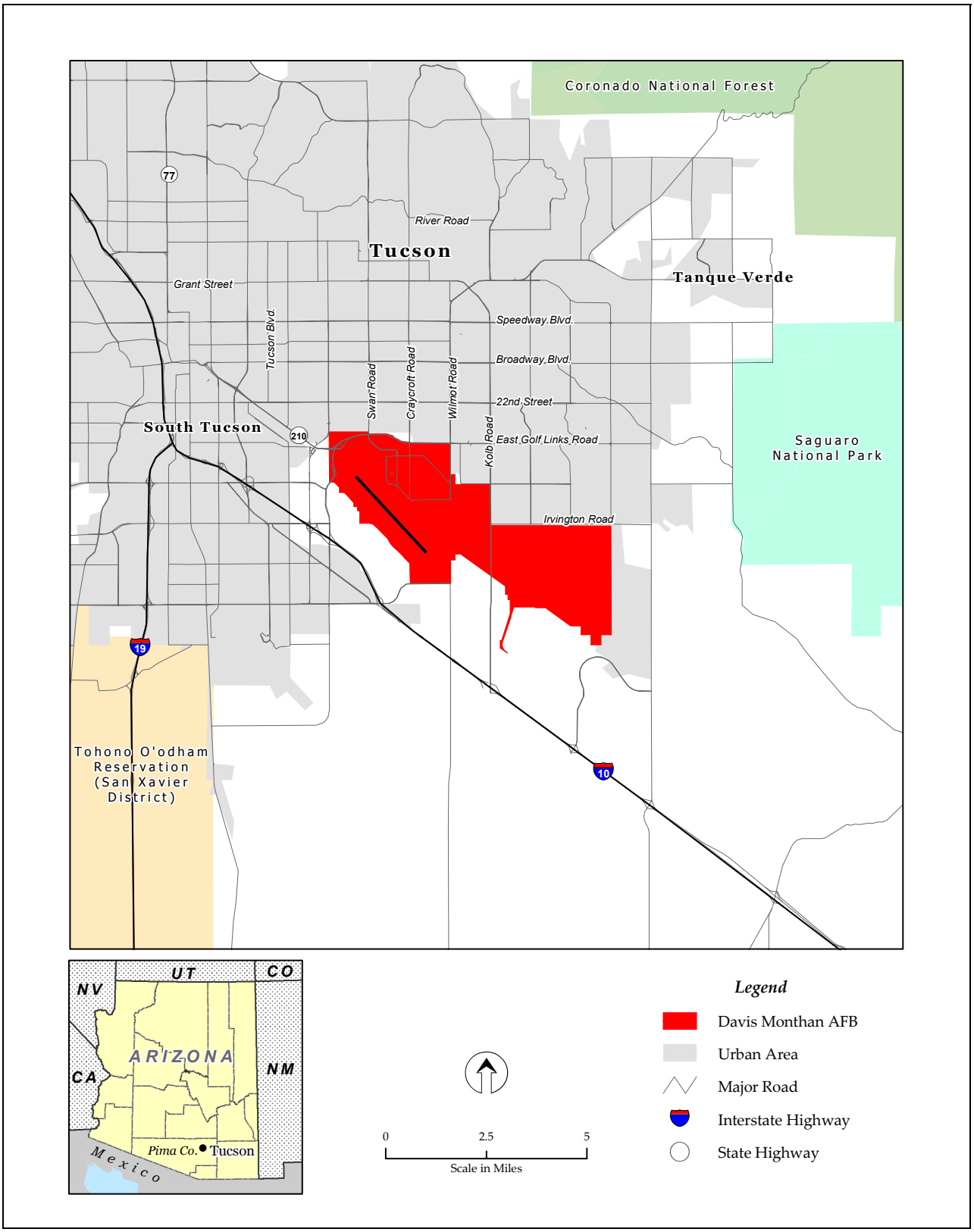

Figure 1.1-1. Location of Davis-Monthan AFB, Arizona

Determining the specific need for required housing at Davis-Monthan AFB involved estimating the number of appropriate private sector housing units available to military families within 20 miles or a 60-minute commute, whichever was greater. In 2004, a Housing Requirements and Market Analysis (HRMA) was conducted for Davis-Monthan AFB to identify the housing units available to military members in the private community. The shortfalls in the available private sector housing were factored into the total MFH requirement for Davis-Monthan AFB, to determine the number of units that the USAF needs to provide at the installation for its personnel. It was determined that the minimum requirement for family housing at Davis-Monthan AFB is 929 units (USAF 2004a). Under privatization, all 1,256 existing family housing units would be conveyed to a private real estate development and property management company. The developer would then propose development scenarios to provide for 929 family housing units, which would include demolition of most of the existing units and construction of numerous new units.

The units would essentially be an investment for the private developer, since the developer would own the units (leasing the land from the USAF) and collect rent from service members. Additional information and details regarding the housing privatization initiative can be found on the DoD housing privatization website at http://www.acq.osd.mil/housing/.

1.2 LOCATION OF THE PROPOSED ACTION

Davis-Monthan AFB is a USAF training installation under the ACC. The installation covers 10,613 acres and is located in Pima County, Arizona, within the city limits of Tucson. Figure 1.1-1 shows the location of Davis-Monthan AFB, while Figure 1.2-1 shows the location of the housing areas on Davis-Monthan AFB.

There are three major housing areas on base (USAF 2004b):

- *Kachina Village* provides quarters for airmen in grades E-1 through E-9 and officer grades O-1 through O-9. Original construction began in 1952. These homes are of masonry construction with attached carports and block-fenced backyards. Five single-story units on Hinden Boulevard that serve as *Senior/General Officer's Quarters* are also included in this group.
- *Palo Verde* is the largest housing area on Davis-Monthan AFB and is designated as enlisted housing. The stucco and frame construction with attached garages/carports was built in four phases: 1970, 1975, 1996, and 2000. Sixty-four new homes were added in the 2000 phase. It is expected that the most recently built of these units would remain.
- *Sonoran Vista* is the newest housing area for enlisted personnel. These homes, built in 1996, are located south of Kachina Village.

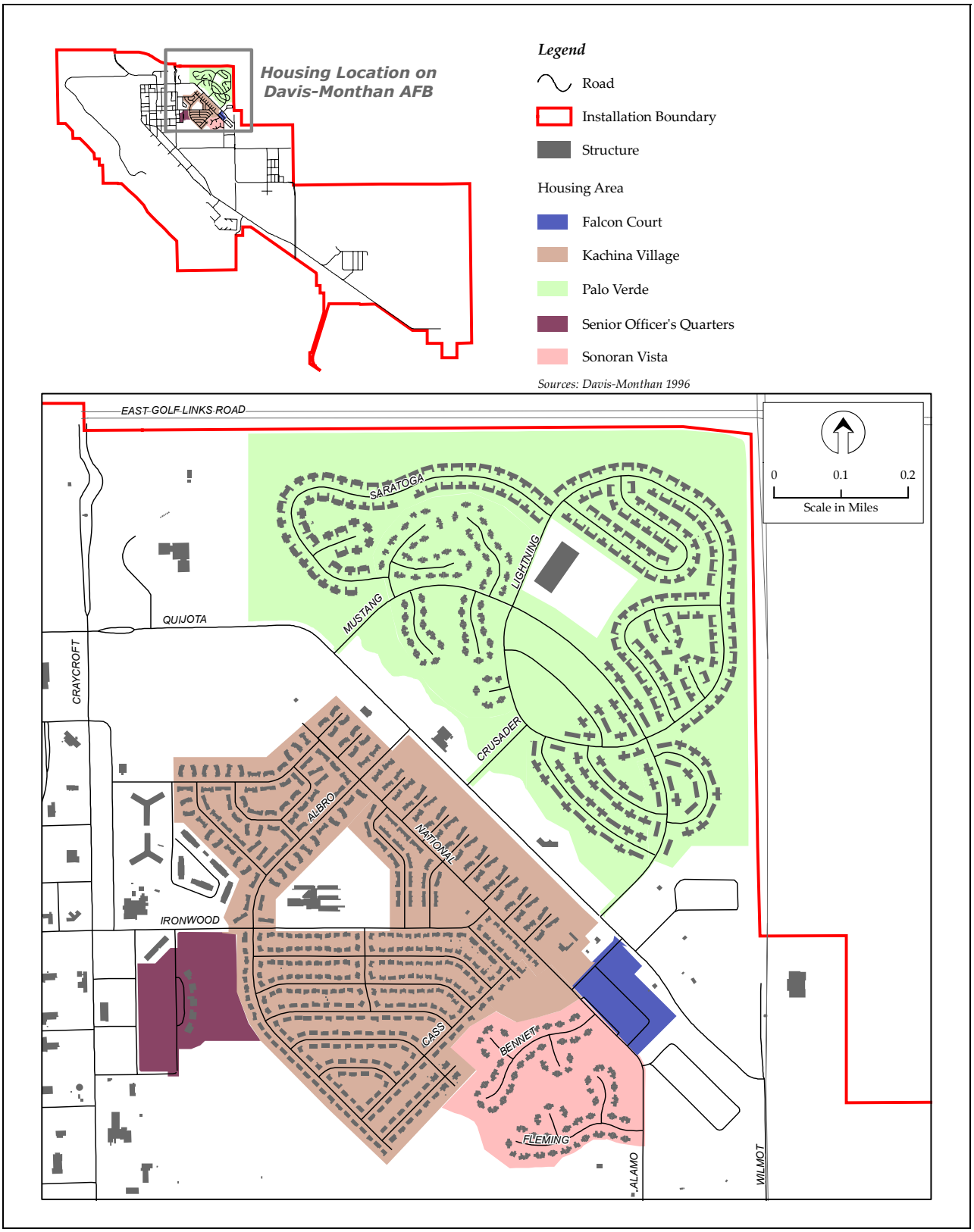

Figure 1.2-1. Location of MFH Areas at Davis-Monthan AFB, Arizona

1.3 DECISION TO BE MADE

The decision to be made is one of two alternatives.

- *Proposed Action:* Meet the base's minimum requirement of 929 units privatization of MFH at Davis-Monthan AFB at a density of 4 to 6 units per acre. This would involve several actions, including the lease of the real property underlying all of the housing units to a private developer. The base would also convey all 1,256 housing units to the developer, who would then demolish 936 housing units and renovate 123 units. Upon demolition of 170 units, approximately 36 acres at Kachina Village would be returned to Davis-Monthan AFB for future base development. The developer would then construct 609 housing units distributed among Kachina Village, Palo Verde, and Falcon Court.

- *No Action Alternative:* Take no action with regard to privatization and continue to occupy, manage, and maintain MFH in accordance with existing USAF policy. Based on the HRMA, Davis-Monthan AFB has a requirement to supply 929 housing units. Therefore, under the No Action Alternative, at a minimum, the number of housing units would be reduced by 327 units to achieve this number. It is also reasonable to assume that, in the near future under the No Action Alternative, Davis-Monthan AFB would implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. As a result, should the No Action Alternative be selected, demolition and construction of housing units is likely to occur sometime in the near future.

1.4 SCOPE OF THE ENVIRONMENTAL REVIEW

This Environmental Assessment (EA) describes, as appropriate, the affected environment and environmental consequences of the activities associated with the Proposed Action. The EA also identifies, if required, any measures that would prevent or minimize environmental impacts. Section 1.4.1 details the issues associated with the Proposed Action addressed in the EA.

If anticipated impacts would be significant, the USAF would either prepare an Environmental Impact Statement (EIS) or would not implement the proposal. If impacts would not be significant, a Finding of No Significant Impact (FONSI) would be prepared. Accordingly, environmental justice would be addressed either in a FONSI or in a Record of Decision based on an EIS.

1.4.1 Identification of Environmental Issues Associated with the Proposed Action and Alternatives

1.4.1.1 ISSUES NOT CARRIED FORWARD FOR DETAILED ANALYSIS

Based on preliminary issue screening, the following issues and resource areas were found to have no applicability to the Proposed Action or No Action Alternative, as there would be no

potential for direct, indirect, or cumulative impacts. Therefore, these issues are not carried forward for detailed analysis in the EA.

Cultural Resources. No archaeological or historic sites or structures have been identified within or adjacent to the MFH areas at Davis-Monthan AFB (USAF 2002). Therefore, there would be no impact to cultural resources and no need for analysis of impacts to this resource area. However, if any signs of an archaeological site are uncovered (e.g., artifacts, pottery shards) during project implementation, notification of the 355th Civil Engineering Squadron, Environmental (355 CES/CEV) would be required, and all localized project activities would be halted until the area has been evaluated.

Land Use. All activities would occur within existing housing areas. These areas would remain classified as residential areas, and the land use classifications of the surrounding areas would not change. Therefore, detailed analysis regarding impacts associated with land use would not be necessary within the EA.

Floodplains. Under Executive Order (EO) 11988, 1977, *Floodplain Management* (42 Federal Register 26951), federal agencies are prohibited from the occupancy and modification of floodplains and floodplain development unless there is no practicable alternative. Floodplains are identified using Federal Emergency Management Agency (FEMA) flood hazard mapping data developed through the National Flood Insurance Program identification and mapping program (FEMA 2005). Based on FEMA floodplain mapping data, neither the Proposed Action nor the No Action Alternative would involve the utilization or change in functionality, topography, or utility of floodplain areas. Consequently, there would be no impact to floodplains from the Proposed Action or No Action Alternative, and further analysis is not required.

Wetlands. Before an action that adversely impacts wetlands may proceed, EO 11990, *Protection of Wetlands*, 1977 (42 Federal Register 26961), requires the head of the responsible federal agency to find that there is no practicable alternative to conducting the action in wetlands. There are no wetland areas within or adjacent to the housing project areas. As a result, impacts to wetlands would not occur, and further analysis is not required.

1.4.1.2 ISSUES CARRIED FORWARD FOR DETAILED ANALYSIS IN THE EA

After analysis of preliminary environmental issues, the following issues will be carried forward for further analysis in the EA due to the potential for direct, indirect, or cumulative impacts:

- Earth Resources
- Water Resources
- Biological Resources
- Air Quality
- Noise
- Socioeconomics/Environmental Justice
- Safety
- Hazardous Materials/Hazardous Waste
- Infrastructure

1.5 APPLICABLE REGULATORY REQUIREMENTS

1.5.1 National Environmental Policy Act

Federal agencies are required to consider the environmental consequences of proposed actions in the decision-making process under the National Environmental Policy Act (NEPA) of 1969. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee federal policy in this process. In 1978, CEQ issued regulations implementing the NEPA process under 40 Code of Federal Regulations (CFR) Parts 1500–1508. The CEQ regulations require that the federal agency considering an action evaluate or assess the potential consequences of the action or alternatives to the action, which may result in the need for an EA or EIS. Under 40 CFR:

- An EA must briefly provide evidence and analysis to determine whether the Proposed Action might have significant effects that would require the preparation of an EIS. If the analysis determines that the environmental effects will not be significant, a FONSI will be prepared.
- An EA must facilitate the preparation of an EIS when an EIS is determined to be required.

The activities that are addressed within this EA constitute a federal action and therefore must be assessed in accordance with NEPA. To comply with NEPA, as well as other pertinent environmental requirements, the decision-making process for the Proposed Action will include the development of an EA to address the environmental issues related to the proposed activities. The USAF implementing procedures for NEPA are contained in 32 CFR 989 et seq., *Environmental Impact Analysis Process*.

1.5.2 Clean Air Act

The Clean Air Act (CAA) (42 United States Code [USC] §§ 7401–7671, as amended) provided the authority for the United States Environmental Protection Agency (USEPA) to establish nationwide air quality standards to protect public health and welfare. Federal standards, known as the National Ambient Air Quality Standards (NAAQS), were developed for six criteria pollutants: ozone (O_3), nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), particulate matter, and lead (Pb). The CAA also requires that each state prepare a State Implementation Plan (SIP) for maintaining and improving air quality and eliminating violations of the NAAQS. Under the CAA Amendments of 1990, federal agencies are required to determine whether their undertakings are in conformance with the applicable SIP and demonstrate that their actions will not cause or contribute to a new violation of the NAAQS; increase the frequency or severity of any existing violation; or delay timely attainment of any standard, emission reduction, or milestone contained in the SIP. Primacy for the CAA on Davis-Monthan AFB and Pima County comes under the regulatory authority of the Pima County Department of Environmental Services. Under Pima County Title 17, Section I, 17.12.470 no person shall conduct, cause or allow land stripping, earthmoving, trenching or road construction or commence demolition or renovation of any structure without first obtaining an activity permit from the County control officer.

1.5.3 Water Resources Regulatory Requirements

The Clean Water Act (CWA) of 1977 (33 USC § 1251 et seq.) regulates pollutant discharges that could affect aquatic life forms or human health and safety. Section 404 of the CWA, EO 11990, *Protection of Wetlands,* and EO 11988, *Floodplain Management*, regulate development activities in or near streams or wetlands. Section 404 regulates development in streams and wetlands and requires a permit from the United States Army Corps of Engineers (USACE) for dredging and filling in wetlands.

1.5.4 Other Regulatory Requirements

Additional regulatory legislation that potentially applies to the implementation of this proposal includes guidelines promulgated by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, to ensure that citizens in either of these categories are not disproportionately affected by any federal action. Also, under the Migratory Bird Treaty Act of 1918 (16 USC §§ 703-712, July 3, 1918, as amended), migratory birds are protected from harm. In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, requires federal agencies to evaluate the effects of actions on migratory birds with an emphasis on species of concern.

1.5.5 Environmental Coordination

EO 12372, *Intergovernmental Review of Federal Programs*, requires intergovernmental notifications prior to making any detailed statement of environmental impacts. Through the process of

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), the proponent must notify concerned federal, state, and local agencies and allow them sufficient time to evaluate potential environmental impacts of a proposed action. Comments from these agencies are subsequently incorporated into the Environmental Impact Analysis Process (EIAP). All pertinent comments (Appendix A) will be addressed specifically within the EA.

The USAF prepared and published a newspaper advertisement announcing the availability of the Draft EA for public and agency review to facilitate public involvement in this project. This advertisement was published in the *Arizona Daily Star* on September 29, 2005 and the *Desert Airman* on September 23, 2005. There were four responses from agencies; and there were no public comments received.

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2.0 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.1 INTRODUCTION

Through privatization, the USAF proposes to convey 1,256 housing units distributed among five parcels of land (including infrastructure and utilities) located on Davis-Monthan AFB to a private real estate development and property management company. Of these units, the USAF proposes that the developer would demolish a certain number of units that no longer meet minimum USAF requirements and then construct new units to meet Davis-Monthan AFB housing demands. All demolition and construction activities would occur on Davis-Monthan AFB property. The USAF proposes to lease the affected real property to the developer for a period of 50 years. The No Action Alternative would involve the management and maintenance of existing housing units in their current locations under current management policy, eventually meeting the minimum Davis-Monthan AFB requirement of 929 MFH units through the MILCON process. This chapter describes the history of the formulation of these alternatives, describes the alternatives in detail, and summarizes the proposed activities and issues associated with each alternative.

2.2 HISTORY OF THE FORMULATION OF THE ALTERNATIVES

The privatization initiative required Davis-Monthan AFB to assess the status of its current housing inventory and identify actions that would allow for the provision of adequate housing based on Davis-Monthan AFB's minimum HRMA housing requirement of 929 units. During this process, alternatives were identified that could potentially meet the need for providing Davis-Monthan AFB families with adequate housing. Criteria for the development of alternatives were identified and are described below.

Selection criteria for the alternatives include the following considerations.

- All MFH units must remain within the Davis-Monthan AFB boundary due to funding and force protection issues. Force protection requirements (e.g., protection of personnel, facilities, and infrastructure) include those outlined in the *USAF Installation Force Protection Guide* and the *DoD Unified Facilities Criteria Minimum Antiterrorism Standards for Buildings* for facility siting, building design, and general security considerations. Placing housing off-base would not only increase the cost but would raise substantial force protection issues for Davis-Monthan AFB personnel.
- All MFH must meet current USAF housing standards.
- In order to meet the minimum Davis-Monthan AFB HRMA requirement, the total end-state number of MFH units must be no less than 929.

2.3 IDENTIFICATION OF ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

Siting the housing areas outside of the existing MFH footprint was considered but eliminated from further consideration. The only viable areas outside of the existing housing areas that are large enough to accommodate the need are located in areas that are undeveloped. However, utilizing these areas is not necessary since the existing housing areas could accommodate the need with minimal impact. Therefore, these areas were considered as alternatives but eliminated from further consideration due to the potential for significant environmental impacts.

2.4 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The Proposed Action would involve the following activities:

- Initial conveyance of 1,256 existing housing units and associated infrastructure (e.g., roads) and utilities distributed among Kachina Village, Palo Verde, Sonoran Vista, and SOQ to a private real estate development and property management company.
    - 197 of these units would remain "as is," and no improvements would be made to these units.
        - Kachina Village: 6 units
        - Sonoran Vista: 40 units
        - Palo Verde: 142 units
        - SOQ: 9 units
    - 123 of these units would undergo minor renovations.
        - Sonoran Vista: 70 units
        - Palo Verde: 53 units
    - 936 of these units would be demolished through a phased approach.
        - Kachina Village: 546 units
        - Palo Verde: 390 units
- Lease of the affected real property to the developer for a period of 50 years.
- Upon demolition of existing housing units, return of approximately 36 acres at Kachina Village to Davis-Monthan AFB. This area would not be needed to support housing units and would be utilized by the installation for future planning efforts as needed.
- Construction of 609 new units through a phased approach at 4 to 6 units per acre within three parcels.
    - Kachina Village

- Palo Verde
- Falcon Court

At completion of the project, 929 units would be owned and operated by a private developer on behalf of Davis-Monthan AFB's military families. This would meet Davis-Monthan AFB's minimum housing requirement. All demolition and construction activities would occur on Davis-Monthan AFB property. Table 2.4-1 summarizes the project details by housing area. Figure 2.4-1 provides a graphical representation.

Table 2.4-1. Proposed Action Project-Related Activities

Existing Housing Area	*Est. Size of Leased Area (Acres)*	*Number of Units that will be Conveyed*	*Year Built*	PROJECT-RELATED ACTIVITIES					*Total End-State Units*
				MAXIMUM # UNITS				*Est. # Acres Used for Const.*	
				Proposed for Demolition	*Proposed Construction*[1]	*Proposed for Renovation*	*Renovations or other Modifications*		
Kachina Village	143	546	1952	546	Min – 246 Max – 591	0	6	98.5	*929*
		6	2005						
Sonoran Vista	34	110	1996	0	0	70	40	0	
Palo Verde	222	50	1970	390	Min – 378 Max – 603	53	142	151	
		340	1975						
		53	1996						
		64	2000						
		78	2005						
SOQ	16	9	2005	0	0	0	9	0	
Falcon Court MH Park	8	0	N/A	0	6	0	0	8	
Total	***423***	***1,256***	***—***	***936***	***609***	***123***	***197***	***257.5***	

Note: 1. Numbers were derived by estimating distribution of units to maximize available acreage. The minimum number represents an even distribution of units at a unit density of approximately 2.5 units/acre and therefore represents an estimation of the minimum number of units that would be constructed at each location. The maximum represents a distribution of units based on a density of 6 units/acre. This represents the maximum number of units that could fit at each location. In any case, there would be no more than 609 total units constructed, and the distribution would likely fall somewhere between the minimum and maximum number of units estimated for each location.

Source: Personal communication, Whitaker 2005

The developer would 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.

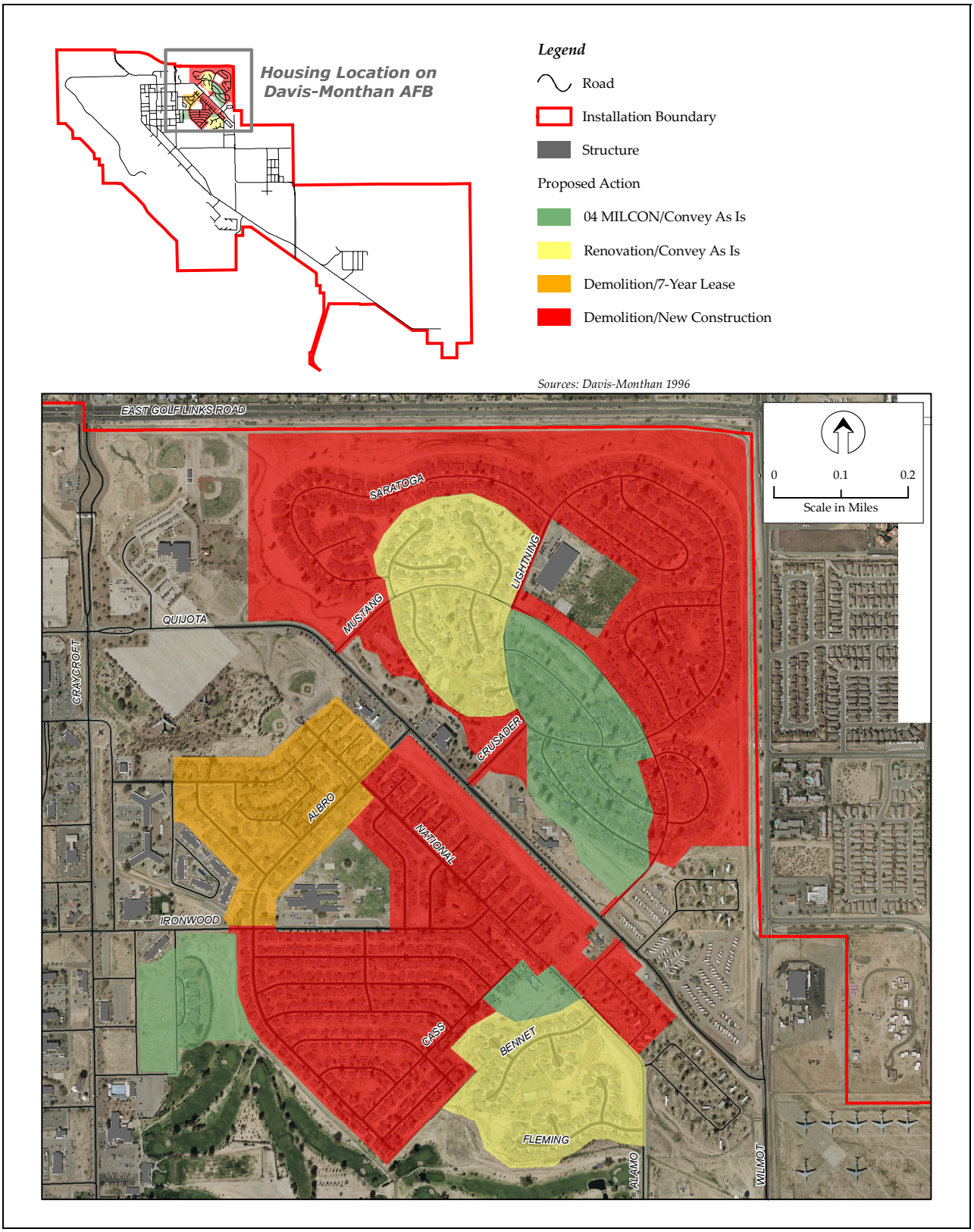


Figure 2.4-1. Project Activities by Location

As the exact size and placement of each unit within the areas would be determined when the USAF selects a developer's project concept, the actual construction of new units and infrastructure could take place anywhere within the areas identified. To assess the maximum environmental impacts posed by construction of new units, it is assumed that they would be no larger than the maximum gross square footage allowed by pay grade and bedroom count. For example, a two-bedroom house for a junior noncommissioned officer has a maximum gross square footage requirement of 1,500 square feet. Similarly, because the details of the construction and location of these structures are unlikely to create many variances in the environmental impact, assumptions were made regarding the square footage of driveways and roadways. Furthermore, so long as it is constructed outside sensitive areas, the environmental impacts of a road depend primarily upon the area of its impervious surface, not upon its exact location.

