Environmental Assessment of the Privatization of Military Family Housing Fairchild Air Force Base, Washington

Headquarters Air Mobility Command

May 2006

Report Documentation Page

Form Approved
OMB No. 0704-0188

1. REPORT DATE	2. REPORT TYPE	3. DATES COVERED
26 MAR 2007		**00-00-2007 to 00-00-2007**

4. TITLE AND SUBTITLE	5a. CONTRACT NUMBER
Environmental Assessment of the Privatization of Military Family Housing, Fairchild Air Force Base, Washington	5b. GRANT NUMBER
	5c. PROGRAM ELEMENT NUMBER
6. AUTHOR(S)	5d. PROJECT NUMBER
	5e. TASK NUMBER
	5f. WORK UNIT NUMBER
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) **e2M Inc,4215 Walney Road, Suite 4,Chantilly,VA,20151**	8. PERFORMING ORGANIZATION REPORT NUMBER
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)	10. SPONSOR/MONITOR'S ACRONYM(S)
	11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT
Approved for public release; distribution unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The USAF operates and maintains approximately 104,000 family housing units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require major improvement or replacement. The lack of adequate military family housing (MFH) forces many military members and their families to live in housing in need of repair, renovation or replacement, or to live off-base where the cost and quality of housing vary considerably. Congress enacted the Military Housing Privatization Initiative as part of the National Defense Authorization Act for Fiscal Year 1996 to create alternative authorities for improvement and construction of MFH. Consistent with the USAF Housing Privatization Program, Fairchild AFB proposes to convey its MFH units, grant leases of land and convey land, and transfer responsibility for providing housing to a private developer. Fairchild AFB currently has a total of 1,319 MFH units: 1,077 are on-base, and 242 are offbase. Under the Proposed Action, approximately 80 acres of land would be leased to the private developer for 8 years, 212 acres of land would be leased to the private developer for 50 years, and 84 acres would be conveyed to the private developer. The private developer might also have the option of an additional 52 acres of land under the 50-year lease (Housing Maintenance Office and an undeveloped parcel), depending on the proposed use of that land. Of the 1,077 units on Fairchild AFB, 575 would be demolished, 481 would be renovated, and 21 would convey in their current condition. In addition, 94 new MFH units would be constructed on Fairchild AFB at a location to be proposed by the private developer. MFH units at Geiger Heights (226 units) and Cheney (16 units) would be entirely conveyed to the private developer and would no longer be used for MFH. A total of 596 MFH units would be left in the Fairchild AFB inventory after 8 years. An EA evaluating the Proposed Action and alternatives, including the No Action Alternative, aids in determining whether an Environmental Impact Statement is needed. Resources considered in the impact analysis are noise, land use, air quality, safety, geological resources, water resources, biological resources cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and infrastructure. The EA was made available to the public upon completion.

15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT **unclassified**	b. ABSTRACT **unclassified**	c. THIS PAGE **unclassified**	**Same as Report (SAR)**	**220**	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std Z39-18

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

ENVIRONMENTAL ASSESSMENT (EA) OF THE PRIVATIZATION OF MILITARY FAMILY HOUSING, FAIRCHILD AIR FORCE BASE, WASHINGTON

INTRODUCTION

The U.S. Air Force (USAF) operates and maintains approximately 104,000 family housing units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require major improvement or replacement. The lack of adequate military family housing (MFH) forces many military members and their families to live in housing in need of repair, renovation, or replacement, or to live off-base where the cost and quality of housing vary considerably. Congress enacted the Military Housing Privatization Initiative as part of the National Defense Authorization Act for Fiscal Year 1996 to create alternative authorities for improvement and construction of MFH.

Consistent with the USAF Housing Privatization Program, Fairchild Air Force Base (AFB) proposes to convey its MFH units, grant leases of land and convey land, and transfer responsibility for providing housing and ancillary supporting facilities to a private developer. An Environmental Assessment (EA) has been prepared in accordance with the National Environmental Policy Act (NEPA) and the *Environmental Impact Analysis Process* (32 Code of Federal Regulations [CFR] Part 989). The EA is incorporated by reference into this Finding of No Significant Impact (FONSI).

PURPOSE OF AND NEED FOR THE PROPOSED ACTION

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Fairchild AFB. The action is needed to provide affordable, quality housing and ancillary facilities to military members and their families through replacement and renovation of existing family housing units so that they meet current USAF standards.

DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

Proposed Action. Under the Proposed Action, all MFH units and land and the Housing Maintenance Office would be transferred to a private developer either by a 50-year lease or conveyance. Of the 1,077 units on Fairchild AFB, some would be demolished, some would be renovated, and some would convey in their current condition. In addition, some new MFH units would be constructed on Fairchild AFB at a location that would be proposed by the private developer. MFH units at Geiger Heights (226 units) and Cheney (16 units) would be entirely conveyed to the private developer and would no longer be used for MFH. A total of 641 MFH units would be left in the Fairchild AFB inventory after 8 years. An optional parcel (approximately 50 acres, undeveloped) and the Housing Maintenance Office (2 acres) might also be included in the 50-year lease if the private developer proposes an acceptable use for this land. Further environmental analysis would occur if and when that land is conveyed to study the impact of the Proposed Action. The Proposed Action is the preferred alternative.

Alternative A. Under Alternative A, the Maximum Construction Alternative, all 1,077 MFH units on Fairchild AFB would be demolished and 641 new MFH units would be constructed. The Maximum Construction Alternative is a maximum-impact scenario.

Alternative B. Under Alternative B, the Maximum Renovation Alternative, 436 MFH units on Fairchild AFB would be demolished and 641 MFH units would be renovated. The Maximum Renovation Alternative presents a scenario with fewer impacts than the Maximum Construction Alternative.

No Action Alternative. Under the No Action Alternative, Fairchild AFB would not implement the Proposed Action but would continue to provide for the MFH needs of its personnel through use of traditional military maintenance and construction procedures. Fairchild AFB would continue to obtain funding for MFH through the Congressional authorization and appropriations process. Based on historical trends, it is assumed that the amount of Congressional funding for family housing would not change and that the housing maintenance backlog would continue to increase. Any major changes to existing housing or construction of new housing would require that appropriate NEPA analyses be completed before implementing such actions.

SUMMARY OF ANTICIPATED ENVIRONMENTAL IMPACTS ASSOCIATED WITH THE PROPOSED ACTION

Proposed Action. On base, short-term direct minor adverse effects resulting from construction and demolition activities would occur on the noise environment, air quality, safety, geological resources, water resources, biological resources, infrastructure (transportation and production of municipal solid waste), and hazardous materials and wastes. Adverse effects associated with construction activities would be localized to the immediate area of construction and would subside following the end of construction in that area. Short-term indirect minor beneficial effects on socioeconomics would also occur on the local community from construction costs; however, expenditures associated with construction are only short-term and would have no long-lasting community benefits.

On base, long-term direct minor beneficial effects on land use, safety, and infrastructure (utilities) would be expected from reduction of housing density. Long-term minor adverse effects would be expected on socioeconomics resulting from loss of impact aid, primarily in the Medical Lake School District.

At the off-base Geiger Heights and Cheney MFH, no direct or indirect effects on noise, land use, air quality, geological resources, water resources, biological resources, socioeconomics, infrastructure, or hazardous materials and waste management would occur under the Proposed Action. The housing units and base-owned infrastructure and utilities would be conveyed to a private developer and the land would continue to be used as it has been in the past, as a residential neighborhood. Beyond the conveyance of the land to the private developer, any actions taken in the future would be up to the developer and local building authorities. Spokane County and the City of Cheney would provide police, fire, and emergency medical service to Geiger Heights and Cheney, respectively.

No direct or indirect effects on cultural resources or environmental justice would be expected at the on- or off-base MFH units.

Alternative A. Environmental consequences under Alternative A would be similar to those described under the Proposed Action. Generally, effects would be considered more adverse because there would be more demolition and more construction of new MFH units. However, the environmental effects would not be significant.

Alternative B. Environmental consequences under Alternative B would be similar to those described under the Proposed Action. Generally, effects would be considered less adverse because there would be less demolition and more renovation of existing MFH units. The environmental effects would not be significant.

No Action Alternative. Under the No Action Alternative, there would be no effects on noise, air quality, safety, geological resources, water resources, biological resources, cultural resources, and hazardous materials and wastes because there would be no change from the baseline conditions.

Long-term minor adverse effects could occur on land use, especially in the Geiger Heights and Cheney areas as a result of continued nonuse or reduced use of those properties for residential purposes. Such idle properties would be susceptible to taking on the appearance of blight and, thereby, have the potential to affect decisions of adjacent owners in developing their properties. Long-term minor adverse effects on infrastructure might also occur from the No Action Alternative. Existing infrastructure would continue to degrade in the older on-base MFH units with repairs as needed. Infrastructure at Geiger Heights and Cheney would deteriorate from nonuse and lack of maintenance. Long-term minor adverse effects on socioeconomics and quality of life would also occur from deteriorating on-base MFH. Minor adverse effects on quality of life would not arise at the Geiger Heights and Cheney areas unless those areas were once again actively used for MFH. Vacant housing at Geiger Heights and Cheney could invite vandalism and consequent loss in economic value as a result of property damages.

PUBLIC REVIEW AND INTERAGENCY COORDINATION

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP) was initiated on January 14, 2005, for a 30-day comment period. Two comments were received and incorporated into the EA. A Notice of Availability for the EA was published on March 4, 2006, in the *Spokesman-Review*, initiating a 30-day public review. The EA was made available in the Spokane County Public Library. No comments were received.

FINDING OF NO SIGNIFICANT IMPACT

I conclude that the environmental effects of the proposed privatization of MFH at Fairchild AFB are not significant, that preparation of an Environmental Impact Statement is unnecessary, and that a FONSI is appropriate. The preparation of the EA is in accordance with NEPA, Council on Environmental Quality regulations, and 32 CFR Part 989, as amended.

Ronald R. Daniels

RONALD R. DANIELS
Deputy Base Civil Engineer

26 Mar 07
Date

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
µg/m^3	micrograms per cubic meter
92 ARW	92d Air Refueling Wing
92 CES/CEF	92d Civil Engineer Squadron's Fire and Emergency Services Flight
ACM	asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFPD	Air Force Policy Directive
AGE	aerospace ground equipment
AICUZ	Air Installation Compatible Use Zone
AMC	Air Mobility Command
AOZ	Airport Overlay Zones
APE	Area of Potential Effect
AQCR	air quality control region
AST	aboveground storage tanks
BAH	Basic Allowance for Housing
BMP	best management practice
C&D	construction and demolition
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CY	Calendar Year
dB	decibels
dBA	A-weighted sound level measurements
DNL	Day-Night Average A-weighted Sound Level
DOD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EO	Executive Order
ERP	Environmental Restoration Program
ESA	Endangered Species Act
EWNII	Eastern Washington–Northern Idaho Interstate
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulations
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
FY	Fiscal Year
GOV	government-owned vehicle
gpd	gallons per day
HPA	Hydraulic Project Approval
HRO	Highest Ranked Offeror
HRMA	Housing Requirements and Marketing Analysis
HUD	Housing and Urban Development
HVAC	heating, ventilation, and air conditioning
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
kV	kilovolt

Continued on inside back cover →

← *Continued from inside front cover*

LBP	lead-based paint
MCL	maximum contaminant level
MFH	military family housing
mg/m^3	milligrams per cubic meter
MHPI	Military Housing Privatization Initiative
MSL	mean sea level
MSW	municipal solid waste
NAAQS	National Ambient Air Quality Standards
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
Pb	lead
pCi/L	picoCurie per liter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
ppb	parts per billion
POL	petroleum, oils, and lubricants
POV	privately owned vehicle
ppm	parts per million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
ROD	Record of Decision
ROI	Region of Influence
SCAPCA	Spokane County Air Pollution Control Authority
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SMA	Shoreline Management Act
SO_2	sulfur dioxide
SWPPP	Storm Water Pollution Prevention Plan
TCE	trichloroethylene
TMDL	Total Maximum Daily Load
tpy	tons per year
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compounds
WAC	Washington Administrative Code
WDFW	Washington Department of Fish and Wildlife
WDOE	Washington State Department of Ecology
WNHP	Washington Natural Heritage Program

COVER SHEET

ENVIRONMENTAL ASSESSMENT OF THE PRIVATIZATION OF MILITARY FAMILY HOUSING, FAIRCHILD AIR FORCE BASE, WASHINGTON

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Mobility Command (AMC), Scott Air Force Base (AFB), Illinois, and Fairchild AFB, Washington

Affected Location: Fairchild AFB, Geiger Heights, Cheney, Spokane County, Washington

Proposed Action: Privatization of Military Family Housing at Fairchild AFB

Report Designation: Environmental Assessment (EA)

Written comments and inquiries regarding this document should be directed to Mr. Gerald Johnson, 92 CES/CEV, 100 W. Ent Street, Suite 155, Fairchild AFB, WA 99011-9688.

Abstract: The USAF operates and maintains approximately 104,000 family housing units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require major improvement or replacement. The lack of adequate military family housing (MFH) forces many military members and their families to live in housing in need of repair, renovation, or replacement, or to live off-base where the cost and quality of housing vary considerably. Congress enacted the Military Housing Privatization Initiative as part of the National Defense Authorization Act for Fiscal Year 1996 to create alternative authorities for improvement and construction of MFH.

Consistent with the USAF Housing Privatization Program, Fairchild AFB proposes to convey its MFH units, grant leases of land and convey land, and transfer responsibility for providing housing to a private developer. Fairchild AFB currently has a total of 1,319 MFH units: 1,077 are on-base, and 242 are off-base. Under the Proposed Action, approximately 80 acres of land would be leased to the private developer for 8 years, 212 acres of land would be leased to the private developer for 50 years, and 84 acres would be conveyed to the private developer. The private developer might also have the option of an additional 52 acres of land under the 50-year lease (Housing Maintenance Office and an undeveloped parcel), depending on the proposed use of that land. Of the 1,077 units on Fairchild AFB, 575 would be demolished, 481 would be renovated, and 21 would convey in their current condition. In addition, 94 new MFH units would be constructed on Fairchild AFB at a location to be proposed by the private developer. MFH units at Geiger Heights (226 units) and Cheney (16 units) would be entirely conveyed to the private developer and would no longer be used for MFH. A total of 596 MFH units would be left in the Fairchild AFB inventory after 8 years.

An EA evaluating the Proposed Action and alternatives, including the No Action Alternative, aids in determining whether an Environmental Impact Statement is needed. Resources considered in the impact analysis are noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and infrastructure. The EA was made available to the public upon completion.

ENVIRONMENTAL ASSESSMENT OF THE PRIVATIZATION OF MILITARY FAMILY HOUSING, FAIRCHILD AIR FORCE BASE, WASHINGTON

HEADQUARTERS AIR MOBILITY COMMAND
ENVIRONMENTAL PLANNING BRANCH
507 SYMINGTON DRIVE
SCOTT AIR FORCE BASE, ILLINOIS 62225-5022

MAY 2006

ENVIRONMENTAL ASSESSMENT OF THE PRIVATIZATION OF MILITARY FAMILY HOUSING, FAIRCHILD AIR FORCE BASE, WASHINGTON

TABLE OF CONTENTS

APPENDICES

FIGURES

TABLES

1. Purpose, Need, and Scope

1.1 Background

The U.S. Air Force (USAF) operates and maintains approximately 104,000 family housing units at its installations throughout the United States. More than 38 percent of all units do not meet current modern standards and require either major improvement or replacement. At most installations the demand for adequate on-base housing exceeds supply. The lack of adequate military family housing (MFH) forces many military members and their families to live in housing in need of repair, renovation, or replacement; or to live off-base where the cost and quality of housing vary considerably. Often, the cost to military members and their families to live off-base is 15 to 20 percent greater than the cost to live on-base. The USAF estimates that as much as $7 billion would be needed to bring its housing up to current standards and to address the deficit of housing with an additional 5,000 new housing units (AFCEE 2004).

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law 104-106, codified at Title 10 of the United States Code [U.S.C.] Sections 2871–2885). Also known as the Military Housing Privatization Initiative (MHPI), this provision of law creates alternative authorities for improvement and construction of MFH (see Appendix A). The legislative intent of Congress in enacting these additional authorities was to enable the military to obtain private sector funding to satisfy MFH requirements. By leveraging scarce public funding, the USAF can obtain private sector funds for construction, maintenance, management, renovation, replacement, rehabilitation, and development of USAF MFH and ancillary supporting facilities. The Department of Defense (DOD) has asked the USAF to upgrade all required, inadequate housing before FY 2010.

1.2 Purpose of and Need for the Proposed Action

Consistent with the USAF Housing Privatization Program, Fairchild Air Force Base (AFB) proposes to convey its MFH units, grant leases of land and convey land, and transfer responsibility for providing housing and ancillary supporting facilities to a private developer.

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Fairchild AFB. The action is needed to provide affordable, quality housing and ancillary facilities to military members and their families through replacement and renovation of existing family housing units so that they meet current USAF standards.

Substantial portions of the MFH inventory at Fairchild AFB exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Fairchild AFB, there are 575 MFH units that show signs of age and continuous use to such extent that they warrant demolition. Many units are not energy-efficient, and housing density is too high in some neighborhoods. Housing interiors are inadequate by modern criteria in that bedrooms have insufficient closet space; kitchen storage and counter space is insufficient; and plumbing, electrical, heating, ventilation, and air conditioning (HVAC), and lighting systems are inefficient.

1.3 Location and Mission

Fairchild AFB originated as the Spokane Army Air Depot in 1942 and was assigned to the Strategic Air Command in 1947. When the Strategic Air Command was dissolved in 1992, Fairchild AFB fell under the Air Combat Command. In July 1994, Fairchild AFB was transferred to the Air Mobility Command (AMC). At the same time, the 92d Bomb Wing was redesignated the 92d Air Refueling Wing (92 ARW), resulting in the creation of the largest air refueling wing in the USAF. As the new "tanker hub of the Northwest," the wing is capable of maintaining an air bridge across the nation and world in support of U.S. and allied forces. Fairchild AFB has 40 active-duty and Air National Guard KC-135 aircraft assigned. With more than 4,200 military personnel assigned to the installation, Fairchild AFB has 1,319 total MFH units. The locations of Fairchild AFB and off-base MFH are shown in Figure 1-1.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act, commonly known as NEPA, is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are taken. NEPA established the Council on Environmental Quality (CEQ) that is charged with the development of implementing regulations and ensuring agency compliance with NEPA. CEQ regulations mandate that all Federal agencies use a systematic interdisciplinary approach to environmental planning and the evaluation of actions that might affect the environment. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions.

The process for implementing NEPA is codified in Title 40 Code of Federal Regulations (CFR) Parts 1500–1508, *Regulations for Implementing the Procedural Provisions of the National Environmental*

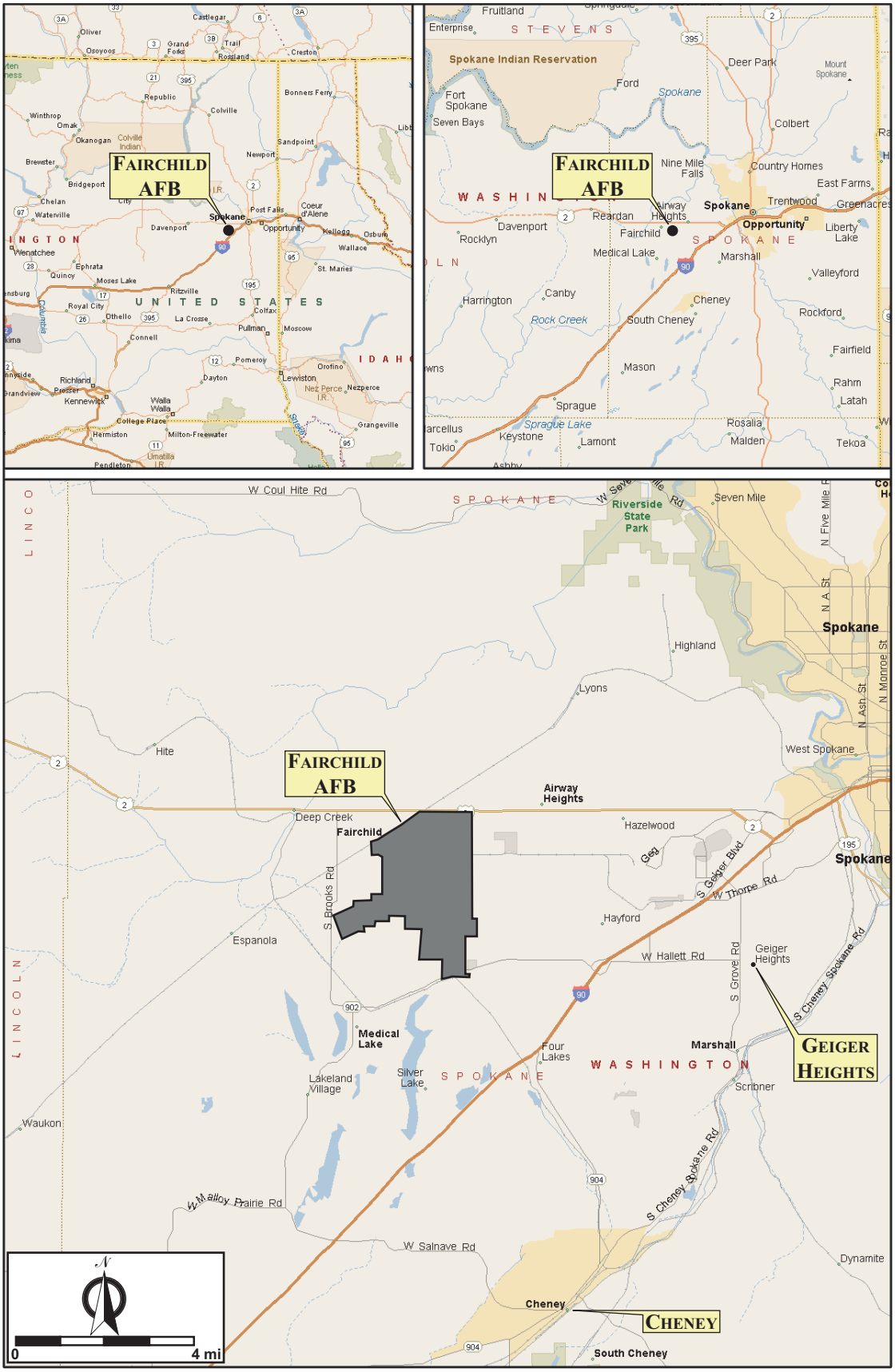


Figure 1-1. Location of Fairchild AFB, Geiger Heights, and Cheney

Policy Act. The CEQ was established under NEPA to implement and oversee Federal policy in this process. CEQ regulations specify the following must be accomplished when preparing an Environmental Assessment (EA):

- Briefly provide evidence and analysis for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI).
- Aid in an agency's compliance with NEPA when an EIS is unnecessary.
- Facilitate preparation of an EIS when one is necessary.

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

1.4.2 Integration of Other Environmental Statutes and Regulations

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

The EA examines potential effects of the Proposed Action and alternatives on 11 resource areas: noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and infrastructure. These resources were identified as being potentially affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by Executive Order (EO), regulation, or policy. Appendix B contains examples of relevant laws, regulations, and other requirements that are often considered as part of the analysis. Where useful to better understanding, key provisions of the statutes and EOs described in Appendix B are discussed in more detail in the text of the EA.

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning and Public Review

NEPA requirements help ensure that environmental information is made available to the public during the decisionmaking process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions will be enhanced if proponents provide information to the public and involve the public in the planning process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. Air Force Instruction (AFI) 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, requires the USAF to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, Fairchild AFB notified relevant Federal, state, and local agencies of the Proposed Action and provided them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided Fairchild AFB the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. IICEP began on January 14, 2005, and concluded on February 14, 2005. Appendix C includes the IICEP list, two letters received during the IICEP process, and USAF responses.

A Notice of Availability for the EA was published on March 4, 2006, in the *Spokesman-Review*, initiating a 30-day public review period. The EA was made available in the Spokane County Public Library. No public comments were received. Appendix C includes the Notice of Availability and Affidavit of Publication.

1.5 Organization of this Document

The EA is organized into seven sections. Section 1 provides the purpose of and need for the Proposed Action. Section 2 contains a description of the Proposed Action, Alternatives, and the No Action Alternative. Section 3 contains a general description of the biophysical resources and baseline conditions that could potentially be affected by the Proposed Action, Alternatives, and the No Action Alternative. Section 4 presents an analysis of the potential environmental consequences of implementing the Proposed Action, an Alternative, or the No Action Alternative. Section 5 includes an analysis of the potential cumulative impacts at Fairchild AFB. Section 6 lists the preparers of the document. Section 7 lists the references used in the preparation of the document.

Appendix A contains the text of the MHPI as codified in 10 U.S.C. 2871–2885. Appendix B contains applicable laws, regulations, policies, and planning criteria. Appendix C includes a copy of the IICEP letter mailed to the agencies for this action, the IICEP distribution list, and responses to the IICEP letter. Appendix D contains the desired features for Fairchild AFB privatized housing units. Appendix E contains the air quality emissions calculations spreadsheets for the Proposed Action and Alternatives.

2. Description of the Proposed Action and Alternatives

This section presents information on the USAF's Housing Privatization Program and Fairchild AFB's Proposed Action under that initiative. Section 2.1 describes how the Proposed Action would be implemented at Fairchild AFB and Section 2.2 identifies alternatives to the Proposed Action, including the No Action Alternative. Implementation of the Proposed Action as described in Section 2.1 is Fairchild AFB's preferred alternative for privatization of MFH.

2.1 Proposed Action

Consistent with the USAF Housing Privatization Program, Fairchild AFB proposes to convey its MFH units, grant leases of land and convey land, and transfer responsibility for providing housing and ancillary supporting facilities to a private developer.

Fairchild AFB has 1,319 MFH units in six on-base neighborhoods and two off-base locations. The on-base neighborhoods (and their number of MFH units) are Army Capehart (22)[1], Commander's Circle (7), Fort Wright Village (333), Galena Station (465), NCO Capehart (158), and Officer Capehart (92). Figure 2-1 shows the general location of MFH on Fairchild AFB. Figure 2-2 shows the individual locations of these six neighborhoods on Fairchild AFB, as well as the Housing Maintenance Office. The off-base housing areas are Geiger Heights (226) and Cheney (16). Figures 2-3 and 2-4 show the locations of these two off-base neighborhoods, respectively.

The USAF Housing Privatization Program incorporates the MHPI legislation enacted by Congress in 1996. Appendix A contains the MHPI on which the USAF Housing Privatization Program and Fairchild AFB's Proposed Action are based. Application of provisions of the USAF Housing Privatization Program would be tailored to Fairchild AFB's specific circumstances and requirements.

2.1.1 Initial Transactions

Under the Proposed Action, Fairchild AFB would execute agreements with a private developer to convey real property, lease and convey land, and have a private developer assume responsibility to operate a rental housing development for the benefit of USAF and other personnel for 50 years.[2] In exchange for providing housing, a private developer would become entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

[1] There are 26 former MFH units in Army Capehart that have been converted to Temporary Lodging Facilities, which are not a component of this Proposed Action.

[2] Under agreements with Fairchild AFB to operate a rental housing development, a private developer would be responsible to plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all necessary assets for MFH and designated ancillary support facilities.