In the less likely event that the developer's plans vary meaningfully from these assumptions (for instance, should they not avoid sensitive areas or new species become listed as endangered), USAF would assess the necessity for supplemental environmental documentation consistent with NEPA. Table 2.4-2 provides the estimated total maximum square footage proposed for both construction and demolition.

Future plans could involve the addition of quality-of-life improvements to support the housing areas, which are listed as desired features of the privatization initiative. Such improvements could include, but are not limited to "tot lots" (e.g., play areas/playgrounds), which may contain half-size or full-size basketball courts, soccer fields, jogging trail/bike paths, tennis and volleyball courts, sheltered group picnic areas, and recreational park area(s).

Demolition and construction of the proposed housing units would be done in a phased approach throughout the life of the project (i.e., a certain number of units would be constructed and demolished each year). The exact phasing of the project would be identified by the developer chosen by the USAF. However, the USAF developed a phasing scenario for inclusion in the housing privatization initiative. This phasing scenario is largely based on offers received for other housing projects; these offers weighed considerations as varied as the desire not to lose tenants by demolishing their homes before new ones were complete to the number of qualified and available construction workers. While it is possible that the developers would submit a more aggressive schedule, it is unlikely that these differences would result in environmental impacts substantially different from those presented by the USAF's scenario. However, should the selected developer propose a scenario with substantial differences than anticipated, the USAF would consider the necessity of supplemental environmental documentation in accordance with NEPA.

Table 2.4-2. Estimated Total Gross Square Footage of Construction and Demolition under the Proposed Action

Number of Bedrooms	*Pay Grade*		DEMOLITION		*CONSTRUCTION		
			Max # of Units	*Total Gross Sq Footage*	*Max # of Units*	*Max Gross Sq Footage/ Unit*	*Total Gross Sq Footage*
2	JNCO	E1-E6	228	1,243,028	230	1,500	1,121,810
	CGO	O1-O3			23	1,790	
3	JNCO	E1-E6	470		143	1,760	
	SNCO	E7-E8			14	2,050	
	CGO	O1-O3					
	Prestige/FGO	E-9/O4-O5			24	2,300	
4	JNCO	E1-E6	230		138	2,220	
	SNCO	E7-E8			31	2,500	
	CGO	O1-O3					
	Prestige/FGO	E-9/O4-O5			6	2,700	
	SGO	O6			0	NA	
	GO	O7			0		
5	JNCO	E1-E6	8		0		
	Prestige	E-9					
Total	*NA*		*936*		*609*	*NA*	

NA = not applicable; JNCO = junior noncommissioned officer; SNCO = senior noncommissioned officer; CGO = company grade officer; FGO = field grade officer; SGO = senior grade officer; GO = general officer

*Sources: USAF 2004a; Personal communication, Whitaker 2005

The site development design would integrate the new housing community, to the extent practicable, with the surrounding community. The site development design would create a network of neighborhoods within the community by creating a full range of compatible private and shared recreation and community-desired facilities and would provide efficient and separate vehicular and pedestrian traffic patterns. The design would identify constraints such as easements, drainage, and offensive environments (i.e., blight, bright lights, and loud noises) to ensure activities within and surrounding the site are compatible. The site design would provide for common green spaces with native landscaping, recreational areas, appropriate buffer area/screening, street lighting, pedestrian and vehicular circulation, and sidewalks on both sides of the street. These site designs would be consistent with good land use planning, practices, and economics and would incorporate green space, landscaping, underground utilities, and recreation areas.

Table 2.4-3 summarizes the USAF's projected timeline scenario.

Table 2.4-3. Projected Timeline Scenario for Demolition, Renovation, and Construction Activities for the Proposed Action

Activity	YEAR							
	2006	***2007***	***2008***	***2009***	***2010***	***2011***	***2012***	***Total***
Demolition								
2-Bedroom	68	60	50	50	0			228
3-Bedroom	115	133	119	103				470
4+-Bedroom	53	74	67	44				238
Subtotal	***231***	***267***	***236***	***197***	***0***			***936***
Renovation								
2-Bedroom	0			0				0
3-Bedroom	30	40	37					107
4-Bedroom	1	7	8					16
Subtotal	***31***	***47***	***45***	***0***				***123***
Construction								
2-Bedroom	50	0	35	38	25	50	55	253
3-Bedroom	18	28	64	35	7	25	4	181
4-Bedroom	28	38	42	61	6	0	0	175
Subtotal	***96***	***66***	***141***	***134***	***38***	***75***	***59***	609

2.5 NO ACTION ALTERNATIVE

Under the No Action Alternative, the USAF would not implement the MFH privatization initiative at Davis-Monthan AFB. Instead, Davis-Monthan AFB would continue to manage and maintain MFH in accordance with existing USAF policy. Based on the HRMA, Davis-Monthan AFB has a requirement to supply 929 housing units. Therefore, under the No Action Alternative, at a minimum, the number of housing units would be reduced by 327 units to achieve this number. It is also reasonable to assume that, in the near future under the No Action Alternative, Davis-Monthan AFB would implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. As a result, should the No Action Alternative be selected, demolition and construction of housing units is likely to occur sometime in the near future.

2.6 PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS IN THE REGION OF INFLUENCE

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the vicinity of the project. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, or recently completed is required. At this time, there are no known off-base projects planned or ongoing that would contribute cumulatively to potential impacts associated with this Proposed Action or the No Action Alternative.

Recently completed, ongoing, and proposed actions (in addition to those that are a component of this EA) at Davis-Monthan AFB include the following.

- Recently completed projects (USAF 2004b):
    - Headquarters Interim Facility and Parking Lot for 563rd Rescue Squadron (RQG) and 563rd Operations Support Squadron (OSS) (Building #3250)
    - Headquarters Facility for 563rd Maintenance Squadron (MXS)
    - Headquarters Facility for 79th RQS, Addition to Building # 4851
    - Headquarters Facility for 55th RQS, Addition to Building #4853
- Ongoing Projects (USAF 2004b):
    - MFH improvement MILCON. Initiated in 2004, this has a target completion of October 2005.
    - Construction of new hangar and administrative offices for the 563 MXS. This will be a 2-bay hangar and associated shops for maintenance of the HH-60 aircraft. The hangar will be approximately 26,000 square feet.
    - Construction of new 55th RQS Facility.
    - Mobility Readiness Spares Package Warehouse Facility. This will be a new facility for storing spare parts for Combat Search and Rescue (CSAR) associated aircraft. The facility will be approximately 12,000 square feet.
- Planned projects for the foreseeable future include (USAF 2004b):
    - Construction of permanent headquarters facility for the 563 RQG and 563 OSS.
    - Bentsen Tank Storage Facility expansion for the 563 MXS. This would include the storage of four HC-130 removable fuel tanks and would be an expansion to the building of approximately 4,000 square feet.
    - Expansion of Building 4853 for the 79th RQS (pending relocation of 55th RQS into new facility).

- Construction of new 48th RQS storage facility.
- Construction of new 48th RQS headquarters facility.

In addition, the following projects are being evaluated in an EA as part of the Wing Infrastructure and Development Outlook (WINDO) plan for Davis-Monthan AFB. The WINDO is a plan designed to identify construction and demolition projects proposed for improving the physical infrastructure and functionality of Davis-Monthan AFB and is ACC's initiative to improve the facility planning process. The WINDO consists of the following proposed projects.

- *Construct Desert Lightning City.* Would provide an expeditionary exercise area that would give trainees practice in setting up "military cities" for wartime operations.
- *Expand Communications Infrastructure.* Would expand the communications infrastructure into the Desert Lightning City project area for future development purposes. There is currently no communications infrastructure into this area.
- *Construct Recycle Facility.* The existing recycling facility is being demolished because it is not compatible with existing adjacent functions.
- *Construct Security Forces Supply (SFS) Mobility Facility.* The SFS is being displaced by the CSAR expansion into existing facility; and will therefore need a new facility.
- *Construct Roads and Parking Lot, Site 5.* New parking necessary to comply with anti-terrorism/force protection (AT/FP) requirements.
- *Construct Addition to Combat Arms Training Maintenance (CATM) Facility.* CATM requires larger facility based on current needs.
- *Construct Aerospace Maintenance and Regeneration Center (AMARC) Aircraft Hangar.* There is currently no existing, dedicated hangar to support aircraft as large as the KC-135. Work is conducted outdoors, which is not particularly efficient.
- *Construct Consolidated Packing and Crating Center.* The function exists across seven facilities. This one facility would consolidate these functions under one roof, increasing efficiency.
- *Make Modifications to Family Camping (FAMCamp).* The existing FAMcamp does not provide enough recreational vehicle camping opportunities for the large military community that visits Tucson in the winter.
- *Construct Youth Center.* The Youth Center has been occupying the Open Recreation Center. New facility would leave the existing facility for its intended purpose.
- *Construct Shopette Addition.* The addition would include amenities such as drive-through food vendor and gas pumps.
- *Construct Transfer Line to Pumphouse.* The purpose of the line is to supply Pump House 202 with jet propellant (JP)-8 fuel.

- *Construct Grounds Product Storage.* This would consist of two 12,000- to 15,000-gallon aboveground storage tanks that would supply unleaded and diesel fuel, thereby adding necessary capacity.
- *Extend JP-8 Header Line.* Adding the necessary plumbing to existing fuel pumps so that fuel delivery capacity would be increased.
- *Construct Secondary Containment at Pump Houses.* Installation of a 4- to 6-inch berm around the existing filter separator concrete slabs to ensure containment should a spill occur.
- *Construct Liquid Oxygen Facility.* The Combat Rescue Group Squadron Operations facility is displacing this facility, and therefore it must be relocated.
- *Construct New Health and Wellness Center.* The current facility is going to be demolished due to its dilapidated condition, thereby requiring a new facility to house this function.
- *Construct Sim Tower Parking Lot, Lavatory, and Break Room.* Replacement of the existing gravel parking lot and construction of break room and restrooms.
- *Construct Parking Lot at Building 1440 (Phase Dock).* Gravel parking lot would be paved (with asphalt) to support 200 parking spots.
- *Construct CATM Jogging Trail (Rails to Trails).* Railroad track would be converted to a 5-to 6-mile running trail to provide additional physical training opportunities in support of combat readiness.
- *Construct Helicopter Landing Pad for HH-60s.* The existing helipad violates airfield clearance criteria and produces a foreign object damage issue with the F-16 aircraft. This project would eliminate that violation.
- *Construct EC-130 Hangar.* The existing hangar was transferred to the CSAR mission, and therefore leaves this mission without a hangar.
- *Construct Education Center*. The Education Center would provide for the academic and professional development of officers, airmen, and civilian employees in support of USAF and national goals.

The projects listed above, as well as the projects analyzed within this EA, have all been coordinated through the Base Community Planner incorporated into the Base Master Plan. The projects listed above have already been evaluated, or are currently being evaluated, under the NEPA process.

Davis-Monthan AFB and the local community update facilities on a continual basis, as necessary. These planned activities have the potential to generate environmental impacts that could exacerbate impacts associated with the Proposed Action described in this EA, unless projects are planned and implemented with consideration for this potential. Each of the federal actions listed above either have been or will be the subject of subsequent NEPA analysis, which

will evaluate the existing environment at the time of each proposal. The existing environment described in each of those subsequent NEPA documents will include the Proposed Action.

2.7 SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2.7-1 summarizes issues associated with the Proposed Action and Alternatives and potential impacts. Under the No Action Alternative, Davis-Monthan AFB would continue to utilize the existing housing units until a MILCON action could be implemented, which would result in essentially the same construction and demolition activities as identified under the Proposed Action. This would result in basically the same anticipated impacts as discussed under the Proposed Action.

Table 2.7-1. Summary of Environmental Consequences (Page 1 of 3)

Issue	*Proposed Action*	*No Action Alternative*
Earth Resources	Approximately 285 acres would be temporarily disturbed during demolition of existing units and depending on density, 100 to 250 acres would be redeveloped with 609 new housing units. Impervious surface would not increase and is likely to decrease since the final number of housing units would decrease by almost 25 percent. Best Management Practices (BMPs) would be used during and following construction to minimize impacts associated with erosion	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to earth resources would be the same or less than those described under the Proposed Action.
Water Resources	Under the proposal, there would be a net decrease in impervious surface at the Base as a result of fewer housing units. This decrease in impervious surface would result in a minor decrease in storm water runoff at the Base. A Storm Water Pollution Prevention Plan (SWPPP) under the Arizona Pollutant Discharge Elimination System (AZPDES) program would be prepared and BMPs would be implemented to minimize impacts to waterways.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to water resources would be the same or less than those described under the Proposed Action.
Biological Resources	To a large extent, the areas associated with proposed construction and/or demolition are currently developed and have been previously disturbed. Any remaining natural vegetation is typical of surrounding Sonoran desert scrub plant community and does not provide important or rare habitat. There are no known sensitive plant or animal species in the area for proposed activities. A survey of the site would be conducted by the Base prior to implementation of proposed activities.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to biological resources would either be less than or the same as those described under the Proposed Action.

Table 2.7-1. Summary of Environmental Consequences
(Page 2 of 3)

Issue	*Proposed Action*	*No Action Alternative*
Air Quality	Annual emissions related to construction/demolition activities would vary over the 7-year construction period with the highest emissions being in 2008, and the lowest being in the final year, 2012. Emissions (in tons per year) would range as follows: CO would range from 0.4 to 25.5; volatile organic compounds (VOCs) from 0.3 to 7.0; nitrogen oxides (NO_x) from 3.9 to 80.0; sulfur oxides (SO_x) from <0.1 to 1.1; and respirable particulate matter less than or equal to 10 micrometers in diameter (PM_{10}) from 0.2 to 9.8. In general, combustive and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality in Pima County (Air Quality Control Region [AQCR] 015). The total CO emissions are below the conformity threshold of 100 tons per year	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to air quality would either be less than or the same as those described under the Proposed Action.
Noise	Vehicles and equipment involved in demolition, facility construction, and finishing work would generate the primary noise from the Proposed Action. Residents within and surrounding the construction and demolition areas would be exposed to noise from redevelopment activities. The resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent over the construction period, and would not result in long-term impacts.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts from noise would be either less than or the same as those described under the Proposed Action.
Socioeconomics and Environmental Justice	It is unlikely that the socioeconomic characteristics of the region of influence (ROI) would be substantially affected by the construction employment and income that would result under the Proposed Action. Construction accounts for 6 percent of total employment in 2005 and 8 percent of total earnings in 2003. Given the phased approach to the project and simultaneous other MILCON projects, this would not result in a significant impact on employment or earnings in the area. The Proposed Action would have no substantial impact on specific minorities. Given standard safety precautions, there are no impacts anticipated to children who may reside or go to school in the vicinity of the proposed activities.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to socioeconomics and environmental justice would be either less than or the same as those described under the Proposed Action.

Table 2.7-1. Summary of Environmental Consequences
(Page 3 of 3)

Issue	*Proposed Action*	*No Action Alternative*
Safety	All proposed activities and workers at the construction site would comply with Occupational Safety and Health Administration (OSHA) standards and requirements, and would be required to conduct construction activities in a manner that would not pose any risks to personnel at or near the construction site. All materials and equipment would used in accordance with industry and regulatory standards. All construction areas would be fenced to preclude public access. Given these measures, risks to personnel and the public would be minimized. Construction contractors would be required to develop a plan addressing traffic and safety concerns. The plan would identify haul routes through neighborhoods, set speed limits on construction-related vehicles, and define other protocols to ensure safety of residents and children.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to safety would be less than or the same as those described under the Proposed Action.
Hazardous Materials and Hazardous and Solid Waste	New Davis-Monthan AFB housing units would be constructed utilizing normal residential construction methods, which would limit the use, of hazardous materials to the extent possible. Petroleum, oil, and lubricant (POL) products and other hazardous materials (e.g., paints) would be used during construction/ renovation activities, as necessary. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. There is a single Environmental Restoration Program (ERP) site (SD-19) situated within the south and west edge of Palo Verde Village. There is no further action required at this site. Should any unusual odor, soil, or groundwater coloring be encountered during activities in any other areas, the Davis-Monthan AFB Environmental Flight would be contacted immediately. Neither asbestos-containing building material (ACBM) nor lead-based paint (LBP) would be used for any new construction; therefore, there would be an overall beneficial result to residents upon the removal of potential exposure to ACBM and LBP	The No Action Alternative would eventually result in less than or essentially the same construction/ demolition activities as under the Proposed Action, and therefore, the impacts from hazardous materials and hazardous and solid wastes would be less than or the same as those described under the Proposed Action.
Infrastructure	Implementation of the Proposed Action would not alter traffic circulation on most of the Base. Haul routes for proposed demolition and construction have not been established, but would be routed on the primary roads in and out of the Base and through family housing areas, to the extent possible. There may be some minor traffic inconveniences, but these impacts would be of short duration. In general, utility usage on Base would decrease as a result of the Proposed Action; however these savings would be offset off-Base and therefore there should be no substantial net change in utility consumption as a result of the Proposed Action.	The No Action Alternative would eventually result in either less than or essentially the same construction/demolition activities as under the Proposed Action, and therefore, the impacts to infrastructure would be less than or the same as those described under the Proposed Action.

3.0 EXISTING CONDITIONS

Section 3.0 describes the existing environmental and socioeconomic conditions potentially affected by the Proposed Action. This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the Proposed Action. Baseline conditions represent current conditions. The potential environmental and socioeconomic impacts of implementing the Proposed Action or its alternatives are described in Section 4.0.

In compliance with the NEPA, CEQ guidelines, and 32 CFR Part 989, et seq., the description of the affected environment focuses on those resources and conditions potentially subject to impacts, as discussed in Section 1.4.1.2. These resources and conditions include: earth resources, water resources, biological resources, air quality, noise, socioeconomics and environmental justice, safety, hazardous materials and hazardous and solid waste, and infrastructure.

3.1 EARTH RESOURCES

3.1.1 Definition of the Resource

Earth resources include geology, soils, and topography. Geologic resources of an area typically consist of surface and subsurface materials and their inherent properties. The term "soils" refers to unconsolidated materials formed from the underlying bedrock or other parent material. Soils play a critical role in both the natural and human environment. Soil drainage, texture, strength, shrink/swell potential, and erodibility all determine the suitability of the ground to support man-made structures and facilities. Topography refers to an area's surface features including its vertical relief. These resources may have scientific, historical, economic, and recreational value.

The ROI for earth resources in this EA includes Davis-Monthan AFB. Additional focus is given to the area of direct impact in the MFH areas.

3.1.2 Existing Conditions

3.1.2.1 GEOLOGY

Davis-Monthan AFB is located in the Tucson Basin, an intermontane trough in the Sonoran Desert, formed between the Tucson Mountains to the west, the Rincon Mountains to the east, and the Santa Catalina Mountains to the north. Troughs such as this one are a common feature in the Basin and Range province of the southwestern United States (U.S.). The Tucson Mountains are a small range composed of Tertiary intrusive and volcanic rocks bordered by faulted, folded Paleozoic and Cretaceous sedimentary rock (Chronic 1983).

The Tucson Basin represents a structural basin that has been depressed between mountain ranges and has been partially filled with alluvial deposits eroding off the surrounding

mountains or brought in from upstream. Over time, structural uplifting and faulting during the Tertiary Period allowed drainages, such as the Santa Cruz River, to develop through the Tucson Valley. This process involved numerous erosional cycles, resulting in a series of terraced surfaces sloping down to the present floodplain. Small tributaries then began draining adjoining mountain slopes and formed their own alluvial fans on the terraces and floodplains (USACE 1993). Davis-Monthan AFB lies on the nearly flat surface of confluent alluvial fans, known as a bajada.

Most of the soils in the ROI formed in transported parent material, primarily alluvium of mixed origin and mineralogy. Much of the alluvium comes from the nearby Rock land mapping unit, which is weathering in place. On most of the valley terraces, the soils formed in mixed material high in quartz and feldspar, and in material deposited by wind. Some of the valley terraces are made up of mixed material that is high in carbonates (Natural Resources Conservation Service [NRCS] 2003). On most of the valley terraces, the soils have formed from both alluvium (high in quartz and feldspar) and to a lesser extent, wind-borne (eolian) material, that introduces high carbonate material (NRCS 1993).

3.1.2.2 SOILS

Soils at Davis-Monthan AFB are characteristic of the bajada. Area topsoils consist of silts, clays, sands, and gravels. Rock, clay, and caliche material compose the bajada subsoil strata. The majority of the soils at Davis-Monthan consist of gravel and sandy loam about 36 inches deep. These soils typically have low fertility and are potentially erodable by both water and wind. Below the sandy loam layer is typically a layer of calcareous material that is approximately 48 inches thick. Base soils are typically low to moderately permeable (ACC 2002).

A soil mapping unit represents an area that is dominated by one major kind of soil, or an area dominated by several kinds of soil (NRCS 1993). Davis-Monthan AFB has eight distinct soil mapping units (Figure 3.1-1); however, only one soil unit (*Mohave soils and Urban land)* is found within the MFH areas. This soil type is described in more detail below.

Mohave soils and Urban land, 1 to 8 percent slopes. Formed in mixed alluvium, the *Mohave soil* is very deep and well-drained. The surface layer is about three inches thick and is a yellowish brown loam. The subsurface layer is brown sandy loam and is three inches thick. The upper five inches of the subsoil is brown sandy clay loam with the next 13 inches brown and light brown clay loam. The lower 16 inches is reddish brown sandy, clay loam and clay loam. The substratum to a depth of 60 inches or more is loam. Permeability of the *Mohave soil* is moderately slow; available water capacity is high; and runoff is slow to medium. The hazard of water erosion is slight to moderate, and the hazard of wind erosion is moderate. *Urban land* consists of areas of soil that are so altered by construction or obscured by structures and pavement that identification of the original soil is not possible. This soil mapping unit is well-suited to urban development. The primary limitations are the moderate shrink-swell character of the *Mohave soil* and dustiness in disturbed areas (NRCS 1993).

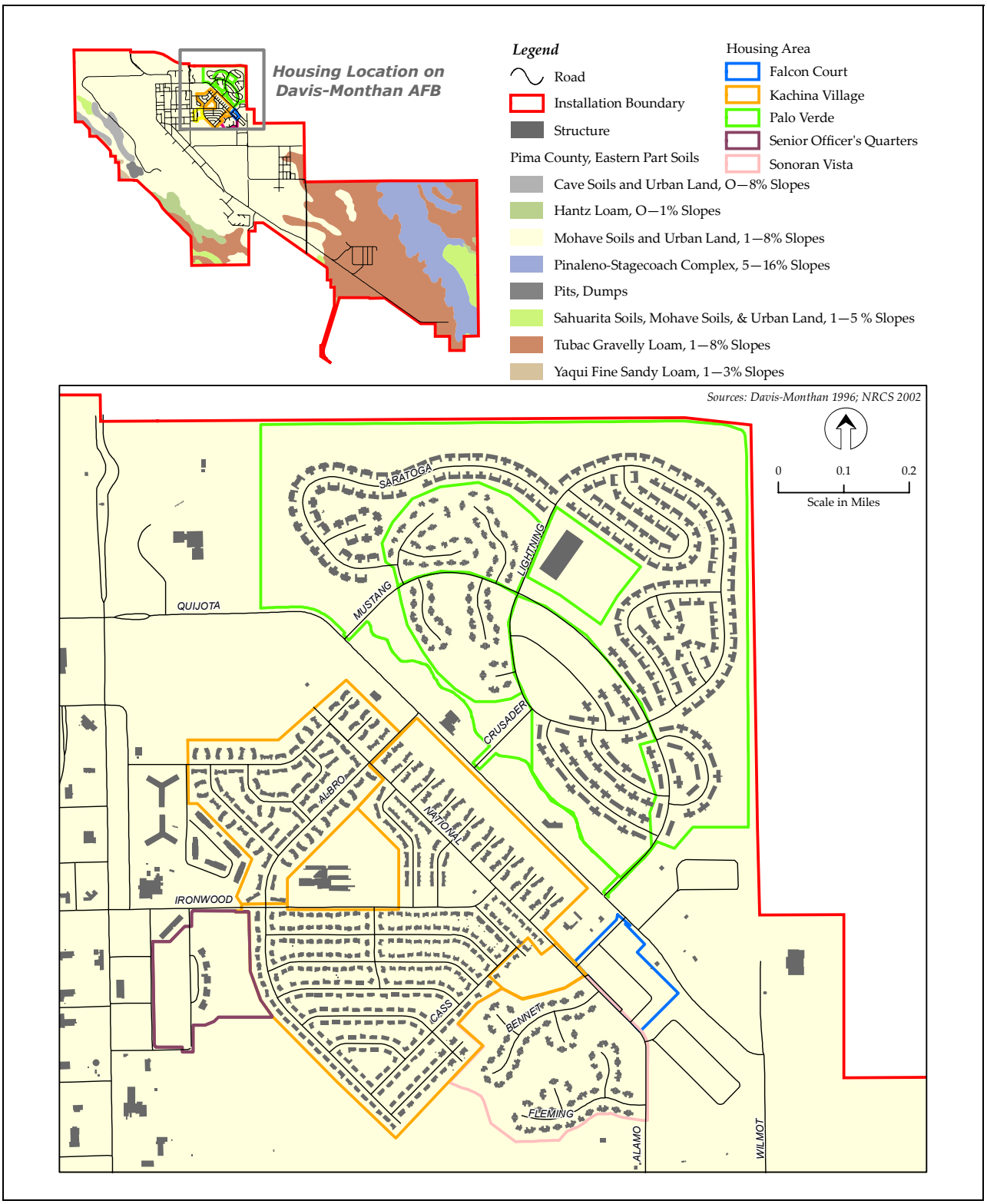


Figure 3.1-1. Soil Types Associated with MFH Areas, Davis-Monthan AFB, Arizona

3.1.2.3 TOPOGRAPHY

The terrain on Davis-Monthan AFB is predominantly flat, sloping down from the southeast to the northwest. The elevation ranges from 2,550 feet above mean sea level (MSL) on the west side of the Base, to 2,950 feet above MSL on the east side of the Base. There are two areas on Base that have any appreciable slope or elevation change. One is the road cut for Kolb Road as it passes through the Base; the other is Atterbury Wash, which is located in the eastern part of the Base (Davis-Monthan AFB 2001). Neither of these areas are within or near the family housing area.

3.2 WATER RESOURCES

3.2.1 Definition of the Resource

Water resources analyzed in this EA include surface water and ground water quantity and quality. Surface water resources include lakes, rivers, and streams and are important for a variety of reasons, including economic, ecological, recreational, and human health. Ground water includes the subsurface hydrologic resources of the physical environment and is an essential resource. Ground water properties are often described in terms of depth to aquifer or water table, water quality, and surrounding geologic composition.

The ROI for water resources in this EA includes the MFH area, as well as Davis-Monthan AFB and the Tucson Basin.

3.2.2 Existing Conditions

3.2.2.1 SURFACE WATER

Davis-Monthan AFB is located within the Tucson Basin, which is drained by the Santa Cruz River, which generally flows due north approximately 12 miles west of the Base. Major tributaries of the Santa Cruz River in the vicinity of the Base are the Rillito River, Julian Wash, and Pantano Wash. Pantano Wash is the nearest of these tributaries to the Base, located about 0.5 miles northeast of the Base (USACE 1996; Davis-Monthan AFB 2001).

The climate within the ROI is characterized as warm and semi-arid. An average of approximately 11 inches of precipitation falls within the Tucson area on an annual basis, with about half of this total occurring between July and September in the form of scattered showers or frequent, isolated thunderstorms during the monsoon season. These events often result in overflows of the typically dry washes, and sometimes lead to localized flash flooding. More gentle rains typically occur between December and March (USACE 1996).

No perennial drainages are located on the Base. Due to the small amount and infrequent nature of precipitation in the region, the local drainages are ephemeral, flowing only during and immediately following rainstorms. The main surface water feature on the Base is Atterbury Wash, which is ephemeral and is located in the eastern portion of the Base. A delineation of jurisdictional waters of the U.S. identified 142,896 linear feet and 0.8 acres of jurisdictional

waters of the U.S. at the Base (USACE 1996) (Figure 3.2-1). The USACE Tucson Project Office has indicated that this wetland delineation is outdated, and that a new one should be prepared (Appendix A); however, barring more recent data, Davis-Monthan AFB has indicated that the delineation is still an accurate representation of the existing conditions. About 7,440 linear feet of these jurisdictional waters run through the Base housing areas, and are described as ephemeral and channelized drainages (Davis-Monthan AFB 1998a).

Surface drainage at Davis-Monthan AFB has been modified to comprise a series of ditches, channels, and culverts that discharge either directly or indirectly into the Santa Cruz River. The storm water drainage system at the Base consists of 11 drainage areas, each featuring one or more outfalls (an outfall is defined as a point source that discharges storm water to waters of the U.S.). These drainage areas divert surface runoff to either a detention basin located about one mile off Base, the Tucson Diversion Channel, a pond at Lakeside Park, or Pantano Wash via Atterbury Wash or a series of unnamed culverts, channels, or ditches. These surface waters eventually reach the Santa Cruz River (USACE 1996; Davis-Monthan AFB 1998a, 2001, 2004a). Some of these surface drainages around the family housing area are delineated waters of the U.S, shown on Figure 3.2-1.

Storm water at Davis-Monthan AFB is managed in accordance with the National Pollutant Discharge and Elimination System (NPDES) multi-sector general permit (MSGP) AZR05A12F issued by the USEPA, which is effective through 2005 (Davis-Monthan AFB 2004a). In order to comply with the requirements of the MSGP, Davis-Monthan AFB has prepared and implemented a SWPPP that includes water quality monitoring requirements and BMPs to minimize the potential for contaminants to reach nearby surface waters (Davis-Monthan AFB 2005).

In December 2002, the Arizona Department of Environmental Quality (ADEQ) became the permitting authority for NPDES permits within the state, and a new permit specific to Arizona is being developed. ADEQ is developing the permit with stakeholder input (ADEQ 2004, 2005). The final permit will be issued upon completion of the review process. When the ADEQ issues the Arizona-specific, final industrial storm water Arizona Pollutant Discharge Elimination System general permit, the Base will be required to re-submit a Notice of Intent (NOI) for coverage under the new general permit (Davis-Monthan AFB 2004a).

3.2.2.2 GROUND WATER

The Base's primary water source is ground water drawn from the Tinaja Beds and the Fort Lowell Formation of the Tucson Basin aquifer. The Base's average daily water use is about 1.1 million gallons, increasing to peak usage of about 2.4 million gallons per day in the summer (Davis-Monthan AFB 2004b). Based on this, Davis-Monthan's annual consumption is about 1,200 acre-feet annually, or less than 1 percent of the estimated 128,521 acre-feet used by the City of Tucson in the year 2000 (City of Tucson 2004). Depletion of local aquifers is a concern in the ROI as water levels have declined an estimated 50 to 100 feet due to the high level of extraction combined with low recharge rates (United States Geological Survey [USGS] 2005).

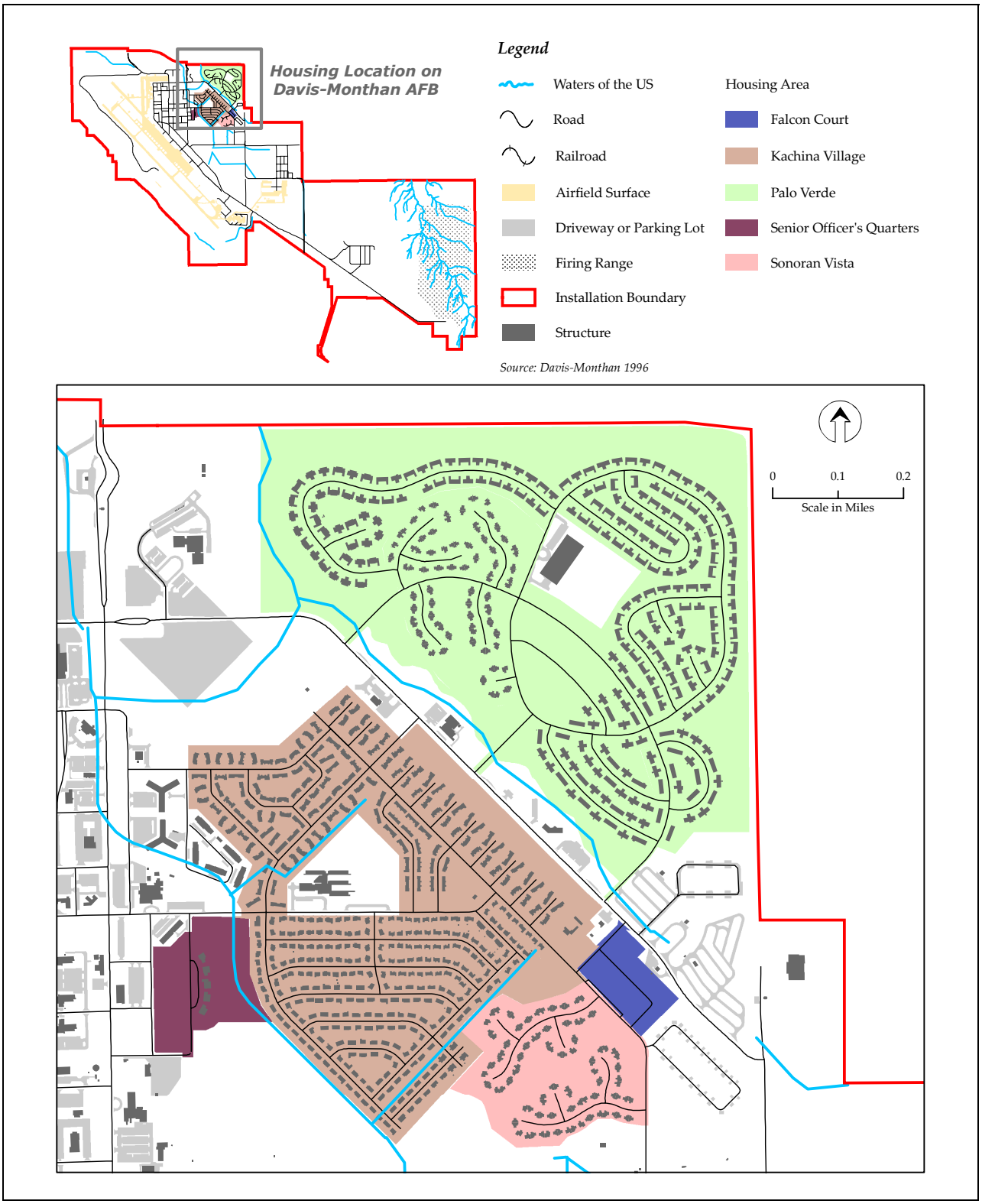


Figure 3.2-1. Waters of the U.S. at Davis-Monthan AFB, Arizona

Ground water depletion is expected to continue for the foreseeable future due to continued urbanization of the Tucson area.

Another concern with regard to local ground water is contamination, as a large plume of tri-chloroethylene in the vicinity of the Tucson International Airport, about 5 miles southwest of the Base; it is not believed that this contamination currently threatens Base water supplies (Davis-Monthan AFB 2001, 2004b).

3.3 BIOLOGICAL RESOURCES

3.3.1 Definition of the Resource

Biological resources consist of native or naturalized plants and animals, along with their habitats, including wetlands. Although the existence and preservation of biological resources are both intrinsically valuable, these resources also provide essential aesthetic, recreational, and socioeconomic benefits to society. This section focuses on plant and animal species and vegetation types that typify or are important to the function of the ecosystem, are of special societal importance, or are protected under federal or state law or statute. For purposes of this assessment, sensitive biological resources are defined as those plant and animal species listed as threatened or endangered by the U.S. Fish and Wildlife Service (USFWS) and species that are listed for conservation-related reasons by the state of Arizona or other entities. Three categories of protection status are included in this section including 1) federal listed threatened and endangered species, 2) state listed species, and 3) other sensitive species.

Federal Listed Threatened and Endangered Species. The Endangered Species Act (ESA) of 1973 provides protection to species listed under this category. Endangered species are those species that are at risk of extinction in all or a significant portion of their range. Threatened species are those that could be listed as endangered in the near future.

State Listed Species. The state of Arizona maintains a list of the Wildlife of Special Concern in Arizona (WSCA) in the Arizona Heritage Data Management System, which is maintained by Arizona Department of Game and Fish (AZGF). The list identifies these species as those whose occurrence in Arizona is or may be in jeopardy, or has known or perceived threats or population declines, as described by the AZGF listing of WSCA. Additionally, under the Arizona Native Plant Law (1993), the Arizona Department of Agriculture has identified plant species of particular concern throughout the state. Plants on this list are placed in one of five categories of protection: Highly Safeguarded Protected Native Plants; Salvage Restricted (collection with a permit only); Export Restricted (Export out of state prohibited); Salvage Assessed (permits required to remove live trees); and Harvest Restricted (permit required to remove plant by-products).

Other Sensitive Species. Species under this heading are those that are federal species of concern or species listed that are identified as rare or on a watch list under the Arizona Natural Heritage Program state ranking system. These are usually species of regional concern and may

or may not be adopted as state or federally threatened or endangered. At present, these species receive no legal protection under the ESA.

In addition, EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (2001), recognized the ecological and economic importance of migratory birds to this and other countries. It requires federal agencies to evaluate the effects of their actions and plans on migratory birds (with an emphasis on species of concern) in their NEPA documents. Species of concern are those identified in 1) the report "Migratory Nongame Birds of Management Concern in the United States" (USFWS 1995a), 2) priority species identified by established plans such as those prepared by Partners in Flight, or 3) listed species in 50 CFR 17.11 *Endangered and Threatened Wildlife*.

3.3.2 Existing Conditions

3.3.2.1 VEGETATION

Tucson, Arizona lies within the American Semi-desert and Desert Province, which is characterized by extensive plains, from which isolated mountains and buttes abruptly rise (Bailey 1995). Vegetation is typically sparse and the flora of this province is characteristic of the Sonoran Desert and well adapted to extremely high temperatures, high exposure to solar radiation, and low precipitation.

Davis-Monthan AFB is classified into the following four vegetation subclasses: landscaped and mowed (located primarily in the cantonment area of the base), Sonoran Desertscrub, Sonoran Desert Riparian, and Semi-Desert Grassland (the latter three primarily occur in undeveloped areas of the Base) (Davis-Monthan AFB 1998b, 2001). Table 3.3-1 summarizes floristic species that typically occur in each of these classes at Davis-Monthan AFB. These four subclasses are described below.

Landscape and Mowed. The subclass predominates in the cantonment area of Davis-Monthan AFB, which is actively landscaped with a variety of native and nonnative grasses, shrubs and trees.

The Sonoran Desertscrub. This community is the most common community to the Sonoran Desert. There are two subdivisions of the community that are most common in the Tucson area: the Arizona Upland and the Lower Colorado Valley subdivisions. Davis-Monthan AFB is located within the boundaries of the Arizona Upland subdivision, but due to the proximity, similarity of habitat, and topography, many aspects of the Lower Colorado Valley subdivision are evident as well. The Arizona Upland Subdivision includes some of the most famous and picturesque portions of the Sonoran Desert (Davis-Monthan AFB 2001).

The Sonoran Desert Riparian community is found at Davis-Monthan AFB primarily along Atterbury Wash and comprises a relatively small proportion of the total acreage of the Base. Because of the greater diversity and density of vegetation found in a riparian community, this community provides habitat for many species (Davis-Monthan AFB 2001).

Table 3.3-1. Common Vegetation Communities Likely to Occur on Davis-Monthan AFB

Community	*Latin Name*	*Common Name*
Sonoran Desert Scrub	*Larrea tridentata*	Creosote bush
	Ambrosia dumosa	White bursage
	Hymenoclea monogyra	Burrobrush
	Carnegiea gigantea	Saguaro cactus
	Opuntia fulgida and *Opuntia versicolor*	Cholla species
	Chloris spp.	Windmill grass
	Aristida spp.	Three-awns
	Bouteloua spp.	Grama grass
	Parkinsonia microphylla and *Parkinsonia aculeata*	Paloverde
	Acacia greggii	Catclaw
	Baccharis glutinosa	Seep willow
	Prosopis velutina	Velvet mesquite
	Echinocactus wislizenii	Barrel cacti
	Opuntia spp.	Cacti
Semi-Desert Grassland[1]	*Bouteloua rothrockii*	Grama grass
	Bouteloua californica	Grama grass
	Bouteloua radicosa	Grama grass
	Bouteloua parryi	Grama grass
	Bouteloua barbata	Grama grass
	Cathestecum erectum	False grama grass
	Aristida hamulosa	Three-awns grass
	Aristida wrighti	Three-awns grass
	Aristida ternipes	Three-awns grass
	Aristada aristidoides	Three-awns grass
	Heteropogon contortus	Gangle-head grass
	Chloris spp.	Windmill grass
Sonoran Desert Riparian	*Lycium brevipes*	Tomatillo
	Acacia greggii	Catclaw
	Celtis pallida	Desert hackberry
	Prosopis spp.	Mesquite
	Baccharis salicifolia	Desert broom
	Baccharis glutinosa	Seep willow
	Baccharis viminea	Mule fat
Landscaped/Mowed[2]	*Eragrostis lehmanniana*	Lehmann's lovegrass

Notes: 1. These species may occur in patchy distribution, contiguous habitat in unlikely due to modern development at Davis-Monthan AFB.
2. Species occurring in the other three classes may also occur in this class as ornamental species or patchy distribution.

Sources: Davis-Monthan AFB 1998b, 2001

Semi-Desert Grassland. This community is a landscape dominated by perennial grass-scrub species. It is not likely that pure stands of Semi-Desert Grasslands still exist at Davis-Monthan AFB due to selective pressures in which shrubs, cacti, and other forbs have begun to replace the original grassland species. However, those areas on the installation where grasses constitute a substantial portion of cover may be remnants of this community (Davis-Monthan AFB 2001).

The cantonment area of Davis-Monthan AFB is actively landscaped with a variety of native and nonnative grasses, shrubs, and trees. The developed area comprises approximately 60 percent of the Base. These areas consist primarily of buildings, roads, and the airfield. The remaining 40 percent of the Base is undeveloped and contains native vegetation reflecting its Sonoran desert influence. The MFH areas essentially fall within the subclass of landscaped, mowed, and non-maintained.

ARIZONA NATIVE PLANT LAW

Arizona contains more rare and unusual plants than anywhere else in the U.S. Under Arizona Native Plant Law (Arizona Revised Statutes Title 3, Chapter 7, *Arizona Native Plants*), native plants cannot be removed from any Arizona land without the permission of the landowner and a permit from the Arizona Department of Agriculture. Plants that fall under this jurisdiction include the saguaro, hedgehog cactus, pincushion cactus, and numerous others. Many of these species occur on Davis-Monthan AFB.

3.3.2.2 WILDLIFE

Wildlife typical of the American Semidesert and Desert province are typically well-adapted to extreme temperatures and low precipitation. Ungulates are largely absent from the desert, living primarily in the paloverde-cactus shrub community. Carnivores, including the desert kit fox (*Vulpes velox macrotis*) and the coyote (*Canis latrans*) are common in this province and are typically nocturnal. Other common species found in this province include the western spotted skunk (*Spilogale gracilis*), kangaroo rats (*Dipodomys* species), and pocket mice (*Perognathus* species). Desert birds include the loggerhead shrike (*Lanius ludovicianus*), Gila woodpecker (*Melanerpes uropygialis*), Gambel's quail (*Callipepla gambelii*), and the cactus wren (*Campylorhynchus brunneicapillus*). Reptiles include many species of snake and lizard (Bailey 1995).

Wildlife that occurs on Davis-Monthan AFB is typical of the Sonoran Desert. Species occurring on the Base are also generally adapted to urban environments as over half the Base is characteristic of this land classification. This developed portion of the Base (the cantonment area) contains habitats and species more typical of rural and agricultural areas where disturbance has previously occurred. Grassy and landscaped areas are often watered, attracting a wide variety of wildlife species, particularly birds. Base structures can be attractive to bats and birds as roosting and nesting areas. Davis-Monthan AFB is known to have a diverse wildlife community. There are over 120 avian species, several mammalian, reptilian, and amphibian species as well as hundreds of invertebrate species (Davis-Monthan 2001).

A representative list of common wildlife that may occur at Davis-Monthan AFB is listed in Table 3.3-2.

3.3.2.3 MIGRATORY BIRDS

Davis-Monthan AFB falls between the central and pacific flyways and within the Sonoran Desertscrub Habitat Region. There are six species listed in the Arizona Partners in Flight Conservation Plan. These species include: cactus ferruginous pygmy-owl (*Glaucidium brasilianum cactorum*), Costa's hummingbird (*Calypte costae*), gilded flicker (*Colaptes chrysoides*), purple martin (*Progne subis*), Le Conte's thrasher (*Toxostoma lecontei*), and the rufous-winged sparrow (*Aimophila carpalis*). The cactus ferruginous pygmy-owl is listed as a priority species (Latta *et al.* 1999). Of these six species, only the rufous-winged sparrow and Costa's hummingbird have been documented on the Base (Tucson Bird Count 2004; personal communication, Lisa 2004). The other four species may occur on the Base or the surrounding areas, but their occurrence would likely be transient.

3.3.2.4 SPECIAL-STATUS SPECIES

There are currently 76 special status species listed by the AZGF for Pima County, Arizona. Of the 76 species, two species are known to occur on Base, and three species have potential to occur based on their habitat requirements. These species include the western burrowing owl (*Athene cunicularia hypugaea*), American peregrine falcon (*Falco peregrinus anatum*), lesser long-nosed bat (*Leptonycteris curasoae yerbabuenae*), cave myotis (*Myotis velifer*), and the Pima pineapple cactus (*Coryphantha scheeri var. robustispina*). No federally threatened, endangered, or proposed threatened species are known to occur on Davis-Monthan AFB (Davis-Monthan AFB 2001; personal communication, Lisa 2004). Table 3.3-3 contains a list of special status species known to occur on, or in the nearby vicinity of (within six miles) Davis-Monthan AFB and the general habitat requirements for each species.

Table 3.3-2. Common Wildlife Likely to Occur on Davis-Monthan AFB

Class	*Latin Name*	*Common Name*
Mammals	*Canis latrans*	Coyote
	Lepus californicus	Black-tailed jackrabbit
	Sylvilagus audubonii	Desert cottontail
	Taxidea taxus	Badger
	Felis rufus	Bobcat
	Spilogale putorius	Spotted skunk
	Tayassu tajacu	Javelina
	Eptesicus fuscus pallidus	Big Brown Bat
	Tadarida brasiliensis mexicana	Mexican Free tail Bat
Birds	*Campylorhynchus brunneicapillus*	Cactus wren
	Toxostoma curvirostre	Curve-billed thrasher
	Callipepla gambelii	Gambel's quail
	Columbina inca	Inca dove
	Corvus corax	Raven
	Vermivora spp. and *Dendroica* spp.	Warbler species
	Bubo virginianus	Great-horned owl
	Accipiter cooperii	Cooper's hawk
	Parabuteo unicinctus	Harris' hawk
	Buteo jamaicensis	Redtail hawk
	Buteo swainsoni	Swainson's hawk
	Falco sparverius	American kestrel
	Geococcyx californianus	Greater Roadrunner
	Zonotrichia leucophyrs	White-crowned sparrow
	Passerella iliaca	Fox sparrow
	Passer domesticus	House sparrow
Reptiles	*Phrynosoma solare*	Regal horned lizard
	Sceleporus undulatus	Eastern fence lizard
	Heloderina suspectrum	Gila Monster
	Pituophis melanoleucus	Gopher snake
	Crotalus atrox	Diamondback rattlesnake

Sources: Davis-Monthan AFB 1998b, 2001; personal communication, Lisa 2004.

Table 3.3-3. Special-Status Species Occurring On or Near Davis-Monthan AFB

Class	*Genus species*	*Common Name*	*USFWS*	*AZGF*	*General Species Habitat Requirements*	*Occurrence at Davis-Monthan AFB based on habitat requirements*
Bird	*Athene cunicularia hypugaea*	Western burrowing owl	SC		Variable in open (may occur in human developed areas), well-drained grasslands, steppes, deserts, prairies, and agricultural lands, often associated with burrowing mammals.	Occurs
Bird	*Falco peregrinus anatum*	American Peregrine falcon	SC	WSC	Steep, sheer cliffs overlooking woodlands, riparian areas or other habitats supporting avian prey species in abundance.	Occurs
Mammal	*Leptonycteris curasoae yerbabuenae*	Lesser long-nosed bat	LE	WSC	Desert scrub habitat with agave and columnar cacti present as food plants.	May Occur
Mammal	*Myotis velifer*	Cave myotis	SC		Desertscrub of creosote, brittlebush, palo verde and cacti. Roost in caves, tunnels, and mineshafts and under bridges and sometimes in buildings within a few miles of water.	May Occur
Plant	*Coryphantha scheeri var. robustispina*	Pima pineapple cactus	LE		Sonoran desertscrub or semi-desert grassland communities.	Potential to Occur

SC = Species of Concern, LE = List endangered, WSC = Arizona Species of Concern.
Source: Personal communication, Lisa 2004; personal communication, Snow 2004.

3.4 AIR QUALITY

This section discusses air quality considerations and conditions in the area around Davis-Monthan AFB in Pima County, Arizona. It addresses air quality standards and describes current air quality conditions in the region.

3.4.1 Definition of the Resource

Federal Air Quality Standards. Air quality is determined by the type and concentration of pollutants in the atmosphere, the size and topography of the air basin, and local and regional meteorological influences. The significance of a pollutant concentration in a region or geographical area is determined by comparing it to federal and/or state ambient air quality standards. Under the authority of the CAA, the USEPA has established nationwide air quality standards to protect public health and welfare, with an adequate margin of safety.

These federal standards, known as the NAAQS, represent the maximum allowable atmospheric concentrations and were developed for six "criteria" pollutants: O_3, NO_2, CO, PM_{10}, SO_2, and Pb. The NAAQS are defined in terms of concentration (e.g., parts per million [ppm] or micrograms per cubic meter [$\mu g/m^3$]) determined over various periods of time (averaging periods). Short-term standards (1-hour, 8-hour, or 24-hour periods) were established for pollutants with acute health effects and may not be exceeded more than once a year. Long-term standards (annual periods) were established for pollutants with chronic health effects and may never be exceeded.

Based on measured ambient criteria pollutant data, the USEPA designates areas of the U.S. as having air quality equal to or better than the NAAQS (attainment) or worse than the NAAQS (nonattainment). Upon achieving attainment, areas are considered to be in maintenance status for a period of 10 or more years. Areas are designated as unclassifiable for a pollutant when there is insufficient ambient air quality data for the USEPA to form a basis of attainment status. For the purpose of applying air quality regulations, unclassifiable areas are treated the same as areas that are in attainment of the NAAQS.

On April 15, 2004, the USEPA promulgated attainment designations for the newly established 8-hour O_3 standard effective as of June 15, 2004. The USEPA will revoke the 1-hour O_3 standard in June 2005 (USEPA 2004). On December 17, 2004, the USEPA designated areas as attainment or nonattainment for the newly developed standard for respirable particulate matter less than or equal to 2.5 micrometers in diameter ($PM_{2.5}$), which are fine particulates that have not been previously regulated (USEPA 2005).

State Air Quality Standards. Under the CAA, state and local agencies may establish ambient air quality standards (AAQS) and regulations of their own, provided that these are at least as stringent as the federal requirements. For all criteria pollutants, Arizona has adopted the

NAAQS. A summary of the federal and Arizona AAQS that apply to the proposed project area is presented in Table 3.4-1.

Table 3.4-1. Arizona and Federal Ambient Air Quality Standards

Air Pollutant	*Averaging Time*	*Arizona AAQS*	*FEDERAL (NAAQS)*	
			Primary	*Secondary*
Carbon Monoxide (CO)	8-hour 1-hour	9 ppm 35 ppm	9 ppm 35 ppm	--- ---
Nitrogen Dioxide (NO_2)	AAM	0.053 ppm	0.053 ppm	0.053 ppm
Sulfur Dioxide (SO_2)	AAM 24-hour 3-hour	0.030 ppm 0.14 ppm 0.50 ppm	0.030 ppm 0.14 ppm ---	--- --- 0.50 ppm
Particulate Matter (PM_{10})	AAM 24-hr	50 $\mu g/m^3$ 150 $\mu g/m^3$	50 $\mu g/m^3$ 150 $\mu g/m^3$	50 $\mu g/m^3$ 150 $\mu g/m^3$
Particulate Matter ($PM_{2.5}$) (a)	AAM 24-hour	--- ---	15 $\mu g/m^3$ 65 $\mu g/m^3$	15 $\mu g/m^3$ 65 $\mu g/m^3$
Ozone (O_3) (b)	1-hour 8-hour	0.12 ppm ---	0.12 ppm 0.08 ppm	0.12 ppm 0.08 ppm
Lead (Pb) and Lead Compounds	Calendar Quarter	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$	1.5 $\mu g/m^3$

Notes: AAM = Annual Arithmetic Mean; AGM = Annual Geometric Mean; ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.

(a) The $PM_{2.5}$ standard (particulate matter with a 2.5 μm diameter or smaller) will be implemented over the next few years. USEPA designated areas as being in attainment or nonattainment of the $PM_{2.5}$ standard in December 2004.

(b) The 8-hour O_3 standard will replace the 1-hour standard in June 2005, one year after the effective date of EPA's recent nonattainment designations. Meanwhile, the 1-hour O_3 standard will continue to apply to areas not attaining it.

Sources: 40 Code of Federal Regulations 50; Arizona Secretary of State 2005.

State Implementation Plan. For non-attainment regions, the states are required to develop a SIP designed to eliminate or reduce the severity and number of NAAQS violations, with an underlying goal to bring state air quality conditions into (and maintain) compliance with the NAAQS by specific deadlines. The SIP is the primary means for the implementation, maintenance, and enforcement of the measures needed to attain and maintain the NAAQS in each state.