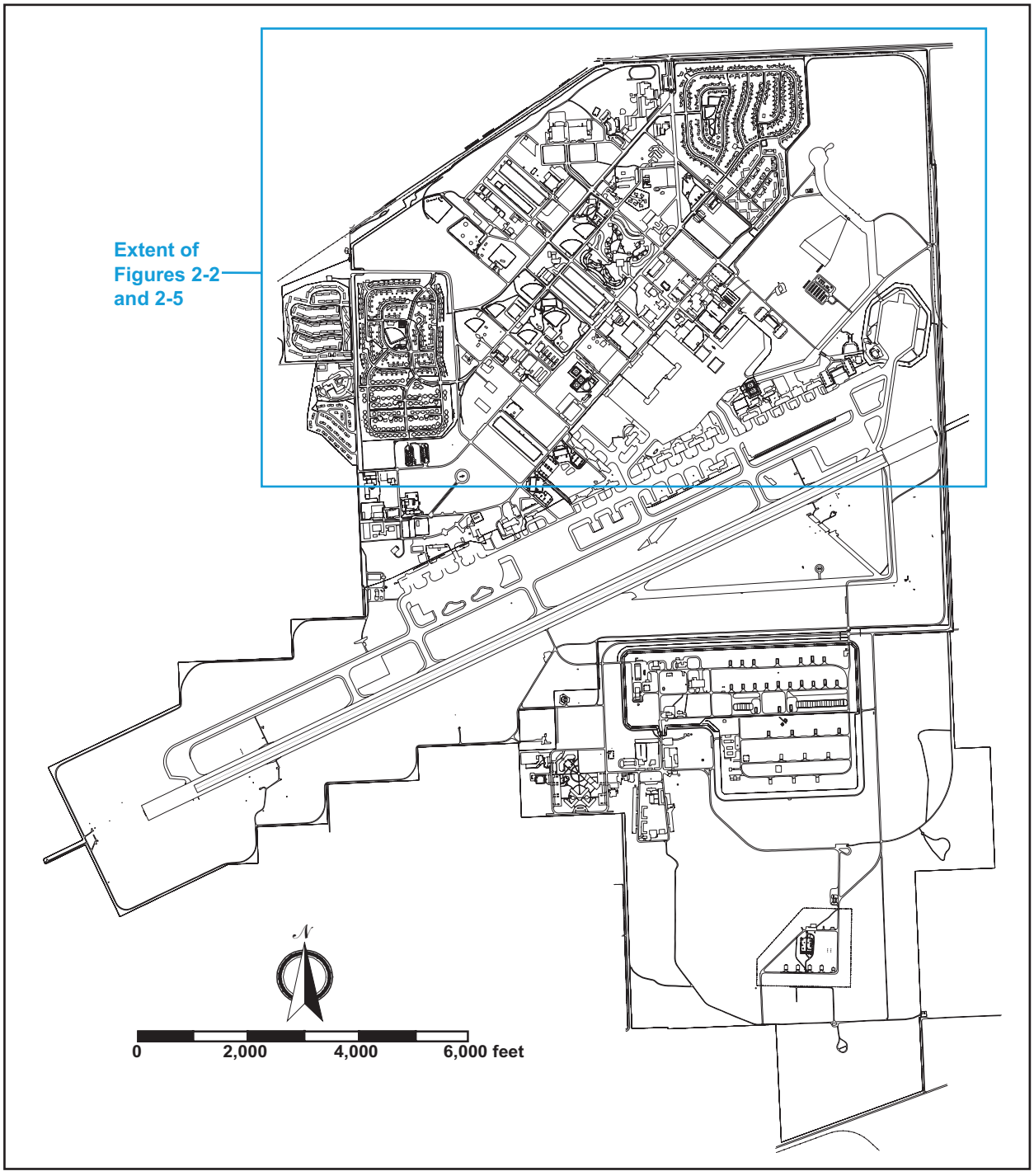


Figure 2-1. Location of Military Family Housing on Fairchild AFB

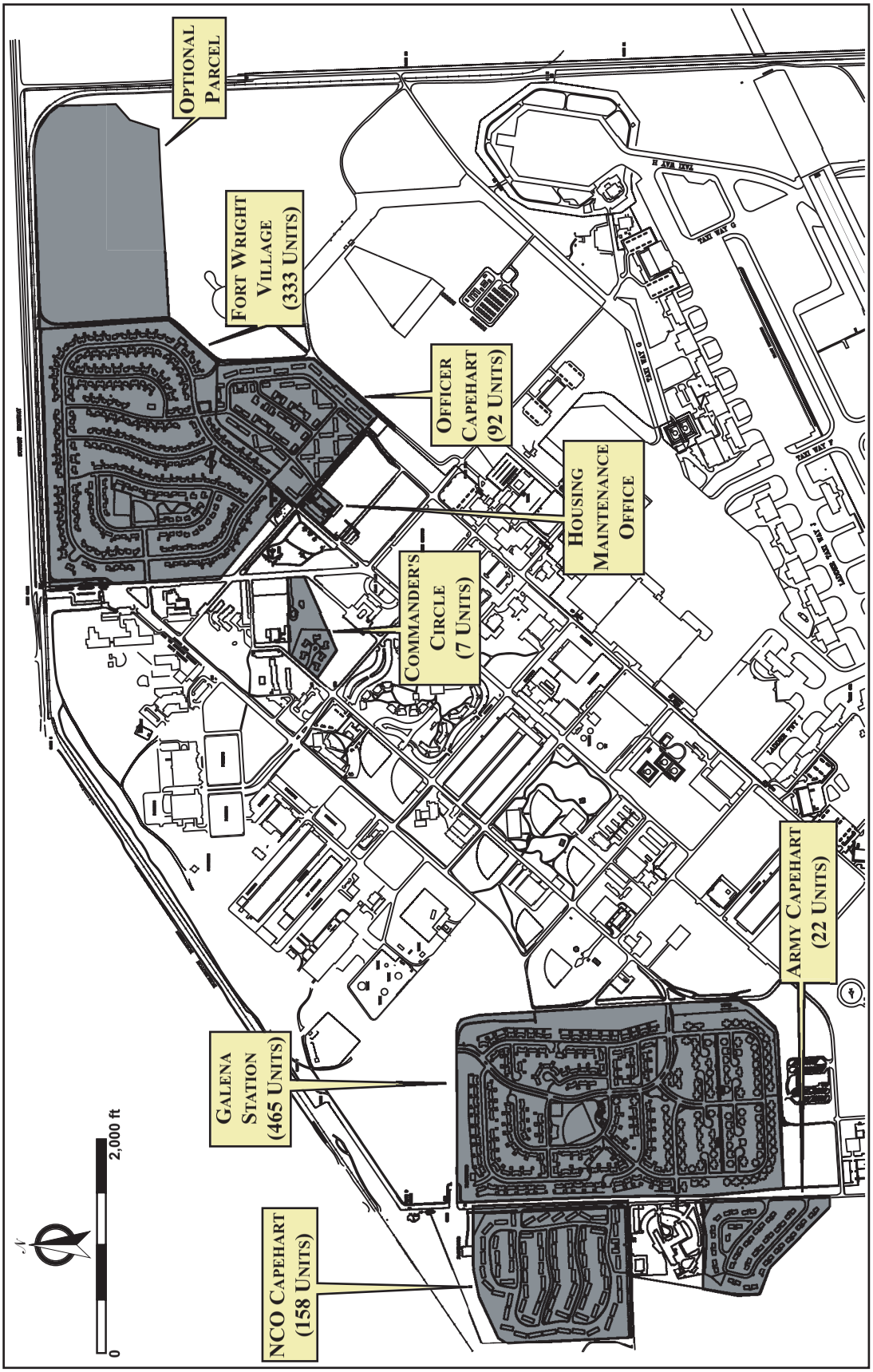


Figure 2-2. Locations of Specific Military Family Housing Developments on Fairchild AFB

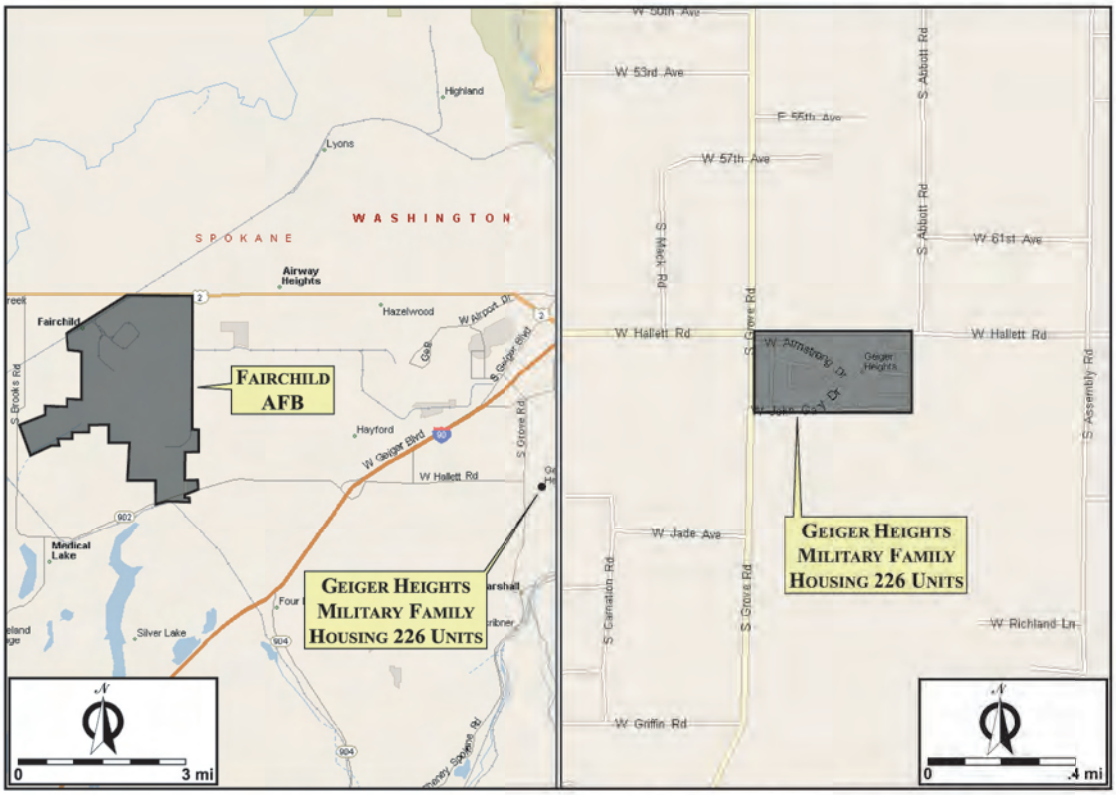


Figure 2-3. Location of Geiger Heights Military Family Housing

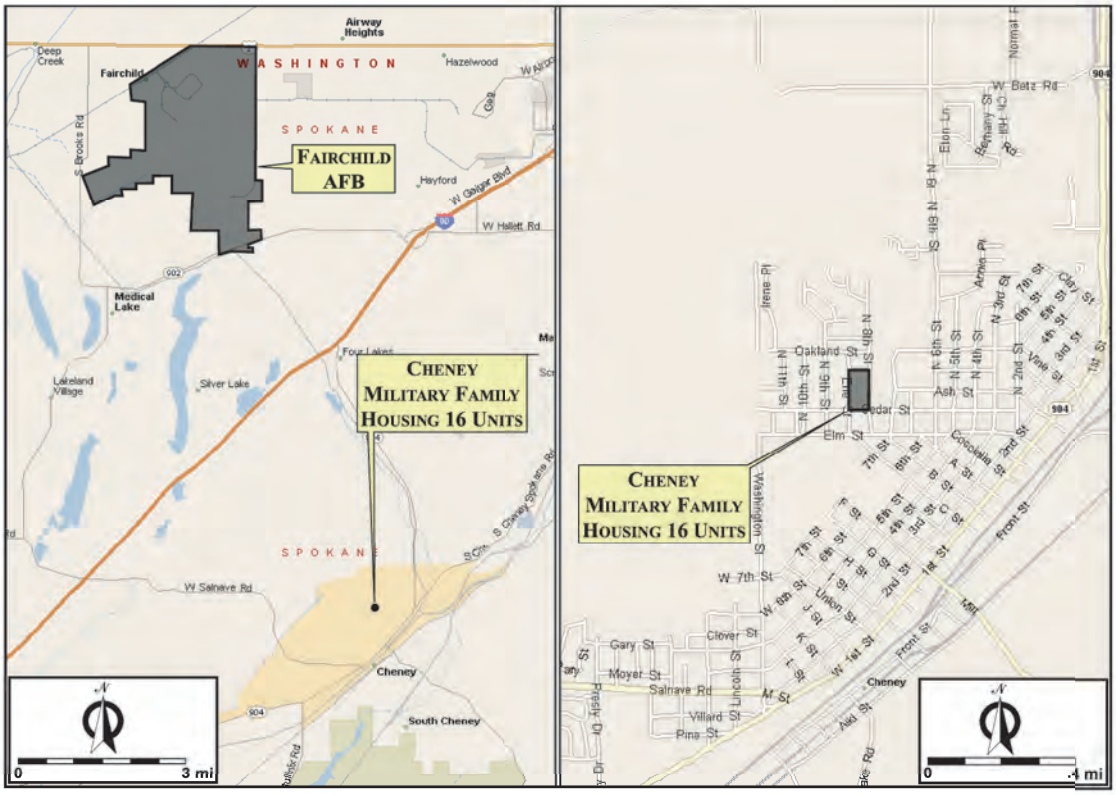


Figure 2-4. Location of Cheney Military Family Housing

Results of the Housing Requirements and Marketing Analysis (HRMA)[3] indicate that Fairchild AFB should have no more than 596 MFH units (Parsons 2003). Accordingly, the privatization agreement with a private developer would reduce the base's MFH inventory from 1,319 units to an end state inventory of 596 units. Under the Preferred Alternative, specific transactions that would occur between Fairchild AFB and the selected Highest Ranked Offeror (HRO) would be as follows:

- Fairchild AFB would convey all existing MFH units to the private developer.
- Fairchild AFB would grant 8-year leases for lands underlying MFH at Army Capehart, NCO Capehart, and Officer Capehart (total of 80 acres); 50-year leases for lands underlying MFH at Commander's Circle, Fort Wright Village, and Galena Station (total of 212 acres); and convey land underlying MFH at Geiger Heights and Cheney MFH areas (total of 84 acres).
- The private developer would demolish 575 units, renovate 481 units, and construct 94 new units. It is anticipated that the HRO would construct the 94 new units in Fort Wright Village, Galena Station, or the Optional Parcel (if it is included in the 50-year lease). The location of the 94 units and the final housing density within Commander's Circle, Fort Wright Village, Galena Station, and the Optional Parcel (if it is included in the 50-year lease) would be proposed by the HRO.

Twenty-one of the existing MFH units (7 in Commander's Circle and 14 in Fort Wright Village) were constructed recently and do not require renovations; therefore, the USAF proposes to convey these units in their current condition. The USAF also offers an optional parcel (approximately 50 acres of unimproved land to the east of Fort Wright Village) and the Housing Maintenance Office (2 acres) that would be included in the 50-year leased lands if the HRO proposes an acceptable use for these parcels. Further environmental analysis would occur if and when the optional parcel is conveyed or to study the impact of the proposed activity.

Figure 2-5 identifies the locations of construction, demolition, and renovation projects and the optional parcel and Housing Maintenance Office on Fairchild AFB. Table 2-1 indicates the actions that would be taken with respect to the current MFH inventory. The actions presented in Table 2-1 represent a combination of construction, demolition, and renovation that would produce an end state inventory of 596 MFH units.

[3] DOD guidance states that the local community should be the first source for satisfying the demand for housing generated by military families. The Housing Requirements and Market Analysis identifies current and projected supply and demand for family housing and analyzes the local housing market to determine its ability to provide suitable housing for military personnel.

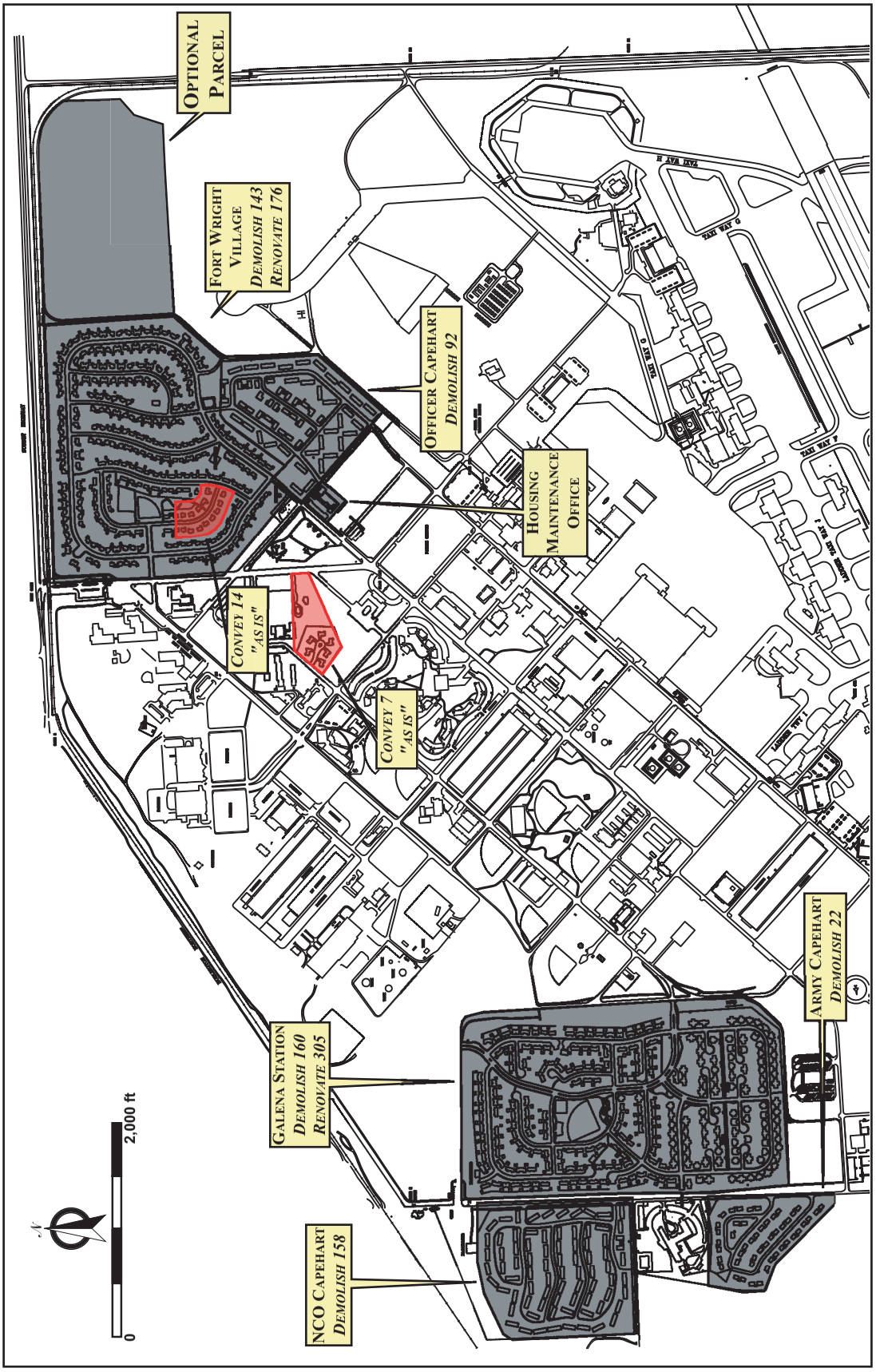


Figure 2-5. Proposed Construction, Demolition, and Renovation Projects on Fairchild AFB

Table 2-1. Family Housing Unit Actions under the Preferred Alternative

Housing Area	Existing Inventory	Action	Units Affected	End State Inventory	Remarks
Army Capehart (8 acres)	22	Demolish	22	0	Create open space
Commander's Circle (4 acres)	7	No Action Needed	7	7	All units were recently constructed and would be used in their current condition
Fort Wright Village (96 acres)	333	Demolish	143	190[1]	14 units were recently constructed and would be used in their current condition
		Renovate	176		
		No Action Needed	14		
Galena Station (112 acres)	465	Demolish	160	305[1]	Reduce neighborhood housing density
		Renovate	305		
NCO Capehart (43 acres)	158	Demolish	158	0	Create open space
Officer Capehart (29 acres)	92	Demolish	92	0	Create open space
Geiger Heights (80 acres)	226	Convey	226	0	Convey all to private developer
Cheney (4 acres)	16	Convey	16	0	Convey all to private developer
Location(s) to be determined by HRO	-	Construct	94	94	Location Options: • Fort Wright Village • Galena Station • Optional Parcel
Total End State Inventory				**596**[2]	

Note:

[1] It is anticipated that the HRO would construct 94 new units at a location(s) in Fort Wright Village, Galena Station, or the Optional Parcel (if subject to the 50-year lease). The location of the 94 units would be proposed by the HRO and would be implemented in conformity with the construction standards in Section 2.1.3 and in compliance with all environmental requirements.

[2] It is anticipated the HRO would demolish 575 units, renovate 481 units, and construct 94 units. However, the final mix of units demolished, renovated, and constructed would be at the discretion of the HRO so long as the Total End State Inventory of 596 units is maintained. The housing density in Commander's Circle, Fort Wright Village, Galena Station, and Optional Parcel (if subject to the 50-year lease) would be determined by the HRO.

The actions shown in Table 2-1 would occur at various times within the first 8 years of the 50-year privatization program. Total construction, demolition, and renovation activities would not be spaced out evenly over those first 8 years so that approximately 12 percent of the activities would occur each year; nor would the activities occur during only 2 or 3 years of the first 8 years. For the purposes of this analysis, it is assumed that construction, demolition, and renovation activities would occur during 6 years. This assumption provides Fairchild AFB and the HRO a prudent degree of flexibility to deal with planning requirements and potential variables such as timing and availability of funding, requirements for smooth transitioning of families to the local housing market, and possible fluctuations in housing demand due to mission changes.

2.1.2 Project Objectives

The USAF Housing Privatization Program has identified several desired features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management. These desired features are intended to result in substantial improvements in the overall quality of housing for personnel. In addition to the desired features articulated in the USAF Housing Privatization Program, Fairchild AFB has identified additional features for implementation at the installation. These desired features are shown, in their descending order of importance, in Appendix D.

2.1.3 Operational Provisions

The following identify relevant matters pertaining to the proposed privatization of MFH.

Transition Plan. Implementation of the Proposed Action would include reliance on a transition plan prepared by the private developer and approved by Fairchild AFB. The plan would include project development, phasing out of existing units, the means by which the private developer would maintain the availability of units, and the methodology for providing utilities and services during and after the transition period. The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for 8 years. During the transition period, the number of available MFH units would be gradually reduced from 1,319 to 596 units. At all times during the transition period, sufficient numbers of units for all eligible paygrades would be maintained.

Lease of Land. The USAF would grant the private developer a lease of approximately 212 acres (Commander's Circle, Fort Wright Village, and Galena Station), or approximately 264 acres with the inclusion of the optional parcel and the Housing Maintenance Office, currently used for MFH on the installation. Leasing of the housing area parcels would be subject to several conditions imposed by the USAF. The lease would be subject to all existing easements, or those subsequently granted, as well as

established access routes for roadways and utilities located, or to be located, on the premises. The lease would do the following:

- Prohibit the private developer from storing hazardous wastes (above those quantities generated in routine operations and immediately disposed of) or taking any actions that would cause irreparable injury to the land. The private developer would be required to comply with all Federal, state, interstate, or local applicable laws, regulations, conditions, or instructions affecting its activities. The USAF would include clauses in the lease permitting the USAF's periodic inspection of the property to ensure its safe condition and its proper use in accordance with the terms of the lease.
- Prohibit the use of asbestos or asbestos-containing material (ACM) or lead-based paint (LBP) in the construction of new housing units.
- Prohibit operation by the private developer of satellite hazardous waste accumulation sites on Fairchild AFB. The private developer would be responsible for appropriate storage and disposal of hazardous waste and universal waste (e.g., fluorescent bulbs, batteries, thermostats). The private developer would be responsible for any environmental fines or penalties arising from accidental, negligent, or intentional acts on the property. The private developer would be responsible for the costs of disposing of solid waste generated by the MFH construction and subsequent housing use. Solid waste generated would be disposed of off-base at the private developer's expense. Solid waste transportation and disposal would only be accomplished by a contractor possessing a certificate from the Washington Utilities and Transportation Commission.
- Prohibit discharge of waste or effluent from the premises in such a manner that the discharge would contaminate streams or other bodies of water or otherwise become a public nuisance.
- Prohibit removal or disturbance of, or causing or permitting to be removed or disturbed, any historical, archaeological, architectural, or cultural artifacts, relics, remains, or objects of antiquity. In the event such items should be discovered, the private developer would be required to notify the installation commander or his designated representative and immediately protect the site and the material from further disturbance.
- Require maintenance of all soil and water conservation structures and the taking of appropriate measures to prevent or control soil erosion within the premises. These measures would be addressed in permits (e.g., Clean Water Act [CWA] Section 404 permit) and in storm water pollution prevention plans (SWPPPs). The private developer would be required to comply with all applicable permits, including the storm water permit and accompanying SWPPP.

- Prohibit the cutting of timber; mining operations; removal of sand, gravel, or like substances from the ground; generating of waste of any kind; illegal dumping or disposal of waste; or in any manner substantially changing the contour or condition of the premises except as authorized through permits or by the base commander or his designated representative.

Conveyances. All existing MFH units on Fairchild AFB would be conveyed to the private developer. The USAF would convey this property with encumbrances, notices, and requirements obligating the private developer to certain actions. The USAF is completing an Environmental Baseline Survey to determine the location and extent of possible contamination from underground storage tanks (USTs) or other sources. As appropriate to each structure or group of structures, the deed or bill of sale would identify the presence or probable locations of ACM, LBP, and radon. However, the USAF will not complete comprehensive ACM, LBP, or radon surveys. The USAF would identify any easements and rights-of-way that might affect use of conveyed property. These encumbrances would be in the form of covenants in the deed and would be binding on the transferee, as well as any subsequent successors or assigns. Negotiated terms of transfer or conveyance might result in requirements for the private developer to maintain the status quo of historic buildings or archaeological sites or might impose a requirement for consultation with the State Historic Preservation Office (SHPO) prior to any actions affecting such resources.

Barrier-free Design. New MFH and ancillary supporting facilities must adhere to the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines* promulgated by the Access Board (formerly known as the Architectural and Transportation Barriers Compliance Board) pursuant to the Architectural Barriers Act of 1968, Rehabilitation Act of 1973, and Americans with Disabilities Act of 1990. These standards require that at least 5 percent of new MFH units be designed and built to be accessible, or easily modifiable for access, by persons with physical disabilities.

Construction and Demolition Standards. Demolition, construction, and renovation standards reflect consideration of City of Spokane, Spokane County, and State of Washington building codes, standards, regulations, and Federal laws. Construction of MFH units would be based on sustainable design and development concepts and would seek to incorporate consideration of matters such as sustainable sites, water efficiency, energy and atmosphere, materials and resources, and indoor environmental quality. Design, materials, equipment, and construction methods would reduce energy and water consumption to current Energy Star[4] criteria. Design features would include optimizing glass locations and areas;

[4] The U.S. Environmental Protection Agency and the U.S. Department of Energy promote the use of energy-efficient equipment by awarding the Energy Star label to products that save energy. The agencies set energy efficiency criteria for specific consumer

optimizing insulation in exterior walls, ceilings, and between adjoining units; weatherstripping throughout; and minimizing duct leakage. Attention to construction details, exterior fenestration materials, and passive solar energy systems would be employed whenever possible. The private developer would ensure that materials, equipment, and finishes would be durable, low-maintenance, and functional. These measures would improve environmental and economic performance of facilities through the use of established and advanced industry principles, practices, materials, and standards. In accordance with EO 13101, *Greening the Government through Waste Prevention, Recycling, and Federal Acquisition*, the private developer would consider recycled products and environmental preferable purchasing criteria developed by the U.S. Environmental Protection Agency (USEPA).

A Demolition Plan would be established and implemented as part of the overall Construction Management Plan. The Demolition Plan would provide a phased approach to demolition of existing units, appurtenances, and infrastructure. The private developer would remove all aboveground utilities on Army Capehart, NCO Capehart, and Officer Capehart. Underground utility mains scheduled for demolition could be capped at the main and abandoned in place; however, the private developer would remove all laterals. The contractor would be responsible for handling any ACM and LBP in accordance with applicable laws, including removal, disposal, and abatement. An asbestos disposal plan would identify the proposed disposal site for any ACM. After demolition is complete (including facilities, utilities, and roads and fences), the private developer would grade to drain and seed all areas not scheduled to receive new construction. The private developer would haul all debris to a government-approved site off of Fairchild AFB. Selling or recycling demolition debris would be pursued where possible.

Operation and Maintenance. The private developer would operate and maintain for 50 years all existing and new MFH units and ancillary supporting facilities, including associated parking lots and sidewalks, in accordance with the quality standards established in privatization program agreements. At Fairchild AFB's option, the base may extend the period of operation and maintenance and the leases of land supporting MFH for an additional 25 years.

Rental Rates and Payments. The rental rate to be paid by any military member would not exceed his or her BAH. Fairchild AFB would continue to categorize MFH by grade group. Unit rents would be fixed by type of unit. Like BAH, rent would be paid in arrears.

and commercial products. Energy Star products include appliances (refrigerators, dishwashers, and room air conditioners) and residential HVAC equipment (programmable thermostats, boilers, furnaces, heat pumps, and central air conditioners).

Utilities. For each unit type, the private developer would collect utility statistics for 5 years to establish a 5-year running average. The private developer would pay all utility costs until such time that utility meters are installed on each housing unit and the 5-year running average is computed. During such period, the military member would surrender his or her entire BAH as rent. After the 5-year running average is computed, the military member would be entitled to a utility allowance (applicable only to electrical services and natural gas use). The utility allowance would be calculated as 110 percent of the estimated utility consumption multiplied by actual utility rates. The military member would be responsible for payment of utilities (electricity and natural gas). The remainder of the member's BAH would be paid to the private developer as rent. The private developer would pay for all water, sewer, and refuse collection services, including curbside recycling pickup, throughout the duration of the privatization agreement.