Prevention of Significant Deterioration (PSD). Section 162 of the CAA further established the goal of PSD of air quality in all international parks; national parks which exceed 6,000 acres; and national wilderness areas and memorial parks which exceed 5,000 acres if these areas were in existence on August 7, 1977. These areas were defined as mandatory Class I areas, while all

other attainment or unclassifiable areas were defined as Class II areas. Under CAA Section 164, states or tribal nations, in addition to the federal government, have the authority to redesignate certain areas as (non-mandatory) PSD Class I areas, e.g., a national park or national wilderness area established after August 7, 1977, which exceeds 10,000 acres. PSD Class I areas are areas where any appreciable deterioration of air quality is considered significant. Class II areas are those where moderate, well-controlled growth could be permitted. Class III areas are those designated by the governor of a state as requiring less protection than Class II areas. No Class III areas have yet been so designated. The PSD requirements affect construction of new major stationary sources in the PSD Class I, II, and III areas and are a pre-construction permitting system.

Visibility. CAA Section 169A established the additional goal of prevention of further visibility impairment in PSD Class I areas. Visibility impairment is defined as a reduction in the visual range and atmospheric discoloration. Determination of the significance of an activity on visibility in a PSD Class I area is typically associated with evaluation of stationary source contributions. The USEPA is implementing a Regional Haze rule for PSD Class I areas that will address contributions from mobile sources and pollution transported from other states or regions. Emission levels are used to qualitatively assess potential impairment to visibility in PSD Class I areas. Decreased visibility may potentially result from elevated concentrations of PM_{10} and SO_2 in the lower atmosphere.

General Conformity. CAA Section 176(c), General Conformity, established certain statutory requirements for federal agencies with proposed federal activities to demonstrate conformity of the proposed activities with each state's SIP for attainment of the NAAQS. Federal activities must not:

(a) cause or contribute to any new violation;

(b) increase the frequency or severity of any existing violation; or

(c) delay timely attainment of any standard, interim emission reductions, or milestones in conformity to a SIP's purpose of eliminating or reducing the severity and number of NAAQS violations or achieving attainment of NAAQS.

General conformity applies only to nonattainment and maintenance areas. If the emissions from a federal action proposed in a nonattainment area exceed annual thresholds identified in the rule, a conformity determination is required of that action. The thresholds become more restrictive as the severity of the nonattainment status of the region increases.

Stationary Source Operating Permits. In Pima County, Arizona, the Pima County Department of Environmental Quality (PDEQ) regulates air quality and processes permit applications for stationary air pollution sources. Activity permits must be obtained for various construction, demolition, earthmoving, and land clearing activities. Title V of the CAA Amendments of 1990 requires states to issue Federal Operating Permits for major stationary sources. A major

stationary source in an attainment or maintenance area is a facility (i.e., plant, base, or activity) that emits more than 25 tons per year (TPY) of VOC or NO_x, both of which are atmospheric precursors to the formation of O_3, 100 TPY of any other criteria air pollutant, 10 TPY of a hazardous air pollutant (HAP), or 25 TPY of any combination of HAPs. The purpose of the permitting rule is to establish regulatory control over large, industrial activities and to monitor their impact upon air quality (PDEQ 2005; Davis-Monthan AFB 2004c). Arizona air pollution control regulations are contained in Titles 17 and 18 of the Arizona Administrative Code (Arizona Secretary of State 2005).

3.4.2 Existing Conditions

Regional Air Quality. Federal regulations at 40 CFR 81 delineate certain AQCR, which were originally designated based on population and topographic criteria closely approximating each air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Therefore, the ROI for the proposed action is the Pima Intrastate AQCR (AQCR 15), which includes Pima County, Arizona (40 CFR 81.269).

Attainment Status. A review of federally published attainment status for Tucson, Arizona in 40 CFR 81.303 indicated that Davis-Monthan AFB is located within a region designated as attainment (i.e., meeting national standards) for all criteria pollutants, including CO, NO_2, SO_2, PM_{10}, O_3, and Pb. The Tucson metropolitan area was designated as attainment for CO as of July 10, 2000, and is currently covered by a 10-year maintenance plan for CO (65 FR 36353, June 8, 2000); therefore, although the County is designated as in attainment for CO, conformity requirements apply for CO due to its maintenance status. In 1999, Tucson violated the 24-hour PM_{10} NAAQS due to high wind natural events and an extended period of low rainfall. As a result, the PDEQ has developed a Natural Events Action Plan to protect the public from airborne fine dust particles during future high wind action events (Pima Association of Governments 2004). Title 17 of the Pima County Code lists precautions that must be taken to control dust at all times, and requires that facilities apply for activity permits prior to beginning any land stripping, earthmoving, blasting, trenching, road construction, or demolition or renovation of any structure (PDEQ 2004).

A review of federally published attainment status for Arizona in 40 CFR 81.303 indicated that Pima County is designated as attainment (i.e., meeting national standards) for all criteria pollutants, including CO, NO_2, SO_2, PM_{10}, O_3, and Pb. Based on recent monitoring data, the USEPA has designated Pima County as attainment for the new 8-hour ozone and $PM_{2.5}$ standards (USEPA 2004, 2005).

PSD Class I Areas. Mandatory PSD Class I areas for the State of Arizona are listed under 40 CFR 81.403. The nearest PSD Class I area is Saguaro National Park, the East Unit of which is 14 miles east of Davis-Monthan AFB. The West Unit of Saguaro National Park is 21 miles west-northwest of the Base. Dark night skies are considered to be an important air quality related value in Saguaro National Park. Reduction of haze from air pollution (fine particulates caused

by elevated concentrations of PM_{10} and SO_2 in the lower atmosphere) can improve the night sky. Soils, vegetation, and certain aquatic resources may be sensitive to atmospheric deposition of NO_x. Several species of vegetation, including ponderosa pines (*Pinus ponderosa*), quaking aspen (*Populus tremuloides*), and skunkbush (*Rhus trilobata*) are known to be sensitive to elevated ozone concentrations (National Park Service 2004).

Other nearby PSD Class I areas include the Galiuro Wilderness, 41 miles northeast of the Base; Chiricahua National Monument, 88 miles east; the Chiricahua Wilderness, 93 miles east-southeast; Superstition Wilderness Area, 95 miles north; Sierra Ancha Wilderness Area, 116 miles north; Mazatzal Wilderness Area, 142 miles north; Mount Baldy Wilderness Area, 145 miles north-northeast; Gila Wilderness Area in New Mexico, 157 miles east; and Pine Mountain Wilderness Area, 159 miles north.

Climate. The climate of Pima County and southeastern Arizona varies with elevation; the mountain ranges experiencing higher amounts of precipitation and lower temperatures than the low desert regions. Average maximum and minimum temperatures at Tucson Airport (elevation 2,560 feet) are 82 degrees Fahrenheit (°F) and 55°F, compared with 59°F and 34°F at the Palisades Ranger Station (elevation 8,000 feet) 40 miles northwest of Tucson in the Coronado National Forest. Average annual precipitation is 12 inches in Tucson and 31 inches at the higher elevations. Snowfall in Tucson is slightly more than one inch per year in Tucson and 78 inches per year at the ranger station (Arizona Board of Regents 2001).

In general, the hottest period in Tucson is from May to September, with daytime temperatures often exceeding 100°F. Nighttime temperatures are typically 30 degrees cooler. Winters are mild with warm days and cool nights, occasionally falling below freezing. The majority of the rain falls during two rainy seasons: July through mid-September and December through mid-March. The summer storms are often torrential, with invariable lightning strikes and occasional flash flooding.

Tucson experiences an average of 192 clear days and 53 rainy days per year. Temperatures above 90°F occur during an average of 143 days per year; sub-freezing temperatures are experienced an average of 18 days per year. Wind is typically from the southeast year-round, at an average speed of 8.3 miles per hour (Friends of Saguaro National Park 2004; Western Regional Climate Center 2004).

Current Emissions. Stationary sources of air emissions at Davis-Monthan AFB include mobile sources, non-road engines, and stationary sources. Mobile sources include aircraft, highway vehicles, and off-road vehicles. Non-road engines include aerospace ground equipment, portable generators, welders, and grounds maintenance equipment. Because these mobile and non-road sources are not regulated by the state of Arizona, they are not included in the base-wide emissions inventory. Stationary sources at Davis-Monthan include jet engine test cells, fuel storage and distribution equipment, corrosion control facilities, fuel cell maintenance, solvent cleaning, abrasive blasting, boilers and heaters, emergency generators, and gasoline service stations. In the following table, particulate matter includes PM_{10} as a component of the

total; NO_x includes NO_2 and other nitrogen compounds; and SO_x includes SO_2 and other sulfur compounds. Because VOCs and NO_x are precursors to the formation of O_3 in the atmosphere, control of these pollutants is the primary method of reducing O_3 concentrations in the atmosphere. Table 3.4-2 summarizes the results of an emissions inventory for stationary sources at Davis-Monthan AFB for calendar year 2003 (Davis-Monthan 2004c).

Table 3.4-2. Baseline Emissions at Davis-Monthan AFB, Calendar Year 2003

	ANNUAL EMISSIONS (TONS PER YEAR)				
	CO	*VOC*	*NO_x*	*SO_x*	*PM_{10}*
Stationary Sources	40.8	48.2	45.2	3.2	9.7

Source: Davis-Monthan AFB 2004c

Davis-Monthan AFB operates under Operating Permit #1701, which contains voluntary limits on activity emissions for all major types of HAPs on the Base. The permit allows Davis-Monthan AFB to be categorized as a Synthetic Minor source of HAPs, and the emission thresholds in the permit allow the Base to avoid the operational constraints and emission control requirements associated with the federal Aerospace National Emission Standards for HAPs. Since the permit was issued in 1998, the Base HAP emissions have been less than half of the permitted levels, leaving substantial operating flexibility under the thresholds for future changes in mission and increases in activities that may emit air pollutants (Davis-Monthan 2004c).

Regional Air Emissions. The previous section lists on-Base emissions for Davis-Monthan AFB. The NEPA process, however, must also consider impacts from mobile sources and indirect emissions related to the project, some of which (for example, commuting of new employees to and from the facility) occur outside of the installation. For comparison purposes, Table 3.4-3 lists county-wide emissions for Pima County, as compiled by the USEPA in its National Emissions Inventory (NEI), which was last updated in 1999 (USEPA 2003). The 1999 NEI contains estimates of annual emissions for stationary and mobile sources of air pollutants in each county, on an annual basis.

Table 3.4-3. Air Emissions Inventory Pima County, Arizona Calendar Year 1999

	POLLUTANTS (IN TPY)				
	CO	*VOC*	*NO_x*	*SO_2*	*PM_{10}*
Pima County, Arizona					
Stationary Sources	132,218.6	25,207.2	18,853.1	**4,207.3**	30,515.4
Mobile Sources	141,992.1	14,090.9	19,641.8	770.0	565.5

Source: USEPA 2003.

3.5 NOISE

3.5.1 Definition of the Resource

Noise is considered to be unwanted sound that interferes with normal activities or otherwise diminishes the quality of the environment. It may be intermittent or continuous, steady or impulsive. It may be stationary or transient. Stationary sources are normally related to specific land uses, e.g., housing tracts or industrial plants. Transient noise sources move through the environment, either along established paths (i.e., highways, railroads, and airports), or randomly. There is wide diversity in responses to noise that not only vary according to the type of noise and the characteristics of the sound source, but also according to the sensitivity and expectations of the receptor, the time of day, and the distance between the noise source (e.g., an aircraft) and the receptor (i.e., a person or animal).

The physical characteristics of noise, or sound, include its intensity, frequency, and duration. Sound is created by acoustic energy, which produces minute pressure waves that travel through a medium, like air, and are sensed by the eardrum. This may be likened to the ripples in water that would be produced when a stone is dropped into it. As the acoustic energy increases, the intensity or amplitude of these pressure waves increase, and the ear senses louder noise. The unit used to measure the intensity of sound is the decibel (dB). Sound intensity varies widely (from a soft whisper to a jet engine) and is measured on a logarithmic scale to accommodate this wide range. The logarithm, and its use, is nothing more than a mathematical tool that simplifies dealing with very large and very small numbers. For example, the logarithm of the number 1,000,000 is 6, and the logarithm of the number 0.000001 is -6 (minus 6). Obviously, as more zeros are added before or after the decimal point, converting these numbers to their logarithms greatly simplifies calculations that use these numbers. Sound levels are easily measured, but the variability is subjective and physical response to sound complicates the analysis of its impact on people. People judge the relative magnitude of sound sensation by subjective terms such as "loudness" or "noisiness."

The term most often used when measuring the magnitude of sound is *sound pressure level*. Sound pressure level can vary over an extremely large range of amplitudes. It is a relative quantity, in that it is a ratio between the actual sound pressure and a fixed reference pressure, which is normally the threshold of human hearing. Table 3.5-1 presents the subjective effect of changes in sound pressure level.

Table 3.5-1. Perceived Changes in Noise as Sound Pressure Changes

Change in Sound Level (dB)	CHANGE IN POWER		*Change in Apparent Loudness*
	Decrease	*Increase*	
3	1/2	2	Just perceptible
5	1/3	3	Clearly noticeable
10	1/10	10	Half or twice as loud
20	1/100	100	Much quieter or louder

Source: American National Standards Institute (ANSI) 1983

Different sounds contain different frequencies. When describing sound and its effect on a human population, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The term "A-weighted" refers to a filtering of the noise signal, which emphasizes frequencies in the middle of the audible spectrum and de-emphasizes low and high frequencies in a manner corresponding to the way the human ear perceives sound. This filtering network has been established by the ANSI (ANSI 1983). The A-weighted noise level has been found to correlate well with people's judgments of the noisiness of different sounds and has been used for many years as a measure of community noise. Figure 3.5-1 shows the typical A-weighted sound levels for various sources.

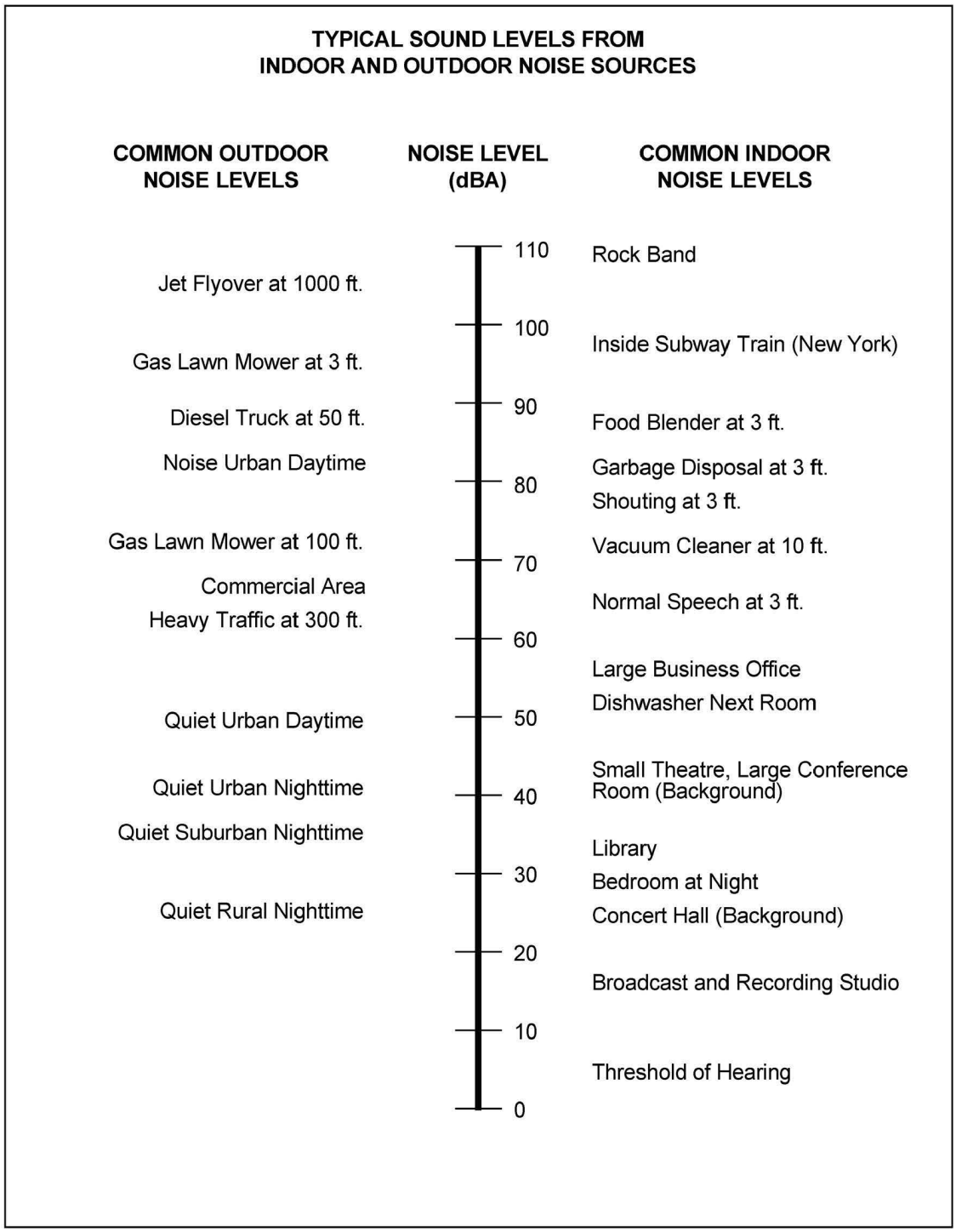
The word "metric" is used to describe a standard of measurement. As used in environmental noise analysis, there are many different types of noise metrics. Each metric has a different physical meaning or interpretation and each metric was developed by researchers attempting to represent the effects of environmental noise.

The day-night average sound level (DNL) was developed to evaluate the total daily community noise environment. DNL is the average A-weighted acoustical energy for a 24-hour period with a 10 dB upward adjustment added to the nighttime levels (10:00 p.m. to 7:00 a.m.). This adjustment is an effort to account for the increased sensitivity of most people to noise in the quiet nighttime hours. DNL has been adopted by federal agencies including the USEPA, the Federal Aviation Administration (FAA), and the Department of Housing and Urban Development as the accepted unit for quantifying human annoyance to general environmental noise.

3.5.2 Existing Conditions

Noise associated with activities at Davis-Monthan AFB is characteristic of that associated with most USAF installations with a flying mission. During periods of no aircraft activity, noise associated with Base operations results primarily from maintenance and shop activities, ground traffic movement, occasional construction, and similar sources. The resultant noise is almost entirely restricted to the Base itself and is comparable to that which might occur in adjacent community areas. Due to airfield operations, existing noise levels are typical of an urban residential area near a major airport.

Land use guidelines identified by the Federal Interagency Committee on Urban Noise (FICUN) are used to determined compatible levels of noise exposure for various types of land use surrounding airports (FICUN 1980); 65 to greater than 85 dB (DNL) noise contours are frequently used to help determine compatibility of aircraft operations with local land use. Figure 3.5-2 depicts the baseline DNL 65 to 85 dB noise contours in 5 dB increments surrounding the Davis-Monthan AFB airfield. Table 3.5-2 presents the baseline land acreage exposed to noise levels greater than 65 dB (DNL).



Source: Harris 1991

Figure 3.5-1. Typical Sound Levels from Indoor and Outdoor Noise Sources

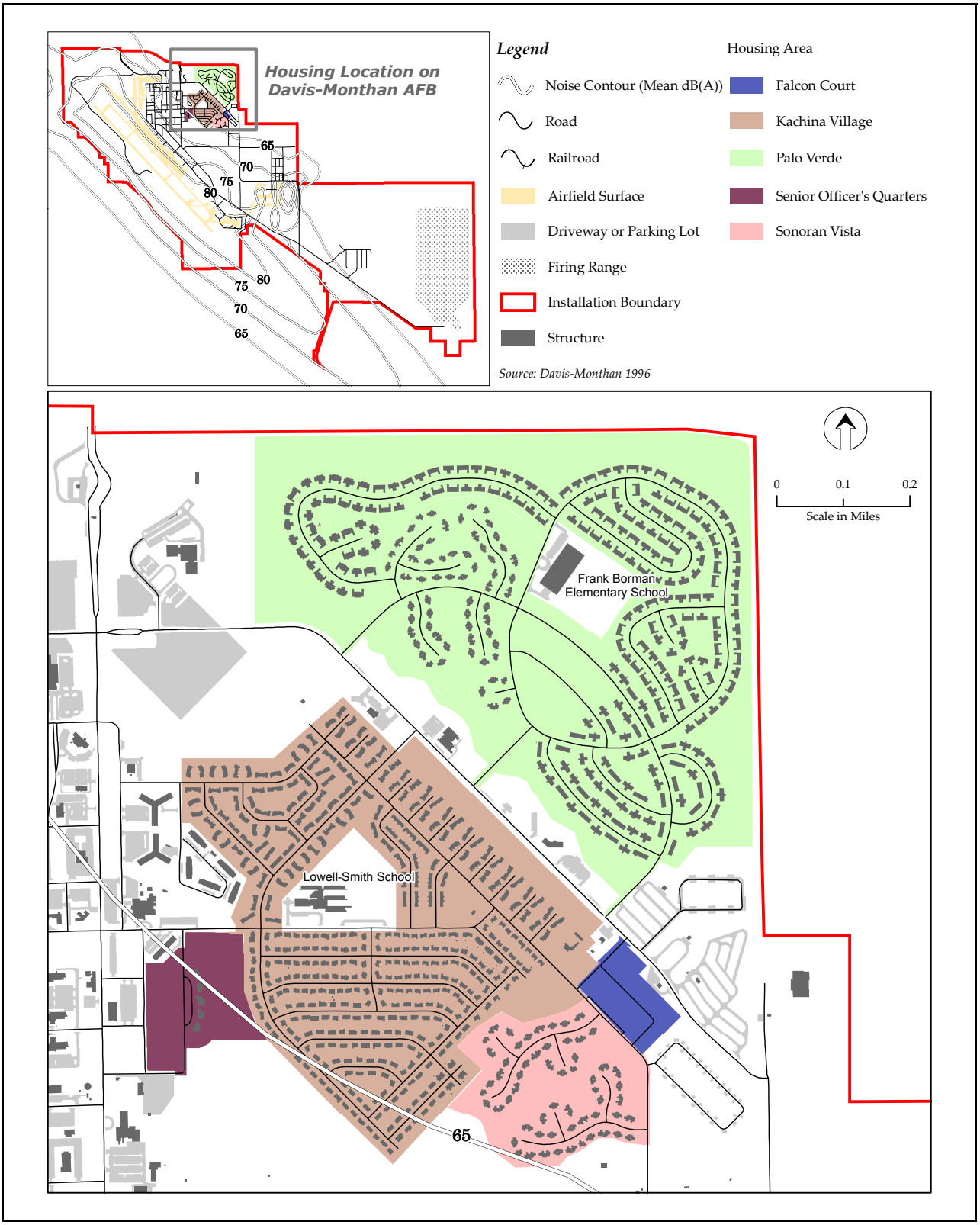


Figure 3.5-2. Existing Noise Levels in the Vicinity of the MFH Areas, Davis-Monthan AFB, Arizona

Table 3.5-2. Noise Contour Acreage, Baseline Conditions

Noise Contour (DNL)	*Acres*
65 – 70 dB	3,506
70 – 75 dB	1,293
75 – 80 dB	642
80+ dB	564
Total	**6,005**

Source: ACC 2002

Much of the Base administrative, industrial, and unaccompanied housing areas are within the 65 dB DNL noise level contour, as shown on Figure 3.5-2. Only about 30 acres on the south edge of the family housing area are within the 65 dB DNL. Although not prohibited, residential and community areas are discouraged from being sited inside the 65 dB DNL noise contour. Sound attenuation is required for administrative facilities exposed to the 70 dB DNL noise contour, which includes areas mostly along the flight line (Davis-Monthan AFB 2005).

3.6 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.6.1 Definition of the Resource

Socioeconomic resources are defined as the basic attributes associated with human activities. Of particular interest are characteristics of the population including race, ethnicity, and age distribution and economic factors including employment, income, and poverty status. Actions that impact these socioeconomic indicators may have ramifications for other socioeconomic factors such as housing availability and public services.

To comply with NEPA, the planning and decision making process for actions proposed by federal agencies requires a study of relevant environmental statutes and regulations, including EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*. EO 12898 defines environmental justice by identifying and addressing activities, policies, and programs of federal agencies that may have a disproportionately high and adverse effect on the environment or human health of minorities or low-income populations.

Because children are more sensitive to environmental health risks and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* requires federal agencies to identify and assess the environmental health and safety risks of programs, policies, and activities that may disproportionately affect children. The section on children identifies locations where there are a proportionately higher number of children in the affected area (e.g., schools, child care centers, etc.).

The ROI for socioeconomics in this analysis is Pima County which constitutes the Tucson Metropolitan Statistical Area. Socioeconomic data are presented for the ROI where information is available. Information for the ROI is compared to the state and national scale. Environmental justice within the ROI is assessed through demographic characterization, particularly ethnicity and poverty status.

3.6.2 Existing Conditions

3.6.2.1 POPULATION

Pima County had a 2003 estimated population of 870,764, which was about 16 percent of Arizona's total population of over 5 million. From 2000 to 2003, Pima County's population grew approximately 3 percent (U.S. Census Bureau [USCB] 2003a).

According to the USCB, there are 349,670 households in Pima County of which 63 percent are family households. In the state of Arizona, 68 percent of all households are considered to be 'family' households, while in the U.S. as a whole, 67 percent represent family (Table 3.6-1).

Table 3.6-1. Family and Non-family Households, 2003

	HOUSEHOLDS				
	Total	*Family*	*Percent of Total*	*Non-family*	*Percent of Total*
Pima County	349,670	220,508	63%	129,162	37%
Arizona	2,048,918	1,390,352	68%	658,566	32%
United States	108,419,506	73,057,960	67%	35,361,546	33%

Source: USCB 2003a.

3.6.2.2 EMPLOYMENT AND INCOME

Total employment in Pima County grew by 7 percent between 2001 and 2005 (Table 3.6-2). The economy of Pima County is oriented toward services, such as Professional and Business Services; Educational and Health Services; Leisure and Hospitality; and Other Service sectors, which represent approximately 35 percent of total employment. Among the largest sectors of employment are Government; Educational and Health Services; and Trade, Transportation, and Utilities. City, County, and federal government account for over 82,000 jobs or 19 percent of the total jobs in Pima County. Government employment in Tucson includes city government and Pima County government. Davis-Monthan AFB serves as another large employer of the local community. From 2001 to 2005, employment in the Government sector grew 7 percent (Arizona Department of Economic Security, Research Administration 2005).

In 2005, 49,400 jobs in Pima County, which represents 12 percent of total employment, were in Educational and Health Services. Pima County has 13 leading hospitals and the only medical

school in Arizona. In addition to numerous school districts, Pima County is home to the University of Arizona and Pima Community College. Employment in Educational and Health Services has grown approximately 18 percent between 2001 and 2005 (Arizona Department of Economic Security, Research Administration 2005).

With employment increasing over 6 percent between 2001 and 2005, there are over 58,000 jobs in the Trade, Transportation, and Utilities sector of Pima County. This sector, which includes Wholesale Trade and Retail Trade, accounts for 14 percent of total employment in 2005 (Arizona Department of Economic Security, Research Administration 2005).

In Pima County, the construction industry added over 2,600 jobs increasing to 25,300 jobs in 2005 from 22,700 jobs in 2001 (Table 3.6-2). Construction is 6 percent of total employment (Arizona Department of Economic Security, Research Administration 2005).