Occupancy Guarantee. Fairchild AFB would not guarantee the level of occupancy of MFH by military members. The Fairchild AFB Housing Maintenance Office would provide "Referral Tenants." All military personnel assigned to the local area would be required to process through the Fairchild AFB Housing Maintenance Office upon arrival prior to signing a lease for housing. Freedom of housing choice would be preserved. The private developer would compile and maintain a waiting list. After the transition period, if vacancy rates exceed 5 percent for more than 3 consecutive months, the private developer may rent to other eligible tenants at unrestricted rental rates. Should this type of situation arise, the private developer would be allowed to fill only the number of rental units necessary to bring the vacancy rate to 5 percent. Offering of vacant units to other eligible tenants would be based on a priority list. Other eligible tenants would include (listed in descending order of priority):

- Other active-duty military members and families (including unaccompanied military members)
- Federal civil service employees
- Retired military members and families
- Guard and Reserve military members and families
- Retired Federal civil service employees
- DOD contractor or permanent employees (U.S. citizens)
- Members of the general public (with prior written notice to the Government)

Jurisdiction. The concept of jurisdiction is separate and distinct from that of title. Jurisdiction includes the right to legislate (i.e., implement laws, rules, and regulations) and to enforce those laws. Having title does not necessarily include legislative jurisdiction. Two types of legislative jurisdiction exist at Fairchild AFB: concurrent and proprietary. "Concurrent Jurisdiction" is where both the state and Federal

governments retain all their legislative authority. All on-base MFH except NCO Capehart and Army Capehart have concurrent jurisdiction. "Proprietary Jurisdiction" is where the United States is like any other party who has only a possessory interest in the property it occupies, and the United States is simply a tenant with virtually no legislative authority. The Federal government maintains immunity and supremacy for inherently governmental functions. NCO Capehart and Army Capehart, as well as Geiger Heights and Cheney housing, have proprietary jurisdiction. The Government reserves the right to change the jurisdiction of the leased parcels at any time. Such change would not be the basis for a claim by the private developer for property taxes or other costs.

Municipal Services. Fairchild AFB would provide fire, law enforcement services, and other emergency services to MFH within the base boundaries. The level of service would include emergency response and force protection. The private developer would reflect these costs in its operating budget and reimburse the base's service agency for all actual costs incurred for this level of service.

2.2 Alternatives

2.2.1 Alternatives Evaluated in Detail

Within the USAF's Proposed Action, there are alternative means by which to arrive at the end state inventory of 596 MFH units by varying the number of units constructed, demolished, or renovated. In order to present a range of impacts, the USAF is considering the potential impacts of implementing the Preferred Alternative (Section 2.1.1), Alternative A (the Maximum Construction Alternative), and Alternative B (the Maximum Renovation Alternative). All other aspects of the Proposed Action as presented in Sections 2.1.2 and 2.1.3, as well as the conveyance of Geiger Heights and Cheney and the possible lease of the optional parcel, would remain consistent across all alternatives. Table 2-2 indicates the actions within each MFH parcel that would occur under each alternative.

Table 2-2. Family Housing Unit Actions under Alternatives

Alternative	Existing Inventory	Total Demolished	Total Renovated	Total Constructed	End State Inventory
Alternative A (Maximum Construction)	1,077	1,077	0	596	596
Alternative B (Maximum Renovation)	1,077	481	596	0	596

Note: The Total End State Inventory must equal 596 units based on the results of the HRMA. However, the final mix of units demolished, renovated, and constructed would be at the discretion of the HRO so long as the Total End State Inventory of 596 units is maintained. The housing density in Commander's Circle, Fort Wright Village, Galena Station, and Optional Parcel (if subject to the 50-year lease) would be determined by the HRO.

Alternative A

Under Alternative A, the Maximum Construction Alternative, all 1,077 MFH units on Fairchild AFB would be demolished and 596 new MFH units would be constructed. Alternative A is a maximum-impact scenario. The Preferred Alternative would likely result in fewer impacts than Alternative A.

Alternative B

Under Alternative B, the Maximum Renovation Alternative, 481 MFH units on Fairchild AFB would be demolished and 596 MFH units would be renovated. Alternative B presents a scenario with fewer impacts than the Maximum Construction Alternative. The Preferred Alternative would likely result in more impacts than Alternative B.

2.2.2 Alternatives Eliminated from Detailed Evaluation

Fairchild AFB initially considered other alternatives to the Proposed Action that potentially satisfy the need to provide affordable, quality housing and ancillary facilities to military members and their families. These alternatives, and the basis for their elimination, are discussed in more detail below.

The Partial Privatization Alternative

Under this alternative, Fairchild AFB would privatize only a portion of the base's MFH inventory. Family housing in good condition (not needing demolition or renovation) would remain subject to USAF management for maintenance and operational control.

Privatization of only a portion of Fairchild AFB's MFH inventory would have three substantial drawbacks. First, the condition of the MFH retained by the USAF would change over time, resulting in a need for its renovation or replacement. Failure to include the entire inventory of housing in the privatization transaction would only delay action to provide adequate housing for airmen and their dependents. Second, two management regimes (the USAF's and the private developer's) would not be as cost-effective as one. From a private developer's perspective, maximum potential cash flow is important to support development and operation of the ancillary supporting facilities desired by the installation, activities that traditionally do not provide independent sources of revenue to sustain them. Third, partial privatization would not fully meet the USAF's purpose of and need for the Proposed Action. Together, these three factors render consideration of partial privatization at Fairchild AFB not feasible and, therefore, such an alternative is not evaluated in detail in this EA.

The Private Sector Reliance Alternative

Under this alternative, Fairchild AFB would rely solely on the private sector to meet the housing needs of personnel assigned to the installation. The base would terminate MFH programs, dispose of existing MFH units, and convert the land now supporting housing areas to other uses.

The alternative is premised, in part, on the view that competitive marketplace forces would lead to the creation of sufficient affordable, quality MFH. Data vary, but, in general, experience shows that military members and their families living off-base must cover between 15 and 20 percent of their costs out-of-pocket. Moreover, living on base has several intangible benefits to the military member and their families. These include camaraderie and esprit de corps among the military personnel, a sense of "family" among dependents (especially during military deployments), proximity to the workplace (thereby avoiding lengthy commutes), and each military member's comfort level in knowing that his or her dependents are residing in a safe community while they are deployed or serving on temporary duty at a distant location.

As a practical matter, termination of Fairchild AFB MFH would prove difficult. If MFH were to be terminated over a period of years, without maintenance funding, the existing housing would become unsuitable because of age or necessity of repairs. Residents could then find themselves living in blighted and partially abandoned neighborhoods. If MFH were to be terminated at once, it is unlikely that the private sector could provide the requisite amount of affordable, quality housing units, as well as schools, shops, roads, and other support amenities, on short notice.

Renovation of many of the MFH units at Fairchild AFB is economically sound. Termination of MFH programs would involve abandonment of immense investments in those facilities. The various consequences of reliance on the private sector and the management difficulties of effecting termination of USAF MFH would prove challenging. In light of the aggregate value of MFH units amenable to renovation, termination of a family housing construction and maintenance program would gravely contravene the fiscal responsibilities that the U.S. Congress expects of the USAF. For these reasons, this alternative is not reasonable and is not further evaluated in this EA.

The Leasing Alternative

Statutory authorities exist for Fairchild AFB to ensure availability of adequate, affordable housing through use of long-term leases of housing for military family use. Key aspects of the two laws providing these authorities are summarized below.

- *Long-term leasing of military family housing to be constructed.* Family housing obtained through use of this authority, which appears at 10 U.S.C. 2835, is most often referred to as "Section 801 housing." Under this authority, the USAF may, through competitive contract procedures, have a developer build or renovate (to residential use) family housing units near an installation. Housing units under this authority must meet DOD specifications. The USAF may then lease the units for use as MFH for a period of not more than 20 years. At the end of the lease term, the USAF has the option to purchase the MFH units from the private developer.
- *Military housing rental guarantee program.* Family housing obtained through use of this authority, which appears at 10 U.S.C. 2836, is most often referred to as "Section 802 housing." Under this authority, the USAF may award a competitive contract to a private developer or a state or local housing authority to construct or rehabilitate housing on or near an installation having a shortage of housing for personnel with or without accompanying dependents. The USAF contractually guarantees the occupancy levels of the housing units, at rental rates comparable to those for similar units in the same general market. Housing units under this authority must comply with DOD specifications or, at the discretion of the Service secretary, local building codes. A rental guarantee agreement may not exceed 25 years in duration; it may be renewed only for housing located on government-owned land. The agreement may provide that utilities, trash collection, snow removal, and entomological services be furnished by the USAF at no cost to the occupant to the same extent such services are provided to occupants of base MFH.

USAF-wide, there has been only limited experience with either of the foregoing authorities. An important drawback of the Section 801 and Section 802 housing programs is related to what is known as budget "scoring," the method of accounting for Federal government obligations as required by the Budget Enforcement Act of 1990. Scoring ensures that all government obligations are accounted for when long-term liability is incurred (during the first year of a project). Scoring guidelines issued by the Federal Office of Management and Budget require that a project be fully funded with sufficient budget authority in its first year to cover the government's long-term commitment. In other words, all potential costs associated with long-term leasing or rental guarantee programs must be recognized in the first year, and they must be considered part of the USAF's total obligational authority (the total monies appropriated by Congress for use by the USAF in a given year). For some privatization projects, such as military-leased housing, the USAF's obligations for scoring purposes amount to the net present value of the total rent under the lease. These amounts can be nearly as great as the sums required under traditional military construction financing for USAF-initiated construction of similar facilities.

The Section 801 housing program and Section 802 rental guarantee program only partially address the purpose of and need for the Proposed Action. Because of the scoring guidelines, the USAF would obtain very little or no leverage benefit.

The enactment of new authorities in the MHPI suggests Congress's recognition that the drawbacks of Section 801 and Section 802 outweigh the potential benefits to the USAF. Although use of the authorities in either Section 801 or Section 802 or both would be possible, their use would not be reasonable when compared with the greater flexibility and economic advantages of the new authorities offered by the MHPI to the USAF and its members' families. Accordingly, this alternative is not further evaluated in this EA.

2.2.3 The No Action Alternative

CEQ regulations require inclusion of the No Action Alternative. The No Action Alternative serves as a baseline against which the impacts of the Proposed Action and Alternatives can be evaluated.

Under the No Action Alternative, Fairchild AFB would not implement the Proposed Action but would continue to provide for the MFH needs of its personnel through use of traditional military maintenance and construction procedures. Fairchild AFB would continue to obtain funding for MFH through the Congressional authorization and appropriations process. Based on historical trends, it is assumed that the amount of Congressional funding for MFH would not change and that the housing maintenance backlog would continue to increase. Any major changes to existing housing or construction of new housing would require that appropriate NEPA analyses be completed before implementing such actions.

THIS PAGE INTENTIONALLY LEFT BLANK

3. Affected Environment

3.1 Definition of the Resource

3.1.1 Noise

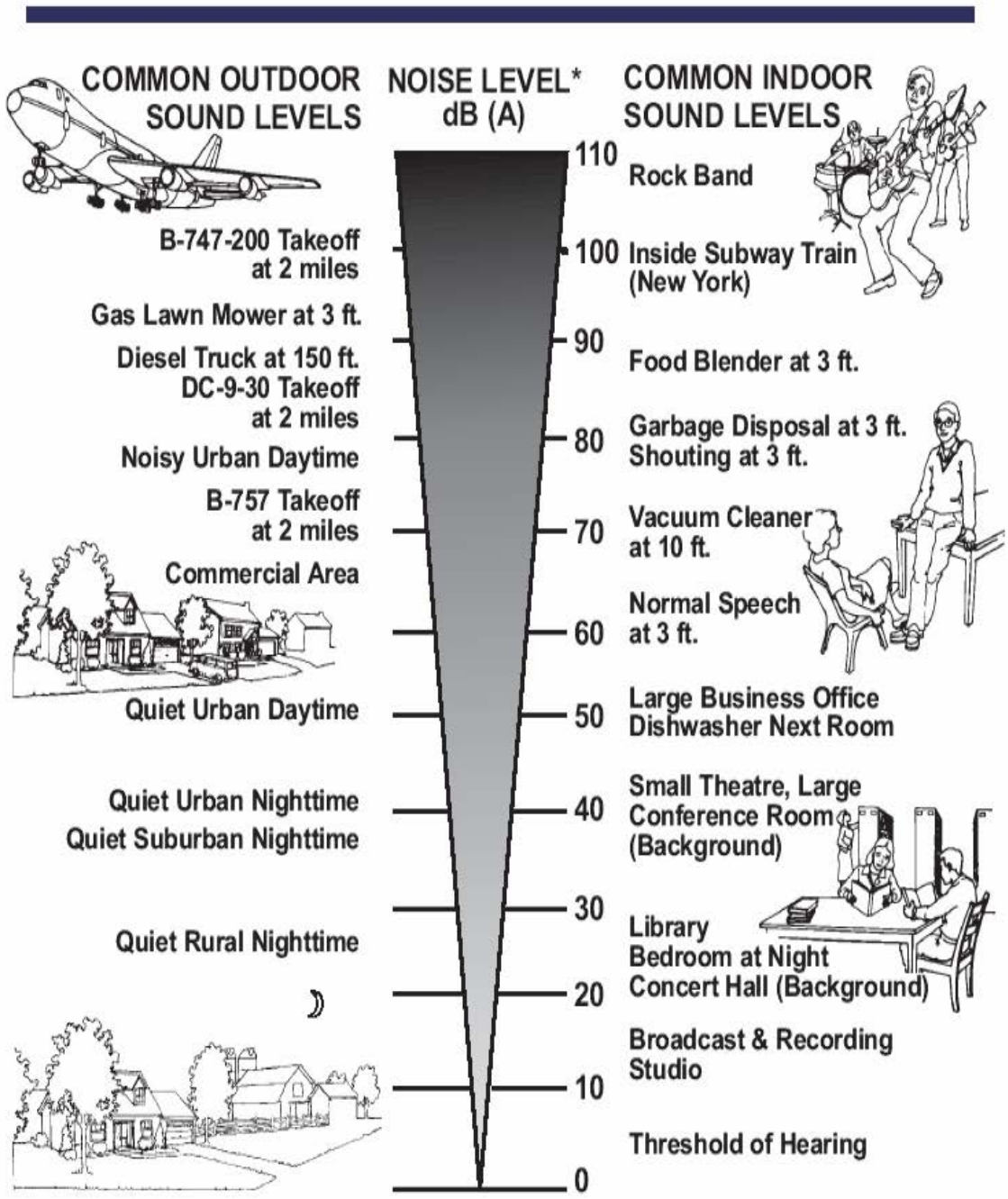
Physically, there is no distinction between sound and noise. Sound is a sensory perception and the complex pattern of sound waves is labeled noise, music, speech, and so forth. Thus, noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Human response to increased noise levels varies according to the source type, characteristics of the noise source, distance between source and receptor, receptor sensitivity, and time of day.

Sound is measured with instruments that record instantaneous sound levels in decibels (dB). A-weighted sound level measurements (dBA) are used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency content of a noise event to represent the way in which the average human ear responds to the noise event. All sound levels analyzed in this EA are A-weighted; therefore, the term dB implies dBA unless otherwise noted.

Human response to noise is dependent on the magnitude and the sound frequency distribution. The human ear is more susceptible to higher frequency than lower frequency sounds, as reflected in the A-weighting scale. This scale assigns a weighting of zero to sounds with a frequency below 10 cycles per second, and a maximum weighting for sounds with a frequency of 2,000 to 5,000 cycles per second.

Figure 3-1 displays common noise sources and the associated decibel sound level (in dBA) emitted by the noise source. The threshold of human hearing is about 10 dBA. A bedroom at night measures 30 dBA, while quiet suburban nighttime levels are around 40 dBA. In contrast, a vacuum cleaner at 10 feet measures 70 dBA, a diesel truck at 50 feet during daytime measures 90 dBA, and a loud rock band or jet flyover at 1,000 feet measures close to 110 dBA (Landrum & Brown 2002).

Day-Night Average A-weighted Sound Level. Noise levels, resulting from multiple single-events, are used to characterize community noise effects from aircraft or sustaining road and building construction activity, are measured in the Day-Night Average A-weighted Sound Level (DNL). This noise metric incorporates a "penalty" for evening and nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10 dB penalty assigned



* These values are equivalent to the Lmax values referenced on the Loudest Aircraft Noise Events Report.

Source: Landrum & Brown 2002

Figure 3-1. Common Noise Levels

to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging sound exposure level values for a given 24-hour period. DNL is the preferred noise metric of Housing and Urban Development (HUD), Federal Aviation Administration (FAA), USEPA, and DOD for modeling airport environs.

Most people are exposed to sound levels of DNL 50 to 55 dBA or higher on a daily basis. Studies specifically conducted to determine noise impacts on various human activities show that about 90 percent of the population is not significantly bothered by outdoor sound levels below DNL of 65 dBA (USDOT 1984). Studies of community annoyance in response to numerous types of environmental noise show that DNL correlates well with impact assessments and that there is a consistent relationship between DNL and the level of annoyance.

Noise Criteria and Regulations. Federal and local governments have established noise guidelines and regulations for the purpose of protecting citizens from potential hearing damage and from various other adverse physiological, psychological, and social effects associated with noise. The following paragraphs describe the guidelines and regulations that are relevant to the project.

According to USAF, FAA, and HUD criteria, residential units and other noise-sensitive land uses are "clearly unacceptable" in areas where the noise exposure exceeds DNL of 75 dBA, "normally unacceptable" in regions exposed to noise between the DNL of 65 to 75 dBA, and "normally acceptable" in areas exposed to noise where the DNL is 65 dBA or less. The Federal Interagency Committee on Noise developed land-use compatibility guidelines for noise in terms of DNL (USDOT 1984). For outdoor activities, USEPA recommends DNL of 55 dBA as the sound level below which there is no reason to suspect that the general population will be at risk from any of the effects of noise (USEPA 1974).

3.1.2 Land Use

Land use may be defined as the natural or human activities occurring at a particular location. Human land use categories include residential, commercial, industrial, transportation, communications and utilities, agricultural, institutional, and recreational. Management plans and zoning regulations determine the type and extent of land use allowable in specific areas and can protect specially designated or environmentally sensitive areas.

3.1.3 Air Quality

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

The CAA directed USEPA to develop, implement, and enforce environmental regulations that would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA developed numerical concentration-based standards, or National Ambient Air Quality Standards (NAAQS), for pollutants that have been determined to impact human health and the environment. USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. Table 3-1 presents the primary and secondary NAAQS that apply to the air quality in Washington (USEPA 2004a).

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

As authorized by the CAA, the USEPA has delegated responsibility for ensuring compliance with NAAQS to the states and local agencies. As such, each state must develop air pollutant control programs and promulgate regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels. These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or local regulatory agency and approved by USEPA. A SIP is a compilation of regulations,

strategies, schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be incorporated into the SIP and approved by USEPA.

Table 3-1. National Ambient Air Quality Standards

Pollutant	Standard Value		Standard Type
CO			
8-hour Average[1]	9 ppm	(10 mg/m^3)	Primary and Secondary
1-hour Average[1]	35 ppm	(40 mg/m^3)	Primary
NO_2			
Annual Arithmetic Mean	0.053 ppm	(100 µg/m^3)	Primary and Secondary
O_3			
1-hour Average[2]	0.12 ppm	(235 µg/m^3)	Primary and Secondary
8-hour Average[3]	0.08 ppm	(157 µg/m^3)	Primary and Secondary
Pb			
Quarterly Average		1.5 µg/m^3	Primary and Secondary
PM_{10}			
Annual Arithmetic Mean[4]		50 µg/m^3	Primary and Secondary
24-hour Average[1]		150 µg/m^3	Primary and Secondary
$PM_{2.5}$			
Annual Arithmetic Mean[5]		15 µg/m^3	Primary and Secondary
24-hour Average[6]		65 µg/m^3	Primary and Secondary
SO_2			
Annual Arithmetic Mean	0.03 ppm	(80 µg/m^3)	Primary
24-hour Average[1]	0.14 ppm	(365 µg/m^3)	Primary
3-hour Average[1]	0.5 ppm	(1,300 µg/m^3)	Secondary

Source: USEPA 2004a

Notes: Parenthetical values are approximate equivalent concentrations.

1 Not to be exceeded more than once per year.

2 (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1, as determined by Appendix E. (b) The 1-hour NAAQS will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour ozone NAAQS. The effective designation date for most areas is June 15, 2004 (40 CFR 50.9; see *Federal Register* of April 30, 2004 [69 FR 23996]).

3 To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

4 To attain this standard, the expected annual arithmetic mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.

5 To attain this standard, the 3-year average of the annual arithmetic mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

6 To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 65 µg/m^3.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O_3, $PM_{2.5}$, and regional haze standards that were promulgated in that year. The 1-hour O_3 standard will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O_3 NAAQS. The effective designation date for most areas is June 15, 2004 (USEPA 2004a). USEPA designated $PM_{2.5}$ nonattainment areas in December 2004, and no area in Washington was identified as being nonattainment for the $PM_{2.5}$ standard.

The General Conformity Rule and the promulgated regulations found in 40 CFR Part 93 exempt certain Federal actions from conformity determinations (e.g., contaminated site cleanup and natural emergency response activities). Other Federal actions are assumed to conform if total indirect and direct project emissions are below *de minimis* levels presented in 40 CFR 93.153. The threshold levels (in tons of pollutant per year) depend upon the nonattainment status that USEPA has assigned to a nonattainment area. Once the net change in nonattainment pollutants is calculated, the Federal agency must compare them to the *de minimis* thresholds.

Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary sources. A major stationary source is a facility (i.e., plant, base, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant, or 25 tpy of any combination of hazardous air pollutants. However, lower pollutant-specific "major source" permitting thresholds apply in nonattainment areas. For example, the Title V permitting threshold for an "extreme" O_3 nonattainment area is 10 tpy of potential VOC or NO_x emissions. The purpose of the permitting rule is to establish regulatory control over large, industrial-type activities and monitor their impact on air quality. Synthetic minor sources are those facilities that would be regulated under the air operating permit program but have opted to keep their emissions limits lower than the threshold for the program.

Federal Prevention of Significant Deterioration (PSD) regulations also define air pollutant emissions from proposed major stationary sources or modifications to be "significant" if (1) a proposed project is within 10 kilometers of any Class I area, and (2) regulated pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 $\mu g/m^3$ or more [40 CFR 52.21(b)(23)(iii)]. PSD regulations also define ambient air increments, limiting the allowable increases to any area's baseline air contaminant concentrations, based on the area's designation as Class I, II, or III [40 CFR 52.21(c)]. Because Fairchild AFB is not located within 10 kilometers of and Class I area, PSD regulations do not apply and are not discussed further in this EA.

3.1.4 Safety

A safe environment is one in which there is no, or an optimally reduced, potential for death, serious bodily injury or illness, or property damage. The primary safety concerns associated with the Proposed Action consist of human health and safety, building safety, emergency services, and aircraft safety. Human health and safety addresses workers' occupational health and safety and public health and safety during demolition, construction, renovation, maintenance, and normal working activities. Building safety includes all aspects of building construction and maintenance. Emergency services typically consist of fire, police, and emergency medical assistance. Aircraft safety involves all aspects of air and ground aircraft operations that have safety implications.

Safety and accident hazards can often be identified and subsequently reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself together with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Activities that can be hazardous include transportation, construction, maintenance and repair activities, and the creation of highly noisy environs. The proper operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any facility or human-use area with potential explosive or other rapid oxidation process creates unsafe environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns. Current noise levels at the Fairchild AFB and off-base MFH areas are discussed in Sections 3.2.1, 3.3.1, and 3.4.1. Transportation is discussed in Sections 3.2.1 and 3.2.10.

Human Health and Safety. Human health and safety includes both occupational and public health and safety resources. Occupational health and safety is largely a matter of adherence to regulatory requirements imposed for the benefit of employees and implementation of operational practices that reduce risks of illness, injury, death, and property damage. The occupational health and safety of on-site military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to comply with 29 CFR Part 1960; EO 12196, *Occupational Safety and Health Programs for Federal Employees*; and standards issued by the Occupational Safety and Health Administration (OSHA). These policies and standards specify the amount and type of training required for workers, the use of protective equipment and clothing, engineering controls, and maximum exposure limits for workplace stressors.

Public health and safety is protected by a plethora of Federal, state, and local agencies, regulations, and programs ranging from environmental protection to nuclear safety. DOD and USAF also have programs

and policies that protect the public from their operations. This is accomplished primarily through fences, barriers, and restricted areas.

Building Safety. The concept of building safety involves the design, construction, and maintenance of structures. Current Federal, state, and local building codes, such as Building Officials and Code Administrators, dictate the construction of structures in terms of design, construction, fire safety, electrical safety, and accessibility by persons with physical disabilities. Additionally, building materials that were regularly used in the past, such as asbestos and LBP, are now prohibited from use. Proper building maintenance also impacts building safety. The level of necessary building maintenance is a direct result of the quality of building construction and materials, age of the structure, and preventative maintenance.

Emergency Services. Residential housing complexes require access to emergency services, such as fire, police, and emergency medical. On military installations, these resources are typically provided by the military, but can be supplemented by the local community, if necessary. The available emergency resources are a function of the size of the military property, number of personnel, and the type and quantity of training. Changes to any of these parameters could impact the availability of emergency services. Emergency services available to civilians not located on military installations are determined by several factors, including population, tax base, and volunteer efforts.

Aircraft Safety. Safety issues typically associated with and specific to military flying units and their airfields include the potential for mid-air aircraft mishaps, aircraft collisions with objects on the ground, bird/wildlife-aircraft strikes, and weather-related accidents. There are several USAF policies, regulations, and information sources that minimize the risk of aircraft mishaps. These resources include AFI 91-202, *The U.S. Air Force Mishap Prevention Program*; bird/wildlife-aircraft strike hazard plans; Flight Information Publications; aeronautical charts; and preflight weather information. Because the Proposed Action does not affect the type, frequency, or location of aircraft operations, aircraft safety is only addressed in terms of ground-based safety issues.

3.1.5 Geological Resources

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

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

Geology. Geology is the study of the earth's composition and provides information on the structure and configuration of surface and subsurface features. Such information derives from field analyses based on observations of the surface and borings to identify subsurface composition. Hydrogeology extends the study of the subsurface to water-bearing structures. Hydrogeological information helps in the assessment of groundwater quality and quantity and its movement.

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

3.1.6 Water Resources

Water resources include groundwater, surface water, and floodplains. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes.

Groundwater. Groundwater consists of the subsurface hydrologic resources. It is an essential resource that functions to recharge surface water and is used for drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of its depth from the surface, aquifer or well capacity, water quality, surrounding geologic composition, and recharge rate. Spokane County maintains authority to regulate activities in groundwater recharge areas in the county (Chapter 11.20 Critical Area Ordinance).

Surface Water. Surface water resources consist of lakes, pond, rivers, and streams and function as an ecological resource that provides both habitat and transportation. Surface water is important for its contributions to the economic, ecological, recreational, and human health of a community or locale.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade lakes, rivers, and streams. Storm water flows are exacerbated by high proportions of impervious surfaces (e.g., rooftops, parking lots, sidewalks) and are important to the management of surface water. For instance, a large, sudden flow from a heavy rain event could scour a streambed and harm biological resources within that ecosystem. Storm water systems

convey precipitation away from developed sites to receiving surface waters. Various systems and devices might be used to slow the movement of water. Storm water systems provide the benefit of reducing sediments and other contaminants that would otherwise flow directly into surface waters. Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted precipitation event often leads to downstream flooding and the environmental and economic damages associated with flooding. Higher densities of development, such as those found in urban areas, require greater degrees of storm water management because of the higher proportions of impervious surfaces that occur in urban centers.

The CWA (33 U.S.C. 1251 et seq.) sets the basic structure for regulating discharges of pollutants to U.S. waters. Section 404 of the CWA (33 U.S.C. 1344) establishes a Federal program to regulate the discharge of dredged and fill material into waters of the United States. The U.S. Army Corps of Engineers (USACE) administers the permitting program for this law. Section 401 of the CWA (33 U.S.C. 1341) requires that proposed dredge and fill activities permitted under Section 404 be reviewed and certified by the designated state agency that the proposed project will meet state water quality standards. The Federal permit is deemed to be invalid unless it has been certified by the state. Washington State Department of Ecology (WDOE) is designated by statute as the state agency responsible for issuing Section 401 water quality certification.

Washington Department of Fish and Wildlife (WDFW) has the authority to regulate any form of work that uses, diverts, obstructs, or changes the natural flow or bed of any fresh water through the Hydraulic Project Approval (HPA) process (Chapter 77.55 Revised Code of Washington [RCW]).

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

EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action would occur within a floodplain. This determination typically involves consultation of appropriate FEMA Flood Insurance Rate Maps, which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains unless the agency determines that there is no practicable alternative. Where the only practicable alternative is to site in a floodplain, a specific step-by-step process must be followed to comply with EO 11988 outlined in the FEMA document *Further Advice on EO 11988 Floodplain Management*. As a planning tool, the NEPA process incorporates floodplain management through analysis and public coordination of the EA.

3.1.7 Biological Resources

Biological resources include wildlife (fauna), vegetation (flora), and the ecosystems in which these resources occur. Specific concerns relating to biological resources consist of declines in species diversity, impacts on threatened and endangered species, and degradation of wetlands and riparian zones.

Vegetation and Wildlife. Sensitive and protected biological resources include federally listed (endangered or threatened), proposed, and candidate species, and designated or proposed critical habitat; species of concern managed under Conservation Agreements or Management Plans; and state-listed species.

Threatened and Endangered Species. The Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.), specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure an action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction of critical habitat for these species, unless the agency has been granted an exception. The Secretary of the Interior, using the best available scientific data, determines which species are officially threatened or endangered. Washington maintains a list of Species of Concern pursuant to Washington Administrative Code (WAC) 232-12-297. Species of Concern in Washington include all state endangered, threatened, sensitive, and candidate species. Species of Concern also include Federal endangered, threatened, and candidate fish stocks.

A map of fish and wildlife critical areas, published by the Spokane County Department of Building and Planning, indicates that no protected species are within or adjacent to the on- or off-base MFH areas (see Figure 3-2). The currently developed portions of the MFH parcels are not expected to provide suitable

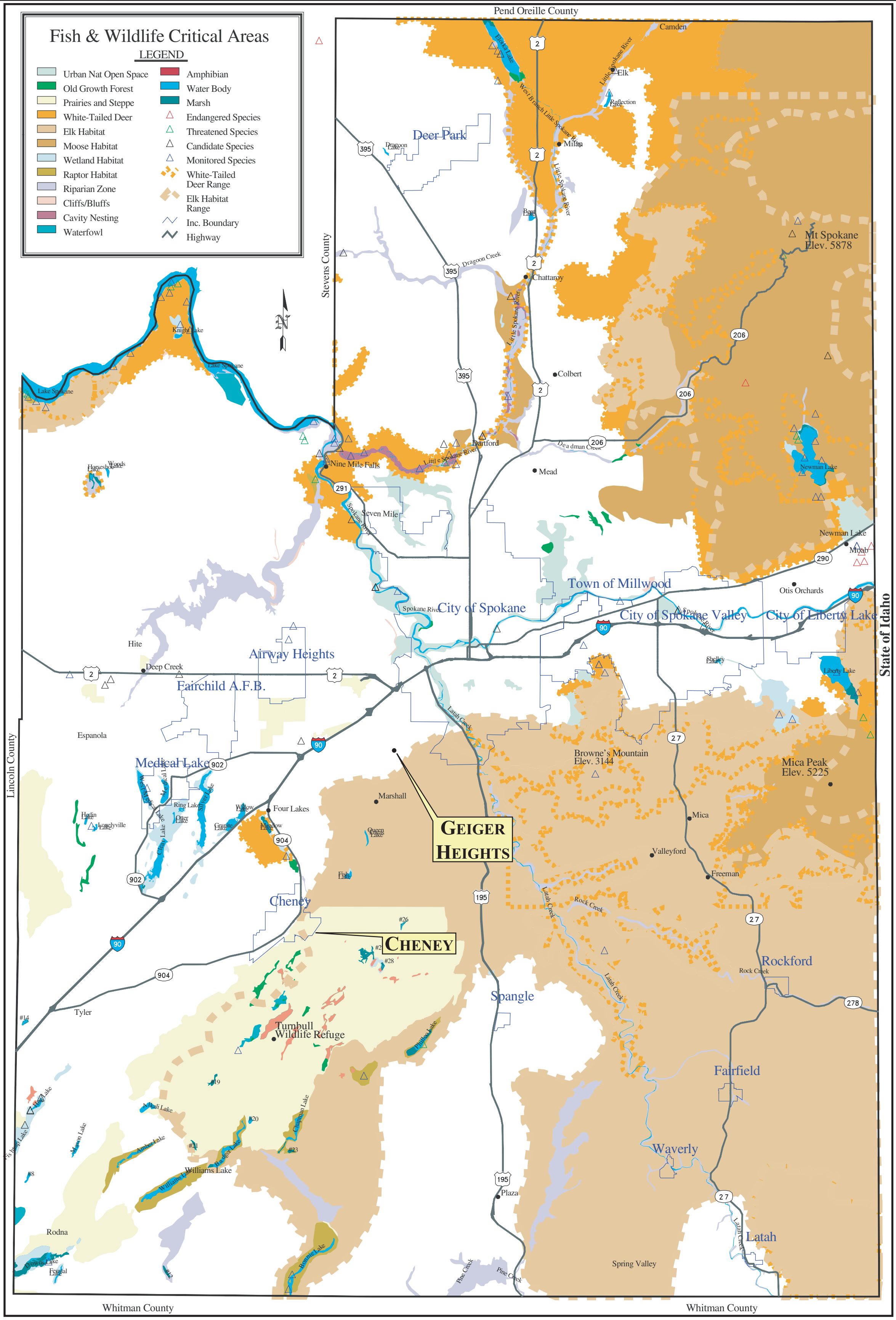


Figure 3-2. Map of Critical Areas and Protected Species Locations in Spokane County

habitat for Federal- or state-listed threatened or endangered species. The Nature Conservancy conducted a survey for threatened and endangered species at Fairchild AFB in 1993 and 1994. WNHP reconfirmed the survey in 1999. Results from the survey included no species present in the MFH areas (FAFB 2004a). Accordingly, USAF has omitted detailed examination of threatened and endangered species within the MFH areas of Fairchild AFB.

Wetlands. Wetlands are an important natural system and habitat because of the diverse biologic and hydrologic functions they perform. These functions include water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, wildlife habitat, and erosion protection. Wetlands are protected as a subset of the "the waters of the United States" under Section 404 of the CWA. The term "waters of the United States" has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or saturated with ground or surface water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 328).

The USACE is responsible for making jurisdictional determinations and regulating wetlands under Section 404 of the CWA. The USACE also makes jurisdictional determinations under Section 10 of the Rivers and Harbors Act of 1899. The Natural Resources Conservation Service (NRCS) has developed procedures for identifying wetlands for compliance with the Food Security Act of 1985, and the National Wetlands Inventory (NWI) has developed a classification system for identifying wetlands. Through the NWI, the USFWS is the principal Federal agency that provides information to the public on the extent and status of wetlands.

EO 11990, *Protection of Wetlands*, requires that Federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland.

Two state laws, the State Water Pollution Control Act (Chapter 90.48 RCW), and the Shoreline Management Act (SMA) (Chapter 90.58 RCW), give WDOE authority to regulate wetlands. The State Water Pollution Control Act designates WDOE as the lead state agency for implementing provisions of the Federal CWA. The SMA regulates only wetlands within 200 feet of shoreline water bodies and

wetlands "associated" with these water bodies. WDOE encourages the use of the Washington State Wetland Rating System (either Eastern or Western Washington version) to assist with decisionmaking about the management of a particular site. The four basic criteria that determine a wetland's placement in a category are rarity, irreplaceability, sensitivity to disturbance, and habitat functions. Spokane County maintains authority to regulate activities in wetlands in the county (Chapter 11.20 Critical Area Ordinance).

The Natural Resources Conservation Service (NRCS) conducted a wetland inventory on Fairchild AFB and associated installations in 1991. Wetlands were identified and delineated using the methodology contained in the 1989 *Federal Manual for Identifying and Delineating Jurisdictional Wetland*s (FAFB 2004a). Most wetlands identified in the inventory are found in the southern portion of the base. Only one wetland, located north of NCO Capehart, is in proximity to the area in which the Proposed Action would occur. No wetlands were identified within the on- and off-base MFH parcels. Figure 3-3 presents the locations of wetlands on base. By implementing Best Management Practices (BMPs) in accordance with National Pollution Discharge Elimination System (NPDES) requirements for storm water runoff from land disturbing activities, potential impacts on the wetland adjacent to NCO Capehart would be prevented. There would be no other impacts on wetlands as a result of the Proposed Action. Therefore, USAF has omitted detailed examination of wetland resources.

Riparian Areas. Riparian areas are transitional between terrestrial and aquatic ecosystems and are distinguished by gradients in biophysical conditions, ecological processes, and biota. Riparian areas are adjacent to perennial, intermittent, and ephemeral streams, lakes, and estuarine-marine shorelines. They are areas through which surface and subsurface hydrology connect water bodies with their adjacent uplands. They include those portions of terrestrial ecosystems that significantly influence exchanges of energy and matter with aquatic ecosystems. Specifically, they include portions of the channel system and associated features (e.g., gravel bars, islands, and wood debris); a vegetated zone of various successional states influenced by floods, sediment deposition, soil-formation processes, and water availability; and a transitional zone to the adjacent uplands, all underlain by an alluvial aquifer (NRC 2002).

Riparian areas provide stream microclimate modification and shade, bank stabilization and modification of sediment processes, organic litter and wood to aquatic systems, nutrient retention and cycling, wildlife habitat, and food-web support for a wide range of aquatic and terrestrial organisms (NRC 2002). There is no Federal regulatory program that attempts to manage ecologically harmful activities within riparian areas (e.g., livestock grazing, clear-cutting). However, there are Federal programs that apply to certain

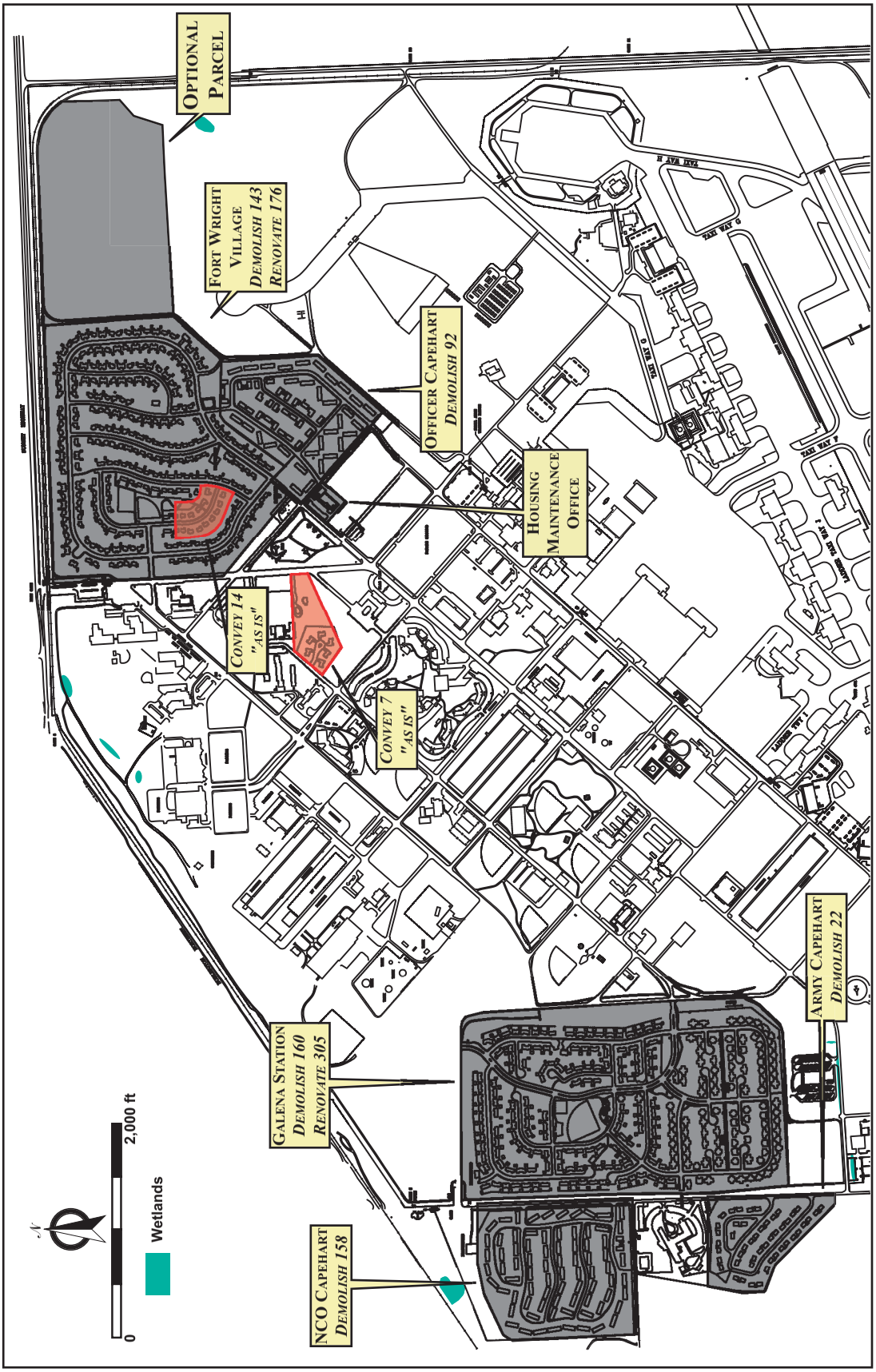


Figure 3-3. Location of Wetlands in the MFH Area on Fairchild AFB

activities in riparian areas. Section 404 of the CWA applies only to those riparian areas that are included in the jurisdictional definition of wetlands. The ESA has served as authority to regulate the development and use of land in riparian areas that provide essential habitat for a listed threatened or endangered plant or animal species. Section 303(d) of the CWA requires states and USEPA to identify waters not meeting state water-quality standards and to develop Total Maximum Daily Loads (TMDLs). A TMDL is the maximum amount of a pollutant that a water body can receive and still be in compliance with state water quality standards. After determining TMDLs for impaired waters, states are required to identify all point and nonpoint sources of pollution in a watershed that are contributing to the impairment, and to develop an implementation plan that will allocate reductions to each source in order to meet the state standards. The TMDL program is currently the nation's most comprehensive attempt to restore and improve water quality. The TMDL program does not explicitly require the protection of riparian areas. However, implementation of the TMDL plans typically call for restoration of riparian areas as one of the required management measures for achieving reductions in nonpoint source pollutant loadings.

WDOE has proposed riparian buffer ranges to be used in conjunction with different category wetlands. Spokane County maintains authority to regulate activities in wetland riparian buffers in the county (Chapter 11.20 Critical Area Ordinance). No riparian areas were located within the on- and off-base MFH parcels. Accordingly, USAF has omitted detailed examination of riparian resources.

Protection of Valuable Natural Resources. Washington counties are required to protect critical areas through the adoption of policies and regulations. Critical areas include (a) wetlands, (b) areas with a critical recharging effect on aquifers used for domestic purposes, (c) fish and wildlife habitat conservation areas, (d) frequently flooded areas, and (e) geologically hazardous areas. Details of Spokane County's critical areas are outlined in the County's Comprehensive Plan. Spokane County's Critical Areas Ordinance (Chapter 11.20) is intended to help protect and preserve these limited natural resources.

The goal of designating critical areas is that they will be preserved, protected, managed, and restored so that the functions and values of these areas are maintained. The Critical Areas Ordinance contains numerous requirements to help protect designated critical areas. The most prevalent include setback and use restrictions. Briefly, for wetlands, "buffer" setbacks can range from 25 to 200 feet, depending on the classification of the wetland; fish and wildlife habitat requirements regulate uses within a quarter-mile of "point" locations (dens and nests) of priority species and require "buffers" ranging from 25 to 250 feet of riparian areas adjacent to flowing rivers and some creeks; geohazard areas requirements regulate development on slopes of 30 percent or greater; and Critical Aquifer Recharge Areas limit allowable uses within designated areas to help protect groundwater quality.

3.1.8 Cultural Resources

"Cultural resources" is an umbrella term for many heritage-related resources. The National Historic Preservation Act (NHPA) defines cultural resources as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources might provide insight into living conditions in previous civilizations or might retain cultural and religious significance to modern groups.

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

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

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

Architectural resources include standing buildings, bridges, dams, and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, might warrant protection if they have the potential to gain significance in the future.

Traditional cultural properties or *sacred sites* can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

The EA process and the consultation process prescribed in Section 106 of the NHPA require an assessment of the potential impact of an undertaking on historic properties that are within the proposed project's Area of Potential Effect (APE), which is defined as the geographic area(s) "within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." Under Section 110 of the NHPA, Federal agencies are required to locate and inventory all resources under their purview that are recommended as eligible for inclusion in the NRHP

on owned, leased, or managed property. In accordance with EO 12372, *Intergovernmental Review of Federal Programs*, determinations regarding the potential effects of an undertaking on historic properties are presented to the SHPO.

The APE for the Proposed Action is confined to each of the MFH parcels where construction, renovation, and demolition would occur. On base, the APE is defined as Army Capehart, NCO Capehart, Galena Station, Fort Wright Village, Commander's Circle, Officer Capehart, the Housing Maintenance Office, and the optional parcel. Off base, the APEs are the Geiger Heights and Cheney housing parcels.

3.1.9 Socioeconomics and Environmental Justice

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

Data in three areas provide key insights into socioeconomic conditions that might be affected by a proposed action. Data on employment identify gross numbers of employees, employment by industry or trade, and unemployment trends. Data on personal income in a region can be used to compare the "before" and "after" effects of any jobs created or lost as a result of a proposed action. Data on industrial or commercial growth or growth in other sectors provide baseline and trend line information about the economic health of a region.

In appropriate cases, data on an installation's expenditures in the regional economy help to identify the relative importance of an installation in terms of its purchasing power and jobs base.

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

Socioeconomic data shown in this chapter are presented at metropolitan, county, and state levels to characterize baseline socioeconomic conditions in the context of regional and state trends. Data have

been collected from previously published documents issued by Federal, state, and local agencies; from state and national databases (e.g., U.S. Bureau of Economic Analysis' Regional Economic Information System).

Environmental Justice. There are no Federal regulations on socioeconomics, but there is one EO that pertains to environmental justice issues. This EO is included in the environmental justice section because it relates to various socioeconomic groups and the health effects that could be imposed on them. On February 11, 1994, President Clinton issued EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires that Federal agencies' actions substantially affecting human health or the environment do not exclude persons, deny persons benefits, or subject persons to discrimination because of their race, color, or national origin. The EO was created to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies. Consideration of environmental justice concerns includes race, ethnicity, and the poverty status of populations in the vicinity of a proposed action. Such information aids in evaluating whether a proposed action would render vulnerable any of the groups targeted for protection in the EO.

3.1.10 Infrastructure

Infrastructure consists of the systems and physical structures that enable a population in a specified area to function. Infrastructure is wholly human-made, with a high correlation between the type and extent of infrastructure and the degree to which an area is characterized as "urban" or developed. The availability of infrastructure and its capacity to support growth are generally regarded as essential to economic growth of an area. The infrastructure components to be discussed in this section include the transportation network, electricity, natural gas, communications, water supply, sanitary systems and wastewater, and solid waste.

The availability of landfills to support a population's residential, commercial, and industrial needs is integral in evaluating municipal solid waste (MSW). Alternative means of waste disposal might involve waste-to-energy programs or incineration. In some localities, landfills are designed specifically for, and are limited to, disposal of construction and demolition (C&D) debris. Recycling programs for various waste categories (e.g., glass, metals, and papers) reduce reliance of landfills for disposal.

3.1.11 Hazardous Materials and Waste Management

Hazardous material is defined as any substance with physical properties of ignitability, corrosivity, reactivity, or toxicity that might cause an increase in mortality, serious irreversible illness, and incapacitating reversible illness, or that might pose a substantial threat to human health or the environment. Hazardous waste is defined as any solid, liquid, contained gaseous, or semisolid waste; or any combination of wastes that poses a substantial present or potential hazard to human health or the environment.

Evaluation of hazardous materials and waste management focuses on USTs and aboveground storage tanks (ASTs) and the storage, transport, and use of pesticides and herbicides; fuels; and petroleum, oils, and lubricants (POL). Evaluation might also extend to generation, storage, transportation, and disposal of hazardous wastes when such activity occurs at or near the project site of a proposed action. In addition to being a threat to humans, the improper release of hazardous materials and wastes can threaten the health and well-being of wildlife species, botanical habitats, soil systems, and water resources. In the event of release of hazardous materials or wastes, the extent of contamination varies based on type of soil, topography, and water resources.

Special hazards are those substances that might pose a risk to human health, but are not regulated as contaminants under the hazardous waste statutes. Included in this category are ACM, LBP, radon, polychlorinated biphenyls, and unexploded ordnance. The presence of special hazards or controls over them might affect, or be affected by, a proposed action. Information on special hazards describing their locations, quantities, and condition assists in determining the significance of a proposed action.

The Comprehensive Environmental Response, Compensation, and Liability Act, as amended by the Superfund Amendments and Reauthorization Act and the Toxic Substances Control Act, define hazardous materials. The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act (RCRA), which was further amended by the Hazardous and Solid Waste Amendments, defines hazardous wastes. In general, both hazardous materials and wastes include substances that, because of their quantity, concentration, physical, chemical, or infectious characteristics, might present substantial danger to public health or welfare or the environment when released or otherwise improperly managed.

Through its Environmental Restoration Program (ERP), DOD evaluates and cleans up sites where hazardous wastes have been spilled or released to the environment. The ERP provides a uniform, thorough methodology to evaluate past disposal sites, control the migration of contaminants, minimize potential hazards to human health and the environment, and clean up contamination. Description of ERP

activities provides a useful gauge of the condition of soils, water resources, and other resources that might be affected by contaminants. It also aids in identification of properties and their usefulness for given purposes (e.g., activities dependent on groundwater usage might be restricted until remediation of a groundwater contaminant plume has been completed).

3.2 On-Base MFH

3.2.1 Noise

Construction Program. Building construction, modification, and demolition work can cause noise emissions well above ambient sound levels. A variety of sounds come from cranes, cement mixers, welding, hammering, boring, and other work processes. Construction equipment and building operations are often poorly silenced, but quickly become a part of the ambient noise levels heard every day. Table 3-2 lists noise levels associated with common types of construction equipment that might be used to build various buildings and other structures.

Aircraft Operations. The Fairchild AFB runways and Spokane International Airport are south and east, respectively, of the on-base MFH area. Due to the proximity of the MFH area to the active runways, military aircraft operations were reviewed in the 1995 Air Installation Compatible Use Zone (AICUZ) Study. Military aircraft activity from Fairchild AFB totaled approximately 400 operations a day (USAF 1995). Table 3-3 provides operations counts for a typical busy day at Fairchild AFB.

Table 3-2. Noise Levels for Construction Equipment

Equipment	Average (dBA)	Range (dBA)
Dozers, Dumpers	96	89–103
Front end loaders	88	85–91
Excavators	87	86–90
Backhoes	86	79–89
Scrapers	96	84–102
Compressors	79	62–92
Pavers	101	100–102
Rollers (compactors)	90	79–93
Graders, trucks, concrete pumps and mixers, generators	< 85	

Source: Eaton 2000

Table 3-3. Fairchild AFB Aircraft Daily Operations

Aircraft	Average Daily Operations
KC-135	292
C-12	40
UH-1N	64
A-6	2
P-3	3
Total	**401**

Source: USAF 1995

Transportation Operations. The Washington State Department of Transportation *2003 Annual Traffic Report* reports an average daily traffic volume of 9,500 units after the junction with Brooks Road (heading east on U.S. Highway 2 west of Fairchild AFB) and 20,000 units after the junction with Craig Road (heading east on U.S. Highway 2 east of Fairchild AFB) (WSDOT 2003).

3.2.2 Land Use

On-base land use categories include airfield, aircraft operations and maintenance, industrial, administrative, community (commercial), community (service), medical, housing (accompanied), housing (unaccompanied), outdoor recreation, and open space. Table 3-4 presents a breakdown of acreage within these land use categories. Improved and semi-improved areas make up approximately 2,800 acres and are mostly in the north portion of the base. Primarily unimproved areas, including wetlands, open fields, stands of ponderosa pine, and shrub areas make up approximately 1,400 acres in the northeast corner and south portion of the base. The areas in the northeast portion of the base, used for a trap/skeet range and golf driving range, are considered improved (92 ARW 2004).

3.2.3 Air Quality

Regional Air Quality. USEPA classifies the air quality in an air quality control region (AQCR) or in subareas of an AQCR according to whether the concentration of criteria pollutants in ambient air exceeds the primary or secondary NAAQS. All areas within each AQCR are therefore designated as either "attainment," "nonattainment," or "unclassified" for each of the six criteria pollutants. Attainment means that the air quality within an AQCR is better than the NAAQS, nonattainment means that air quality exceeds NAAQS, and unclassified means that there is not enough information to appropriately classify an AQCR so the area is considered attainment.

Table 3-4. Fairchild AFB Land Use (By Category)

Category	Acreage
Airfield	1,070
Aircraft operations and maintenance	225
Industrial	730
Administrative	83
Community (Commercial)	70
Community (Service)	61
Medical	15
Housing (Accompanied)	294
Housing (Unaccompanied)	50
Outdoor Recreation	203
Open Space	1,400
Total	**4,201**

Source: FAFB 2004a

Spokane County is within the Eastern Washington-Northern Idaho Interstate (EWNII) AQCR. The EWNII AQCR consists of the counties of Adams, Asotin, Columbia, Garfield, Grant, Lincoln, Spokane, and Whitman, Washington; and Benewah, Kootenai, Latah, Nez Perce, and Shoshone, Idaho. Portions of Spokane County, which include the Spokane Urban Area as defined by the Washington Department of Transportation, are designated as a *serious* nonattainment area for CO and a *moderate* nonattainment area for particulate matter. Spokane County is in attainment with all other criteria pollutants (USEPA 2004c).

The WDOE is responsible for implementation of the CAA and has adopted the Federal primary and secondary NAAQS. WDOE has developed a USEPA-approved SIP. The State of Washington submitted a CO Attainment Plan to USEPA in January 1993. USEPA approved the CO Attainment Plan in September 1997. The plan relies on control strategies for tracking vehicle miles traveled; vehicle emissions inspection and maintenance programs; oxygenated fuels, transportation conformity; and reasonably available control measures for residential wood combustion, point sources, and new source review (USEPA 2004b). The State of Washington also submitted a PM_{10} Attainment Plan to USEPA in December 1994. USEPA approved the plan in January 1997. The plan relies on control strategies for windblown dust from unpaved and paved roads and residential wood combustion (USEPA 2004d).

The Spokane area enjoys a moderate four season climate. The Cascade Mountain Range protects the area from the damp coastal weather that is often associated with the Northwest, particularly the Puget Sound area. The Rocky Mountains to the east of Spokane perform the same function to keep the region's

winters relatively mild. Yearly precipitation averages only 16.71 inches. Maximum and minimum normal monthly temperatures ranges vary from 33.9 degrees Fahrenheit (°F) to 23.5 °F in January to 82.8 °F to 55.2 °F in July. The mean annual precipitation is 18.84 inches, with an average of 2.17 inches in January and an average of 0.82 inches in July. Precipitation occurs on average 90 days per year (WRCC 2004).

Fairchild AFB. While portions of Spokane County are in nonattainment for CO and particulate matter, Fairchild AFB is outside the nonattainment boundary. Fairchild AFB is considered in attainment for all criteria pollutants.

The Spokane County Air Pollution Control Authority (SCAPCA) works with Fairchild AFB in monitoring and implementing the installation's stationary source permits and emissions inventory. As required by SCAPCA permitting requirements, Fairchild AFB routinely calculates annual criteria pollutant emissions from stationary emissions sources and provides this information to the state. However, there is no routine requirement to calculate pollutant emissions calculations for aircraft operations, government-owned and privately owned vehicles (GOVs and POVs), aircraft engine testing, aerospace ground equipment (AGE), and other sources not included in the state's stationary source permitting program.

Fairchild AFB is classified as a synthetic minor source and has voluntary limits on air emissions (see Chapter 173-401-300 WAC). There are various stationary combustion sources on base that have the potential to emit, including the base's hospital boilers, other boilers, and generators. VOCs are emitted primarily from handling of organic liquids (i.e., refueling activities). Miscellaneous particulate matter sources at Fairchild AFB include abrasive blasting units, woodworking equipment, and a dust collection system designed to capture emissions from a firing range (at the target end of the range) (SCAPCA 2000).

Each calendar year, Fairchild AFB is required to prepare and submit an annual emissions inventory to Headquarters AMC. The purpose of this annual emissions inventory is to estimate and document air pollutant emissions from stationary sources. Stationary source categories include external combustion sources, internal combustion sources, fuel transfer/dispensing, storage tanks, surface coating operations, degreasers/solvent cleaners, aircraft fuel cell maintenance, off-aircraft engine testing, miscellaneous chemical usage, and dust collectors.

3.2.4 Safety

Human Health and Safety. All contractors performing construction activities at USAF installations are responsible for following Federal OSHA standards and are required to conduct construction activities in a manner that does not pose any risk to contractors or base personnel. Industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and use and availability of Material Safety Data Sheets. Industrial hygiene is the responsibility of contractors, as applicable. Contractor industrial hygiene responsibilities include reviewing potentially hazardous workplaces; monitoring exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g., noise propagation and deteriorated structures), and biological (e.g., infectious waste, insects, snakes) agents; recommending and evaluating controls (e.g., ventilation and respirators) to ensure personnel are properly protected or unexposed; and ensuring a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures or engaged in hazardous waste work.

There are currently no electromagnetic radiation safety zones, antenna look-angles, primary surface zones, clear zones, accident potential zones, or quantity distance safety arcs that cross into any of the on-base MFH complexes, the optional 50-acre parcel, or the Housing Maintenance Office (92 ARW 2004).

Handling, storage, and disposal of hazardous materials and hazardous wastes at Fairchild AFB are controlled by regulations of the USAF, USEPA, and the State of Washington. Information regarding hazardous materials; hazardous wastes; and associated programs, policies, and regulations applicable to Fairchild AFB is described in Section 3.2.11.