Table 3.6-2. Employment (in Thousands), Pima County, 2001-2005

Industrial Sector	*2001*	*2005*	*Percent of Total, 2005*	*Percent Change, 2001-2005*
Total Employment	399.4	428.1		7%
Natural Resources and Mining	1.8	1.5	0.4%	-17%
Construction	22.7	25.3	6%	11%
Manufacturing	33.0	28.3	7%	-14%
Trade, Transportation, and Utilities	55.3	58.8	14%	6%
Wholesale Trade	7.4	8.3	2%	12%
Retail Trade	38.7	42.0	10%	9%
Information	7.7	7.3	2%	-5%
Financial Activities	14.5	17.9	4%	23%
Professional and Business Services	41.3	42.9	10%	4%
Educational and Health Services	41.8	49.4	12%	18%
Leisure and Hospitality	38.2	40.9	10%	7%
Other Services	14.3	14.9	3%	4%
Government	76.8	82.2	19%	7%

Source: Arizona Department of Economic Security, Research Administration 2005

In Arizona, the largest sectors in terms of employment are found in Government and Government Enterprises; Accommodation and Food Services; Health Care and Social Assistance; and Retail Trade. Government and Government Enterprise account for over 400,000 jobs or 14 percent of total employment in Arizona (U.S. Bureau of Economic Analysis [BEA] 2003a). Employment in Government and Government Enterprise grew approximately 5 percent between 2001 and 2003. Accommodation and Food Services are 7 percent of total employment increasing to over 217,000 jobs in 2003 from 213,600 jobs in 2001. Almost 9 percent of total employment, or 258,000 jobs, are in Health Care and Social Assistance, an increase of over 10

percent between 2001 and 2003. There are over 340,000 jobs in Retail Trade for almost 12 percent of total employment. Retail Trade grew by almost 4 percent between 2001 and 2003. Construction in Arizona accounts for 7 percent of total employment, increasing to 217,500 jobs in 2003 from 214,600 jobs in 2001 (BEA 2003a).

Unemployment in Pima County is estimated to be 4.7 percent in 2005. Pima County's unemployment rate is lower than the state unemployment of 5.2 percent in 2005 (Arizona Workforce Informer 2005).

In Pima County, Manufacturing; Trade, Transportation, and Utilities; and Educational and Health Services sectors provide the largest earnings (Table 3.6-3). Manufacturing accounts for 19 percent of total earnings, nearly $1.6 billion; however, manufacturing has only a small portion of the total employment with 28,700 jobs and experienced growth in earnings of only 1 percent between 2002 and 2003. Trade, Transportation, and Utilities sector includes retail and wholesale trade. In 2003, this sector accounted for 18 percent of total earnings with $1.5 billion and over 55,000 jobs. Earnings in Trade, Transportation, and Utilities increased approximately 4 percent between 2002 and 2003. Educational and Health Services also account for 18 percent of total earnings with nearly $1.5 billion and over 45,000 jobs. Between 2002 and 2003, earnings in Educational and Health Services increased by 8 percent. Construction accounts for 8 percent of total earnings and almost 23,000 jobs. Earnings in Construction increased 3 percent between 2002 and 2003 (Arizona Department of Economic Security, Research Administration 2005) (Table 3.6-3).

Table 3.6-3. Earnings (in Thousands of Dollars), Pima County, 2002-2003

Industrial Sector	*2002*	*2003*	*Percent of Total, 2003*	*Percent Change, 2002-2003*	*Employment, 2003*
Total Earnings	8,049,704	8,382,261		4%	409,800
Natural Resources and Mining	78,517	72,177	1%	-8%	1,200
Construction	677,088	698,667	8%	3%	22,900
Manufacturing	1,590,472	1,599,664	19%	1%	28,700
Trade, Transportation, and Utilities	1,443,086	1,503,996	18%	4%	55,100
Information	334,259	334,663	4%	0.1%	7,600
Financial Activities	537,073	642,264	8%	20%	15,500
Professional and Business Services	1,228,098	1,258,590	15%	2%	41,200
Education and Health Services	1,379,275	1,488,521	18%	8%	45,700
Leisure and Hospitality	514,730	503,815	6%	-2%	37,200
Other Services	261,072	269,798	3%	3%	14,600

Source: Arizona Department of Economic Security, Research Administration 2005.

Arizona has experienced changes in earnings in similar industries. Earnings in Utilities increased 16 percent to over $1 billion in 2003 from $920,000 in 2001 (BEA 2003b). Finance and Insurance also increased in earnings by 16 percent between 2001 and 2003 to $7.8 billion in 2003. Earnings in Educational Services are over $1 billion after an increase of nearly 28 percent between 2001 and 2003. Health Care and Social Assistance earnings are $10.7 billion and have increased by 21 percent between 2001 and 2003. Earnings in the Manufacturing sector decreased by 1 percent to $12.2 billion in 2003 from $12.3 billion in 2001. The Information sector decreased in earnings by 2 percent to $2.9 billion in 2003 from over $3 billion in 2001 (BEA 2003b).

3.6.2.3 HOUSING

There were over 390,000 housing units in Pima County in 2003 (USCB 2003c). In 2003, approximately 350,000 housing units were occupied, and 40,000 housing units, or 9 percent of the total housing units, were vacant. In the first quarter of 2005, the vacancy rate for apartments was approximately 7 percent (Reis, Inc. 2005). Building permits for all housing units decreased annually from 2001 to 2003, increasing in 2004 (Table 3.6-4). In 2004, multi-family permits nearly tripled to 908 permits from 312 permits in 2003. Single family building permits decreased to 2,243 permits in 2004 from 2,425 permits in 2003 (Table 3.6-4) (U.S. Department of Housing and Urban Development 2004).

Table 3.6-4. Building Permits, 2000-2004

	2000	*2001*	*2002*	*2003*	*2004*	*Percent Change, 2000-2004*	*Percent Change, 2003-2004*
Total Units	3,549	3,256	3,198	2,737	3,151	-11%	15%
Single-Family	2,764	2,564	2,407	2,425	2,243	-19%	-8%
Multi-Family	785	692	791	312	908	16%	191%

Source: U.S. Department of Housing and Urban Development 2004

3.6.2.4 ENVIRONMENTAL JUSTICE

RACE AND ETHNICITY

According to the USEPA's CEQ, a significant minority population exists if 50 percent or more of the general population in the ROI is comprised of minorities (USEPA 1997). Whites, with a population of over 652,000 in 2003, account for 75 percent of the total population in Pima County. The population identified as Some Other Race consists of 122,000 or 14 percent of Pima County's total population. African Americans and American Indians are each 3 percent of the total population with nearly 24,000 and 26,500 people, respectively. The Asian population is 18,500 or 2 percent of Pima County's population. Native Hawaiians are less than 1 percent of the total population with 1,000 people (USCB 2003a). Hispanics and Latinos of any race make

up a large portion of the total population in Pima County and Arizona. In Pima County, Hispanics and Latinos account for over 280,000, or 32 percent, of the total population (USCB 2003a).

In the state of Arizona, Whites, with a population of 4.2 million, represent 77 percent of the total population. Some Other Race is 11 percent of Arizona's population with this component being over 600,000 people. The American Indian population is over 260,000 people and represents 5 percent of the total population. African Americans represent 3 percent of Arizona's population with over 160,000 people. The Asian population represents 115,000 and is therefore 2 percent of the total population. Native Hawaiians represent the smallest portion of the population with nearly 11,000 people and less than 1 percent of the total population of Arizona. Out of the total population of Arizona, nearly 1.3 million people, or 28 percent, are identified as Hispanic and Latino of any race (USCB 2003a).

The total population of the U.S. is 76 percent White with over 215 million people. African Americans represent 12 percent of the population with over 34 million people. The population identified as Some Other Race represents 13 million people and is 5 percent of the population. Asians represent 4 percent of the total population with nearly 12 million people, while American Indians represent over 2 million people and 1 percent of the total population of the U.S. Native Hawaiians are less than 1 percent of the total population of the U.S. with 400,000 people (Table 3.6-5). In the U.S., Hispanics and Latinos account for 14 percent of the total population, or over 35 million people (USCB 2003a).

LEGAL STATUS

In Pima County, 25 percent of the total population consists of individuals under the age of 18. In the state of Arizona and the U.S. as a whole, 27 and 26 percent of the total population is under the age of 18, respectively.

POVERTY

In 2003, the USCB determined the poverty threshold for an individual under the age of 65 years is an income under $9,573 per year. For an individual over the age of 65 years that threshold is decreased to $8,825 per year. A family of four, with two adults and two children under the age of 18 years has a poverty threshold of $18,660 per year.

Applying these poverty thresholds, the family households living below the poverty threshold is approximately 10 percent of the total number of families in Pima County and the U.S., and 12 percent of the families in Arizona. Individuals living under the poverty threshold were approximately 15 percent of the total population in Pima County and Arizona, and 13 percent of the total population in the U.S. (USCB 2003b) (Table 3.6-5).

Table 3.6-5. Population and Race, 2000-2003

	2000 Population	*2003 Population*	*Percent of Total, 2003*	*Percent Change, 2000-2003*
Pima County	843,746	870,764		3%
White	633,387	652,110	75%	3%
African American	25,594	23,945	3%	-6%
American Indian and Alaska Native	27,178	26,511	3%	-2%
Asian	17,213	18,512	2%	8%
Native Hawaiian and Other Pacific Islander	1,088	1,024	0.1%	-6%
Some other race	112,217	122,197	14%	9%
Hispanic or Latino of any race	247,578	280,520	32%	13%
Arizona	5,130,632	5,470,843		7%
White	3,873,611	4,200,567	77%	8%
African American	158,873	161,474	3%	2%
American Indian and Alaska Native	255,879	264,812	5%	3%
Asian	92,236	115,059	2%	25%
Native Hawaiian and Other Pacific Islander	6,733	10,981	0.2%	63%
Some other race	596,774	605,864	11%	2%
Hispanic or Latino of any race	1,295,617	1,525,366	28%	18%
U.S.	281,421,906	282,909,885		0.5%
White	211,460,626	215,451,392	76%	2%
African American	34,658,190	34,313,529	12%	-1%
American Indian and Alaska Native	2,475,956	2,173,834	1%	-12%
Asian	10,242,998	11,743,093	4%	15%
Native Hawaiian and Other Pacific Islander	398,835	404,619	0.1%	1%
Some other race	15,359,073	13,468,733	5%	-12%
Hispanic or Latino of any race	35,305,818	39,194,837	14%	11%

Source: USCB 2000a, 2003a.

Poverty has been increasing in Pima County, Arizona, and the U.S. Arizona experienced a 29 percent increase in the number of family households living below the poverty threshold and a 20 percent increase in the number of individuals living below the poverty threshold. Poverty has been growing more slowly in Pima County with Pima County experiencing only a 1 percent increase in family households below the poverty threshold. Over the same period, the U.S. experienced an increase of 8 percent in family households living below the poverty threshold. Individuals living below the poverty threshold have increased 6 percent in Pima County and the U.S. (USCB 2003b) (Table 3.6-6).

Table 3.6-6. Families and Individuals in Poverty, 2003

	Pima County	*Arizona*	*United States*
Families Below the Poverty Threshold			
Households	22,759	165,723	7,143,075
Percent of Total Households	10%	12%	10%
Percent Change, 2001-2003	1%	29%	8%
Individuals Below the Poverty Threshold			
Individuals	127,858	839,106	35,846,289
Percent of Total Population	15%	15%	13%
Percent Change, 2001-2003	6%	20%	6%

Source: USCB 2000b, 2003b.

3.6.2.5 CHILDREN

Children are considered a special group of interest for their sensitivity to risks posed by their environment. Of particular concern are areas where the number of children may be concentrated such as schools.

There are two elementary schools located on Davis-Monthan AFB, Lowell Smith Elementary School and Frank Borman Elementary School.

Smith Elementary School is located south of East Quijota Boulevard in the center of the housing district known as Kachina Village. The school includes grades from kindergarten to 5th grade, and enrollment for the 2004-2005 school year was 249 students. Borman Elementary School is located north of East Quijota Boulevard in the center of the Palo Verde housing district. The school also includes kindergarten through 5th grade, and enrollment for the 2004-2005 school year was 406 students (Tucson Unified School District 2005a, 2005b, 2005c, 2005d).

3.7 SAFETY

3.7.1 Definition of the Resource

This section addresses ground safety involving day-to-day operations and maintenance activities performed by personnel assigned to Davis-Monthan AFB. The interaction between airfield operations and explosives storage and handling is also considered relative to safety of persons on the Base. The ROI for safety in this EA includes Davis-Monthan AFB.

3.7.2 Existing Conditions

3.7.2.1 GROUND SAFETY

Day-to-day operations and maintenance activities conducted by the 355th Wing are performed in accordance with applicable USAF safety regulations, published USAF Technical Orders, and standards prescribed by Air Force Occupational Safety and Health requirements.

The DoD stipulates certain safety restrictions on land uses in the immediate vicinity of aviation operations around military airfields. These restrictions limit construction and certain land uses. The Clear Zones at Davis-Monthan AFB are confined to within Base boundaries; however, the Accident Potential Zones do go outside of the Base boundary (as shown in Figure 3.7-1). Although there are several waivers in effect for structures or uses around the airfield, the location of the family housing areas does not conflict with any airfield safety restrictions.

USAF Manual 91-201, *Explosives Safety Standards*, represents the USAF guidelines for complying with explosives safety. Restrictions apply to zones around munitions and ammunition storage and handling facilities (defined by distances) to maintain safe separation of potentially hazardous events. These distances, called quantity-distance (QD) arcs, are determined by the type and net explosive weight of explosive material to be stored. No inhabited facilities are allowed within the QD arcs. As Figure 3.7-1 illustrates, the family housing areas are not affected by any QD arcs.

3.7.2.2 ANTI-TERRORISM/FORCE PROTECTION

As a result of terrorist activities, the DoD and the USAF have developed a series of AT/FP guidelines for military installations. These guidelines address a range of considerations that include access to the installation, access to facilities on the installation, facility siting, exterior design, interior infrastructure design, and landscaping (Unified Facilities Criteria 4 010 01, 2002). The intent of this siting and design guidance is to improve security, minimize fatalities, and limit damage to facilities in the event of a terrorist attack.

Many military installations, such as Davis-Monthan AFB, were developed before such considerations became a critical concern. Thus, under current conditions, the Base is not able to comply with all present AT/FP standards. However, as new construction occurs, it would incorporate these standards, and as facilities are modified, AT/FP standards would be incorporated to the maximum extent practicable.

Figure 3.7-1. Safety Zones at Davis-Monthan AFB, Arizona

3.8 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

3.8.1 Definition of the Resource

Hazardous materials may be defined as any substances that, due to quantity, concentration, physical, chemical, or infectious characteristics, may present a danger to public health, welfare, or the environment. Hazardous materials include flammable and combustible materials, corrosives and oxidizers, compressed gases, and toxic chemicals. Federal laws regarding management of hazardous materials include the Comprehensive Environmental Response, Compensation, and Liability Act, 42 USC § 9601 (4) and the Emergency Planning and Community Right-to-Know Act (42 USC § 1001 et seq.) as part of the Superfund Amendments and Reauthorization Act Title III (10 USC § 2701 et seq.). Management of hazardous materials in the workplace is regulated under the OSHA regulations, Title 29 CFR 1910.1200.

Hazardous wastes, listed under the Resource Conservation and Recovery Act (RCRA), are defined as any solid, liquid, contained gaseous or semisolid waste, or any combination of wastes that pose a substantive present or potential hazard to human health or the environment. In addition, hazardous wastes must meet either a hazardous characteristic of ignitability, corrosivity, toxicity, or of reactivity under 40 CFR 261, or be listed as a waste under 40 CFR 261. *Solid wastes* are wastes that do not meet the requirement for hazardous waste and whose disposal is not regulated under RCRA. Solid wastes are regulated under the Solid Waste Disposal Act (42 U.S.C. 3251 et seq.), which established guidelines for solid waste collection, transport, separation, recovery, and disposal systems. RCRA amended this Act by shifting the emphasis from disposal to recycling and reuse of recoverable materials.

At Davis-Monthan AFB, hazardous materials and hazardous wastes are managed according to both federal and Arizona state regulations. State laws pertaining to hazardous materials and hazardous waste management may be found in Arizona Revised Statutes Title 18, Environmental Quality, Chapters 2 through 17, and Title 49; while laws related to solid wastes are addressed in Title 49, Chapter 4. Based on an evaluation of existing conditions at Davis-Monthan AFB, the following items are relevant to this assessment and are addressed in this section:

- *Hazardous Materials/Waste Management* – Hazardous materials comprise substances that may present substantial danger to human health or the environment, and may include petroleum products/fuels, natural gas, paints, mercury, asbestos, etc. Hazardous wastes are defined as any waste or combination of wastes that pose a hazard to human health or the environment, and may include contaminated petroleum products/fuels, used paints, solvents, and cleaners, etc.

- *ERP Sites* – The ERP is used by the USAF to identify, characterize, and remediate past environmental contamination on USAF installations

- *ACBM* – Asbestos is a naturally occurring mineral whose crystals form long, thin fibers and has been used in the past in the manufacture of a wide range of building materials. Asbestos management at USAF installations is managed under Air Force Instruction (AFI) 32-1052, Facility Asbestos Management. AFI 32-1052 incorporates by reference applicable requirements of 29 CFR 669 et seq., 29 CFR 1910.1025, 29 CFR 1926.58, 40 CFR 61.140, Section 112 of the CAA, and other applicable AFIs, and DoD Directives.

- *LBP* – LBP is defined as surface paint that contains lead in excess of 1 milligram per square centimeter as measured by X-ray fluorescence spectrum analyzer, or 0.5 percent lead by weight. The LBP Poisoning Prevention Act (42 USC § 4821 et seq.), as amended by the Residential LBP Hazard Reduction Act of 1992 (Public Law [P.L.]. 102-550, also known as Title X), requires that LBP hazards in federal housing be identified and eliminated. In 1993, OSHA, under 29 CFR 1926, restricted the permissible exposure limit for general industrial workers to 50 micrograms per cubic centimeter of air, which would include workers in the construction field.

- *Polychlorinated Biphenyls* (PCBs) – PCBs are defined as any chemical substances or combination of substances that contain 50 parts per million or more of PCBs. The management of PCB compounds is regulated under the Toxic Substances Control Act (TSCA) 15 USC § 2605 and USEPA implementing regulations at 40 CFR 761, which banned the manufacture and distribution of PCBs, with the exception of PCBs used in enclosed systems.

- *Solid Waste* – USAF regulatory requirements and management of solid wastes are established by Air Force Policy Directive (AFPD) 32-70, Environmental Quality. AFPD 32-70 requires compliance with applicable Federal, state, and local environmental laws and standards. For solid waste, AFPD 32-70 is implemented by AFI 32-7042. AFI 32-7042 requires that each installation have a solid waste management program that includes a solid waste management plan that addresses handling, storage, collection, disposal, and reporting of solid waste. AFI 32-7080 contains the solid waste requirement for preventing pollution through source reduction, resource recovery, and recycling.

3.8.2 Existing Condition

3.8.2.1 HAZARDOUS MATERIALS/WASTE MANAGEMENT

There is no historical or current bulk storage of hazardous materials, including petroleum products, in the Davis-Monthan AFB MFH areas; however, residents may purchase cleaning supplies, paints, and other chemicals for personal use that contain constituents that are classified as hazardous materials. The residential use of these chemicals is not tracked by the installation and the quantity of these materials stored in the housing area is unknown.

Hazardous materials are also stored at the Housing Maintenance Facility (Building 675). The facility is managed by ACEPEX Management Corporation (Chino, California), which performs

management and maintenance activities for the MFH area. At the Housing Maintenance Facility, there are several flammables cabinets with small containers (5-gallons or less) of POL or paint-related products. Three of these cabinets are located in the fenced-in, exterior storage compound; the other is located inside Building 675. There is also a covered area located in the compound, which is used for the storage of paint-related products and POL. Small quantities of hazardous materials may also be stored by contractor personnel at current construction sites in Palo Verde Village. There have been no spills of hazardous or petroleum products associated with the MFH areas or the Housing Maintenance Facility (personal communication, Duran 2005; personal communication, Tridico 2005).

Davis-Monthan AFB is registered as a large quantity generator (LQG) of hazardous waste under RCRA. A LQG either produces 1,000 kilogram (approximately 265 gallons, or 2,200 pounds) or more of hazardous waste per month or 1 kilogram (approximately 2.2 pounds) or more of acute hazardous waste per month. Hazardous waste generated by residents is exempted from RCRA regulations. While it is not a violation of RCRA for residents to dispose of household hazardous wastes (HHW) in the trash, the City of Tucson and Pima County prohibit landfills from accepting these wastes. The City and County have jointly established a voluntary program for individuals to dispose of their HHW at designated HHW Collection Centers. At Davis-Monthan AFB, HHW (excluding used oil and filters) may be turned in at Building 5227 (2nd Street north of Madera Street). Used oil and filters are accepted at the Auto Skills Center (USAF 2001).

Hazardous waste generated at the Housing Maintenance Facility may include used paints or expired shelf-life items. These wastes are handled and stored according to established hazardous waste management requirements and are disposed through Defense Reutilization and Marketing Office (DRMO) or other approved means. The Davis-Monthan AFB Hazardous Waste Management Plan (2001) presents specific requirements associated with hazardous waste management at the installation (USAF 2001).

3.8.2.2 ENVIRONMENTAL RESTORATION PROGRAM SITES

The ERP is used by the USAF to identify, characterize, and remediate past environmental contamination on USAF installations. Although widely accepted at one time, the procedures followed for managing and disposing of wastes resulted in contamination of the environment. The ERP, which generally addresses contamination due to releases of hazardous substances or petroleum products that occurred prior to January 1984, establishes a process to evaluate past disposal sites, control migration of contaminants, identify potential hazards to human health and the environment, and remediate these sites.

Davis-Monthan AFB has been assessed for historical hazardous waste contamination and 49 ERP sites have been identified. One of these sites (SD-19) is situated within the south and west edge of Palo Verde Village. This site is a drainage ditch located between the abandoned Runway 4 and Palo Verde Village in the northeast portion of the installation. The ditch is a linear depression over 4,000 feet long that slopes gradually toward the northwest. The side

slopes are relatively steep to the south and gradual to the north. Most of the ditch is vegetated (USAF 2003). A metes and bounds survey has not been prepared for areas to be conveyed as part of this project. However, according to installation personnel, the ditch falls within the boundary of Palo Verde since the west bank of the ditch comprises the west edge of the Palo Verde Village area that will be leased (personal communication, Whitaker 2005).

The ditch received waste oil and fuel drained from aircraft in the 1950s. Some waste solvents may also have been disposed of at this site. The site was first studied in 1984 when four 21-foot-deep borings were drilled. The analyses indicated the presence of lead (in concentrations of 17 to 30 micrograms per gram [µg/g]) and toluene (in concentrations of 0.03 µg/g). No other VOCs, metals, phenols, or oil and grease were detected. Further study of the site was conducted in 1988 when one boring was drilled to a depth of 45 feet. Total recoverable petroleum hydrocarbons (TRPHs) were detected, from 6.4 milligram per kilogram (mg/kg) at 5 feet to 2,200 mg/kg at 45 feet below the ground surface. The only VOC detected was methylene chloride. This result was near the detection limit and thought to be laboratory contamination. A sixth boring was drilled in 1989 to a depth of 70 feet. TRPHs were detected at a depth of 45 feet with a corresponding concentration of 109 mg/kg. All other samples from the surface to 70 feet were negative for the presence of contaminants (USAF 2003).

Based on these results, Davis-Monthan AFB has determined that the remedial investigation is complete and No Further Action (NFA) is required at this site. A decision document supporting the NFA was signed by the ADEQ in September 1997 (USAF 2003).

3.8.2.3 ASBESTOS

Asbestos was widely used in construction/manufacturing in the past because of its insulating properties, its ability to withstand heat and chemical corrosion, and its soft, pliant nature. Friable (brittle) asbestos becomes hazardous when fibers become airborne and are inhaled. Asbestos fibers (<5 microns in size) may become trapped in the lungs and may lead to diseases including asbestosis, lung cancer, and mesothelioma. In 1989, the USEPA prohibited the use of most commercially available asbestos-containing materials used in the U.S. Since that time, knowledge of the adverse health effects associated with exposure to airborne asbestos has increased. Asbestos is regulated by the USEPA with the authority promulgated under the Occupational Safety and Health Act, 29 USC § 669 et seq. Emissions of asbestos fibers to ambient air are regulated under Section 112 of the CAA.

Surveys to identify ACBM have been conducted for the MFH areas on Davis-Monthan AFB. These surveys indicate that ACBM are located in housing units constructed prior to 1994. A 1988 survey of Palo Verde units found asbestos in the floor tile, floor tile adhesive, and roofing materials. The 1988 survey also identified asbestos in the floor tile and roofing material of housing units in Kachina Village. Chrysotile has comprised the type of asbestos identified in all of these materials, with chrysotile content ranging from less than 1 percent (in ceiling material) up to 40 percent in some floor tile or roofing materials. Asbestos has not been identified in housing units at Sonoran Vista (USAF 2005a).

3.8.2.4 LEAD-BASED PAINT

LBP was commonly used in and on buildings and other structures until 1978. When in good condition, LBP does not pose a health hazard. However, when it is in a deteriorated condition (cracking, peeling, chipping), or is damaged by renovation or maintenance activities, LBP can release lead-containing particles that pose a threat of lead contamination to the environment and a health hazard to workers and building occupants who may inhale or ingest the particles. Hazards of lead exposure include severe damage to the nervous system, brain, and kidneys in adults and children. In pregnant women, high levels of exposure to lead may cause miscarriage. Children are more sensitive to the effects of lead than adults and may develop blood anemia, kidney damage, colic, muscle weakness, and brain damage, which can potentially cause death, following ingestion of lead particles.

To ensure that any threat to human health and the environment from LBP has been identified, USAF policy requires that a LBP survey of high-priority facilities be conducted. High-priority facilities include MFH areas, transient lodging facilities, schools, day care facilities, playgrounds, and other facilities frequented by children under the age of seven. A preliminary LBP survey of Davis-Monthan AFB's housing units was conducted during 1995. As part of the survey, 56 Kachina Village units were evaluated for LBP. Eighty-seven percent of these units were found to have some interior and/or exterior components coated with LBP. Components that tested positive included wood baseboards, wood cabinet doors, wood doors, wood door jams, concrete walls, exterior wood soffits, and exterior block fencing. There were also 28 Palo Verde 300 area units surveyed, of which 85 percent were found to have some interior/exterior components coated with LBP, including metal door frames, and exterior wood soffits and trim. In the Palo Verde 400 area, 29 units were surveyed and 6 percent contained LBP on the following components: sheetrock ceiling, wood door frames, and wood varnished doors (personal communication, Calabro 2005).

The current Davis-Monthan Lead Based Paint Management Plan was published in 1995. The installation is in the process of updating this plan, which will be republished during summer 2005 (personal communication, Flannery 2005). The new plan will provide specific policy and guidance to identify and address LBP hazards and to protect the public from exposure to these hazards. The plan will also provide guidance on proper management/disposal of material containing LBP.

3.8.2.5 POLYCHLORINATED BIPHENYLS

PCBs are chemicals that persist in the environment, accumulate in organisms, and concentrate in the food chain. Exposure to PCBs and their by-products have been linked to chloracne (a skin disorder), bleeding and neurological disorders, liver damage, human embryo deformation, cancer, and death. PCB items consist of any containers or equipment that contain PCBs in concentration equal to, or greater than, 50 ppm. The USEPA, under TSCA, regulates the removal and disposal of all of PCB items.