Building Safety. All of the on-base MFH units, except for 7 units of the Commander's Circle and 14 units at Fort Wright Village, were originally constructed in the 1950s and 1960s. The majority of these structures were renovated and rebuilt in the early 1990s. These intensively renovated units meet today's building codes regarding safety and building materials but might not meet current USAF standards for size and amenities. There is a housing maintenance backlog at Fairchild AFB. Many of the MFH units have maintenance issues such as wet basements and foundations, damaged windows and roofing, and street damage. All of the on-base MFH complexes are occupied except for Army Capehart.

The 7 MFH units of Commander's Circle were constructed in 1996 and 14 MFH units at Fort Wright Village were constructed in 2000. These newer structures were built with modern building materials and in accordance with updated Spokane County and State of Washington building codes.

There are no structures on the optional 50-acre parcel. The Housing Maintenance Office was constructed in 2000.

Emergency Services. Fairchild AFB provides fire, emergency medical, and police (force protection) services for the entire base. The 92d Civil Engineer Squadron's Fire and Emergency Services Flight (92 CES/CEF) is a full-service, 24-hour department that provides crash, structural, and emergency medical first response; technical rescue; hazardous material and weapons of mass destruction incident response; and fire prevention, safety, and training/education services to Fairchild AFB. The 92 CES/CEF has two fire stations and a total staff of 73. Its emergency equipment consists of four aircraft rescue firefighting vehicles, two structural vehicles, one structural pumper, two water tenders, one technical rescue vehicle, one hazardous materials truck, two hazardous materials response trucks, one weapons-of-mass destruction trailer, one minipumper, two command vehicles, one safety vehicle, three support vehicles, and three water trailers. There are almost 450 fire hydrants throughout the base, including the MFH complexes (92 ARW 2004).

The medical complex is off Graham Road on the west side of the base. It includes a medical clinic, dental clinic, and a reserve medical training facility. The medical complex was constructed in 1956 and is planned for closure (long-range plan) after the construction of a new medical clinic facility (92 ARW 2004). The medical complex is operated by the 92d Medical Group.

Fairchild AFB is surrounded by a 6-foot, chain-link fence topped with barbed wire and has two manned, security gates (Main Gate and Rambo Gate). Graham Gate is only used for special occasions. The base is patrolled 24-hours a day by the 92d Security Forces Squadron.

Aircraft Safety. Risks associated with aircraft takeoffs and landings at Fairchild AFB are presented in the AICUZ Study, which was developed to address safety issues and to identify hazard potentials due to aircraft accidents, obstructions to navigation, and incompatible land uses based on exposure levels to aircraft noise in the surrounding area.

The Fairchild AFB AICUZ Study defines accident potential zones, obstruction-free areas, setback areas, and clear zones relative to runways and taxiways, which in turn result in constraints in the location of facilities on base. The on-base MFH complexes, optional 50-acre parcel, and Housing Maintenance Office are not located within the primary surface, clear zones, or accident potential zones of the Fairchild AFB runway and taxiways. Army Capehart is the closest parcel to the runway at a distance of 3,000 feet. Portions of Fort Wright Village, Army Capehart, and the optional 50-acre parcel are within the 65 DNL contour. See Sections 3.1.1 and 3.2.1 for additional information regarding on-base aircraft noise.

Spokane County has Airport Overlay Zones (AOZ) that act to reduce the potential for airport hazards from Fairchild AFB, Spokane International Airport, Felts Field, and Deer Park Airport. The AOZ program is similar in design and intent to the AICUZ program. It establishes guidelines for development around the four designated airports and a process for how applications for development are handled. The AOZ program directive is in the Spokane County Zoning Code, Chapter 14.700. The AOZs consist of conical areas, approach areas, and accident potential zones (Spokane County Zoning Code Chapter 14.700). The on-base MFH complexes, 50-acre optional parcel, and Housing Maintenance Office are not within any of the Spokane County AOZs.

Height and land use restrictions within Fairchild AFB and outside the runway protection zones must be in compliance with Part 77 of the Federal Aviation Regulations (FAR) "Objects Affecting Navigable Airspace." All proposed improvements must comply with airport restrictions on horizontal and vertical clearance.

3.2.5 Geological Resources

Topography and Geology. The general topography of Fairchild AFB and the on-base MFH parcels is flat with an average elevation of 2,340 feet (709 kilometers) above mean sea level (MSL) (FAFB 2004a).

Fairchild AFB and the on-base MFH parcels are near the eastern edge of the Columbia Basin physiographic province. The Columbia Basin province is primarily characterized by incised rivers, extensive plateaus, and anticlinal ridges (WDNR 2001a). The Cascade mountain range is 180 miles west of the base. The Selkirk Mountains and Okanogan and Kettle River Ranges are north of the base and are oriented north to south. They connect to the Cascades to the west and to the Rocky Mountains to the east. The Bitterroot Range of the Rocky Mountains is 90 miles east of Fairchild AFB and the Blue Mountains are 100 miles south of the base.

The Spokane region was formed by the Columbia Plateau lava flows and glacial floodwaters that widened the Spokane River valley and deposited a layer of gravel up to 500 feet (152 meters) thick. Basalt outcrops, the result of cooled lava, are the predominant geological features. Fairchild AFB and the on-base MFH parcels are on the Channeled Scablands of the Columbia Basin. The Channeled Scablands are unique geological erosion features that were created in the Columbia River Plateau by cataclysmic floods during the Pleistocene epoch (between 10,000 and 15,000 years ago). The floods occurred about every 50 years and lasted a few days to a few weeks, leaving a deeply scarred plateau.

Natural Hazards. The State of Washington has an average of 1,000 earthquakes per year (WDNR 2001b). It is characterized by a moderate to high level of seismic activity, and Spokane has a moderate level of seismic activity (WSU 2001). The Spokane area does not typically experience a large quantity of earthquakes because of its location in relation to fault zones. The most recent seismic activity felt in Spokane was in 2001, when there was a series of unusual earthquakes. The strongest earthquakes occurred on November 11, 2001, with a magnitude of 4.0 on the Richter scale (WSU 2001).

Soils. The topsoil at Fairchild AFB consists of a silt loam and a fine sandy loam, with an average depth of 11 inches (28 centimeters). The subsoils are sandy and gravelly loams with an average depth of 28 inches (72 centimeters) that lie on top of bedrock (FAFB 2004a). Two major soil associations are present in the Fairchild AFB area, the Bong and Phoebe association and the Cheney and Uhlig association (USDA 1968).

The Bong and Phoebe association is found in the outwash plains in the northern and central portion of the base. It consists of gently sloping, well-drained, moderately high-permeability soils with a sandy and gravelly coarse substratum.

The Cheney and Uhlig association is found on the grassland areas of the glacial outwash plains. It covers the eastern and western boundaries of the base as well extending towards the south boundary. These soils are gently sloping, well-drained and moderately permeable. The Uhlig silt loam and the Cheney gravelly silt loam are shallow soils that have a medium fertility underlaid by a gravel and cobblestone layer.

Soil classifications on base are in the process of being updated. The likely classification of soils in the MFH areas are Urban Land, which are soils resulting from any form of human disturbance.

3.2.6 Water Resources

Groundwater. Fairchild AFB is underlain by alluvial sediments and two layers of basalt associated with the regional Columbia River Basalt Group (AFCEE 2000). The uppermost basalt is referred to as Basalt A, and the deeper basalt sequence is referred to as Basalt B. The top of Basalt A is fractured and highly weathered in places, while the center is more massive and fine-grained with infrequent fractures and low permeability. Basalt B is porous and vesicular at the top and progressively denser with depth (AFCEE 2000).

The uppermost groundwater in the area is typically encountered from 3 to 12 feet below ground surface in alluvium or in the fractured and weathered uppermost portion of Basalt A. Groundwater flows generally from west to east across the base. In some locations, a high degree of hydraulic conductivity exists

between the alluvium and shallow basalt water-bearing zones. In other areas, the shallow alluvium and basalt bedrock water-bearing zones are separated by a low-permeability clay layer. Groundwater flow within Basalt A occurs predominantly where the number of interconnected fractures is highest in the upper and lower portions of the formation. Vertical groundwater movement through Basalt A is typically slow because of the tightness of fractures within the center of the basalt formation (AFCEE 2000).

Fairchild AFB receives almost all of its water from wells at the Fort George Wright Annex. However, a seasonal well at the extreme southeast corner of the base pumps water to the water distribution grid. This well is used only when water demands cannot be met from the Fort George Wright Annex wells (92 ARW 2004). All wells are monitored closely at Fairchild AFB for possible contamination.

Surface Water. Fairchild AFB is situated in portions of the Lower Spokane, Hangman, and Palouse watersheds (WDOE 2004). The Lower Spokane watershed flows into the Franklin D. Roosevelt Lake. Figure 3-4 shows the surface waters within the MFH areas on base. Fairchild AFB is divided into eight drainage basins correlating to the National Pollutant Discharge Elimination System (NPDES) Storm Water General Multisector General Permit (No. WAR05A025) and the SWPPP (92 ARW 2004). Existing permits apply to six of the eight basins (Basins 2 and 8 are omitted from the SWPPP and permits because no industrial activities occur there). Table 3-5 provides descriptions of the eight drainage basins on base. Fort Wright Village and Officer Capehart are in Basin 2. The remaining MFH complexes on base are within Basin 1. Basin 1 is the largest basin, draining about one-third of Fairchild AFB. More than one-third of Basin 1 is covered by impervious surfaces. There are numerous surface water conveyances in this basin, such as drainage swales and grass-lined open ditches (FAFB 2004a).

The storm drainage system is composed of storm water collection catch basins, drywells, collection piping, lagoons, ditches, and other storm water conveyances (92 ARW 2004). The majority of runoff at Fairchild AFB infiltrates the ground or drains to a drainage pond. Since the majority of precipitation infiltrates or evaporates in localized topographic depressions, a significant portion of Fairchild AFB generates little storm runoff (92 ARW 2004). The base contains approximately 215 acres of wetlands with much of the remaining land resting upon a shallow, perched water table (see Section 3.2.7 for more information on Fairchild AFB wetlands). Evidence of this shallow water table is apparent in natural depressions and drainage ditches (92 ARW 2004).

Storm water collection ponds located in the southwest area of the base function as containment/settling ponds, which are then discharged into an unnamed ditch. Discharge from the ditch is monitored (FAFB 2004a).

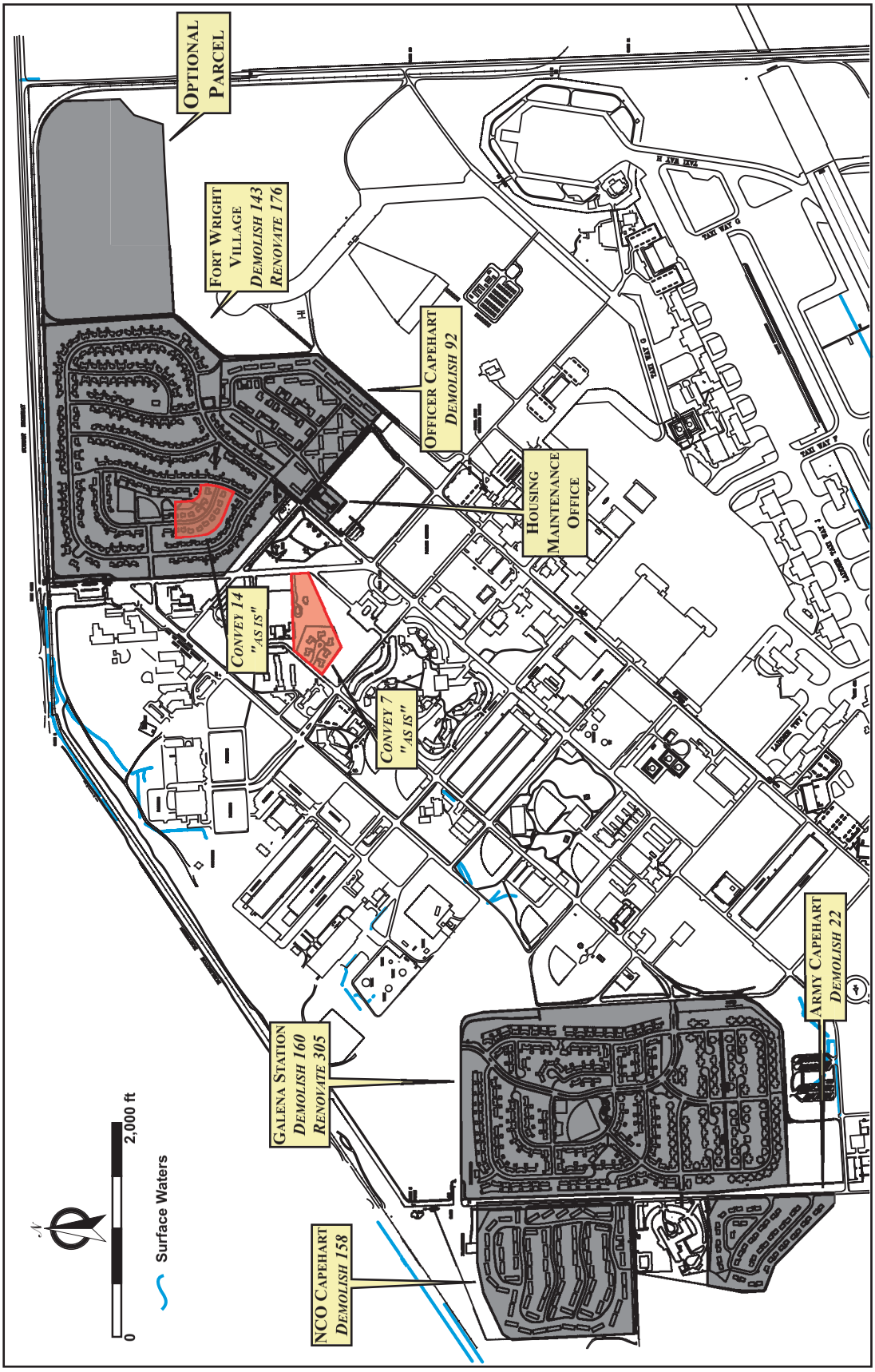


Figure 3-4. Location of Surface Waters Within On-Base MFH on Fairchild AFB

Table 3-5. Fairchild AFB Drainage Areas

Basin ID	Area of Impervious Surface (acres)	Description of Basin
1	700	Hospital, residential areas, majority of flightline and airport industrial area, hangars for aircraft maintenance and repair, building maintenance and repair shops, fuel storage and handling facilities, heat generating facilities, aircraft parking/fueling stubs, runway and taxi area, MFH
2	not listed	MFH
3	100	Civil Engineering building and maintenance shops, Bulk Fuel Storage, gas station, Defense Reutilization and Marketing office storage yard, Hazardous Materials Pharmacy facility
4	60	Portion of flightline, inactive base landfill
5	170	Washington Air National Guard hangars and aircraft support facilities, portion of the flightline
6	30	Two weapons storage areas; also contains undisturbed native growth areas with wetlands, dry-land grasses, and natural drainage channels
7	50	Facility maintenance shops, motor pool, Survival School, large acreage of undeveloped land
8	5	Mainly undeveloped land with dry-land grasses and wetlands

Source: 92 ARW 2004

Floodplains. Fairchild AFB has two land holdings in the 100-year floodplain: Water System Annex No. 1 and a Clear Lake Recreation facility, both of which are auxiliary sites not on the main base (92 ARW 2004). According to the FEMA Flood Insurance Rate Maps, the MFH parcels and the optional parcel on base are not within the regulatory 100- or 500-year floodplains (FAFB 2004a).

3.2.7 Biological Resources

Fairchild AFB is a Category I installation, as defined in AFI 32-7064. Category I installations contain suitable habitat for conserving and managing fish and wildlife, while Category II installations do not. However, nearly three-fourths of the base is developed land (e.g., buildings, runways, and landscaped fields). The majority of undeveloped land and valuable habitat in terms of size, species abundance, and management potential, occurs in the southern portion of the base. The MFH areas, both on-base and off-base, are situated in developed areas; therefore, no further description of the undeveloped land and valuable habitat at Fairchild AFB is necessary for this Proposed Action. Only descriptions of resources specific to the MFH and surrounding areas are included.

Vegetation. Fairchild AFB is in the Columbia Basin Province where grassland or shrub-steppe vegetation grades into ponderosa pine forest. Vegetation Agrocommunities in this region show a wide range of diversity depending on soil conditions, hydrology, topographic aspect, and microclimate. Perennial grassland community associations dominated by Idaho fescue or bluebunch wheatgrass are found in drier sites, while ponderosa pine, aspen, and wetland associations exist in moist sites (FAFB 2004a).

On-base MFH vegetation tends to be sparse, consisting mainly of native grasses such as wheatgrass (*Agropyron* spp.) and fescue (*Festuca* spp.); native shrubs including sagebrush, barberry (*Berberis* spp.), snowberry (*Symphoricarpos* spp.), and greasewood; and tree species including ponderosa pine (*Pinus ponderosa)*, juniper (*Juniperius* spp.), hawthorn (*Crataegus* spp.), and white oak (*Quercus alba*). Base development has caused the replacement of areas of historic vegetation cover with nonnative landscaping. The remainder of the base remains in natural vegetation cover (92 ARW 2004; FAFB 2004a).

Wildlife. Wildlife abundance and species diversity are relatively low at the on-base MFH areas, primarily due to intensively developed areas and degraded natural habitats. Wildlife typically present in the MFH areas are typical of urban areas and usually include no large mammals, few small mammals (mostly deer mice, voles, and moles), and bird communities dominated by fruit-eating or omnivorous species, such as American robin, European starling, cedar waxwing, and purple finch (FAFB 2004a).

3.2.8 Cultural Resources

Archaeological Resources. One archaeological site, Site 45 SP 255, has been identified at the Water System Annex No. 1 (92 CES/CEV 2002). This site has been registered with the Washington State Office of Archaeology and Historic Preservation as a prehistoric archaeological property, and is potentially eligible for inclusion on the NRHP. However, this site is well outside the APE.

The main portion of Fairchild AFB was constructed on high, relatively rocky land that was nearly devoid of water. Although Native American and settler activity has been noted both north and south of Fairchild AFB, no activity is recorded for Fairchild AFB proper. Only three houses existed on the main portion of the base in 1941 when the land was turned over to the military, and those houses have been removed. In addition to this lack of activity and poorly watered character, the main portion of Fairchild AFB has been subjected to 20th-century irrigation developments, some intensive farming, and extensive modification for military purposes. The probability is low that undisturbed, significant archaeological resources, including human graves, will be discovered there during future construction activities (92 CES/CEV 2002).

Architectural Resources. All structures on Fairchild AFB have been evaluated for NRHP eligibility (92 CES/CEV 2002, Lowe et al. 1994). On base, two military-era historic buildings were identified as potentially eligible for the NRHP: Building 2050 (Maintenance Hangar) and Building 2150 (Engine Test Cell). Historic American Building Survey/Historic Archaeological Engineering Record documentation was completed on Building 2150, and it has been demolished. There are also two buildings potentially historic in the Cold War context: Building 2080 (the Bomber Alert Facility) and Building 1467 (the Segregated Storage Igloo). Both buildings are listed as eligible for the NRHP (92 CES/CEV 2002). The Survival School buildings are also considered important for their role in the Vietnam War. All of these buildings are outside the on-base APE.

Most all of the MFH units were constructed in the late 1950s or early 1960s. However, Commander's Circle was built in 1996, and 14 new units were built in Fort Wright Village in 2000. All units in Galena Station underwent extensive remodeling beginning in the early 1990s. An historic building survey has been conducted for on-base MFH (92 BMW/LGC 1990). These units are of typical construction and do not appear to be unique or significant.

Traditional Cultural Properties. No sites or areas important to the Spokane or Coeur d'Alene Tribes have yet been identified at Fairchild AFB. Though these tribes have historically been in the Spokane area, it does not appear that the Fairchild AFB area was used intensively by Native Americans. The potential for culturally significant sites appears to be low (92 CES/CEV 2002).

3.2.9 Socioeconomics and Environmental Justice

Fairchild AFB is southwest of Spokane, Washington, which has a population of approximately 195,629 in the city and 417,939 in Spokane County (U.S. Census Bureau 2000). The population of Spokane County and City increased by 15.7 percent and 9.8 percent, respectively, between 1990 and 2000. This increase in population is lower than the statewide increase of 21.1 percent. Fairchild AFB represents one census bureau tract. Areas around the base are represented by five additional tracts. For the purposes of this EA, these six census bureau tracts are considered the socioeconomic Region of Influence (ROI) around Fairchild AFB. The population within the ROI was 28,720 in 2000, a 21.6 percent increase over 1990 (U.S. Census Bureau 2000).

As the financial center for the Inland Northwest, Spokane is the hub for service industries, and wholesale and retail trade. Spokane has a well-developed financial center and is one of few cities of its size to have its own stock exchange. Major industries include construction and mining; manufacturing; transportation, communication, and utilities; finance, insurance, and real estate; health care delivery; and government.

Nearby forests account for one-quarter of the world's white pine trees. There are nearly 31 million acres of commercial forests in the Spokane marketplace. Miners have been active in the region since the late 1800s when gold and silver were discovered in the Coeur d'Alene mining district. The Inland Northwest is now considered one of the richest and most diversified mining districts in North America (FAFB 2004b).

The U.S. military forces have been stationed in the Spokane area since the 1860s (FAFB 2004b). Today, all branches of the military are represented, with the USAF at Fairchild AFB as the largest, with more than 5,400 military and civilian employees. About one-third of Fairchild AFB personnel live on base in MFH or dormitories. Fairchild AFB's annual payroll for military and civilian employees is about $203 million. Fairchild AFB is estimated to create indirectly an additional 2,000 jobs and $82 million in payroll from support jobs throughout the community. Including the value of base operations and maintenance activities, construction, and education payments, Fairchild AFB contributes more than $469 million to the Spokane economy each year (FAFB 2003a).

Employment and Economic Characteristics. Table 3-6 lists industry of employment for residents around Fairchild AFB, Spokane County, and the State of Washington. A much larger portion of residents living around Fairchild AFB are in the Armed Services. A larger portion of residents around Fairchild AFB are also employed in education, health, and social services; and public administration than the county or statewide averages. A lower percentage is employed in finance, insurance, real estate, and rental and leasing professions.

Spokane County's unemployment rate in November 2004 was 4.8 percent, lower than the statewide average of 5.6 percent[5] (BLS 2005). The 2000 unemployment rate was higher in the area around Fairchild AFB at 7.2 percent, compared to 5.1 percent for Spokane County and the state average of 4.1 percent. Residents living around Fairchild AFB have a lower per capita income, but the median household income and percent of persons living below the poverty level is not substantially different than countywide or statewide averages (see Figure 3-5).

Education. The percent of residents who have obtained a high school diploma is substantially the same around Fairchild AFB, countywide, and statewide. However, a smaller percentage of residents around Fairchild AFB have achieved a college education (23.3 percent) compared to the countywide (27.7 percent) or statewide (25 percent) averages (see Figure 3-6).

[5] The most current unemployment rates were obtained from the Bureau of Labor Statistics; however, information at the census tract level is not provided. Therefore, the area around Fairchild AFB had to be accessed from U.S. Bureau of Census data. Data from the Bureau of Labor Statistics are not directly comparable to Census Bureau data because of the different methods of tabulation.

Table 3-6. Employment by Industry

Employment by Industry	Region of Influence[1]	Spokane County	State of Washington
Percent of Employed Persons in Armed Forces	7.8%	1.0%	1.1%
Industry of Civilian Labor Force			
Agriculture, forestry, fishing and hunting, and mining	0.8%	0.9%	2.5%
Construction	3.8%	6.4%	7.0%
Manufacturing	8%	10.1%	12.5%
Wholesale trade	2.4%	4.6%	4.1%
Retail trade	9.8%	12.7%	12.1%
Transportation and warehousing, and utilities	4.9%	4.6%	5.4%
Information	1.8%	2.3%	3.4%
Finance, insurance, real estate, and rental and leasing	4.8%	7.1%	6.1%
Professional, scientific, management, administrative, and waste management services	7.5%	8.7%	9.8%
Educational, health and social services	32.1%	23.9%	19.4%
Arts, entertainment, recreation, accommodation, and food services	8.7%	8.2%	7.9%
Other services (except public administration)	5.2%	5.7%	4.8%
Public administration	10.1%	4.7%	5.0%

Source: U.S. Census Bureau 2000

[1] The ROI consists of the U.S. Census Tract encompassing Fairchild AFB (Tract #138) and the five tracts surrounding the base (Tracts 104.1, 104.2, 139, 140.01, and 140.02).

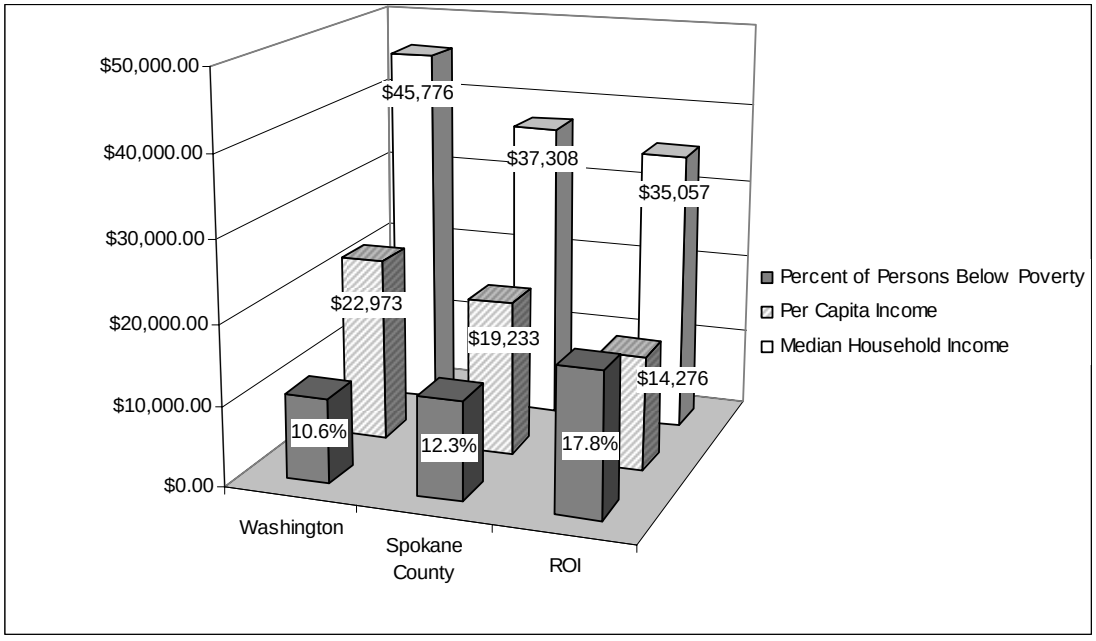


Figure 3-5. Economic Characteristics of Washington State, Spokane County, and the ROI

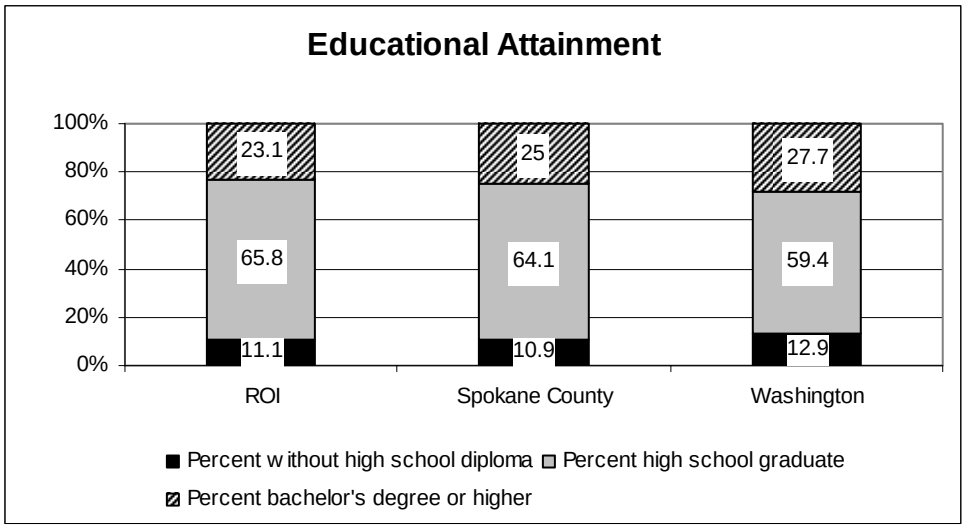


Figure 3-6. Educational Attainment of Residents in the ROI, Spokane County, and Washington State

Fairchild AFB is served by the Medical Lake School District, which has approximately 2,500 enrolled students from elementary to high school (FAFB 2004b). The Medical Lake and Cheney School Districts receive roughly $2.5 million in impact aid for approximately 750 military dependent children (KGP 2004a). The Proposed Action could potentially cause military families to relocate outside of the Medical Lake School District. The relocated families would send their children to the school district in which they reside. Nearby school districts are the Cheney School District, which receives more than $60,000 in impact aid (5 elementary, 1 middle, and 1 high school), and Spokane School District (35 elementary, 6 middle, and 5 high schools) (KGP 2004a, SPS 2005).