Commercial PCBs are used in electrical systems such as transformers, capacitors, and voltage regulators because they are electrically non-conductive and stable at high temperatures. The manufacture of PCBs was banned under the TSCA in 1978, but TSCA does not ban use of PCBs as long as they are completely enclosed, such as in a transformer. Additional requirements under TSCA include an inventory of PCB-containing transformers and proper labeling.

Electric power transformers are located on utility poles in the Davis-Monthan AFB MFH areas. During 1993, all electric transformers associated with the installation's electrical system were evaluated for the presence of PCBs. Affected transformers were removed and replaced with PCB-free units (USAF 2004b). No spills of liquids from transformers have been recorded (personal communication, Duran 2005).

PCBs may also be contained within the ballasts of older fluorescent light fixtures installed in family housing residences. In the event PCBs are discovered, they are turned in to DRMO for proper disposal. Davis-Monthan AFB policy also specifies that housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 or ADEQ requirements.

3.8.2.6 SOLID WASTE

No solid waste dumping or disposal occurs at the subject properties. Refuse collection, disposal, and curbside recycling services are provided to the Davis-Monthan AFB family housing area by the City of Tucson. Housing units are provided with 90-gallon tan containers for municipal solid waste (commonly referred to as refuse or garbage). A single 90-gallon blue container (commonly referred to as a "Blue Barrel") is provided to each housing unit for recyclables (e.g., glass, #1 and #2 plastic beverage bottles, newspaper, aluminum, and tin cans). Refuse and recyclable materials are collected once per week by the City of Tucson. Once collected, the waste is disposed at the Los Reales Landfill, a licensed and secure landfill operated by the City of Tucson (USAF 2005b).

3.9 INFRASTRUCTURE

3.9.1 Definition of the Resource

The infrastructure elements at Davis-Monthan AFB include transportation and utility systems serving all areas of the Base. Transportation refers to roadway and street systems. Utilities include potable water, waste water, storm drainage system, electrical system, heating and cooling systems and liquid fuels. The ROI for these resources consists of Davis-Monthan AFB.

3.9.2 Existing Conditions

3.9.2.1 TRANSPORTATION

Davis-Monthan AFB, located within the city limits of Tucson in Pima County, Arizona, is in close proximity to Interstate 10 (I-10), just west of the installation and Interstate 19 (I-19)

southwest of the installation (see Figure 1.1-1). I-10 provides east-west access to Phoenix and El Paso, Texas, while I-19 connects Tucson with the Mexican border. Access to the Base includes the Main Gate Access off Craycroft Road, with additional gate access off Swan, Wilmot, and Irvington Roads.

Craycroft Road, which runs generally north/south from East Golf Links Road on the north side of the Base, is one of the primary arterial roads on the Base. Wilmot Road is a short artery, which connects the Wilmot Gate at the east side of the housing area to the main cantonment areas of the Base.

The road network serving the family housing area is shown on Figure 3.9-1. The primary "collector" roadway through the housing area is East Quijota Road, connecting to Craycroft and Wilmot Roads. Other secondary routes within the housing area include Ironwood, National, Alamo, Albro, Cass, Mustang, Saratoga, Crusader and Lightning Roads. Bicycle lanes are provided along Quijota and National Roads, and there are sidewalks and crosswalks throughout the housing areas. Each housing unit has a standard parking allocation.

The City of Tucson does not provide mass transit on Davis-Monthan AFB, although there are nearby bus stops off Base. There is no direct rail connection to the Base (USAF 2004b).

3.9.2.2 UTILITIES

Potable Water. Davis-Monthan AFB obtains potable water from eight active on-Base ground water wells with a production capacity of 9.3 million gallons per day (MGD). Average daily demands for the last three years have equaled approximately 1.1 MGD, although summer time demands can more than double, increasing to as much as 2.37 MGD. The largest consumer of water on Base is the family housing area (using about 20 percent), followed by the golf course. To minimize groundwater use, the golf course is now using reclaimed water for irrigation (USAF 2004b).

The Base has two separate distribution systems. Palo Verde Village, along with the AMARC area, the hospital, the 41st and 43rd Squadron areas, and the munitions storage area are supplied by the Upper Water Supply System. The Lower Water Supply System supplies the remaining areas on-Base, including Kachina Village, the SOQ, and Sonoran Vista housing areas. Water is chlorinated at the well heads and pumped into the storage tanks (Davis-Monthan AFB 2004b).

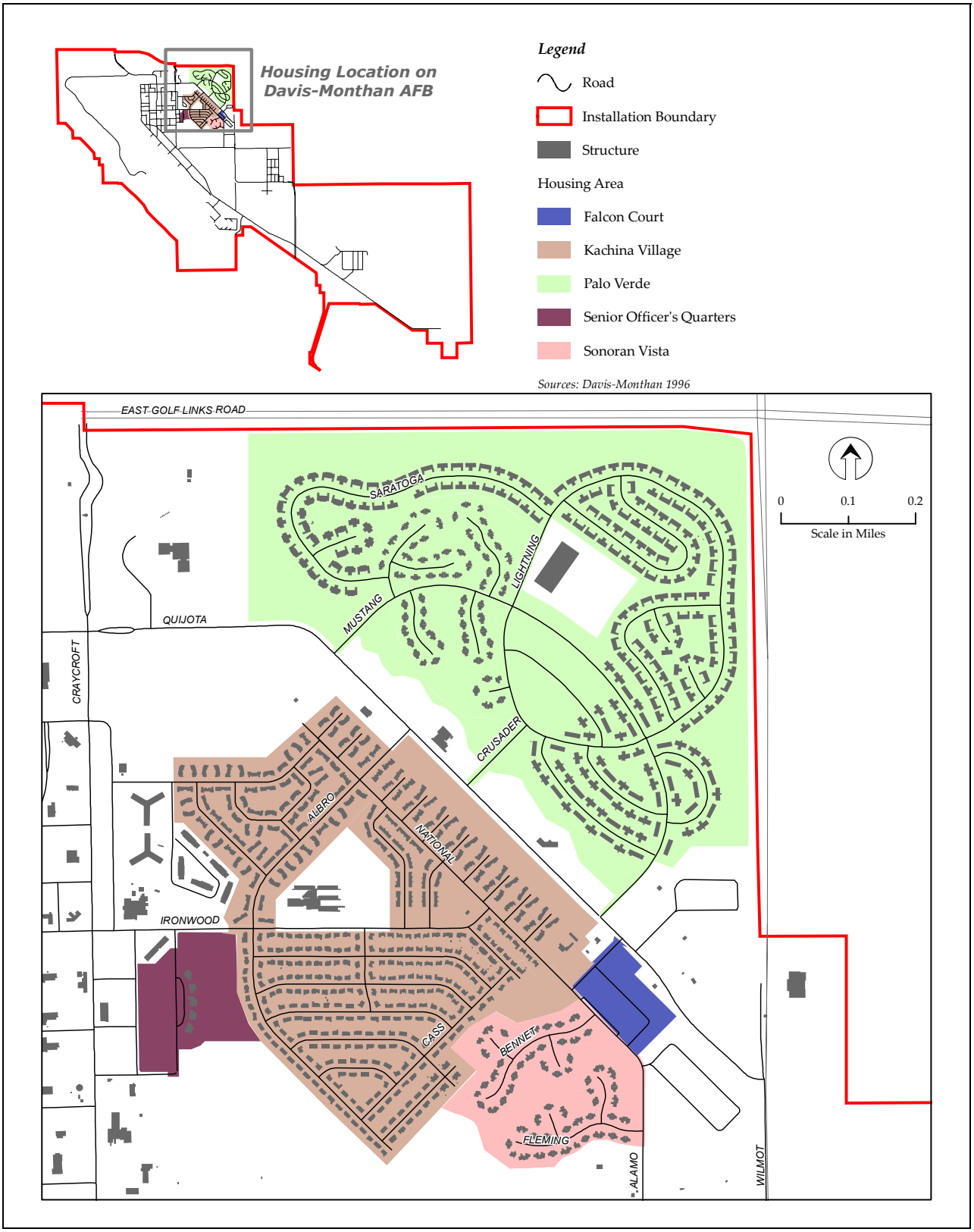


Figure 3.9-1. Roads Serving the MFH Area, Davis-Monthan AFB, Arizona

The Base has four elevated storage tanks and two ground storage tanks with an approximate capacity of 1.5 million gallons for potable. The Base also has two 500,000 gallon raw water steel storage tanks that are submerged underground (Davis-Monthan AFB 2004a, 2004d). The Base has plans to increase its total storage capacity to about 3.5 MGD.

Waste Water. The Base discharges its waste water (averaging about one MGD) to the Pima County sanitary sewer system. Pima County functions as the sole treatment facility for all the waste water generated by the City of Tucson as well. Its total system capacity is approximately 85 MGD, and it treats approximately 70 MGD. The sanitary sewer collection line exits the Base in the extreme northwest corner, where it crosses Golf Links Road. The system is considered adequate for the Base, but lacks redundancy in case of outage or failure of any key component.

Storm Drainage System. Storm water runoff on Davis-Monthan AFB is managed through a storm water system consisting of a combination of swales, culverts, and pipes currently having adequate capacity to handle most flows. During the rainy season from July through September, storms can lead to flooding in portions of the Base.

The Base is divided into eight drainage areas with nine outfalls that are permitted under an NPDES Multi-Sector Permit number AZR05A12F (Davis-Monthan AFB 2004a). Characteristics of these drainage areas are identified in Table 3.9-1. The housing areas drain primarily into drainage areas 002A and 002B/C.

Table 3.9-1. Characteristics of Outfalls and Their Drainage Areas

Drainage Area	*Estimated Drainage Area (acres)*	*Estimated Impervious Area (acres)*	*Percent Impervious*
001	1,280	384	30
002A	**2,138**	**535**	**25**
002B/C	**390**	**156**	**40**
004	2,043	41	2
005A	344	0	0
005B	98	0	0
006	2,414	0	0
007	1,164	116	10
008	74	4	5
009	529	11	2
010	572	257	45
Total	11,046	1,504	14

Source: Davis-Monthan AFB 2004a

Electrical System. Davis-Monthan AFB consumes approximately 90,000 megawatt hours on an annual basis. Tucson Electric Power provides the electric power to most of the Base through two 46 kilovolt (kV) lines. A substation, with the capacity to handle loads of 25 million volt amperes, steps the power down to 13.8 kV and distributes it to eight circuits (USAF 2004b).

Heating and Cooling Systems. Davis-Monthan AFB does not have a central heating and cooling system for the Base. Natural gas is used primarily for space heating and hot water for the main Base and multi-family housing. Southwest Gas Company provides natural gas via a commercial line entering the northwest corner of the Base. Maximum daily consumption during the last ten years was 2.5 million cubic feet or approximately 74 percent of the delivery capacity (USAF 2004b). In the housing areas, the units have individual cooling systems.

The utilities (electric, gas, telephone, sewer, and communications) that were previously in use at the Falcon Court mobile home court were abandoned when the trailers were removed. There are approximately 25 mobile home concrete pads in the area. These utilities are potentially still active.

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4.0 ENVIRONMENTAL CONSEQUENCES

This section of the EA assesses potential environmental consequences associated with the Proposed Action and the No Action Alternative. Potential impacts are addressed in the context of the scope of the Proposed Action as described in Section 2.0 and in consideration of the potentially affected environment, as characterized in Section 3.0.

4.1 EARTH RESOURCES

4.1.1 Methodology

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

Analysis of potential impacts to geologic resources typically includes identification and description of resources that could potentially be affected, examination of the potential effects that an action may have on the resource, assessment of the significance of potential impacts, and provision of mitigation measures in the event that potentially significant impacts are identified. Analysis of impacts to soil resources resulting from proposed activities examines the suitability of locations for proposed operations and activities. Impacts to soil resources can result from earth disturbance that would expose soil to wind or water erosion.

4.1.2 Impacts

4.1.2.1 PROPOSED ACTION

Under the Proposed Action, approximately 285 acres would be temporarily disturbed during demolition of 936 existing units and up to 250 acres would be redeveloped with 609 new housing units. Depending on density of the new development, as few as 100 acres may be used for the new units. Impervious surface would not increase and is likely to decrease since the final number of housing units would decrease by almost 25 percent.

The proposed construction and demolition would occur on soils categorized as *Mohave soils and Urban Land*. This soil mapping unit is suitable for homesites or urban development, and its primary limitation is shrink-swell potential. Building on these soils would require properly designed foundations and footings and would also require diverting runoff away from the buildings to help prevent potential structural damage (NRCS 1993).

Earth grading and placement of structural fill for new facilities would not alter existing soil conditions in the housing areas because much of this land has been previously disturbed and no

longer includes naturally occurring soils. Soils or geologic resources at these sites have no special qualities that raise special impact concerns.

BMPs would be used during and following construction to minimize impacts associated with erosion (such as soil loss and sedimentation in surface waters). These BMPs would include, but not be limited to, installation of silt fencing and sediment traps, application of water sprays to keep soil from becoming airborne, and revegetation of disturbed areas as soon as possible, as appropriate. For example, areas that are disturbed during demolition but not immediately redeveloped would need to be seeded with suitable stabilizing vegetation. More formal landscape materials would be used on land within redevelopment boundaries that is not covered by pavement or a structure as directed in the Davis-Monthan Design Standards (Davis-Monthan AFB 1998c).

Overall, potential impacts to earth resources as a result of the Proposed Action would be minor.

4.1.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to earth resources associated with the No Action Alternative would be either less than or equivalent to those of the Proposed Action, as described in Section 4.1.2.1. Potential impacts to earth resources as a result of the No Action Alternative would be minor.

4.2 WATER RESOURCES

4.2.1 Methodology

Criteria for evaluating impacts related to water resources associated with the Proposed Action are water availability, water quality, and adherence to applicable regulations. Impacts are measured by the potential to reduce water availability to existing users; endanger public health or safety by creating or worsening health hazards or safety conditions; or violate laws or regulations adopted to protect or manage water resources.

The ADEQ Water Division and the USACE are the regulatory agencies that govern water resources in the state of Arizona and at Davis-Monthan AFB. The CWA of 1977 regulates pollutant discharges and development activities that could affect aquatic life forms or human health and safety.

4.2.2 Impacts

4.2.2.1 PROPOSED ACTION

With regard to water resources, the primary concerns associated with the Proposed Action include effects on water quality during construction and with operation of proposed facilities, impacts on surface waters, changes to surface water drainage and ground water recharge, and effects on the availability of local water supplies.

SURFACE WATER

Under the proposal, there would be fewer housing units on the Base, and a net decrease in impervious surface is expected to result. This decrease in impervious surface would result in a minor decrease in storm water runoff at the Base.

Prior to construction, the privatization developer would be required to obtain coverage under an AZPDES Construction General Permit AZG2003-001 by filing an NOI for the construction activity with ADEQ and preparing an SWPPP to manage storm water associated with the construction activity. The SWPPP must include BMPs to minimize the potential for exposed soils or other contaminants from construction activities on the Base to reach surface waters. Such BMPs would include the use of silt fences, covering of soil stockpiles, use of secondary containment for the temporary storage of hazardous liquids, establishment of buffer areas near wetlands and intermittent streams, and revegetation of disturbed areas in a timely manner. Adherence to the requirements of the NPDES construction permit would minimize impacts to water resources during construction. The Proposed Action would also require modifications to the installation storm drainage system and updating the Base SWPPP in order to properly manage storm water.

GROUND WATER

The Proposed Action would result in a net loss of about 327 family housing units. Considering the family housing area now accounts for about 20 percent of the Bases' water consumption, with 25 percent fewer family units, the Base's water consumption could decrease by about 5 percent. However, this would not have any appreciable effect on reducing withdrawals from the ground water aquifer, since these families would likely reside within the City of Tucson's water service area.

Landscaping techniques would employ principles of xeriscaping to minimize irrigation water use and to comply with Base design standards (Davis-Monthan AFB 1998c). With a net decrease in homes, the extent of landscaped areas are likely to decrease and irrigation use may decline slightly.

4.2.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to water resources associated with the No Action Alternative would be either less than or equivalent to those of the Proposed Action, as described in Section 4.2.2.1. Potential impacts to water resources as a result of the No Action Alternative would be minor.

4.3 BIOLOGICAL RESOURCES

4.3.1 Methodology

Evaluation of impacts to biological resources is based upon 1) the importance (legal, commercial, recreational, ecological, or scientific) of the resource, 2) the rarity of a species or habitat regionally, 3) the sensitivity of the resource to proposed activities, and 4) the duration of the impact. Impacts to biological resources are considered to be greater if priority species or habitats are adversely affected over relatively large areas and/or disturbances cause reductions in population size or distribution of a priority species.

4.3.2 Impacts

4.3.2.1 PROPOSED ACTION

VEGETATION

To a large extent, the areas associated with proposed construction and/or demolition (encompassing about 286 acres in the housing areas) are currently developed and have been previously disturbed. Any remaining natural vegetation is typical of surrounding Sonoran desert scrub plant community and does not provide important or rare habitat. There would be no increase in impervious coverage (and therefore, no loss of vegetative cover), although the final layout and location of specific facilities, landscaped areas, and residual areas with more natural planting may be somewhat different than the existing layout. Overall, this would not represent any appreciable change in the vegetative context. There are no known sensitive plant species at any of the proposed construction or demolition sites. As a result, impacts to vegetation communities and individual populations would be expected to be minor under the Proposed Action.

ARIZONA NATIVE PLANT LAW

Several common plants that fall under the jurisdiction of the Arizona Native Plant Law (Arizona Revised Statutes Title 3, Chapter 7, *Arizona Native Plants*), for example, the saguaro,

hedgehog cactus, pincushion cactus, and numerous others, may be present as landscape elements within proposed redevelopment areas. Prior to implementation of the proposed construction and/or demolition activities, a qualified biologist would survey the site for any evidence of native plants protected under this statute. The results of this survey would be coordinated with the 355 CES/Environmental Analysis Element (CEVA) office and appropriate measures would be taken should any of these native plants be observed at the sites.

WILDLIFE

The proposed demolition and construction in the family housing areas would not result in any major change to habitats used by wildlife. Most of the species found at the Base are adapted to rural or semi-urban settings. It is expected that these species would continue to utilize the project area after implementation of the Proposed Action. During construction, noise levels may be elevated in the immediate vicinity of project sites. Less mobile species and fleeing species could be impacted as a result of construction and demolition activities; however, should mortalities occur, they would likely be isolated instances and would not result in long-term impacts to populations of wildlife species.

MIGRATORY BIRDS

There are six migratory bird species identified by the Arizona Partners in Flight Bird Conservation Plan that either occur or have potential to occur on Davis-Monthan AFB (Latta *et al.* 1999). Only two species, the rufous-wing sparrow and Costa's hummingbird, have been documented on the Base (Tucson Bird Count 2004; personal communication, Lisa 2005). The occurrence of the other four species would likely be transient and residential occurrence is not likely. Considering the urban context of the housing areas, any species currently utilizing this area for forage or shelter are likely to be well-adapted to the urban nature of the site, and it is unlikely they would be substantially affected by the temporary construction/demolition activities.

SPECIAL-STATUS SPECIES

No federally-listed threatened or endangered species are known to occur on the Base. While there are some state-listed species of concern known to occur, or have potential to occur on Base, there are no known occurrences of these species within the vicinity of the proposed construction and demolition projects. Prior to implementation of the proposed construction and/or demolition activities, a qualified biologist would survey the site for any evidence of these sensitive species. The results of this survey would be coordinated with the 355 CES/CEVA office and appropriate measures would be taken should sensitive species be observed at the sites.

The following discussion analyzes the potential for impacts to the five special status species identified as occurring or having the potential to occur on Base.

Western Burrowing Owl

Western burrowing owls are known to occur on Base and in the area to the north of the family housing area. These species nest in ground burrows abandoned by other wildlife species (round-tailed ground squirrels). These colonial animal burrows are relatively common in the developed portions of the Base. The owl's diet is primarily arthropods, but it does consume small animals also (rodents, songbirds). Prior to implementation of the Proposed Action, a survey of the site by a qualified biologist would be conducted. Should burrowing owls be present, AZGF protocol for managing the bird would be implemented. Therefore, there would be no impacts to the western burrowing owl as a result of the proposal.

American Peregrine falcon

The American peregrine falcon is known to occur on Base (personal communication, Lisa 2004); although the falcon's preferred habitat (cliff habitat, overlooking woodlands and riparian areas) for this species does not occur in the vicinity of the family housing area, nor anywhere on Base. Due to the lack of preferential habitat for this species, the known occurrences of the falcon are likely transient. Therefore, the construction and demolition activities associated with the MFH proposal would not be likely to impact the American peregrine falcon.

Lesser Long-nosed Bat

The lesser long-nosed bat has not been documented on Base; however, they are known from the Rincon Mountains, just east of the Base. The lesser long-nosed bat forages on nectar of columnar cacti at night. The bat may occur as a transient forager in areas with columnar cacti; however, Davis-Monthan AFB does not have the preferred foraging habitat for the bat. Additionally, the bat is a nocturnal forager, and construction and demolition activities would not occur during these foraging hours. Therefore, the Proposed Action is highly unlikely to have any impact the lesser long-nosed bat.

Cave Myotis

The cave myotis could potentially roost in abandoned buildings at Davis-Monthan AFB; however, this is not likely due to absence of preferred habitat (creosote bush, brittlebush, palo verde and cacti near water) in the vicinity of the family housing area, nor anywhere else on Base. Bats are known to travel up to 40 miles from roosting sites to forage (USFWS 1995b). The cave myotis forages on insects at night and may occur on the Base as a transient forager. Prior to implementation of any demolition projects where there is the potential for cave myotis to be present, a survey of the site by a qualified biologist would be conducted. Should cave myotis be present, AZGF protocol for managing bats would be implemented. Additionally, the bat is a nocturnal forager, and construction and demolition activities would not occur during these foraging hours. Therefore, the Proposed Action would not be likely to impact the cave myotis.

Pima Pineapple Cactus

The Pima pineapple cactus occurs within the floristic community types (Sonoran Desertscrub and semi-desert grassland) that occur on Base (Section 3.3.2). During a survey for the Pima pineapple cactus in 2000, no individuals of this species were identified on Base (personal communication, Lisa 2004). The Sonoran desertscrub and semi-desert grassland habitat types primarily occur in the undeveloped portion of the Base, and would not be found in the vicinity of the family housing area. Therefore, it is unlikely that the cactus would be impacted as a result of the Proposed Action.

4.3.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to biological resources associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.3.2.1. Potential impacts to biological resources as a result of the No Action Alternative would be minor.

4.4 AIR QUALITY

4.4.1 Methodology

Air emissions resulting from the Proposed Action were evaluated in accordance with federal, state, and local air pollution standards and regulations. Air quality impacts from a proposed activity or action would be significant if they:

- increase ambient air pollution concentrations above any NAAQS;
- contribute to an existing violation of any NAAQS;
- interfere with or delay timely attainment of NAAQS; or
- impair visibility within any federally mandated federal Class I area.

The approach to the air quality analysis was to estimate the increase in emission levels due to the Proposed Action.

According to USEPA's General Conformity Rule in 40 CFR Part 51, Subpart W, any proposed federal action that has the potential to cause violations in a NAAQS nonattainment or maintenance area must undergo a conformity analysis. A conformity analysis is not required if the Proposed Action occurs within an attainment area that is not operating under a

maintenance plan. Since Pima County is in maintenance status (i.e., recently achieved attainment) for CO, a conformity determination must be performed if project emissions exceed the *de minimis* threshold, 100 tons of CO per year.

As described in Section 3.4.1, Section 169A of the CAA established the PSD regulations to protect the air quality in regions that already meet the NAAQS. Certain national parks, monuments, and wilderness areas have been designated as PSD Class I areas, where appreciable deterioration in air quality is considered significant. The nearest PSD Class I area is approximately 14 miles from the region potentially affected by the Proposed Action.

4.4.2 Impacts

4.4.2.1 PROPOSED ACTION

The Proposed Action would involve construction, demolition, and paving activities, including construction of new structures, additions to or demolition of existing structures, installation of new pavement, and upgrading of existing pavement.

Construction Emissions. Emissions during the construction period were quantified to determine the potential impacts on regional air quality. Calculations of VOC, NO_x, CO, and PM_{10} emissions from construction, grading, and paving activities were performed using USEPA emission factors compiled in the *California Environmental Quality Air Quality Handbook* (South Coast Air Quality Management District 1993), *Calculations Methods for Criteria Air Pollution Emission Inventories* (Jagielski and O'Brien 1994), and *Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations* (O'Brien and Wade 2002). The emission factors for building construction include contributions from engine exhaust emissions (i.e., construction equipment, material handling, and workers' travel) and fugitive dust emissions (e.g., from grading activities). Demolition emissions evaluated include fugitive dust and transport of demolition debris offsite. Grading and trenching emissions include fugitive dust from ground disturbance, plus combustive emissions from heavy equipment during the entire construction period. Paving emissions include combustive emissions from bulldozers, rollers, and paving equipment, plus emissions from a dump truck hauling pavement materials to the site. Estimated emissions that would occur from construction, demolition, grading, trench work, and paving activities under the Proposed Action during calendar years 2006-2012 are presented in Table 4.4-1. Emissions were allocated for each year based on the projected schedule shown in Table 2.4-3.

Table 4.4-1. Estimated Temporary Construction Emissions – Proposed Action, Calendar Years 2006-2012

Year	*Emissions (Tons/Year)*				
	CO	*VOC*	*NO_x*	*SO_x*	*PM_{10}*
2006	16.5	4.3	44.9	0.7	6.2
2007	17.5	4.5	46.4	0.7	6.5
2008	25.5	7.0	80.0	1.1	9.8
2009	19.7	5.4	60.8	0.8	7.6
2010	1.0	0.3	3.9	<0.1	0.4
2011	5.0	1.5	19.5	0.2	2.0
2012	0.4	0.1	1.6	<0.1	0.2

Emissions generated by construction, demolition, and paving projects are temporary in nature and would end when construction is complete. The emissions from fugitive dust (PM_{10}) would be considerably less than those presented in Table 4.4-1 due to the implementation of control measures that would be implemented on a 24/7 basis in accordance with standard construction practices and Pima County Code Title 17. For instance, frequent spraying of water on exposed soil during construction, proper soil stockpiling methods, and prompt replacement of ground cover or pavement are standard landscaping procedures that could be used to minimize the amount of dust generated during construction. Using efficient practices and avoiding long periods where engines are running at idle may reduce combustion emissions from construction equipment. Vehicular combustion emissions from construction worker commuting may be reduced by carpooling. Construction related emissions are summarized in Table 4.4-1, which presents worst-case scenarios and, therefore, annual emissions would be expected to be somewhat lower.

Pima County Code Title 17 requires that proponents obtain an Air Quality Activity Operating Permit for Road Construction, Trenching, and Landclearing/Earthmoving over certain thresholds. A permit must be obtained prior to implementation of the Proposed Action. Davis-Monthan AFB would coordinate with Pima County to determine whether this permit would be required.

The Proposed Action would also be subject to the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP), in compliance with Title 40 Part 61 of the CFR National Emissions Standards for Asbestos (refer to Section 4.8.2.1). A NESHAP Notification would be submitted to PDEQ at least ten days prior to implementation of demolition or renovation projects. Additionally, PDEQ Asbestos Renovation and Demolition Permits would be required and are effective for one year from the date of issuance.