Housing. The HRMA for Fairchild AFB found that the base has a surplus of 749 units (Parsons 2003). The privatization of the MFH would reduce the number of housing units from 1,319 to 596 units. The housing requirement of 596 MFH units is based on the availability of housing in the private community. As promulgated by DOD policy, the private sector should be the primary source of MFH. The HRMA considered the housing market to consist of units within a 1 hour drive during peak traffic time in normal weather conditions (Parsons 2003). Many of the rental units identified in the HRMA have two bedrooms and cost between $500 and $600 per month (see Table 3-7) (Parsons 2003). This table only represents the suitable housing; however, there are 58,284 rental units within the market area, with a vacancy rate of 6.5 percent (KGP 2004a).

Although there are 39,000 suitable rental units, many are occupied (see Table 3-8). There are approximately 2,400 vacant rental units available to military personnel.

Table 3-7. Suitable Rental Housing, 2002

Rental Cost[1]	Number of Bedrooms					Total
	0	1	2	3	4/+	
$1,400 and Above	84	147	118	270	118	**737**
$1,300 – $1,400	12	22	18	40	18	**110**
$1,200 – $1,300	53	92	75	170	74	**464**
$1,100 – $1,200	58	98	80	182	79	**497**
$1,000 – $1,100	45	89	168	295	129	**726**
$900 – $1,000	27	88	420	636	277	**1,448**
$800 – $900	44	144	692	1,049	456	**2,385**
$700 – $800	91	673	2,356	910	391	**4,421**
$600 – $700	152	1,241	4,230	1,161	503	**7,287**
$500 – $600	269	1,881	4,423	1,145	495	**8,213**
$400 – $500	595	3,399	2,406	323	173	**6,896**
$0 – $400	723	3,377	1,424	127	165	**5,816**
Total	**2,153**	**11,251**	**16,410**	**6,308**	**2,878**	**39,000**

Source: Parsons 2003

[1] Rental cost includes rent, utility cost, and renters insurance.

Table 3-8. Suitable Vacant Rental Housing, 2002

Rental Cost[1]	Number of Bedrooms					Total
	0	1	2	3	4/+	
$1,400 and Above	7	11	8	21	11	**58**
$1,300 – $1,400	--	1	1	3	1	**6**
$1,200 – $1,300	2	3	2	5	3	**15**
$1,100 – $1,200	2	3	3	6	3	**17**
$1,000 – $1,100	2	3	5	8	4	**22**
$900 – $1,000	1	3	12	18	8	**42**
$800 – $900	1	4	20	29	13	**67**
$700 – $800	2	21	71	25	11	**130**
$600 – $700	6	51	173	48	20	**298**
$500 – $600	22	147	309	78	34	**590**
$400 – $500	53	312	225	31	15	**636**
$0 – $400	61	287	133	10	14	**505**
Total	**159**	**846**	**962**	**282**	**137**	**2,386**

Source: Parsons 2003

[1] Rental cost includes rent, utility costs, and renters insurance.

There were 677 new home listings as of June 2004. The majority of these are priced between $150,000 and $199,999 (AJG 2004). Table 3-9 shows the number of homes that were sold in the Spokane area from January 2002 through the first quarter of 2004 (AJG 2004). Nearly two-thirds of the military families living off base (615) are homeowners; the remaining (285) are renters (KGP 2004a).

Environmental Justice. For the purposes of analysis in this EA, residents living within the six census bureau tracts in and around Fairchild AFB were evaluated. The composition of different races in the ROI compared to Spokane County and Washington is largely the same; however, there are nearly two-and-a-half times as many black or African Americans living in the ROI as compared to the countywide data (see Table 3-10). There is also a larger portion of residents living in poverty in the ROI compared to county- and statewide data. In order to gain a more accurate depiction of the ROI, it is necessary to describe each of the census bureau tracts that compose it.

Table 3-9. Price of Homes Sold in Spokane Area, 2002–2004

Subject Market	2002		2003		2004	
Price Range	New Home Sales	Total Home sales	New Home Sales	Total Home Sales	New Home Sales	Total Home Sales
Less than $85,000	8	1,847	12	2,025	3	395
$85,000 – $124,999	109	1,815	120	2,184	21	403
$125,000 – $149,999	246	936	236	1,204	45	207
$150,000 – $199,999	280	874	347	1,217	82	235
$200,000 – $249,999	94	337	199	517	40	97
$250,000 or more	109	332	217	555	65	127
Total Sales	**846**	**6,141**	**1,131**	**7,702**	**256**	**1,464**

Source: AJG 2004

Table 3-10. Race and Poverty Characteristics

	Washington	Spokane County	ROI
Total Population	5,894,121	417,939	28,720
Percent White	81.8%	91.4%	86.1%
Percent Black or African American	3.2%	1.6%	4.2%
Percent American Indian, Eskimo, or Aleut	1.6%	1.4%	1.4%
Percent Asian or Pacific Islander	5.9%	2.0%	3.5%
Percent other	3.9%	0.8%	1.7%
Percent reporting 2 or more races	3.6%	2.8%	3.1%
Percent below poverty	10.6%	12.3%	17.8%[1]

Source: U.S. Bureau of Census 2000

[1] The percent of persons below poverty level in the ROI is the average of the five census tracts evaluated.

Census Tract 138, which encompasses Fairchild AFB, and Tract 104.01, which is northeast of the base, were found to have a somewhat higher portion of minority populations (approximately 21 percent combined minorities) than adjoining areas (approximately 11 percent). Residents of Tract 104.01 were also found to have the lowest per capita income ($11,120), a high unemployment rate (12.6 percent), and a large portion of residents living below the poverty level (21.6 percent). Residents of Tract 138 also have a very low per capita income; conversely, few residents are below the poverty level and few are unemployed. Similarly, Tracts 140.01 and 140.02 have larger portions of residents living below poverty compared to county- and statewide data (see Table 3-11).

Table 3-11. Race and Economic Characteristics of Census Tract Residents

	Tract 104.01	Tract 104.02	Tract 138	Tract 139	Tract 140.01	Tract 140.02
Total Population	4,642	5,820	4,357	4,927	5,373	3,601
Percent White	79.5%	94.7%	78.2%	90.2%	82.6%	89.7%
Percent Black or African American	10.2%	0.3%	7.9%	3.7%	2.7%	1.2%
Percent American Indian, Eskimo, or Aleut	3.2%	1.1%	0.5%	1.2%	0.9%	2.0%
Percent Asian or Pacific Islander	2.3%	1.2%	3.9%	1.5%	9.2%	2.6%
Percent other	1.6%	0.6%	3.8%	1.1%	2.0%	1.2%
Percent Reporting 2 or more races	3.2%	2.0%	5.7%	2.4%	2.5%	3.4%
Percent below poverty	21.6%	7.0%	5.0%	12.8%	35.8%	24.4%
Per Capita Income	$11,120	$20,399	$11,961	$16,304	$11,545	$14,328
Median Household Income	$30,000	$53,405	$33,512	$43,477	$19,309	$30,640
Percent Unemployed	12.6%	4.9%	2.5%	3.1%	13.9%	1.8%

3.2.10 Infrastructure

Transportation Network. Fairchild AFB is approximately 12 miles west of the city of Spokane on U.S. Highway 2. The Main Gate is located along U.S. Highway 2 and is currently being renovated. According to the September 2003 *Environmental Assessment of Anti-Terrorism/Force Protection Gate Projects at Fairchild AFB, Washington,* traffic flow on U.S. Highway 2 and through the Main Gate should improve after construction activities are complete (USAF 2003). Mitchell Drive and Fairchild Highway are the primary roads on base. All other roads feed into these primary roads. Truck traffic at Fairchild AFB enters using Rambo Gate on the east side of the base along Rambo Road (92 ARW 2004).

Electricity. Bonneville Power Administration provides Fairchild AFB with electrical power. The base receives power delivered via two on-base 115 kilovolt (kV) substations. The North and South substations have three feeder circuits each, distributing power at 13.2 kV. The electrical system consists of the two 13.2 kV substations, power lines, high voltage switches, junction boxes, and transformers. Fairchild AFB owns the on-base electrical distribution system (92 ARW 2004). Service to the MFH units is provided through overhead and underground power lines. Army Capehart, NCO Capehart, and Officer Capehart have an overhead distribution system, while Commander's Circle, Fort Wright Village, and Galena Station have buried lines. The undeveloped optional parcel does not have existing electrical service.

Natural Gas. The on-base natural gas system is owned in part by the USAF and in part by Avista Utilities. The system consists of 176,511 linear feet of natural gas line, valves, vents, and meters. The government-owned lines are a mixture of high-density polyethylene piping and steel piping; the lines belonging to Avista Utilities are polyethylene. Avista Utilities performs all polyethylene pipe repairs including repairs to the government-owned lines. The steel piping is approximately 45 years old while the polyethylene piping is less than 10 years old (92 ARW 2004). The undeveloped optional parcel does not have existing natural gas service.

Communications. The on-base telephone system is owned and operated by Qwest Telephone Company. The system is generally in good condition and is comprised of above and below ground networking systems. Cable service is provided by Cable Montana through a franchise agreement with USAF (92 ARW 2004). The undeveloped optional parcel does not have existing telephone or cable service.

Water Supply. The water supply and distribution system at Fairchild AFB consists of base-owned potable water wells, transmission piping, booster pump stations, and water distribution system piping. A component of the distribution system is comprised of asbestos cement (transite) pipe, which is reported to be in fair condition (92 ARW 2004). The undeveloped optional parcel does not have potable water service.

Sanitary Sewer and Wastewater. The sanitary sewer system at Fairchild AFB is comprised of lateral lines from buildings, houses, lift stations, 605 sewer manholes, and 284,190 linear feet of sewer collection mains. The piping is a mix of polyvinyl chloride and high-density polyethylene-lined concrete and vitrified clay pipes. The sewer flow meters are owned and maintained by the City of Spokane's Wastewater Department (92 ARW 2004). This department also treats all of the wastewater from Fairchild AFB. During periods of known high groundwater, flow to the City of Spokane's treatment plant increases by 200 percent to over 2,000,000 gallons per day (gpd). The contractual maximum daily

limit is 1,000,000 gpd (92 ARW 2004). The undeveloped optional parcel does not have sanitary sewer service.

Solid Waste. Wastes disposed of in the solid waste stream at Fairchild AFB are expected to consist only of those materials that cannot be effectively recycled. This commonly includes paper towels and other sanitary wastes, food-soiled wrappings and packaging, most food wastes, plastic bags and wrappings, nonrecyclable C&D wastes, and other miscellaneous nonrecyclable materials from administrative, industrial, food-service, and retail operations.

Fairchild AFB operates a solid waste recycling program with a full service recycling center in Building 2420, accepting a wide variety of materials, including household hazardous waste. The Recycle Center also has a Household Hazardous Material Exchange Shelf where personnel can pick up or drop off usable household materials such as paint, cleaners, automotive products, and a variety of other household chemicals at no cost. Containers may be dropped off using the drive-through 24 hours per day and 7 days per week. MFH units all receive a blue 18.7-gallon recycling container with a label that provides specific recycling instructions on acceptable materials (92 CES/CEV 2005a).

Fairchild AFB has a contract for solid waste pick-up and disposal of all refuse on the base with Waste Management of Spokane, Washington. The contractor removes refuse from Fairchild AFB properties and transports the solid waste to either the Spokane Regional Waste to Energy Facility or Graham Road Landfill. Yard waste is also taken to the Waste to Energy Facility, where it is then transported to a regional composting facility. Waste is collected in dumpsters throughout the base and in refuse containers in the MFH areas, and then removed. Currently, there are no operating landfills at Fairchild AFB. In FY 2003, Fairchild AFB disposed 2,989 tons of nonhazardous MSW (Wulf 2005).

An average of 265 tons of MSW is collected and transported every month to the Spokane Regional Waste to Energy Facility. When materials do not meet criteria for thermal processing disposal at the Waste to Energy Facility, the solid waste goes to the Graham Road Landfill in Medical Lake, Washington.

MSW at Fairchild AFB is managed in accordance with the guidelines specified in AFI 32-7042, *Solid and Hazardous Waste Compliance*. This AFI incorporates by reference the requirements of Subtitle D, 40 CFR Parts 240 through 244, 257, and 258; and other applicable Federal regulations, AFIs, and DOD Directives. In general, AFI 32-7042 establishes the requirement for installations to have a solid waste management program that incorporates the following: a solid waste management plan; procedures for handling, storage, collection, and disposal of solid waste; record-keeping and reporting; and pollution prevention.

C&D waste generated from specific construction, renovation, and maintenance projects on Fairchild AFB, most of which are performed by off-base contractors, is the responsibility of the contractor. The contractors are required to comply with Federal, state, local, and USAF regulations for the collection and disposal of MSW from the installation. Much of this material can be recycled or reused, or otherwise diverted from landfills. All nonrecyclable C&D waste is collected in a dumpster until removal. C&D waste contaminated with hazardous waste, ACM, LBP, or other undesirable components is managed in accordance with AFI 32-7042.

3.2.11 Hazardous Materials and Waste Management

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards that govern management of hazardous materials throughout USAF. It applies to all USAF personnel who authorize, procure, issue, use, or dispose of hazardous materials, and to those who manage, monitor, or track any of those activities. Hazardous and toxic material procurements at Fairchild AFB are approved and tracked by the base hazardous material management process team. The Environmental Management Office at Fairchild AFB supports and monitors environmental permits, hazardous material and hazardous waste storage, and spill prevention and response (92 ARW 2004).

In general, the on-base MFH complexes do not include storage areas for hazardous materials or petroleum products. No information was found to suggest that the MFH complexes or the optional parcel had been used to store hazardous material or petroleum products, or that a release of hazardous materials or petroleum products had taken place. The Housing Maintenance Office does store hazardous material, but there is no evidence that a release has occurred.

Hazardous Wastes. The 92 ARW maintains a Hazardous Waste Management Plan as directed by AFI 32-7042, *Solid and Hazardous Waste Compliance* (92 ARW 2004). This plan prescribes the roles and responsibilities of all members of Fairchild AFB with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes the procedures to comply with applicable Federal, state, and local standards for solid waste and hazardous waste management.

Wastes generated at Fairchild AFB include waste flammable solvents, contaminated fuels and lubricants, paint/coating, stripping chemicals, waste oils, waste paint-related materials, MSW, and other miscellaneous wastes. Management of hazardous waste is the responsibility of each waste-generating organization and 92d Civil Engineering Squadron. Fairchild AFB produces more than 1,000 kilograms of hazardous waste per month and is considered a large quantity hazardous waste generator. There are 18

satellite accumulation points on base and 1 90-day accumulation site. A contracted waste transporter picks up the waste containers from the 90-day accumulation sites and transports them to an off-base licensed Treatment, Storage and Disposal Facility (92 ARW 2004). There are no accumulation or storage points for hazardous wastes at any of the MFH complexes, optional parcel, or Housing Maintenance Office.

Pollution Prevention. AFI 32-7080, *Pollution Prevention Program*, implements the regulatory mandates in the Emergency Planning and Community Right-to-Know Act, Pollution Prevention Act of 1990; EO 12856, *Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements*; EO 12873, *Federal Acquisition, Recycling, and Waste Prevention*; and EO 12902, *Energy Efficiency and Water Conservation at Federal Facilities*. AFI 32-7080 prescribes the establishment of Pollution Prevention Management Plans. The 92 ARW fulfills this requirement with the following plans:

- Integrated Solid Waste Management Plan (92 CES/CEV 2005a)
- Storm Water Pollution Prevention Plan (92 CES/CEV 2000)
- Hazardous Waste Management Plan (92 ARW/CC 2003)
- Hazardous Material Emergency Planning and Response Plan (92 ARW 1999)
- Management Action Plan (FAFB 2003b)
- Hazardous Material Management Plan (FAFB 2001a)
- Pollution Prevention Management Action Plan (FAFB 2000)
- Underground Storage Tank Management Plan (FAFB 2001b)

These plans ensure that Fairchild AFB maintains a waste-reduction program and meets the requirements of the CWA; the NPDES permit program; and Federal, state, and local requirements for spill prevention control and countermeasures.

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

asbestos fibers to ambient air. USEPA policy is to leave asbestos in place if disturbance or removal could pose a health threat.

Building materials in older buildings are assumed to contain asbestos. It exists in a variety of forms and can be found in floor tiles, floor tile mastic, roofing materials, joint compound used between two pieces of wallboard, some wallboard thermal system insulation, and boiler gaskets. If asbestos is disturbed, fibers can become friable. Common sense measures, such as avoiding damage to walls, will keep the fibers from becoming airborne and hazardous. The ACMs are removed in conjunction with other building renovation and alteration projects.

Asbestos at Fairchild AFB is managed in accordance with the Asbestos Management Plan that was updated in 2003 (92 CES/CEV 2005a). This plan specifies procedures for the removal, encapsulation, enclosure, and repair activities associated with ACM-abatement projects. Additionally, it is designed to protect personnel who live and work on Fairchild AFB from exposure to airborne asbestos fibers as well as to ensure the installation remains in compliance with Federal, state, and local regulations pertaining to asbestos (92 ARW 2004).

The following is a list of on-base MFH units where ACM abatement has been conducted.

- *Army Capehart.* No exterior or interior ACM testing activities have been performed.
- *Commander's Circle.* All seven MFH units were built in 1996 and have no known ACM concerns.
- *Fort Wright Village.* A review of available data on ACM in Fairchild MFH units revealed that some units had contained ACM, but that it was removed during "whole house" renovations performed in the 1990s.
- *Galena Station.* A review of available data on ACM in Fairchild MFH units revealed that some units had contained ACM, but that it was removed during "whole house" renovations performed in the 1990s.
- *NCO Capehart.* A review of available data on ACM in Fairchild MFH units yielded no detected ACM.
- *Officer Capehart.* A review of available data on ACM in Fairchild MFH units revealed that some units contained ACM.

Lead-Based Paint. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X), passed by Congress on October 28, 1992, regulates the use and disposal

of LBP on Federal facilities. Federal agencies are required to comply with applicable Federal, state, and local laws relating to LBP activities and hazards.

USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR 1910.120, 29 CFR Part 1926, 40 CFR 50.12, 40 CFR Parts 240 through 280, the CAA, and other applicable Federal regulations. Additionally, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards. LBP at Fairchild AFB is managed in accordance with the Lead Exposure and Lead-Based Paint Management Plan that was updated in 2003 (92 ARW/CV 2003). The plan is designed to establish management responsibilities and procedures for identifying and controlling hazards related to the presence of LBP. The plan addresses organizational roles and responsibilities, program development, management actions, data management, and training. LBP is only one of a number of potential sources of lead in the environment that can contribute to lead exposure. Other sources include emissions from industrial air emissions and lead in pipes and solder. The major source of lead for most adults is occupational exposure from maintenance, renovation and abatement work, corrosion control, welding, and cable maintenance operations. For children, the major sources of exposure include LBP, exposure to urban soil and dust, and drinking water.

Abatement activities have been completed at the majority of MFH complexes. The following is a list of on-base MFH units where LBP abatement has been conducted.

- *Army Capehart.* No LBP abatement has occurred on the 22 MFH units.
- *Commander's Circle.* All seven MFH units were built in 1996 and have no known LBP concerns.
- *Fort Wright Village.* All 333 MFH units have undergone exterior and interior renovation and abatement of LBP.
- *Galena Station.* All 465 MFH units have undergone exterior and interior renovations and abatements of LBP.
- *NCO Capehart.* All 158 MFH units have undergone exterior renovations and abatement of LBP. A review of available data on LBP in Fairchild MFH units revealed that some units contained interior LPB concentrations less than 5 ppm and that a potential interior LBP hazard might still exist.
- *Officer Capehart.* All 92 MFH units have undergone exterior renovations and abatement of LBP. A review of available data on LBP in Fairchild MFH units revealed that some units contained

interior LBP concentrations less than 5 ppm and that a potential interior LBP hazard might still exist.

Radon. Radon is a naturally occurring radioactive gas found in soils and rocks; it comes from the natural breakdown or decay of radium. Radon has the tendency to accumulate in enclosed spaces. Radon is an odorless, colorless gas that has been determined to increase the risk of developing lung cancer. In general, the risk increases as the level of radon and the length of exposure increase. USEPA has established a guidance level of 4 picoCurie per liter (pCi/L) of radon in indoor air for residences; however, there have been no standards established for commercial structures. Radon gas accumulations greater than 4 pCi/L are considered to represent a health risk to occupants.

Fairchild AFB and Spokane County are in Federal USEPA Radon Zone 1, or the highest priority zone. Within Zone 1, the indoor average level is greater than 4 pCi/L. Table 3-12 lists the Radon Activities for Spokane County and Zip Code 99004 (City of Cheney). Radon surveys conducted over the past decade have found a very few number of units which have required mitigation. New or renovated on-Base housing (831 units) requires preliminary screening. A recently completed radon study found several MFH units that had radon levels up to 6.5 pCi/L. Houses with radon levels between 4 and 20 pCi/L must be mitigated within three years. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Geiger Heights MFH complex.

Table 3-12. Radon Activity in Spokane County and Zip Code 99004

Location	Area	Average Activity (pCi/L)	< 4 pCi/L	4–20 pCi/L	> 20 pCi/L
Spokane County (360 sites)	Living Area (1st Floor)	3.779	70%	28%	2%
	Basement	11.345	34%	52%	14%
Zip Code 99004 (6 sites)	Living Area (1st Floor)	1.400	100%	0%	0%
	Basement	4.600	67%	33%	0%

Source: EDR 2004a, b, c, d, e

Storage Tanks: Aboveground, Dry Tanks, and Underground. Fairchild AFB manages a regulated tank inventory of 35 USTs. All of these tanks meet regulatory compliance criteria. There are another 11 tanks managed by the base that are exempt from the regulatory requirements (92 ARW 2004). The inventory of regulatory exempt tanks is made up of heating oil storage tanks, emergency spill tanks, and oil/water separator storage tanks. However, none of these exempt tanks exist on the MFH complexes or in the optional parcel and Housing Maintenance Office. The MFH complexes previously had exempt tanks

containing heating oil in the basements. These tanks were classified as ASTs and all have been removed. There is no known contamination resulting from these housing tanks.

At Fairchild AFB, all inactive underground fuel tanks have been removed. The number of tanks removed totals more than 200, and this number includes tanks discovered to be leaking, tanks replaced with double-walled systems, tanks abandoned over the years, tanks replaced with ASTs, and various sizes of heating oil tanks that became inactive after the installation of gas furnaces. In all cases, every effort was made to remove any petroleum-contaminated soil discovered during excavation (92 ARW 2004).

Soil contamination discovered at some locations was greater than the amount included for removal under the scope of the tank excavation effort. In these instances, investigation into the extent of the remaining contamination was initiated, and risk analysis/soil removal/remediation is either complete or ongoing. The amount of contamination remaining at most of these sites is fairly insignificant, since the risk analysis does not indicate a problem. Natural attenuation is occurring as evidenced by recent soil sampling efforts.

There are 12 ASTs with capacities greater than 10,000 gallons at Fairchild AFB, primarily at the bulk fuel storage facility between Vet and POL Roads (92 ARW 2004). All of the tanks are in compliance with Federal and state standards. The heating oil ASTs that were within the on-base MFH complexes were removed and no contamination exists from them. There are no ASTs in the optional parcel and Housing Maintenance Office Parcel.

Environmental Restoration Program. The ERP at Fairchild AFB began in 1984 with a base-wide Preliminary Assessment/Records Search that identified 15 ERP sites for further investigation. In 1989, Fairchild AFB was placed on the USEPA's National Priorities List (NPL), a list of sites that are considered to be of special interest and require immediate attention (NPL 2004). Site assessments and investigations in the late 1980s and 1990s added sites to the Fairchild AFB cleanup program.

Figure 3-7 shows the location of the contaminated sites on Fairchild AFB. Table 3-13 lists the contaminated sites at Fairchild AFB, including the Areas of Concern and RCRA sites. Currently, 19 ERP sites are closed under No Further Action or No Further Remedial Action Planned, 7 are expected to be No Further Action, 9 are under remediation, and 2 are under investigation. The sites include spill areas, drainage areas, landfills, storage tanks, fire training areas, and radioactive waste sites. Primary contaminants in soil and water include waste solvents, fuels, dissolved phase fuels and solvents, and low-level radiation waste. Seventeen ERP sites have associated institutional or land use controls. Plans for

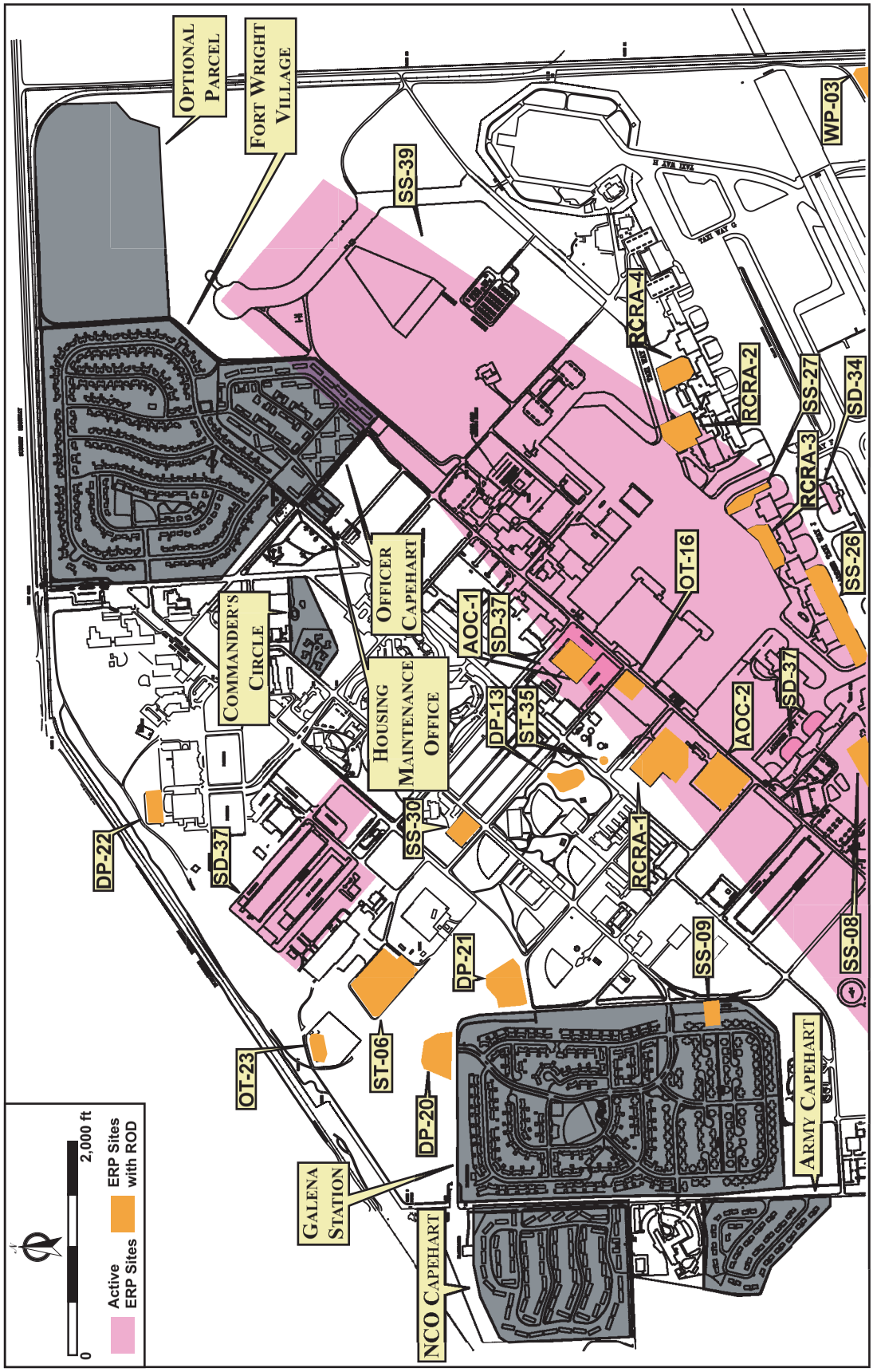


Figure 3-7. Contaminated Sites at Fairchild AFB

future development in the areas of any of the ERP sites should take into consideration the possible restrictions and constraints that they represent (92 ARW 2004).

ERP Site SS-39, a trichloroethylene (TCE) plume, lies adjacent to Officer Capehart, Fort Wright Village, and the optional parcel (Figure 3-7). A USEPA Triad-based approach Remedial Investigation is currently underway at Site SS-39. The contaminated groundwater plume boundaries have been fully delineated and monitoring wells installed. Current TCE concentrations in the monitoring well at the leading edge of the plume are less than the method detection limit of 2.1 parts per billion (ppb). The USEPA maximum contaminant level (MCL) for TCE is 5 ppb.

The depth below ground level of the contaminated groundwater varies over the length of the plume; with the area under the housing area averaging about 40 to 50 feet below ground surface. Additionally, the contaminant-bearing unit of groundwater is overlain by a 5- to 20-foot thick clay layer. The clay layer helps to reduce the amount of TCE vapor that can emit from the ground into buildings. It is also important to note that groundwater on Fairchild AFB is not used as a drinking water source for the base.