There are two elementary schools centrally located in the family housing area. BMPs would be implemented to minimize potential health impacts to children from construction-related air pollutant emissions. These BMPs would include, but not be limited to: locating diesel engines,

motors, and other equipment staging areas away from the schools and residential areas; phasing construction/demolition activities to the extent practicable so that activities occur when schools are not in session; ensuring that diesel equipment is properly running and that engines are shut off when not in use; using diesel particulate filters or other control technologies, as necessary; and using lower-emitting engines and fuels.

In general, combustive and fugitive dust emissions would produce localized, short-term elevated air pollutant concentrations, which would not result in any long-term impacts on the air quality in Pima County (AQCR 015). The total CO emissions are below the conformity threshold of 100 TPY. A conformity determination, therefore, is not required for this action. The temporary construction-related emissions of PM_{10} and SO_x are not expected to adversely impact the air quality or visibility in any of the PSD Class I areas in the vicinity of the Base.

Operational Emissions. Air emissions at Davis-Monthan AFB after the Proposed Action is completed are expected, for the most part, to be virtually identical to or less than current operations, as sources that are removed due to demolition of current facilities would be replaced by similar air emission sources at the new facilities. It is likely that the new equipment would be more efficient and have lower emissions than the heating equipment currently present in the buildings. Nevertheless, the installation or modification of any air emission sources, such as boiler and heaters, emergency generators, etc., would trigger permitting requirements with the PDEQ and/or a modification or additions to the Base's synthetic minor operating permit.

There are no expected increases in operational emissions as a result of the Proposed Action.

Commuting to and from Davis-Monthan AFB. Implementation of the Proposed Action would result in the removal of a net 327 housing units from the Base. The resultant increase in commuting emissions due to vehicular travel to and from the installation by those who would now live off-base were calculated using emission factors from *Calculation Methods for Criteria Pollutant Emission Inventories* (Jagielski and O'Brien 1994). All vehicles were assumed to be light-duty, gasoline-powered vehicles with an average vehicle model year of 1995 or later. Average vehicle occupancy was assumed to be 1.1 passengers per vehicle. Annual criteria pollutant emissions from personally-owned vehicles (POV) commuting of 327 additional vehicles, assuming an average round-trip commuting distance of 40 miles, 5 days per week, 52 weeks per year, are shown in Table 4.4-2.

Table 4.4-2. Emissions from Additional POV Commuting

	POLLUTANTS (TONS/YEAR)				
Source	***CO***	***VOC***	***NO_x***	***SO_x***	***PM_{10}***
Commuting	56.5	8.4	5.6	< 0.1	0.3

It is expected that these additional emissions due to POV commuting would not result in any long-term impacts on the air quality of Pima County or AQCR 015.

4.4.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to air quality in the AQCR associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.4.2.1. Potential impacts to air quality as a result of the No Action Alternative would be minor.

4.5 NOISE

4.5.1 Methodology

Noise impact analyses typically evaluate potential changes to existing noise environments resulting from proposed construction and demolition activities. This consists of changes in noise levels or the exposed human population, as well as noise impacts on wildlife. Potential changes in the noise environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels), negligible (i.e., if the total area exposed to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased exposure of sensitive receptors to unacceptable noise levels).

4.5.2 Impacts

4.5.2.1 PROPOSED ACTION

Vehicles and equipment involved in demolition, facility construction, and finishing work would generate the primary noise from the Proposed Action. Table 4.5-1 illustrates the anticipated noise levels at selected distances from typical equipment operating at a construction site. Noise levels at a distance of 50 feet range from 75 to 89 dBA and from 66 to 79 dBA at 200 feet. At 500 feet this range decreases to 59 to 73 dBA.

Table 4.5-1. Heavy Equipment Noise Levels at Selected Distances

Equipment Type[1]	*Number Used*[1]	*Generated Noise Levels, L_p (dBA)*[1] *50 feet*	*Generated Noise Levels, L_p (dBA)*[1] *200 feet*	*Generated Noise Levels, L_p (dBA)*[1] *500 feet*
Bulldozer	1	88	76	68
Backhoe (rubber tire)	1	80	73	65
Front Loader (rubber tire)	1	80	72	64
Dump Truck	1	75	67	59
Concrete Truck	1	75	66	59
Concrete Finisher	1	80	71	64
Crane	1	75	67	59
Flat-bed Truck (18 Wheel)	1	75	66	59
Scraper	1	89	80	73
Trenching Machine	1	85	70	70

Note: 1. Estimated, based on typical construction scenario
Source: American Industrial Hygiene Association 1986

Residents within and surrounding the construction and demolition areas would be exposed to noise from redevelopment activities. Figure 4.5-1 shows portions of the existing SOQ and Sonoran Vista housing areas (adjacent to redevelopment areas), two schools, and a nearby off-base neighborhood to the east and north that fall within selected distances from the margins of the redevelopment area. Residents, students, and teachers may experience interruptions when talking and communicating while equipment is operating, since normal speech is about 65 dBA at a distance of 3 feet (see Figure 3.5-1). Noise levels for operating equipment in Table 4.5-1 are generally higher within 200 feet, and would be louder than ordinary speech. The resulting noise may cause inconvenience or some annoyance, but it would be temporary and intermittent over the next few years, and not result in long-term impacts. Construction activities would be expected to occur between 7:30 a.m. and 4:30 p.m., therefore, most individual's sleeping hours would not be affected.

Noise levels from existing aircraft operations in the vicinity of the proposed projects would not change and would continue to dominate the average noise levels experienced over a typical 24-hour period surrounding the airfield. As shown in Figure 3.5-2, some of the existing housing units fall within the 65 dB noise contour. DMAFB would work with the developer to ensure that newly constructed housing units would be reconfigured such that none of the units fall within this noise zone, or if some do, noise attenuation practices would be implemented into the design of any units that fall within this noise zone.

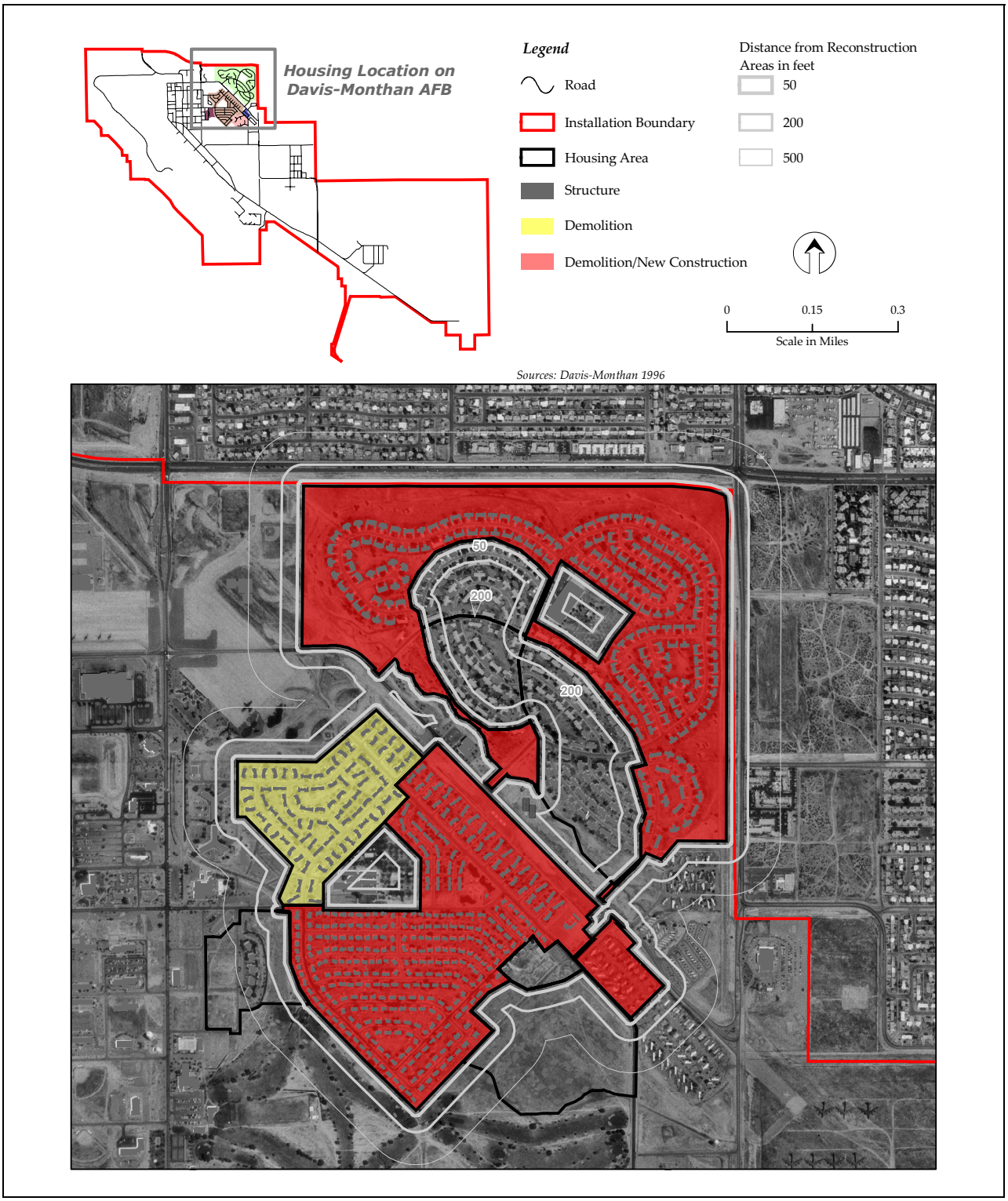

Figure 4.5-1. Locations Around Proposed MFH Redevelopment Area Affected by Noise – Distance Zones (feet)

4.5.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to the acoustic environment associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.5.2.1. Potential impacts to the acoustic environment as a result of the No Action Alternative would be minor.

4.6 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

4.6.1 Methodology

To assess the potential socioeconomic and environmental justice impacts of the Proposed Action, employment, race, ethnicity, poverty status and age characteristics of populations in the ROI were analyzed, as presented in Section 3.6.2. Potential socioeconomic impacts are assessed in terms of the direct effects of the proposal on the local economy and related effects on population and socioeconomic attributes. With regard to environmental justice issues, County figures are compared to State and national demographics to determine proportional differences.

4.6.2 Impacts

4.6.2.1 PROPOSED ACTION

The Proposed Action at Davis-Monthan AFB involves conveying 1,256 government-owned housing units from Kachina Village, Palo Verde, Sonora Vista, and SOQ to a private developer. The developer would demolish 936 housing units, renovate 123 units, and construct 609 new units. The construction of the new housing units would be distributed between Kachina Village and Palo Verde.

Under the Proposed Action, it is unlikely that the socioeconomic characteristics of the ROI would be substantially affected by the construction employment and income that would result under the Proposed Action. Construction accounts for 6 percent of total employment in 2005 and 8 percent of total earnings in 2003 (Arizona Department of Economic Security, Research Administration 2005). Given the phased approach to the project and simultaneous other MILCON projects, this would not result in a significant impact on employment or earnings in the area.

Military members and their families would be displaced during the construction and demolition phases of the project; however, this displacement would be temporary and they would be placed in new and or updated housing at the completion of each unit. According to

the proposed timeline, as many as 466 families could be displaced from on-base housing in 2008 and as few as 4 families could be displaced in 2012 (Table 2.4-3). Upon completion of the Proposed Action by 2013, Davis-Monthan AFB would have 327 fewer housing units. However the minimum requirement for housing on-base is 929 and under the Proposed Action the military is fulfilling its requirement to provide the necessary amount of housing. Vacancy rates between 7 percent and 9 percent indicate that housing in the community is available and it is likely that any displaced military members and their families would be able to obtain adequate housing (USCB 2003a; Reis, Inc 2005).

The Proposed Action would have no significant impact on specific minorities. The construction and demolition would take place in the Davis-Monthan AFB housing area where all groups of people would be equally affected. Minorities would not bear a disproportionate share of the impacts.

There are possible impacts on children. The two elementary schools located on-Base (Smith Elementary and Borman Elementary) are located in the center of the proposed construction and demolition areas. The movement of large trucks associated with proposed activities on residential streets and the construction sites themselves could pose safety hazards for children. However, precautions would be taken to ensure that construction sites are secured and children could not access them, and construction traffic would be regulated such that impacts to children would be minimized. Overall, impacts would be expected to be minor and temporary.

Overall there is no significant impact to socioeconomics or environmental justice as a result of implementing the Proposed Action.

4.6.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to socioeconomics and environmental justice associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, and described in Section 4.6.2.1. Potential impacts to socioeconomics and environmental justice as a result of the No Action Alternative would be minor.

4.7 SAFETY

4.7.1 Methodology

Impacts are assessed according to the potential to increase or decrease safety risks to personnel, the public, and property. Proposal-related activities are considered to determine if additional or

unique safety risks are associated with their undertaking. If any proposal-related activity indicated a major variance from existing conditions, it would be considered a safety impact.

4.7.2 Impacts

4.7.2.1 PROPOSED ACTION

Coordination would be required between the construction contractors and the Base prior to the implementation of construction activities. All activities and workers at the construction site would comply with OSHA standards and requirements, and would be required to conduct construction activities in a manner that would not pose any risks to personnel at or near the construction site. All materials and equipment would be used in accordance with industry and regulatory standards. All construction areas would be fenced to preclude public access. Given these measures, risks to personnel and the public would be minimized.

During construction and demolition periods, truck traffic would increase on roads in the family housing areas and near two elementary schools. This is potentially incompatible where pedestrian movement is commonplace, and where children may be walking or playing. Construction contractors would be required to develop a plan addressing traffic and safety concerns. The plan would identify haul routes through neighborhoods, set speed limits on construction-related vehicles, and define other protocols to ensure safety of residents and children. For example, construction traffic could avoid using roads that are drop-off or crossing locations for the two elementary schools during the times when children arrive and leave from school. Alternate access roads (for residents and/or construction traffic) would be defined in the plan. Also, appropriate detour and exit routes would be clearly signed on residential roadways to ensure unhindered access during emergencies.

Unused utilities (electric, gas, telephone, sewer, and communications) that were abandoned in the Falcon Court mobile home court will be removed.

Several safety considerations are not an issue for this action. None of the proposed redevelopment overlaps within QD arcs or safety zones around the runway, as shown on Figure 3.7-1, therefore, incompatible land use conditions are not an issue. Common construction tools would be used, but no explosive demolition would occur. No explosives would be used or handled during construction activities, and the project would not result in any change to day-to-day use of hazardous materials at the Base. The projects would not introduce any new standing water bodies or light sources that could pose concerns for aviation safety. Aircraft operations and maintenance activities which would be subject to OSHA regulations are not components of the Proposed Action. Therefore, aviation safety would not be affected by the Proposed Action.

Overall, the Proposed Action would not impact safety on Davis-Monthan AFB.

4.7.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts related to safety associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.7.2.1. Potential impacts related to safety as a result of the No Action Alternative would be minor.

4.8 HAZARDOUS MATERIALS AND HAZARDOUS AND SOLID WASTE

This section addresses potential consequences associated with hazardous materials and solid and hazardous waste management and implementation of the Proposed Action. The assessment focuses on how and to what degree the alternatives affect hazardous materials usage and management and solid and hazardous waste generation and management.

4.8.1 Methodology

Potential impacts related to hazardous materials and solid and hazardous wastes were considered based on the following criteria:

- Generation of solid and hazardous waste types or quantities that could not be accommodated by the current management system;
- An increased likelihood of an uncontrolled release of hazardous materials that could contaminate soil, surface water, groundwater, or air as a result of implementation of the Proposed Action;
- Potential for adverse health and safety impacts from the presence of ACBM and LBP in housing units; and
- Potential for ground-disturbing activities to impact ERP sites, as well as the potential for residential exposure if housing areas are placed in close proximity to these sites.

4.8.2 Impacts

4.8.2.1 PROPOSED ACTION

HAZARDOUS MATERIALS AND HAZARDOUS WASTE MANAGEMENT

New Davis-Monthan AFB housing units would be constructed utilizing normal residential construction methods, which would limit the use, of hazardous materials to the extent possible.

POL products and other hazardous materials (e.g., paints) would be used during construction/renovation activities, as necessary. These materials would be stored in the proper containers, employing secondary containment as necessary to prevent/limit accidental spills. All spills and accidental discharges of POLs, hazardous materials, or hazardous waste would be reported immediately. The Base Fire Department provides emergency response in case of a hazardous materials spill in accordance with the Hazardous Material Emergency Response Plan and RCRA Contingency Plan. Applicable spill response procedures are also detailed in the Davis-Monthan AFB *Hazardous Waste Management Plan* (USAF 2001).

Routine HHW, including batteries, fluorescent bulbs, pesticides, waste paint, pool chemicals, and used oil or other lubricants may be generated in the housing areas. Guidance information is provided on proper disposal of HHW which encourages residents to take their wastes to on-Base/off-Base collection centers for recycling and disposal. Used oil, filters, and greases may be disposed of at the Auto Skills Center. Hazardous wastes generated at the Housing Maintenance Facility or generated during construction activities would be managed according to established requirements and would be disposed through DRMO or other approved means.

Unless otherwise exempted by the Comprehensive Environmental Response, Compensation, and Liability Act regulations, RCRA Subtitle C (40 CFR Parts 260 through 270) regulations are administered by the USEPA and ADEQ and are applicable to the management of hazardous wastes. Hazardous waste must be handled, stored, transported, disposed of, or recycled in accordance with these regulations. Impacts to hazardous waste management would be considered significant if the federal action resulted in noncompliance with applicable federal and Arizona regulations or caused waste generation that could not be accommodated by current Davis-Monthan AFB waste management capacities.

No impacts from hazardous materials and hazardous wastes are expected as a result of implementation of the Proposed Action, as developers would adhere to respective requirements and there would be no increase in the quantity of hazardous waste generated at Davis-Monthan AFB as a result of this action.

ENVIRONMENTAL RESTORATION PROGRAM SITES

There is a single ERP site (SD-19) situated within the south and west edge of Palo Verde Village. As discussed in Section 3.8.2, the site is a drainage ditch located between the abandoned Runway 4 and Palo Verde Village in the northeast portion of the installation. Davis-Monthan AFB has determined that NFA is required at this site. A decision document supporting NFA was approved by the ADEQ. Additionally, construction/renovation activities associated with the Proposed Action would not impact this site since they would be located to the east, on disturbed areas currently occupied by Palo Verde housing units. Should any unusual odor, soil, or groundwater coloring be encountered during activities in any other areas, the Davis-Monthan AFB Environmental Flight would be contacted immediately. No impacts related to ERP issues are anticipated as a result of the Proposed Action.

ASBESTOS

As discussed in Section 3.8.2, the older housing units at Davis-Monthan AFB have been identified as having ACBM. Materials containing ACBM include floor tile, floor tile, adhesive, window caulk, and roofing material. AFI 32-1052, Facilities Asbestos Management, requires that when safety and budgetary considerations permit, complete removal of asbestos-containing material would be included in military construction program facility projects. Asbestos surveys (taking samples and obtaining analysis by a state-certified laboratory) would be performed prior to demolition to determine the location of all ACBM. If asbestos is found, the demolition contractor would perform any and all asbestos work in accordance with applicable laws. Contractor personnel would be appropriately trained and certified, as necessary. Also, the contractor would submit an Asbestos Work/Disposal Plan for the demolition. Transport and disposal documentation records, including signed manifests, would also be required. With these management requirements in effect, there would be no anticipated adverse impacts resulting from asbestos contamination from demolition of buildings. ACBM would not be employed for any new constructed units; therefore, there would be an overall beneficial result to residents upon the removal of potential exposure to ACBM.

LEAD-BASED PAINT

Materials containing LBP have been found in older housing units. Materials identified as containing LBP include interior baseboards, windowsills, metal doorframes, window frames, exterior wood trims, and soffits. LBP-containing materials do not have to be treated as hazardous waste as long as these materials are not removed from a structure prior to demolition. Prior to any renovation/demolition activities, the Environmental Flight would review all construction project programming documents, designs, and contracts. Projects requiring alteration or demolition of an existing housing structure would require LBP surveys. Project designs would stipulate the appropriate abatement and disposal requirements for LBP. With these management requirements met, there would be no anticipated adverse impacts as a result of implementation of the Proposed Action from LBP. LBP would not be employed for any new constructed units; therefore, there would be an overall beneficial impact to housing residents upon the removal of potential exposure to LBP.

PCBS

Electric power transformers located on power poles in Davis-Monthan AFB housing areas are currently PCB-free. PCBs may be contained within the ballasts of older fluorescent light fixtures installed in Davis-Monthan AFB housing units. In the event PCBs are discovered, they are turned in to the DRMO for proper disposal. Davis-Monthan AFB policy also specifies that housing contractors properly dispose of all hazardous materials, including fluorescent light ballasts, in accordance with 40 CFR 261 or ADEQ requirements. No PCB containing materials would be utilized during construction. Therefore, no adverse impacts associated with PCBs would occur as a result of implementation of the Proposed Action.

SOLID WASTE

Solid waste would be generated during demolition and construction of the proposed housing units. Non-hazardous solid waste includes construction and demolition debris such as removed building materials and land clearing debris. Materials such as wood and scrap metal and wiring must be disposed of at a Class III landfill (construction and demolition debris and yard waste) designated for this type of material. The developer would have the responsibility for hauling and disposal of vegetation waste produced from construction and demolition activities. Construction and demolition debris from Davis-Monthan AFB is typically disposed of at the Speedway Landfill (a landfill operated by the city of Tucson), although other landfills in the area are permitted to accept construction and demolition debris (USAF 2005b).

Construction and demolition waste would be recycled, especially wood and scrap metal/wiring, to the maximum extent possible. The amount of potential construction and demolition debris from the proposed housing activities would not be expected to create constraints on area landfills. Coordination of developers with all local county and private landfill operators prior to demolition or construction would minimize any potential impacts associated with disposal of construction and demolition debris. There would be no adverse impacts from solid waste expected as a result of implementation of the Proposed Action.

4.8.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts as a result of hazardous materials and hazardous and solid wastes associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.8.2.1. Potential impacts from hazardous materials and hazardous and solid wastes as a result of the No Action Alternative would be minor.

4.9 INFRASTRUCTURE

4.9.1 Methodology

System capacity and capability is the primary issue for transportation networks and utility services. Criteria for evaluating impacts to transportation and utility service include potential to disrupt, overload, and/or to permanently degrade of the resource, and consequently the level of service.

4.9.2 Impacts

4.9.2.1 PROPOSED ACTION

TRANSPORTATION

Implementation of the Proposed Action would not alter traffic circulation on most of the Base. Haul routes for proposed demolition and construction have not been established, but would be routed on the primary roads in and out of the Base and through family housing areas, to the extent possible. Access and circulation would be maintained through use of appropriate detours and signage. Construction truck traffic and construction workers commuting to the project sites would generate minor increases in vehicle trips per day on Base roadways and increase congestion at the gates. The increased trips and additional heavy truck traffic mixed with smaller passenger vehicles may interrupt the flow of traffic on primary access roads, such as Craycroft and Wilmot Roads, and on haul roads in the family housing areas. At project sites, temporary lane closures may be necessary during demolition and construction activities. These impacts would be short-term and temporary, occurring only for the duration of the construction and demolition periods. Provisions for preventative measures described above would be detailed in a traffic/safety plan by the construction contractor.

Truck traffic could lead to degradation of road surfaces over an extended period of use, particularly on residential roads that are not designed for high volume and heavy truck traffic. If left unrepaired, degraded road surfaces may slow traffic and/or cause wear on government and privately-owned vehicles. Although inconvenient, these impacts are relatively minor.

Upon completion of the projects, just over 300 employees would commute to work (that currently live on Base). These trips would be distributed on several roadways, and likely through multiple access gates to the Base. Therefore, the increases on any given road would be minimal. These additional trips to work would be somewhat offset by a reduction in trips within the immediate local area around the Base for non-work related travel by these families. As they relocate within the City of Tucson, non-work trips, although not fewer, would be dispersed over a wider service area in the City of Tucson, causing no appreciable impact on the transportation network.

UTILITIES

Potable Water. Some water would be used during construction and demolition to control dust. Both reclaimed and hauled water could be used to reduce the demand on potable water supplies. At completion of the Proposed Action, there would be about 25 percent fewer family housing units on the Base. Given that family housing currently consumes about 20 percent of the Base's potable water, implementing the proposal could lower the Base's water consumption by about 5 percent. However, these families would live off-base and still consume water, most likely within the City of Tucson service area. Therefore, there would be no net change in domestic water consumption and withdrawals from local groundwater sources under the Proposed Action.

Wastewater. Under the Proposed Action, wastewater generated at Davis-Monthan may decrease by about 5 percent, based on the likely reduction in domestic water use. This would have no appreciable impact on Pima County treatment facilities and no adverse impacts are anticipated to wastewater facilities.

Storm Drainage System. Demolition and construction of housing units and other surfaces (roads, parking lots, and concrete pads) is not expected to result in an increase in paved or impervious surface on the Base. Therefore, the overall volume of storm water would not increase. Site design would need to address flow of storm water in the redeveloped areas into existing the storm water system. The SWPPP would be revised, if necessary, to address any physical modifications to the system. No impacts are expected to the storm drainage system as a result of implementation of the Proposed Action.

Electrical System. Under the Proposed Action, the MFH area would be taken off the Davis-Monthan AFB electrical grid. Associated with the action, an overall slight decrease in electrical use would be anticipated with fewer housing units and energy-conserving electrical appliances and equipment. It is possible that electrical service could be interrupted when new lines are connected into the existing distribution system. Localized outages may be a few hours in duration when new lines are being connected. To the extent possible, these outages should be timed to occur during hours when schools are closed so that heating and cooling systems are not affected. The overall demand for power would be likely to decrease under the Proposed Action; however, the net affect to the community would be negligible.

Heating and Cooling Systems. Under the Proposed Action, it is possible that the natural gas system would also be taken of the Davis-Monthan AFB network. With the implementation of the Proposed Action, there should be no increase in heating and cooling demands, and possible decreases from fewer housing units and installation of more efficient, new equipment. The overall demand for natural gas as a result of heating would be expected to decrease under the Proposed Action; however, the net affect to the community would be negligible.

Unused utilities (electric, gas, telephone, sewer, and communications) that were abandoned in the Falcon Court mobile home court will be removed.

4.9.2.2 NO ACTION ALTERNATIVE

Under the No Action Alternative, Davis-Monthan would, at a minimum, demolish 327 housing units. Additionally, in the near future under the No Action Alternative, Davis-Monthan AFB could implement a MILCON action that would involve virtually the same demolition and construction actions as described under the Proposed Action, only over a longer time period and through government appropriations rather than through privatization. Therefore, the impacts to infrastructure associated with the No Action Alternative would be either less than or roughly equivalent to those of the Proposed Action, as described in Section 4.9.2.1. Potential impacts to infrastructure as a result of the No Action Alternative would be minor.

5.0 CUMULATIVE IMPACTS AND IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

5.1 CUMULATIVE IMPACTS

Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the ROI. Cumulative impacts can result from individually minor, but collectively substantial, actions undertaken over a period of time by various agencies (federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed (or anticipated over the foreseeable future) is required.

Davis-Monthan AFB updates facilities on a continual basis, as necessary. While it is not practical to catalog all minor projects that could occur over the short-term, a list of the major projects in the ROI have been analyzed for the potential to create cumulative environmental impacts. Planning efforts in the ROI include the actions described within this EA, as well as others that are either ongoing or planned over the short-term. Additional projects within the ROI are discussed below.