Table 3-13. Contaminated Sites at Fairchild AFB

Site ID	Description	Status	ROD	Priority
LF-01[1]	Old Base Landfill	RA-O	X	1
LF-02[1]	Craig Road Landfill	RA-O	X	1
WP-03[1]	Industrial Wastewater Lagoons	RA-O	X	1
FT-04[1]	Fire Training Area	RA-O	X	1
SD-05	French drain system	NFA	X	1
ST-06[1]	POL Bulk Storage Area	RA-O	X	2
SS-07	Area C Pumphouse	NFA	X	2
SS-08	Aircraft Crash Site	NFA	X	2
SS-09	Heating Oil Tank Area	NFA	X	2
ST-10[1]	Fuel Oil Storage Tanks	NFA/IC	X	2
RW-11[1]	Radioactive Waste Disposal Areas	SI/NFA		3
DP-12	Disposal Area near WANG Test Cell	NFA	X	2
DP-13[1]	Disposal Area at Warrior Park	NFA/IC	X	2
DP-14	Disposal Area, East Weapons Storage Area	NFA	X	2
OT-15	EOD Range	SI/NFA		3
OT-16[1]	Reciprocating Engine Test Cell	NFA	X	2
OT-17[1]	Jet Engine Test Cell Soil	RA-O	X	2
SS-18[1]	Refueling Pit Area	RA-O	X	1
DP-20	Waste Disposal Area	NFA	X	2
DP-21	Waste Disposal Area	NFA	X	2

Table 3-13. Contaminated Sites at Fairchild AFB (continued)

Site ID	Description	Status	ROD	Priority
DP-22	Former Bulk Coal storage area	NFA	X	2
OT-23	Incinerator at DRMO Yard	NFA	X	2
DP-24	Asphalt South of Taxiway K	NFA	X	2
RW-25	Radioactive Waste Disposal Area	NFA	X	2
SS-26[1]	Underground Fuel Line Area	RA-O	X	2
SS-27	Defueling Tank Area	NFA	X	1
WP-29	Wastewater Treatment Plant	NFA	X	2
SS-30	CE Storage Facility	NFA	X	2
SD-31	Fuel Truck Maintenance Area	NFA/IC	X	2
FT-32[1]	Fire Training Area	RA-O	X	2
SS-33	Waste Storage Area, Bldg 2115	SI/IRA		3
SD-34	Waste Fuel Operations, Bldg 1012	SI/IRA		3
ST-35	Fuel Transfer Facility, Bldg 2165	SI/IRA		3
WP-36[1]	Holding Lagoon and Imhoff Tank	SI/RA-O		3
SD-37[1]	Oil/Water Separator, Basewide	RI/FS		3
SD-38	Ditches, piping, and culverts, Basewide	SI/IRA		3
SS-39[1]	TCE Orphan Plumes, Basewide	RI/FS		3
AOC-1	Vehicle Maintenance Facility	RI/FS		3
AOC-2	Propulsion Shop	SI/NFA		3
RCRA#1	Aqua Fuel Storage Site	RA		
RCRA#2	Pump House A Fuel Storage Site	RI		
RCRA#3	West Defuel	RA		
RCRA#4	East Defuel	RA		
RCRA#5	Survival School Gas Station	RA		

Source: 92 ARW 2004
AOC: Area of Concern
DP: Defense Priority Model
FS: Feasibility Study
FT: Fire Training
IRA: Interim Remedial Action
LF: Landfill
LTM: Long-Term Monitoring
NFA: No Further Action
OT: Other
RA: Remedial Action
RA-O: Remedial Action - Operation
RCRA: Resource Conservation and Recovery Act
RI: Remedial Investigation
ROD: Record of Decision
RW: Radioactive Waste
SD: Surface Disposal
SI: Site Investigation
SS: Spill Site
ST: Sewage Treatment
WP: Waste Pit

[1]Institutional controls in place.

3.3 Geiger Heights MFH

3.3.1 Noise

Construction Program. See Section 3.2.1 for discussion of construction noise. In general, construction noise is not a prevalent part of the noise environment at Geiger Heights.

Aircraft Operations. The Geiger Heights MFH area is situated in an area that is generally isolated from other residential or commercial areas, resulting in lower background or ambient noise levels in the area. One factor that could add to the background noise level at Geiger Heights MFH area is the Spokane International Airport, which is approximately 2 miles to the northwest. While the neighborhood is not within the airport's associated noise zone areas, the area might still receive noticeable noise as jets take off or approach the runway.

Transportation Operations. No vehicular traffic data were available in the vicinity of Geiger Heights MFH because the housing area is not adjacent to any major county or state highways. Local neighborhood traffic from roads such as West Hallett Road or South Grove Road could contribute to the ambient noise levels in the Geiger Heights neighborhood.

3.3.2 Land Use

Geiger Heights is approximately 3 miles south of the Spokane city limits in an area that is designated Urban Reserve (Spokane County 2001). Geiger Heights is situated just east of the intersection of South Grove and West Hallett Roads in the northwest quarter of Section 10, Township 24 North, Range 46 East. The development is situated on a 77.29-acre parcel and consists of 191 duplex and 35 single family MFH units that were built in 1960. The duplexes have 2, 3, or 4 bedrooms, while the single family dwellings have either 3 or 4 bedrooms.

3.3.3 Air Quality

The affected environment for Geiger Heights MFH is essentially the same as that described in Section 3.2.3. The Geiger Heights MFH is not a major source for air emissions.

3.3.4 Safety

Human Health and Safety. There are currently no primary surface zones, clear zones, accident potential zones, or quantity distance safety arcs that cross into any portion of the Geiger Heights MFH complex.

Handling, storage, and disposal of hazardous materials and hazardous wastes at the Geiger Heights MFH complex are controlled by regulations of the USAF, USEPA, and the State of Washington. Information regarding hazardous materials; hazardous wastes; and associated programs, policies, and regulations applicable to the Geiger Heights MFH complex is described in Section 3.3.11.

Building Safety. The Geiger Heights MFH complex was constructed in 1960. These residential dwellings are outdated by today's building codes regarding safety and building materials.

Emergency Services. Emergency services for the Geiger Heights MFH complex are provided by the Fairchild AFB and supplemented with an automatic-aid agreement with Spokane County Fire District No. 3 and the City of Spokane Fire Department (92 ARW 2004).

Aircraft Safety. Due to its distance from any airfields, the Geiger Heights MFH complex is not affected by either the Fairchild AFB AICUZ or the Spokane County AOZs. However, it is still subject to provisions of Part 77 of the FAR.

3.3.5 Geological Resources

The affected environment for the surrounding geology and natural hazards for Geiger Heights MFH is essentially the same as that described for on-base MFH in Section 3.2.5.

Geiger Heights soils are reportedly from the Garrison Series, which are deep and provide good drainage. The general topography of Geiger Heights MFH is flat with an average elevation of 2,340 feet (709 kilometers) above MSL.

3.3.6 Water Resources

Groundwater. The affected environment for groundwater resources at Geiger Heights MFH is the same as that described for on-base MFH in Section 3.2.6.

Surface Water. Geiger Heights MFH is in the Hangman watershed, a well-studied watershed suffering from anthropogenic disturbance (USEPA 2004e). The Hangman (also known as Latah) Creek watershed drains approximately 431,000 acres and spans two states and four counties. More than half (64 percent) of the watershed lies in eastern Washington State while the remaining portion, including the headwaters, originates in the western foothills of the Rocky Mountains near Sanders, Idaho. Upstream influences, land use changes, and stream channel and floodplain alterations over the past 100 years have contributed to "flashy" flow conditions and unstable stream banks (SCCD 2004).

Floodplains. Geiger Heights MFH is outside the 100- and 500-year floodplains.

3.3.7 Biological Resources

Vegetation and Wildlife. The affected environment for vegetation and wildlife is essentially the same as that described for on-base MFH in Section 3.2.7. Wildlife habitat is typical of suburban areas. Geiger Heights contains well-established trees and shrubs. Ponderosa pine stands provide habitat for forest-associated birds, such as woodpeckers and nuthatches (FAFB 2004a).

3.3.8 Cultural Resources

Archaeological Resources. No archaeological resources have been discovered at the Geiger Heights annex. The site has been entirely graded, and most of the land has been developed for residences and streets. No archaeological potential exists (92 CES/CEV 2002).

Architectural Resources. The Geiger Heights MFH units were constructed around 1960. The Geiger Heights MFH annex was surveyed for historic buildings. These units are of typical construction and do not appear to be unique or significant.

Traditional Cultural Properties. No sites or areas important to the Spokane or Coeur d'Alene Tribes have yet been identified at Fairchild AFB. Though these tribes have historically been in the Spokane area, it does not appear that the Fairchild AFB area was used intensively by Native Americans. The potential for culturally significant sites appears to be low (92 CES/CEV 2002).

3.3.9 Socioeconomics and Environmental Justice

Geiger Heights lies within the ROI described for on-base MFH. Conditions with respect to socioeconomics and environmental justice for the Geiger Heights area are as described in Section 3.2.9.

3.3.10 Infrastructure

Transportation Network. Geiger Heights MFH is bounded by Armstrong Drive, John Gay Drive, Malstrom Drive, and Fanazick Place. Hallet Road and Grove Road are the primary roads that feed into Geiger Heights.

Electricity. Electrical power is supplied to Geiger Heights by Inland Power and Light. Fairchild AFB owns the overhead distribution system.

Natural Gas. Natural gas service to Geiger Heights is supplied and owned by Avista Utilities.

Communications. Qwest owns and provides telephone service to Geiger Heights. Geiger Heights receives cable service from Cable Montana.

Water Supply. The government-owned distribution system is comprised of transite piping, which is reported to be in generally good condition. The City of Spokane supplies Geiger Heights with potable water, which is stored in a water tower on the property. The water tower also services Windsor Elementary School (of the Cheney Public School District), adjacent to Geiger Heights. There is one master water meter upstream of the water tower in Geiger Heights and a second master water meter at

Windsor Elementary School. School personnel report the school's meter reading to the USAF and the USAF then bills the school district for water usage (KGP 2004b).

Sanitary Sewer and Wastewater. The government-owned underground sewer system at Geiger Heights is comprised of unlined main pipes that have grouted joints between sections. The system has a known groundwater infiltration problem that results in an ongoing service charge regardless if the system is in operation. Sanitary sewage is pumped to the City of Spokane sewer main through a government-owned lift station at the rear of the MFH complex. Windsor Elementary School also connects to the lift station on Geiger Heights. The City of Spokane bills the USAF based on a master meter outside the Geiger Heights property; the USAF bills the school district on an estimated basis (KGP 2004b).

Solid Waste. Solid waste management and recycling from Geiger Heights MFH is handled under the same contract as on-base solid waste (92 CES/CEV 2005a).

3.3.11 Hazardous Materials and Waste Management

Hazardous Materials and Wastes. Geiger Heights MFH does not have storage areas for hazardous materials or petroleum products or hazardous wastes.

Asbestos-Containing Materials, Lead-Based Paint, and Radon. A review of available data on ACM in Fairchild MFH units revealed that some units contained ACM and that a potential ACM hazard could still exist. All 226 MFH units have undergone exterior renovations and abatement of LBP. A review of available data on LBP in Fairchild MFH units revealed that of the units surveyed, none were found to contain a potential interior LBP hazard. Refer to Table 3-12 for radon information at Geiger Heights. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Geiger Heights MFH complex.

Storage Tanks: Aboveground, Dry Tanks, and Underground. There is an AST day tank adjacent to the Geiger Heights sewage lift station. In December 1994, 131 USTs were removed from the Geiger Heights MFH complex, as well as 600 tons of contaminated soil. Additional studies found that contaminated soil and groundwater remained at 47 of the former UST locations that required removal or treatment. The USAF has acknowledged responsibility for the release and has funded a study to locate and remediate all contaminated soil, construct additional groundwater monitoring wells, and conduct groundwater sampling (92 CES/CEV 2005b). As of February 2005, two quarterly groundwater sampling events were completed at the Geiger Heights MFH Complex. At least two more events will need to be completed. The first quarter had one petroleum hydrocarbon detection and the second quarter had no detected analytes. There

are three areas of potentially contaminated soil that need additional excavation. Routine excavation and clean-up is anticipated for two of the sites; while one potentially contaminated soil site is beneath a MFH unit and may require a more complicated clean up effort (Nester 2005). These efforts are ongoing and would continue until the State provides the USAF with a "no further action required". It is anticipated that a "no further action" decree would not be issued until after implementation of the Proposed Action.

3.4 Cheney MFH

3.4.1 Noise

Construction Program. See Section 3.2.1 for discussion of construction noise. In general, construction noise is not a prevalent part of the noise environment at Cheney.

Aircraft Operations. The Cheney MFH area is within a neighborhood of a small town where low levels of ambient noise are likely to exist. One factor that could add to the background noise level at Cheney MFH area is the Spokane International Airport, which is north of Cheney. While the neighborhood is not within the airport's associated noise zone areas, the area can still receive noticeable noise as jets take off or approach the runway.

Transportation Operations. Vehicle traffic counts were analyzed from the Washington Department of Transportation to establish current vehicular traffic. In 2003, average daily traffic volume at the junction of F Street and State Highway 904 near the Cheney MFH were approximately 9,800 units to the south of the junction and 11,000 units to the north of the junction (WDOT 2003).

3.4.2 Land Use

The Cheney MFH development is 12 miles south of the Spokane city limits in the small town of Cheney on the northeast corner of Cedar Street. According to the Spokane County Comprehensive Plan, the Cheney MFH area is within the Incorporated Urban Growth Area. The location is in the southwest quarter of Section 12, Township 24 North, and Range 41 East. The Cheney development is situated on a 3.59-acre parcel and consists of 16 single-family MFH units that date to the early 1960s.

3.4.3 Air Quality

The affected environment for Cheney MFH is essentially the same as that described in Section 3.2.3. The Cheney MFH is not a major source for air emissions.

3.4.4 Safety

Human Health and Safety. There are currently no primary surface zones, clear zones, accident potential zones, or quantity distance safety arcs that cross into any portion of the Cheney MFH complex.

Handling, storage, and disposal of hazardous materials and hazardous wastes at the Cheney MFH complex are currently controlled by regulations of the USAF, USEPA, and the State of Washington. Information regarding hazardous materials, hazardous wastes, and associated programs, policies, and regulations applicable to the Cheney MFH complex is described in Section 3.4.11.

Building Safety. The Cheney MFH complex was constructed in the early 1960s. These residential dwellings are outdated by today's building codes regarding safety and building materials.

Emergency Services. Emergency services for the Cheney MFH complex are provided by the Fairchild AFB and supplemented with an automatic-aid agreement with Spokane County Fire District No. 3 and the City of Cheney Fire Department.

Aircraft Safety. Due to its distance from any airfields, the Cheney MFH complex is not affected by either the Fairchild AFB AICUZ or the Spokane County AOZs. However, it is still subject to the provisions of Part 77 of the FAR.

3.4.5 Geological Resources

The affected environment for the surrounding geology and natural hazards for Cheney MFH is essentially the same as that described for on-base MFH in Section 3.2.5.

Soils at Cheney are described as belonging to the Hesseltine-Cheney-Uhlig association, which are moderately deep to shallow, gravelly, or rocky soils of the channeled scablands.

3.4.6 Water Resources

Groundwater. The affected environment for groundwater resources at Cheney MFH is the same as that described for on-base MFH in Section 3.2.6.

Surface Water. Cheney MFH is in the Hangman and Palouse watersheds. These watersheds are discussed in Section 3.2.6.

Floodplains. Cheney MFH is outside the 100- and 500-year floodplains.

3.4.7 Biological Resources

Vegetation and Wildlife. A map of fish and wildlife critical areas, published by the Spokane County Department of Building and Planning, indicates that elk habitat range is adjacent to the Cheney site (refer to Figure 3-2). Other wildlife habitat associated with the Cheney MFH is typical of suburban areas. The Cheney housing area covers about one square block and has traditional landscaping with mostly ornamental trees and shrubs. See affected environment for on-base MFH in Section 3.2.7.

3.4.8 Cultural Resources

Archaeological Resources. No archaeological resources have been discovered at the Cheney annex. The site has been entirely graded, and most of the land has been developed for residences and streets. No archaeological potential exists (92 CES/CEV 2002).

Architectural Resources. All 16 of the MFH units in Cheney appear to have been constructed around 1960 (AJG 2004). The oldest MFH units on base were constructed in the late 1950s. An historic building survey has been conducted for Cheney MFH (92 BMW/LGC 1990). These units are of typical construction and do not appear to be unique or significant.

Traditional Cultural Properties. No sites or areas important to the Spokane or Coeur d'Alene Tribes have yet been identified at Fairchild AFB. Though these tribes have historically been in the Spokane area, it does not appear that the Fairchild AFB area was used intensively by Native Americans. The potential for culturally significant sites appears to be low (92 CES/CEV 2002).

3.4.9 Socioeconomics and Environmental Justice

Cheney MFH lies within the ROI described for on-base MFH. Conditions with respect to socioeconomics and environmental justice for the Cheney area are as described in Section 3.2.9.

3.4.10 Infrastructure

Transportation Network. The 16 Cheney units are situated in one street block, bounded by North 8th Street, Cedar Street, Erie Street, and Oak Street.

Electricity. Cheney receives electrical service from the City of Cheney, which owns the underground distribution system.

Natural Gas. The Cheney MFH complex does not have natural gas service. Instead, heating for each unit is supplied by heating oil stored in a UST.

Communications. Qwest owns and provides telephone service to Cheney. Cheney receives cable service from Comcast.

Water Supply. The Cheney MFH complex receives potable water from the City of Cheney.

Sanitary Sewer and Wastewater. Sanitary sewer service to the Cheney MFH complex is owned and operated by the City of Cheney.

Solid Waste. Solid waste management and recycling from Cheney MFH is handled under the same contract as on-base solid waste (92 CES/CEV 2005a).

3.4.11 Hazardous Materials and Waste Management

Hazardous Materials and Wastes. Cheney MFH does not have storage areas for hazardous materials or petroleum products or hazardous wastes.

Asbestos-Containing Materials, Lead-Based Paint, and Radon. No exterior or interior ACM testing activities have been performed. LBP has been identified at the Cheney MFH complex at concentrations in excess of 1.0 milligram per square centimeter (mg/cm^2) and a potential LBP hazard might exist. Refer to Table 3-12 for radon information at Cheney MFH.

Storage Tanks: Aboveground, Dry Tanks, and Underground. Sixteen 500-gallon USTs remain at the Cheney MFH complex that date back to the original construction of the development completed in 1966. Since June 2002, the houses have sat idle when all residents were moved out. Since the tanks do not exceed 1,100 gallons, they are not regulated by state or Federal law. All of the tanks were tightness tested in 1992, 1993, and 1994 by Tracer Corporation. There were no leakage problems detected during these test dates. An investigation was conducted by URS Corporation, which reported the following in a report dated February 9, 2005:

- The tanks appear to be tight (based on the Low-Pressure Decay Test) and that no leakage was detected. Since liquid was present in the bottom of each tank during performance of the Ullage Test, which requires that all liquid be removed prior to pressurizing the tank, the tanks could not be certified as 100 percent leak free.
- Four sample locations contained hydrocarbon concentrations that exceeded the WDOE Model Toxic Control Act (MTCA) Soil Cleanup Level for diesel range hydrocarbons. URS Corporation reported that additional sampling and laboratory analysis would be required to fully characterize the extent of soil contamination.

- The analytical results may be used to aid in determining the horizontal extent of soil contaminations. URS Corporation could not observe soil conditions underneath the tanks. Although the tanks appear to be tight, they recommended that a contractor excavate under the tanks to confirm the findings (URS 2005).

The results of the URS investigation have been shared with the WDOE regulators.

THIS PAGE INTENTIONALLY LEFT BLANK

4. Environmental Consequences

4.1 Evaluation Criteria

4.1.1 Noise

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

4.1.2 Land Use

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

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

4.1.3 Air Quality

The environmental consequences on local and regional air quality conditions near a proposed Federal action are determined based upon the increases in regulated pollutant emissions relative to existing conditions and ambient air quality. Specifically, the impact in NAAQS "attainment" areas would be considered significant if the net increases in pollutant emissions from the Federal action would result in any one of the following scenarios:

- Cause or contribute to a violation of any national or state ambient air quality standard
- Expose sensitive receptors to substantially increased pollutant concentrations
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any Evaluation Criteria established by a SIP

4.1.4 Safety

If implementation of the Proposed Action were to substantially increase risks associated with the safety of Fairchild AFB personnel, contractors, or the local community, or substantially hinder the ability to respond to an emergency, it would represent a significant, adverse impact. Furthermore, if implementation of the Proposed Action would result in incompatible land use with respect to safety criteria (e.g., height restrictions, safety zones, or occupational safety), impacts on safety would be significantly adverse. Effects on safety can generally be avoided or minimized by adhering to current safety programs.

4.1.5 Geological Resources

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

- Identification and description of resources that could potentially be affected
- Examination of a proposed action and the potential impacts this action might have on the resource
- Assessment of the level of potential impacts
- Provision of mitigation measures in the event that potentially adverse impacts are identified

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

4.1.6 Water Resources

Evaluation criteria for impacts on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. The Proposed Action would have adverse effects if it were to do one or more of the following:

- Reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Affect water quality adversely
- Endanger public health by creating or worsening health hazard conditions
- Threaten or damage unique hydrologic characteristics
- Violate established laws or regulations adopted to protect water resources

The effect of flood hazards on a proposed action is important if such an action is in an area with a high probability of flooding.

4.1.7 Biological Resources

The level of impact on biological resources is based on (1) the importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource, (2) the proportion of the resource that would be affected relative to its occurrence in the region, (3) the sensitivity of the resource to the proposed activities, and (4) the duration of ecological ramifications.

Effects on biological resources are adverse if species or habitats of high concern are negatively affected over relatively large areas. Effects are also considered adverse if disturbances cause reductions in population size or distribution of a species of high concern.

4.1.8 Cultural Resources

Adverse impacts on cultural resources might include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or alter its setting; neglecting the resource to the extent that it deteriorates or is destroyed; or the sale, transfer, or lease of the property out of agency ownership (or control) without adequate legally enforceable restrictions or conditions to ensure preservation of the property's historic significance.

For this Proposed Action and Alternatives, the most relevant effects on cultural resources would be related directly to building construction, alteration, demolition, and ground-disturbing activities.

4.1.9 Socioeconomics and Environmental Justice

Construction expenditure impacts are assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., housing). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates 10 employment positions might go unnoticed in an urban area, but could have considerable impacts in a rural region. If potential socioeconomic changes were to result in substantial shifts in population trends or a decrease in regional spending or earning patterns, they would be considered adverse.

The Proposed Action could have a significant effect with respect to the socioeconomic conditions in the surrounding ROI if it were to

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

4.1.10 Infrastructure

Effects on infrastructure are evaluated based on their potential for disruption or improvement of existing levels of service and additional needs for energy and water consumption, sanitary sewer and wastewater systems, and transportation patterns and circulation. Impacts might arise from physical changes to circulation, construction activities, introduction of construction-related traffic on local roads or changes in daily or peak-hour traffic volumes, and energy needs created by either direct or indirect workforce and population changes related to base activities. In considering the basis for evaluating the significance of impacts on solid waste, several items are considered. These items include evaluating the degree to which the proposed construction projects could affect the existing solid waste management program and capacity of the area landfill. An effect might be considered adverse if a proposed action exceeded capacity of a utility.

4.1.11 Hazardous Materials and Waste Management

Effects on hazardous material management would be considered adverse if the Federal action resulted in noncompliance with applicable Federal and state regulations, or increased the amounts generated or procured beyond current Fairchild AFB waste management procedures and capacities.

Impacts on pollution prevention would be considered adverse if the Federal action resulted in worker, resident, or visitor exposure to these materials, or if the action generated quantities of these materials beyond the capability of current management procedures. Impacts on the ERP would be considered adverse if the action disturbed (or created) contaminated sites resulting in negative effects on human health or the environment, or if the action made it more difficult or costly to remediate existing contaminated sites. Impacts on fuels management would be adverse if the established management policies, procedures, and handling capacities could not accommodate the activities associated with the Proposed Action, or if the Proposed Action resulted in the disturbance or creation of contaminated sites resulting in negative effects on human health or the environment,. Additional adverse impacts include actions that make it more difficult or costly to remediate hazardous waste or POL sites.

4.2 On-Base MFH

4.2.1 Noise

Proposed Action

Construction Program. Short-term direct minor effects on areas in the vicinity of the Proposed Action would be expected. Implementation of the Proposed Action would create additional noise from the proposed demolition, renovation, and construction of new structures. Minor, temporary effects on the noise environment near the project sites resulting from the use of heavy equipment for construction would likely be observed. The nearby facilities would experience muffled construction noise during the workday. However, noise generation would last only for the duration of construction activities, and could be reduced through the use of equipment exhaust mufflers and restriction of construction and demolition activities to normal working hours (between 7:00 a.m. and 5:00 p.m.).

Aircraft Operations. Noise is a principal concern associated with aircraft operations. The main issues concerning noise effects on humans are physiological effects such as hearing loss and nonauditory effects, behavioral effects such as speech or sleep interference and performance effects, and subjective effects such as annoyance.

Fairchild AFB and Spokane International Airport flight operations are independent of the Proposed Action and implementation of the Proposed Action would not increase or decrease current flight operations occurring at Fairchild AFB. Therefore, the noise levels around the surrounding community are not anticipated to change due to aircraft operations, and no direct or indirect adverse effects from aircraft noise would occur as a result of the Proposed Action.

Transportation Operations. Under the Proposed Action, the demolition and construction of new homes would have a short-term direct minor adverse effect on traffic levels from additional construction vehicle traffic around Fairchild AFB. This slight increase in vehicular traffic would not have a noticeable change in the area's associated traffic noise levels.

Alternative A

Short-term direct minor adverse effects from construction noise and increased construction traffic would result under Alternative A. These effects would be similar to those described under the Proposed Action.

Alternative B

Short-term direct minor adverse effects from construction noise and increased construction traffic would result under Alternative B. These effects would be similar to those described under the Proposed Action.

4.2.2 Land Use

Proposed Action

Long-term direct minor beneficial effects would be expected from reduction of housing density. Fairchild AFB currently has 1,077 MFH units within the base property. Under the Proposed Action, 575 of these units would be demolished, 481 would be renovated, 21 would remain in their current condition, and 94 new units would be constructed, leaving the base with 596 housing units as noted in the HRMA. Overall, there would be an increase in open space within the base property under the Proposed Action. The Army Capehart, NCO Capehart, and Officer Capehart neighborhoods, which occupy 80 acres and currently have 272 MFH units, would be completely demolished and open space would occur where the housing units once stood. The Fort Wright Village and Galena Station neighborhoods would also benefit from reduced housing density.

Alternative A

Long-term direct minor beneficial effects would be expected. Effects associated with reduction of housing density would be similar to those discussed under the Proposed Action. Maximum construction

of housing would result in the same number of housing units as the Proposed Action at end state. Land use categorization would not be affected, however, by whether units were new or renovated.

Alternative B

Long-term direct minor beneficial effects would be expected. Effects associated with reduction of housing density would be similar to those discussed under the Proposed Action. Maximum renovation of housing would result in the same number of housing units as the Proposed Action at end state. Land use categorization would not be affected, however, by whether units were new or renovated.

4.2.3 Air Quality

Proposed Action

Short-term direct minor adverse effects would be expected. No long-term air quality effects would be expected from the Proposed Action. Regulated pollutant emissions from the Proposed Action would not contribute to or affect local or regional attainment status with NAAQS. The Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, demolition, and construction operations, but these emissions would be temporary and would not be expected to generate any off-site effects.

The construction projects would generate total suspended particulate and PM_{10} emissions as fugitive dust from ground-disturbing activities (e.g., grading, demolition, soil piles) and combustion of fuels in construction equipment. Fugitive dust emissions would be greatest during the initial site preparation activities and would vary from day to day depending on the construction phase, level of activity, and prevailing weather conditions. The quantity of uncontrolled fugitive dust emissions from a construction site is proportional to the area of land being worked and the level of construction activity.

Fugitive dust emissions for various construction activities were calculated using emissions factors and assumptions published in USEPA's AP-42 Section 11.9 dated October 1998 and Section 13.2 dated December 2003. These estimates assume that 230 working days are available per year for construction (accounting for weekends, weather, and holidays). Using data from the National Oceanic and Atmospheric Administration, the average soil percent moisture was estimated to be around 30 percent (NOAA 2005). Wind speed of greater then 12 miles per hour is recorded 20 percent of the time during O_3 season (April 1 to October 31), which is based on average wind rose data and measured speed for the Spokane, Washington, area (NRCS 2003).

Construction operations would also result in emissions of criteria pollutants as combustion products from construction equipment, as well as evaporative emissions from architectural coatings and asphalt paving operations. These emissions would be of a temporary nature. The emissions factors and estimates were generated based on guidance provided in *Air Quality Thresholds of Significance* from the Sacramento Metropolitan Air Quality Management District (SMAQMD 1994).