5.1.1 Past, Present, and Reasonably Foreseeable Actions

Recently completed, ongoing, and proposed actions (in addition to those that are a component of this EA) at Davis-Monthan AFB include the following.

- Recently completed projects (USAF 2004a):
- Headquarters Interim Facility and Parking Lot for 563 RQG and 563 OSS (Building #3250)
- Headquarters Facility for 563 MXS
- Headquarters Facility for 79th RQS, Addition to Building #4851
- Headquarters Facility for 55th RQS, Addition to Building #4853
- Ongoing Projects (USAF 2004a):
- MFH Improvement MILCON. Initiated in 2004, this has a target completion of October 2005.

- Construction of new hangar and administrative offices for the 563 MXS. This will be a 2-bay hangar and associated shops for maintenance of the HH-60 aircraft. The hangar will be approximately 26,000 square feet.

- Construction of new 55th RQS Facility.

- Mobility Readiness Spares Package Warehouse Facility. This will be a new facility for storing spare parts for CSAR associated aircraft. The facility will be approximately 12,000 square feet.

- Planned projects for the foreseeable future include (USAF 2004a):

- Construction of permanent headquarters facility for the 563 RQG and 563 OSS.

- Bentsen Tank Storage Facility expansion for the 563 MXS. This would include the storage of four HC-130 removable fuel tanks and would be an expansion to the building of approximately 4,000 square feet.

- Expansion of Building 4853 for the 79th RQS (pending relocation of 55th RQS into new facility).

- Construction of new 48th RQS storage facility.

- Construction of new 48th RQS headquarters facility.

In addition, the following projects have been evaluated in an EA as part of the WINDO plan for Davis-Monthan AFB (2005). The WINDO is a plan designed to identify construction and demolition projects proposed for improving the physical infrastructure and functionality of Davis-Monthan AFB and is ACC's initiative to improve the facility planning process. The WINDO consists of the following proposed projects.

- *Construct Desert Lightning City.* Would provide an expeditionary exercise area that would give trainees practice in setting up "military cities" for wartime operations.

- *Expand Communications Infrastructure.* Would expand the communications infrastructure into the Desert Lightning City project area for future development purposes. There is currently no communications infrastructure into this area.

- *Construct Recycle Facility.* The existing recycling facility is being demolished because it is not compatible with existing adjacent functions.

- *Construct SFS Mobility Facility.* The SFS is being displaced by the CSAR expansion into existing facility; and will therefore need a new facility.

- *Construct Roads and Parking Lot, Site 5.* New parking necessary to comply with AT/FP requirements.

- *Construct Addition to CATM Facility.* CATM requires larger facility based on current needs.

- *Construct AMARC Aircraft Hangar.* There is currently no existing, dedicated hangar to support aircraft as large as the KC-135. Work is conducted outdoors, which is not particularly efficient.

- *Construct Consolidated Packing and Crating Center.* The function exists across seven facilities. This one facility would consolidate these functions under one roof, increasing efficiency.

- *Make Modifications to FAMCamp.* The existing FAMcamp does not provide enough recreational vehicle camping opportunities for the large military community that visits Tucson in the winter.

- *Construct Youth Center.* The Youth Center has been occupying the Open Recreation Center. New facility would leave the existing facility for its intended purpose.

- *Construct Shopette Addition.* The addition would include amenities such as drive-through food vendor and gas pumps.

- *Construct Transfer Line to Pumphouse.* The purpose of the line is to supply Pump House 202 with JP-8 fuel.

- *Construct Grounds Product Storage.* This would consist of two 12,000- to 15,000-gallon aboveground storage tanks that would supply unleaded and diesel fuel, thereby adding necessary capacity.

- *Extend JP-8 Header Line.* Adding the necessary plumbing to existing fuel pumps so that fuel delivery capacity would be increased.

- *Construct Secondary Containment at Pump Houses.* Installation of a 4- to 6-inch berm around the existing filter separator concrete slabs, to ensure containment should a spill occur.

- *Construct Liquid Oxygen Facility.* The Combat Rescue Group Squadron Operations facility is displacing this facility, and therefore it must be relocated.

- *Construct New Health and Wellness Center.* The current facility is going to be demolished due to its dilapidated condition, thereby requiring a new facility to house this function.

- *Construct Sim Tower Parking Lot, Lavatory, and Break Room.* Replacement of the existing gravel parking lot and construction of break room and restrooms.

- *Construct Parking Lot at Building 1440 (Phase Dock).* Gravel parking lot would be paved (with asphalt) to support 200 parking spots.

- *Construct CATM Jogging Trail (Rails to Trails).* Railroad track would be converted to a 5-to 6-mile running trail to provide additional physical training opportunities in support of combat readiness.

- *Construct Helicopter Landing Pad for HH-60s.* The existing helipad violates airfield clearance criteria and produces a foreign object damage issue with the F-16 aircraft. This project would eliminate that violation.

- *Construct EC-130 Hangar.* The existing hangar was transferred to the CSAR mission, and therefore leaves this mission without a hangar.

- *Construct Education Center*. The Education Center would provide for the academic and professional development of officers, airmen, and civilian employees in support of USAF and national goals.

The projects listed above, as well as the projects analyzed within this EA, have all been coordinated through the Base Community Planner, and have all been incorporated into the Base Master Plan. The projects listed above have either already gone through the NEPA process, or are currently undergoing NEPA analysis.

As an active military installation, Davis-Monthan AFB undergoes changes in mission and training requirements in response to defense policies, current threats, and tactical and technological advances, and as such, requires new construction, facility improvements, infrastructure upgrades, and ongoing maintenance and repairs on a continual basis. As additional requirements surface, future NEPA analysis will be conducted, as necessary.

5.1.2 Analysis of Cumulative Impacts

Earth Resources. In addition to the approximately 285 acres of surface disturbance anticipated over the course of the seven-year construction program associated with the redevelopment of the MFH area, an additional amount of surface disturbance could result from recently completed, on-going, and future construction at Davis-Monthan AFB. The grading of existing soil and placement of structural fill for new facilities would not substantially alter existing soil conditions at the Base, because to a large extent, the construction described above is planned for areas where surface disturbance has previously occurred. BMPs would be used to limit soil movement, stabilize runoff, and control sedimentation. Cumulative impacts to earth resources would be expected to be minimal.

Water Resources. While there would be a net decrease of impervious surface at Davis-Monthan AFB as a result of the MFH project, there would be an overall slight increase in impervious surface as a result of the projects described in Section 5.1.1. To a large extent, the construction described above is planned for areas that are largely impervious surface already, and therefore the increase would be minor. The Base would update their SWPPP to include all these projects, as appropriate. Under contract to the USAF, the individual contractors have obtained or will obtain, as appropriate, coverage under Construction General Permit AZG2003-001 for storm water. Adherence to the requirements of the Base's SWPPP and the permit would include implementation of BMPs to minimize the potential for exposed soils or other contaminants from construction activities to reach nearby surface waters. Cumulative impacts to water resources would be expected to be minimal.

Biological Resources. In general, the Proposed Action and the projects listed in Section 5.1.1 are at sites that are highly altered by man. There are no sensitive plant species known to occur on Base, and animal species that would be found in specific project areas are well adapted to the human environment. The Base would coordinate with AZGF regarding burrowing owls and cave myotis, should there be a need. Cumulative impacts to biological resources would be expected to be minimal.

Air Quality. In general, combustive and fugitive dust emissions from the proposed MFH project, as well as those activities described in Section 5.1.1, would produce localized, elevated air pollutant concentrations that would occur for a short duration and would not result in any long-term impacts on the air quality of Pima County (AQCR 015). Cumulative impacts to air quality in the County would be expected to be minimal.

Noise. Construction noise emanating off-site as a result of the MFH proposal and the activities described in Section 5.1.1 would probably be noticeable in the immediate site vicinity, but would not be expected to create adverse impacts. The acoustic environment on and near Davis-Monthan AFB is expected to remain relatively unchanged from existing conditions. Cumulative impacts from noise would be expected to be minimal.

Socioeconomics/Environmental Justice. There would be a minor decrease in Base population as a result of implementation of the MFH proposal, and no anticipated change as a result of the projects described in Section 5.1.1. Any decrease in Base population would be offset in the ROI by a relational increase in those residing off-Base in the neighboring Tucson community. These projects are not expected to create adverse environmental or health effects, and therefore no disproportionately high or adverse impacts to minority, low-income, or youth populations are expected. Cumulative impacts to socioeconomics and environmental justice would be expected to be minimal.

Safety. Implementation of the MFH project and the activities described in Section 5.1.1 do involve ground activities that may expose workers performing the required site preparation, grading, and building construction to some risk. Strict adherence to all applicable occupational safety requirements would minimize the relatively low risk associated with these construction

activities. All construction sites would be appropriately secured to ensure that children could not access the sites. All projects have been sited outside any QD arcs, as appropriate. Additionally, the proposed projects would include measures to enhance and correct AT/FP shortfalls as part of the facility designs. Cumulative impacts to safety would be expected to be minimal.

Hazardous Materials and Waste Management. The proposed construction and demolition projects associated with the MFH project, as well as those described in Section 5.1.1 would generate construction and demolition waste that would be recycled and/or taken to the local landfill, as appropriate. There are no capacity issues with the existing landfills. Hazardous materials and wastes would be handled, stored and disposed of in accordance with applicable regulations. Any ACBM, LBP, or contaminated soils associated with ERP sites would be removed and disposed of per applicable regulations. Cumulative impacts to hazardous materials and waste management would be expected to be minimal.

Infrastructure. The proposed construction and demolition projects associated with the MFH project as well as those described in Section 5.1.1 would result in some temporary interruption of utility services and minor hindrance of transportation and circulation during construction activities. These impacts would be temporary, occurring only for the duration of the construction period. In general, infrastructure at Davis-Monthan AFB would improve under these actions, as there would be some upgrades to existing and extensions to non-existent utilities. Cumulative impacts to infrastructure would be expected to be minimal.

5.2 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

NEPA CEQ regulations require environmental analyses to identify "...any irreversible and irretrievable commitments of resources that would be involved in the Proposed Action should it be implemented" (40 CFR Section 1502.16). Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame. Building construction material such as gravel and gasoline usage for construction equipment would constitute the consumption of non-renewable resources.

The Proposed Action would not have irreversible impacts because future options for using this site would remain possible. The vast majority of Davis-Monthan AFB is undeveloped, and the Proposed Action not substantially alter the amount of developed land on Base. The site could be used for alternative uses in the future, ranging from open space to urban development. No loss of future options would occur.

The primary irretrievable impacts of the Proposed Action would involve the use of energy, labor, materials and funds. Irretrievable impacts would occur as a result of construction, facility operation and maintenance activities. Direct losses of irretrievable resources from these activities would be inconsequential.

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McLaury, Janie. 2004. Chief, Community Relations. 355 WG/PA, Davis-Monthan AFB, Tucson, Arizona.

McNamara, Sheri L. 2004. Real Estate Specialist. 355 CES/Real Property (CERR), Davis-Monthan AFB, Tucson, Arizona.

Meyer, Jennifer. 2004-2005. Community Planner. 355 CES/CEC, Davis-Monthan AFB, Tucson, Arizona.

Miller, Dr. C.W. 2004-2005. EIAP Coordinator. 355 CES/CEVA, Davis-Monthan AFB, Tucson, Arizona.

Oden, Karen. 2004-2005. 355 CES/CEVR, Davis-Monthan AFB, Tucson, Arizona.

Pope, Josh. 2004. Planner. Arizona Planning Center. Tucson, Arizona.

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Shore, Kathryn. 2004-2005. 355 CES/CEVC, Davis-Monthan AFB, Tucson, Arizona.

Snow, Tim. 2004. Bat specialist. Arizona Game and Fish Department, Tucson, Arizona.

Thompson, John. 2004-2005. Chief, Environmental Flight. 355 CES/Environmental Quality Flight (CEV), Davis-Monthan AFB, Tucson, Arizona.

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APPENDIX A
INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTA PLANNING (IICEP)

Davis-Monthan AFB IICEP Distribution List

United States Environmental Protection Agency
Region 9
75 Hawthorne Street
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Phone: (415) 947-8000
Fax: (866) EPAWEST

The Honorable Janet Napolitano
Governor of Arizona
1700 West Washington
Phoenix, AZ 85007
Phone: (602) 542-4331
Fax: (602) 542-1381

Arizona Department of Agriculture
1688 West Adams
Phoenix, AZ 85007
Phone: (602) 542-4373

ADEQ Southern Regional Office
Attn: Assistant Director, David Esposito
400 W. Congress, Suite 433
Tucson, AZ 85701
Phone: (520) 628-6733
Toll free: (888) 271-9302
Fax: (520) 628-6745

Natural Resources Conservation Service
Tucson Service Center
4650 N Highway Drive
Tucson, AZ 85705-1914
Phone: (520) 887-4505 ext 4
Fax: (520) 888-1467

Arizona Water Protection Fund
c/o Department of Water Resources
Attn: Rodney Held
500 North Third Street
Phoenix, AZ 85004
Phone: (602) 417-2200 Ext. 7012
Fax: (602) 417-2423

Arizona Department of Water Resources
Tucson Active Management Area (AMA)
400 West Congress, Suite 518
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Fax: (520) 628-6759

Arizona Attorney General
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Office of the Attorney General
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1275 West Washington Street
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U.S. Bureau of Reclamation
Phoenix Area Office (PXAO)
2222 W. Dunlap Ave. Suite 100
Phoenix, AZ 85021
Phone: (602) 216-3999

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Regulatory Branch, Tucson Project Office
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Tucson, AZ 85707

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Tucson, AZ 85713

City of Tucson Dept of Urban Planning and Design
Roger Howlett
MacArthur Building
345 E. Toole
Tucson, AZ 85701

Town of Oro Valley Planning and Zoning
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11000 N. La Canada Drive
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Town of Marana Planning
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Tucson, AZ 85741

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150 W. Congress Street
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Arizona Department of Environmental Quality
Office of Administrative Council
Attn: Ed Ranger
1110 West Washington Street
Phoenix, AZ 85007

CITY OF TUCSON

DEPARTMENT OF URBAN PLANNING & DESIGN

October 3, 2005

Ms. Kate Bartz, Project Manager
Science Applications International Corporation
101 North Wilmot
Suite 400
Tucson, AZ 85711

RE: Environmental Assessment (EA) for Military Family Housing (MFH) Privatization Initiative for Davis-Monthan Air Force Base (AFB)

Dear Ms. Bartz:

The Department of Urban Planning has reviewed the Environmental Assessment (EA) for the above referenced project and appreciates the opportunity to provide comments. The scope of the project consists of conveying 1,256 housing units to a private developer, who will demolish 936 housing units that no longer meet requirements, construct 609 new units, and renovate 123 existing units. The proposed 929 MFH units required for the DM will be constructed in the existing MFH area.

The EA states: "The acoustic environment on and near Davis-Monthan AFB is expected to remain relatively unchanged from existing conditions, and will continue to be dominated by aircraft activities. Impacts from noise will not be significant." However, the Tucson *Land Use Code* indicates that some of the existing lots located at the south tip and along the southwest edge of the Kachina and Sonoran Village are within the Noise Control District A (NCD-A) as defined by the Airport Environs Zone (AEZ). NCD-A represents the geographic area encompassed by the 65 Ldn noise contour. The AEZ further requires sound attenuation to reduce interior noise level by twenty-five decibels, to 40-45 Ldn, per Development Standard 9-05-0 for all site–built residential uses within NCD-A. If homes on theses particular lots have been identified for demolition and reconstruction, it is recommended that the new construction comply with the sound attenuation development standard. A copy is attached for your reference.

Please be aware that the requirements specified by the AEZ are based on the recommendations of the Joint Land Use Study (JLUS) completed in February 2004. The JLUS process involved representatives of Federal, State, County and City government, property owners, the University of Arizona and Davis-Monthan and was fully supported by the U.S. Department of Defense. The purpose of the study and the subsequent zoning regulation was to ensure that development

around DM is compatible with current and future Base operations.

If you have any questions, please telephone our staff at 791-4505. Again, thank you for the opportunity to review the proposal and provide comment.

Sincerely,

Sarah More, AICP
Planning Administrator

cc. Mike Torriello
Civil Engineering Squadron
Davis-Monthan AFB

DEPARTMENT OF THE ARMY
LOS ANGELES DISTRICT, CORPS OF ENGINEERS
TUCSON PROJECT OFFICE
5205 EAST COMANCHE STREET
TUCSON, ARIZONA 85707

REPLY TO
ATTENTION OF:
Office of the Chief
Regulatory Branch

October 24, 2005

Ms. Kate L. Bartz
SAIC
2617 E. 7th Street
Tucson, Arizona 85716

File Number: 2005-00765-MB

Dear Ms. Bartz:

This is in response to your letter dated September 16, 2005 regarding the draft Environmental Assessment (DEA) for the 355th Wing's proposal regarding base housing at Davis Monthan AFB, Tucson, Pima County, Arizona.

We appreciate the opportunity to comment and request you accept these comments to the DEA for incorporation into the final EA. I apologize the comments are late; however, I was deployed to Texas for Hurricane Rita recovery and have just returned.

On February 15, 2005, I provided you with a letter stating the jurisdictional delineation of waters of the U.S. had expired and a new delineation is required. Therefore, the Corps does not concur that the delineation in the DEA is correct. Also, on page 4-2, under 4.2.1, paragraph 2, the DEA states that the Corps and ADEQ have adopted EPA's applicable environmental rules and regulations. I'm not sure exactly to what you refer; if you are referring to the Section 402 program, there has been a recent legal case which concluded that EPA's conversion of the program to ADEQ is illegal. This entire statement should be removed from the DEA or you should clarify specifically what is meant by this statement. The Corps has not "adopted" EPA's rules and regulations but is required to comply with 40 CFR 230 regarding Section 404(b)(1) requirements. In addition, this section regarding impacts to water resources and waters of the U.S. does not clearly impart exactly what the impacts are. It should definitively explain what, if any, waters of the U.S. are impacted and the source of those impacts.

Thank you for participating in our regulatory program. If you have questions, please contact me at (520) 584-1684.

Sincerely,

Marjorie E. Blaine
Senior Project Manager
Arizona Section, Regulatory Branch

Copy Furnished:
John E. Thompson, PE, RLS

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

October 18, 2005

Ms. Kate Bartz
c/o SAIC
2617 East 7th Street
Tucson, AZ 85716

Subject: Draft Environmental Assessment (DEA) for the proposed military family housing privatization initiative, Davis-Monthan Air Force Base

Dear Ms. Bartz:

The U.S. Environmental Protection Agency (EPA) has reviewed the above-referenced draft EA pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508), and Section 309 of the Clean Air Act. Our comments follow.

Air Quality

The DEA identifies two elementary schools located in the center of the proposed construction and demolition areas. EPA is concerned about health impacts to children from construction-related air pollutant emissions, including Diesel Particulate Matter (DPM) and other mobile source air toxics (see http://www.epa.gov/otaq/toxics.htm). The air quality analysis did not address toxic hot spots or the health impacts from DPM. EPA recommends the Air Force address these impacts in the final EA, and include specific mitigation that will be required to minimize exposure by children.

EPA recommends including a Construction Emissions Mitigation Plan for fugitive dust and DPM in the Final EA. The following mitigation measures should be included to reduce impacts from particulate matter and other toxics from construction-related activities:

- Locate diesel engines, motors, and equipment staging areas as far as possible from the elementary schools and residential areas.
- Phase construction/demolition, so that construction/demolition of homes nearest the elementary schools occurs when schools are not in session (e.g., summer).
- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. Control technologies such as particle traps control approximately 80 percent of DPM. Specialized

catalytic converters (oxidation catalysts) control approximately 20 percent of DPM, 40 percent of carbon monoxide emissions, and 50 percent of hydrocarbon emissions.

- Ensure that diesel-powered construction equipment is properly tuned and maintained, and shut off when not in direct use. Prohibit engine tampering to increase horsepower, except when meeting manufacturer's recommendations.
- Require the use of low sulfur diesel fuel (<15 parts per million sulfur) for diesel construction equipment, if available.
- Reduce construction-related trips of workers and equipment, including trucks. Develop a construction traffic and parking management plan that minimizes traffic interference and maintains traffic flow.
- Lease or buy newer, cleaner equipment (1996 or newer model), using a minimum of 75 percent of the equipment's total horsepower.
- Use lower-emitting engines and fuels, including electric, liquefied gas, hydrogen fuel cells, and/or alternative diesel formulations.
- Implement the following Fugitive Dust Source Controls:
    - Stabilize open storage piles and disturbed areas by covering and/or applying water or chemical/organic dust palliative, where appropriate, to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
    - Install wind fencing and phase grading operations where appropriate, and operate water trucks for surface stabilization under windy conditions.
    - When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Additionally, since demolition will include older housing units with asbestos-containing floor tile, adhesive, window caulk, and roofing material (p. 4-18), the final EA should identify specific mitigation measures that will be taken to avoid accidental release of friable asbestos during the project, in compliance with the National Emissions Standards for Hazardous Air Pollutants (NESHAPs) program (40 CFR Part 61). Mitigation should include a clearance program to reduce human health risks at the site after demolition activities are completed. The Air Force is also subject to state and local air pollution control agencies' asbestos removal requirements which may be stricter. The final EA should identify these agencies and requirements.

Groundwater

The DEA states that the depletion of local aquifers is a concern in the region due to the high level of extraction and low recharge rates (p. 3-5). While the project will result in a reduction of housing units on base, which will reduce consumption, it is likely that users will relocate locally in areas utilizing the same aquifer. The family housing area is the largest consumer of water on the base, yet water conservation is not addressed in the DEA. Because of the significant groundwater depletion of the aquifer, it is important to incorporate all available water conservation measures into the design of the housing units. These water conservation

measures should include low-flow plumbing fixtures such as low-flush toilets, low-flow showerheads, faucet aerators, and water pressure reduction.

Also, landscaping can be one of the largest uses of water in residential areas. The DEA indicates that xeriscaping principles will be used in landscaping. EPA recommends housing plans also incorporate rainwater barrels or cisterns for collecting roof runoff for landscape irrigation use. According to a recent article, the roof on a 2,000-square-foot home can capture about 15,000 gallons of water per year in Tucson.[1] The City of Tucson's Water Harvesting Guidance manual is a useful resource. This document can be accessed at: http://dot.ci.tucson.az.us/stormwater/education/whm.pdf.

Impervious surfaces

While the amount of impervious surfaces will decrease as a result of the project, cumulative impervious surfaces will increase when considering other planned projects on the base (p. 5-5). The DEA states that up to 250 acres would be redeveloped, but depending on density, as few as 100 acres may be used for the new units. EPA recommends a higher density design be used to maintain or reduce cumulative impacts from impervious surfaces. Additionally, stormwater treatment structures such as bioretention areas, infiltration trenches or basins, or filter strips should be incorporated into the housing development design to minimize transport of pollutants to waters.

Green Building

The Air Force should incorporate green building principles into all new housing development. The City of Scottsdale's Green Building Rating Worksheet, available at http://www.scottsdaleaz.gov/greenbuilding/GBChecklist2005.pdf, provides an excellent resource for green building construction in the Sonoran Desert environment. The checklist provides specifications that address the building envelope, heating, cooling and ventilation systems, electrical power, lighting, appliances, plumbing systems, roofing, exterior and interior finishes, floors, pools and spas, and solid waste.

At a minimum, the Air Force should commit to building Energy Star qualified homes, independently verified to be at least 30% more energy efficient than homes built to the 1993 national Model Energy Code. Energy savings are achieved through building envelope upgrades, high performance windows, controlled air infiltration, upgraded heating and air conditioning systems, tight duct systems, and upgraded water-heating equipment. Energy Star also encourages the use of energy-efficient lighting and appliances, as well as features designed to improve indoor air quality. Information on Energy Star qualified new homes can be found at: http://www.energystar.gov/index.cfm?c=new_homes.hm_index.

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[1] B. Poole, "Diverting rainwater to nourish your yard," Tucson Citizen, July 21, 2005. Available: http://www.tucsoncitizen.com/index.php?page=local&story_id=072105a1_water_harvesting

We appreciate the opportunity to review this Draft EA. When the Final EA is released for public review, please send one copy to the address above (mail code: CED-2). If you have any questions, please contact me or Karen Vitulano, the lead reviewer for this project. Karen can be reached at 415-947-4178 or vitulano.karen@epa.gov.

Sincerely,

Duane James, Manager
Environmental Review Office
Communities and Ecosystems Division

DEPARTMENT OF ENVIRONMENTAL QUALITY
150 West Congress Street
Tucson, Arizona 85701-1317

Ursula Kramer
Director

(520) 740-3340
FAX (520) 882-7709

October 14, 2005

Kate L. Bartz, Project Manager
Science Applications International Corporation
101 North Wilmot, Suite 400
Tucson, AZ 85711

RE: Draft Environmental Assessment for the 355th Wing at Davis Monthan Air Force Base, AZ

Dear Ms. Bartz:

Thank you for the opportunity to comment and offer suggestions regarding the project for the proposed military housing privatization initiative at the 355th Wing of Davis Monthan AFB, Arizona. The project activities that Pima County Environmental Quality (PDEQ), permits and enforces are:

1. Air Quality Activity Operating Permit

Pima County Code (P.C.C.) Title 17 requires Air Quality Activity Operating Permits for Road Construction, Trenching and Landclearing/Earthmoving over threshold amounts. A permit must be obtained prior to starting the activity.

2. Fugitive Emissions

Measures must be in place to control fugitive dust generated at the project. Dust control is required twenty-four hours a day, seven days a week. This includes a 20% opacity standard.

P.C.C. Title 17 applies to your project:

17.16 Emission Limiting Standards
Article II. Visible Emission Standard
Article V. Emissions from New and Existing Portable Sources

3. Asbestos/NESHAP (National Emissions Standards for Hazardous Air Pollutants)

This project will be subject to the asbestos National Emission Standards for Hazardous Air Pollutants (NESHAP). As a NESHAP facility, the project will require compliance with Title 40, Part 61, Subpart M, of the Code of Federal Regulations National Emissions Standards for

Asbestos. A NESHAP Notification must be submitted to PDEQ at least ten days prior to starting demolition or renovation and PDEQ Asbestos Renovation and Demolition Permits will be required. NESHAP Permits are effective for one year after the issuance date. They can be applied to a phased project, provided advanced notice is given prior to the commencement of each phase. If you have questions regarding the NESHAP requirements you may contact Doug LaGrange, PDEQ Asbestos/NESHAP Coordinator at (520) 740-3355 or e-mail him at: douglas.lagrange@deq.pima.gov.

4. Arizona Pollutant Discharge Elimination System

Based on the scope of proposed activity, coverage under the Arizona Pollutant Discharge Elimination System (AZPDES) Construction General Permit may be necessary. This is a requirement if the area disturbed is one acre or greater. A Notice of Intent must be submitted to ADEQ.

Pima County Code Title 17 is available for your reference on our WEBSITE at: WWW.DEQ.PIMA.GOV. If you have questions regarding permits and compliance, you may contact Business Assistance, at (520) 740-3340. Once again, thank you for the opportunity to comment.

Sincerely,

Ursula Kramer

Ursula Kramer
Director

SWPPP	Storm Water Pollution Prevention Plan
TPY	tons per year
TRPH	Total recoverable petroleum hydrocarbon
TSCA	Toxic Substances Control Act
U.S.	United States
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USC	United States Code
USCB	United States Census Bureau
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
VOC	volatile organic compound
WINDO	Wing Infrastructure and Development Outlook
WSCA	Wildlife of Special Concern in Arizona