For purposes of this analysis, the project duration and affected project site area that would be disturbed (presented in Section 2) was used to estimate fugitive dust and all other criteria pollutant emissions. The construction emissions presented in Table 4-1 include the estimated annual construction PM_{10} emissions associated with the Proposed Action at Fairchild AFB. These emissions would produce slightly elevated short-term PM_{10} ambient air concentrations. However, the effects would be temporary, and would fall off rapidly with distance from the proposed construction site.

Specific information describing the types of construction equipment required for a specific task, the hours the equipment is operated, and the operating conditions vary widely from project to project. For purposes of analysis, these parameters were estimated using established methodologies for construction and experience with similar types of construction projects. Combustion by-product emissions from construction equipment exhausts were estimated using USEPA's AP-42 emissions factors for heavy-duty, diesel-powered construction equipment.

Table 4-1. Annual Construction Emissions Estimates from the Proposed Action

CY	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
2007	32.78	9.89	30.03	1.59	7.87
2008	32.78	9.89	30.03	1.59	7.87
2009	32.78	9.89	30.03	1.59	7.87
2010	32.78	9.89	30.03	1.59	7.87
2011	32.78	9.89	30.03	1.59	7.87
2012	32.78	9.89	30.03	1.59	7.87

Notes: CY – calendar year

The construction emissions presented in Table 4-1 include the estimated annual emissions from construction equipment exhaust associated with the Proposed Action. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction projects involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the effects would be temporary, fall off

rapidly with distance from the proposed construction site, and would not result in any long-term effects. Emissions estimates were based on the assumption that the Proposed Action would be completed over a 6-year period from Calendar Year (CY) 2007–2012. All facilities scheduled for demolition and construction were equally divided over this timeframe.

Since Fairchild AFB is in attainment for all criteria pollutants, the General Conformity Rule does not apply. As shown in Table 4-1, the temporary construction emissions caused by the Proposed Action would not cause a violation of the NAAQS. Therefore, no significant impact on regional or local air quality would result from implementation of the Proposed Action. Appendix E details the emissions factors, calculations, and estimates of construction-related emissions for the Proposed Action.

Local and regional pollutant effects resulting from direct and indirect emissions from stationary emissions sources under the Proposed Action would be addressed through Federal and state permitting program requirements under New Source Review regulations (40 CFR Parts 51 and 52).

Alternative A

Short-term direct minor adverse effects would be expected. The construction emissions presented in Table 4-2 include the estimated annual emissions from construction equipment exhaust associated with Alternative A. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction projects involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term effects. Emissions estimates were based on the assumption that the Proposed Action would be completed over a 6-year period from CY 2007–2012. All facilities scheduled for demolition and construction were equally divided over this timeframe.

Table 4-2. Annual Construction Emissions Estimates from Alternative A

CY	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
2007	87.17	22.50	79.53	4.23	12.04
2008	87.17	22.50	79.53	4.23	12.04
2009	87.17	22.50	79.53	4.23	12.04
2010	87.17	22.50	79.53	4.23	12.04
2011	87.17	22.50	79.53	4.23	12.04
2012	87.17	22.50	79.53	4.23	12.04

Notes: CY – calendar year

Since Fairchild AFB is in attainment for all criteria pollutants, the General Conformity Rule does not apply. As shown in Table 4-2, the temporary construction emissions caused by Alternative A would not cause a violation of the NAAQS. Therefore, no significant impact on regional or local air quality would result from implementation of Alternative A. Appendix E details the emissions factors, calculations, and estimates of construction-related emissions for Alternative A.

Alternative B

Short-term direct minor adverse effects would be expected. The construction emissions presented in Table 4-3 include the estimated annual emissions from construction equipment exhaust associated with Alternative B. As with fugitive dust emissions, combustion emissions would produce slightly elevated air pollutant concentrations. Early phases of construction projects involve heavier diesel equipment and earthmoving, resulting in higher NO_x and PM_{10} emissions. Later phases of construction projects involve more light gasoline equipment and surface coating, resulting in more CO and VOC emissions. However, the effects would be temporary, fall off rapidly with distance from the proposed construction site, and would not result in any long-term effects. Emissions estimates were based on the assumption that Alternative B would be completed over a 6-year period from CY 2007–2012. All facilities scheduled for demolition were equally divided over this timeframe. Under Alternative B, no facilities would be constructed.

Since Fairchild AFB is in attainment for all criteria pollutants, the General Conformity Rule does not apply. As shown in Table 4-3, the temporary construction emissions caused by Alternative B would not cause a violation of the NAAQS. Therefore, no significant impact on regional or local air quality would result from implementation of Alternative B. Appendix E details the emissions factors, calculations, and estimates of construction-related emissions for Alternative B.

Table 4-3. Annual Construction Emissions Estimates from Alternative B

CY	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_x (tpy)	PM_{10} (tpy)
2007	21.59	7.08	19.83	1.04	7.01
2008	21.59	7.08	19.83	1.04	7.01
2009	21.59	7.08	19.83	1.04	7.01
2010	21.59	7.08	19.83	1.04	7.01
2011	21.59	7.08	19.83	1.04	7.01
2012	21.59	7.08	19.83	1.04	7.01

Notes: CY – calendar year

4.2.4 Safety

Proposed Action

Short-term and long-term minor adverse effects and long-term minor beneficial effects would be expected. The Proposed Action would entail the on-base demolition of 575 units, renovation of 481 units, construction of 94 units, and conveyance of 21 units. Implementation of the Proposed Action would result in short-term minor adverse effects on construction contractor occupational safety while performing work at Fairchild AFB because construction activities would increase during demolition, construction, and renovation. Implementation of the Proposed Action would also result in long-term minor adverse effects on contractor occupational safety due to the subsequent maintenance of the on-base MFH complexes. Contractors would be required to establish and maintain safety programs (e.g., Construction Management Plan and Demolition Plan) for the demolition, construction, and renovation of the on-base MFH complexes.

The Proposed Action would result in long-term minor beneficial effects on base personnel in terms of building safety and emergency services. Building safety would be improved because the 94 new MFH units would be constructed in compliance with current building codes, would consist of fewer dwellings per building (fire safety), would have barrier-free design (5 percent of units) and security lighting, and would not have asbestos or LBP. Additionally, the 481 renovated MFH units would benefit from repaired and renovated housing and streets. All on-base MFH complexes would enjoy improved safety due to the addition of concrete walks or asphalt trails leading to playgrounds and covered bus shelters. The 92 CES/CEF and 92d Security Forces Squadron would still be responsible for providing emergency services to the on-base MFH complexes, but their responsibility would decrease because there would be fewer MFH units.

The Proposed Action would have short-term minor adverse effects on public safety due to increased construction traffic and accessibility to construction sites during the demolition, construction, and renovation of the MFH complexes. These adverse effects would be mitigated by limiting construction vehicle speed and routes, and utilizing barriers to keep the public out of construction sites. Section 4.2.10 presents additional analysis on transportation.

The Proposed Action would have no direct or indirect effects with respect to aircraft safety, because any demolition, construction, or renovation conducted at the on-base MFH complexes, optional 50-acre parcel, or Housing Maintenance Office would still have to adhere to the Fairchild AFB AICUZ Program, Spokane County AOZ Program, and Part 77 of the FAR.

Alternative A

Short-term and long-term minor adverse effects and long-term minor beneficial effects would be expected. Alternative A would involve the on-base demolition of 1,077 MFH units and subsequent construction of 596 new MFH units. Implementation of Alternative A would result in short-term minor adverse effects on the construction contractors in terms of demolition and construction safety. This alternative would result in an approximate doubling of the demolition and a five-fold increase in construction over the Proposed Action. Implementation of Alterative A would also result in long-term minor adverse effects on contractor occupational safety in terms of maintenance of the on-base MFH complexes. The increased occupational safety effects on the construction contractors would be mitigated by strictly adhering to the required safety programs (e.g., Construction Management Plan and Demolition Plan) for the demolition and construction of the on-base MFH complexes.

Alternative A would result in long-term minor beneficial effects on base personnel in terms of occupational safety, building safety, and emergency services. USAF personnel would no longer be responsible for the ongoing maintenance of the on-base MFH complexes, therefore, decreasing the chances for occupational injury. Building safety would be improved because the 596 new MFH units would be constructed in compliance with current building codes, would consist of fewer dwellings per building (fire safety), would have barrier-free design (5 percent of units) and security lighting, and would not have asbestos or LBP. All on-base MFH complexes would enjoy improved safety due to the addition of concrete walks or asphalt trails leading to playgrounds and covered bus shelters. The 92 CES/CEF and 92d Security Forces Squadron would still be responsible for providing emergency services to the on-base MFH complexes, but their responsibility would decrease because there would be fewer MFH units.

Alternative A would have short-term minor adverse effects on public safety due to increased construction traffic and accessibility to construction sites during the demolition and construction of the MFH complexes. These adverse effects would be mitigated by limiting construction vehicle speed and routes, and utilizing barriers to keep the public out of construction sites.

Alternative A would have no direct or indirect effects with respect to aircraft safety, because any demolition and construction performed at the on-base MFH complexes, optional 50-acre parcel, or Housing Maintenance Office would still have to adhere to the Fairchild AFB AICUZ Program, Spokane County AOZ Program, and Part 77 of the FAR.

Alternative B

Short-term and long-term minor adverse effects and long-term minor beneficial effects would be expected. Alternative B would involve the on-base demolition of 481 units and renovation of 596 units. Implementation of Alternative B would result in short term minor adverse effects on the construction contractor in terms of occupational safety due to demolition and renovation. It would also result in long-term minor adverse effects on construction contractor occupational safety due to the subsequent maintenance of the on-base MFH complexes. Contractors would be required to establish and maintain safety programs (e.g., Construction Management Plan and Demolition Plan) for the demolition and renovation of the on-base MFH complexes. The adverse effects on construction contractors would be similar to, but less than, those expected from the implementation of the Proposed Action.

Alternative B would result in long-term minor beneficial effects on base personnel in terms of occupational safety, building safety, and emergency services. USAF personnel would no longer be responsible for the ongoing maintenance of the on-base MFH complexes, therefore, decreasing the chances for occupational injury. Building safety would be improved because the renovations to the 596 MFH units would be performed in compliance with current building codes. The 92 CES/CEF and 92d Security Forces Squadron would still be responsible for providing emergency services to the on-base MFH complexes, but their responsibility would decrease because there would be fewer MFH units. The beneficial effects on base personnel would be similar to, but less than, those received from the implementation of the Proposed Action.

Alternative B would have short-term minor adverse effects on public safety due to increased construction traffic and accessibility to construction sites during the demolition and renovation of the MFH complexes. These adverse effects would be mitigated by limiting construction vehicle speed and routes, and utilizing barriers to keep the public out of construction sites.

Alternative B would have no direct or indirect effects with respect to aircraft safety, because any demolition and renovation at the on-base MFH complexes, optional 50-acre parcel, or Housing Maintenance Office would still have to adhere to the Fairchild AFB AICUZ Program, Spokane County AOZ Program, and Part 77 of the FAR.

4.2.5 Geological Resources

Proposed Action

Short-term direct adverse minor effects on soils would be expected from construction and demolition activities associated with the Proposed Action. No direct or indirect effects on soils would be expected

from conveyance of MFH units for use in their current condition. Construction activities, such as grading, excavating, and recontouring of the soil, would result in soil disturbance. Implementation of best management practices (BMPs) during construction would limit potential effects resulting from construction activities. Standard erosion control means (e.g., silt fencing, sediment traps, application of water sprays, and revegetation at disturbed areas) would also reduce potential impacts related to these characteristics. Fugitive dust from construction activities would be minimized by watering and soil stockpiling, thereby reducing to negligible levels the total amount of soil exposed. The Proposed Action would require preparation of a soil and erosion control plan. The Proposed Action is expected to result in insignificant impacts on soils.

Since no housing units exist in the unimproved optional parcel adjacent to Fort Wright Village, more disturbances to soils would be expected to occur in this area as a result of the Proposed Action. It would be expected that facilities and impervious surfaces would be constructed at this location. Given its size and the likely magnitude of such development, effects on soils would be limited.

The Proposed Action would not cause or create drastic changes to the topography of Fairchild AFB or the surrounding area. Therefore, no direct or indirect effects on regional or local topography or physiographic features would be expected to occur.

Alternative A

Short-term direct adverse minor effects on soils would be expected from construction and demolition activities associated with Alternative A. The same erosion control measures and fugitive dust activities should be implemented under Alternative A as those discussed under the Proposed Action. Soil disturbance from Alternative A would likely be higher due to construction of 596 new MFH units as opposed to construction of 94 new units under the Proposed Action. However, implementation of construction BMPs and erosion control measures would minimize soil impacts.

Alternative A would not cause or create drastic changes to the topography of Fairchild AFB or the surrounding area. Therefore, no direct or indirect effects on regional or local topography or physiographic features would be expected to occur.

Alternative B

Short-term direct minor adverse effects on soils would be expected from construction and demolition activities associated with Alternative B. The same erosion control measures and fugitive dust activities should be implemented under Alternative B as those discussed under the Proposed Action. Soil disturbance from Alternative B would likely be less than for the Proposed Action and Alternative A

because no new MFH units would be constructed. Renovation activities to the MFH units would not likely affect soils. However, implementation of construction BMPs and erosion control measures would be used to ensure that any soil impacts are minimized.

Alternative B would not cause or create drastic changes to the topography of Fairchild AFB or the surrounding area. Therefore, no direct or indirect effects on regional or local topography or physiographic features would be expected to occur.

4.2.6 Water Resources

Proposed Action

Short-term direct minor adverse effects on surface water and groundwater would be expected as a result of construction activities associated with the Proposed Action. Long-term indirect beneficial effects on surface water and groundwater quality would be expected as a result of the reduction of impervious surfaces.

No direct or indirect effects on surface water and groundwater would be expected from conveyance of MFH units for use in their current condition. Surface water runoff resulting from construction activities might include contaminants that would impact surface water quality in drainage ditches and groundwater quality. The level of disturbance is related to the type of contaminant that enters the water system. Increased sediment runoff from construction and demolition activities increases surface water turbidity, which can raise water temperature and impede photosynthetic processes. Sediment runoff into surface water bodies also increases the likelihood of contaminant (e.g., heavy metals, excess nutrient concentrations) deposition. However, BMPs, such as sediment fencing during active construction and revegetation of exposed areas immediately following construction, would confine runoff to the construction site and reduce the potential for surface water and groundwater contamination. An SWPPP for construction activities would be developed to include a description of storm water discharge control and stabilization and structural practices to be used at the site to minimize indirect surface water runoff, erosion, and the movement of sediments on and from the site to receiving waters.

A Federal permit would be required for any discharge of dredged or fill material from construction, demolition, or renovation activities to the drainage ditches in the MFH areas pursuant to Section 404 of the CWA. Construction activities that occur within the ordinary high water mark of waters of the state would require an HPA Permit from the WDFW. A Washington State General NPDES Construction Storm Water Permit from WDOE would be required to control discharge of storm water from project sites. Assuming use of storm water pollution control measures and compliance with Section 404 permits,

NPDES construction permits, and HPA permits, there would be short-term direct minor adverse effects on surface water and groundwater quality as a result of the Proposed Action.

Implementation of the Proposed Action would result in a decrease in impervious surfaces (e.g., rooftops, parking lots, sidewalks) at Fairchild AFB because the number of housing units would be reduced by roughly half. Impervious surfaces are constructed of impenetrable materials (e.g., stone, asphalt, concrete) that repel water and prevent rainfall or snowmelt from infiltrating soils. Therefore, during rainfall or snowmelt events, impervious surfaces accelerate the speed at which water is directed into receiving surface water bodies. The potential for storm water to carry contaminants directly into surface waters is lessened when impervious areas decrease. Less storm water runoff would have a long-term direct minor beneficial effect on surface water and groundwater quality in MFH areas.

Since no housing units exist in the unimproved optional parcel adjacent to Fort Wright Village, more disturbances on surface water and groundwater would be expected to occur in this area as a result of the Proposed Action. Given the size of the parcel and the likely amount of construction of facilities or impervious surfaces, it would be expected that effects on surface water and groundwater would be limited.

The on-base MFH areas are not in any floodplain and would not stimulate development within the floodplain. Therefore, the Proposed Action would have no direct or indirect adverse effects on floodplains.

Alternative A

Short-term direct minor adverse effects on surface water and groundwater would be expected as a result of construction activities associated with Alternative A. Long-term indirect beneficial effects on surface water and groundwater quality would be expected as a result of the reduction of impervious surfaces.

Potential effects on surface water and groundwater under Alternative A are similar to those discussed under the Proposed Action. BMPs and compliance with Section 404 permits, NPDES construction permits, and HPA permits would be expected under Alternative A, minimizing runoff and soil erosion from construction activities. However, construction-related contaminant runoff from Alternative A would likely be higher than for the Proposed Action due to construction of 596 new MFH units as opposed to construction of 94 new units under the Proposed Action. Short-term direct minor adverse effects on surface water and groundwater would be expected.

Implementation of Alternative A would result in a decrease in impervious surfaces (e.g., rooftops, parking lots, sidewalks) at Fairchild AFB because the number of housing units is being reduced by roughly half. Therefore, long-term direct and indirect beneficial effects on surface water and groundwater would be expected.

The on-base MFH areas are not in any floodplain and would not stimulate development within the floodplain. Therefore, Alternative A would have no direct or indirect adverse effects on floodplains.

Alternative B

Short-term direct minor adverse effects on surface water and groundwater would be expected as a result of construction activities associated with Alternative B. Long-term indirect beneficial effects on surface water and groundwater quality would be expected as a result of the reduction of impervious surfaces.

Potential effects on surface water and groundwater under Alternative B are similar to those discussed under the Proposed Action. BMPs and compliance with Section 404 permits, NPDES construction permits, and HPA permits would be expected under Alternative B, minimizing runoff and soil erosion from construction activities. However, construction-related contaminant runoff from to Alternative B would likely be less than for the Proposed Action and Alternative A because no construction and less demolition would occur. Short-term direct minor adverse effects on surface water and groundwater would be expected.

Implementation of Alternative B would result in a decrease in impervious surfaces (e.g., rooftops, parking lots, sidewalks) at Fairchild AFB because the number of housing units is being reduced by roughly half. Therefore, long-term direct and indirect beneficial effects on surface water and groundwater would be expected.

The on-base MFH areas are not in any floodplain and would not stimulate development within the floodplain. Therefore, Alternative B would have no direct or indirect adverse effects on floodplains.

4.2.7 Biological Resources

Proposed Action

Vegetation. Short-term and long-term direct minor adverse effects would be expected. No vegetation disturbance would result from renovation activities or from conveyance of MFH units for use in their current condition. Limited vegetation disturbance would be expected in the landscaped areas adjacent to demolition project sites. Construction of new MFH units would generally take place in areas that have been previously modified for residential housing. Similarly, construction of parking lots, driveways, and

access roads would be expected to occur in areas that have been previously disturbed for housing purposes.

Since no housing units exist in the unimproved optional parcel adjacent to Fort Wright Village, more disturbances on vegetation would be expected to occur in this area as a result of the Proposed Action. Generally, long-term direct minor adverse effects would be expected from removal of vegetation that would accompany development of facilities at this site.

Wildlife. No wildlife disturbance would result from renovation activities or from conveyance of MFH units for "as is" use. Limited disturbance on wildlife around the demolition and construction activities would be expected. Demolition activities would be expected to have a short-term indirect minor adverse effect on wildlife inhabiting the wetland north of NCO Capehart.

However, construction and demolition activities would occur in areas previously utilized for residential housing. Similarly, construction of parking lots, driveways, and access roads would occur in areas that have been previously disturbed for housing. Limited suitable habitat exists in the MFH area due to the developed condition, mowing and maintenance of landscaped areas, and human presence. There are no fish and wildlife Critical Areas, as designated by Spokane County, in or adjacent to the MFH areas on base. Therefore, effects on wildlife as a result of the Proposed Action would be expected to be insignificant.

Since no housing units exist in the unimproved optional parcel adjacent to Fort Wright Village, more disturbances on wildlife would be expected to occur in this area as a result of the Proposed Action. Generally, long-term direct minor adverse effects would be expected from removal of wildlife habitat and human presence.

Alternative A

Vegetation and Wildlife. Short-term direct minor adverse effects on vegetation and wildlife would be expected from Alternative A. These effects would be similar to those discussed under the Proposed Action.

Alternative B

Vegetation and Wildlife. Short-term direct minor adverse effects on vegetation and wildlife would be expected from Alternative B. These effects would be less than the effects described under the Proposed Action and Alternative A. Overall, effects would be negligible.

4.2.8 Cultural Resources

Proposed Action

No direct or indirect effects on cultural resources would be expected under the Proposed Action.

Archaeological Resources. There are no known potential prehistoric or historic sites in the areas where ground-disturbing activities would occur. The areas in the on-base APE are not considered to have a high sensitivity for cultural resources. Furthermore, the area has suffered heavy disturbance in the past, reducing the chances of finding intact archaeological resources. Therefore, no direct or indirect effects on archaeological resources would be expected under the Proposed Action. Construction personnel involved in ground-disturbing and excavation activities would be aware of the appropriate procedures outlined in the Fairchild AFB *Integrated Cultural Resources Management Plan* should artifacts or archaeological resources be inadvertently discovered (92 CES/CEV 2002).

Architectural Resources. The on-base MFH units are not considered historically significant. There is no potential for degradation of setting from noise and visual intrusion related to the construction activities proposed in this EA, nor is there potential for structural damage from noise and low-frequency sound vibrations associated with the construction activities. Therefore, no direct or indirect effects on architectural resources would be expected as a result of the Proposed Action.

Traditional Cultural Properties. The potential for discovering sites culturally significant to the Spokane or Coeur d'Alene Tribes is low. Therefore, no direct or indirect effects on traditional cultural properties would be expected under the Proposed Action. However, in the event of the inadvertent discovery of human remains during ground-breaking activity, the appropriate procedures identified in the Fairchild AFB *Integrated Cultural Resources Management Plan* would be followed (92 CES/CEV 2002). Any discoveries would be addressed in accordance with the Native American Graves Protection and Repatriation Act.

Alternative A

No direct or indirect effects on cultural resources would be expected under Alternative A. The environmental consequences of implementing Alternative A would be essentially the same as those discussed for the Proposed Action.

Alternative B

No direct or indirect effects on cultural resources would be expected under Alternative A. The environmental consequences of implementing Alternative B would be essentially the same as those discussed for the Proposed Action.

4.2.9 Socioeconomics and Environmental Justice

Proposed Action

Long-term minor adverse and short-term minor beneficial effects would be expected on socioeconomic resources; no effects would be expected on environmental justice.

Employment and Economic Characteristics. No effects would be expected on employment levels, household income, or poverty level. There would be a slight increase in employment related to residential construction on base. As the construction activity would be spread out, occurring in 6 of the first 8 years, there would be no remarkable change from baseline conditions. Household income and poverty levels would not be affected by the Proposed Action, the essence of which concerns real estate development.

Demolition and Construction. Short-term minor beneficial effects would be expected. Demolition and construction activities under the Proposed Action would provide beneficial economic consequences for the Spokane area. As described in Section 2.1.1, demolition of 575 units would take place over 6 years. The cost for the demolition of each unit is estimated to be $4,900 (KGP 2004a). The total costs for demolition would be approximately $2.8 million. At an estimated construction cost of $65 per square foot and with the average unit being 1,400 square feet, each of the new MFH units would cost $91,000; therefore, the cost of 94 replacement units would be approximately $8.6 million. Costs of renovation performed by a private sector developer might vary widely; recent military construction renovation costs have been nearly $51,000 per unit. It is estimated that renovation costs under privatization would be similar to military construction renovation costs (KGP 2004a). Costs would be on a per-unit basis and would be dependent on each unit's needs (e.g., new appliances, windows, doors, and remodeling). Estimated costs for renovation of 481 housing units would be $24.5 million. Total estimated costs for demolition, new construction, and renovation would be $35.9 million.

Education. Long-term minor adverse effects would be expected. Impact aid is designed to compensate the school districts because of the loss of tax revenue when military families live on base. The Federal government currently provides nearly $58 million in impact aid to local school districts. As a result of implementing the Proposed Action, those local school districts would be eligible for $42 million in impact aid. The school district to be most affected would be Medical Lake. By reducing the number of

housing units on base, families would find residence in other areas, thereby decreasing the amount of impact aid the school district receives. The small supply of available housing in the Medical Lake area would limit the tax revenue, and ultimately result in less funding for that school district. Currently, the Medical Lake and Cheney School Districts receive a combined $2.5 million and will continue to receive this amount until 2011, at which point impact aid will be reduced to $1.6 million. If there were to be an increase in enrollment in the Medical Lake School District or the Cheney School District, these systems would be able to absorb the greater student populations. Previously, as a result of the change in operation of Fairchild AFB from a bombing unit to a refueling wing, Medical Lake had its enrollment reduced by nearly 500 students (Veltri 2005). Additionally, the Cheney School District saw a decrease in enrollment when personnel were no longer assigned housing in the Geiger Heights and Cheney Housing areas (Reisenauer 2005).

The Spokane School District is the second largest in the state and is well-known for its special education programs and capabilities. Since 1998, that school system has seen a decrease from 33,000 to 29,000 students. This trend is expected to continue but to settle at around 27,000 students. An influx of children into the district would likely not create any particular problems for the school system to handle because of the already diminished number of children, but also because those students would be spread out over a sizable grid of schools.

Housing. No effects would be expected. The HRMA found that there is currently a surplus of approximately 750 housing units in the vicinity of the base, many of which are vacant (Parsons 2003). The evaluation concluded that only 596 MFH units are necessary on base; any additional housing requirements could be alleviated by the available homes in the Spokane area. Based on the number of homes sold and the number of rental units that are available, the housing market in the Spokane area has more than an adequate number of homes for sale and rent. In just the first 4 months of 2004, there were 1,464 homes sold and 3,062 listed (AJG 2004). The available housing is the product of free market conditions and not a response to operations at Fairchild AFB; privatization of housing on base would not be expected to create any strain on the surrounding housing market. Because the Proposed Action would be implemented over 10 years, there would not be any "shock" to the system.

Environmental Justice. No effects would be expected. The Proposed Action would occur principally on base. Off-base minority and low-income populations, limited in size and proximity to the installation, would not be adversely or disproportionately affected by the Proposed Action.

Alternative A

Short-term minor beneficial effects would be expected with respect to demolition and construction activities. Under this alternative, all 1,077 MFH units would be demolished and 596 new MFH would be constructed. Estimated costs for these actions would be $5.3 million for demolition and $54.2 million for new construction, for a total of $59.5 million. This would be nearly $24 million more in economic value to the area than would be provided under the Proposed Action. Other aspects of socioeconomics and environmental justice would be as predicted under the Proposed Action.

Alternative B

Short-term minor beneficial effects would be expected with respect to demolition and construction activities. Under this alternative, 481 MFH units would be demolished as 596 units would be renovated. No units would be conveyed use in their current condition. Estimated costs for these actions would be $2.4 million for demolition and $30.4 million for renovation, for a total of $32.8 million. This would be approximately $3 million less in economic value to the area than would be provided under the Proposed Action. Other aspects of socioeconomics and environmental justice would be as predicted under the Proposed Action.

4.2.10 Infrastructure

Proposed Action

Transportation Network. Short-term direct minor adverse impacts on the transportation system would occur because of increased construction traffic along Rambo Road, Mitchell Drive, Fairchild Highway, and residential MFH streets as building materials and demolition debris would be moved to and from sites. However, the increased traffic congestion would be minor and last only through the period of demolition and construction. Most construction equipment would be driven to the project locations and would be kept on site during the duration of the project.

The 2002 *Gate Security, Safety and Capacity Traffic Engineering Study* for Fairchild AFB reported a gate processing rate of 550 vehicles per hour per lane at the Main Gate, with tandem processing during normal security conditions. The peak 15-minute volume (when no lulls occurred between 0630 and 0645 hrs) during normal security conditions was 280 vehicles (or 140 vehicles per lane).

As shown in Table 2-1, there would be 481 fewer on-base MFH units as a result of the proposed MFH privatization. The HRMA concludes that the local private sector housing could provide sufficient suitable housing for military families. It can be assumed that most military members in local private sector housing would live within a one-hour commute of Fairchild AFB. Under the Proposed Action, the 226

units at Geiger Heights and the 16 units at Cheney, both off-base MFH, would be conveyed. The 16 units at Cheney were vacated in 2002 and the units at Geiger Heights are almost all currently vacant. It can be assumed that the 242 off-base units were occupied during the traffic study. Therefore, the increase in vehicle traffic from personnel living in 265 off-base private sector housing units was analyzed.

In order to estimate the amount of traffic that would shift as a result of the MFH privatization, trip generation rates published in the Institute of Transportation Engineers (ITE) *Trip Generation, 6th Edition* were used. One MFH unit was assumed to exhibit the trip generation characteristics of one residential condominium or townhouse (categorized as ITE Land Use 230). ITE Land Use 230 has the following average trip generation characteristics (ITE 1997):

- AM Peak Hour – 0.44 vehicle trips per unit
- PM Peak Hour – 0.54 vehicle trips per unit

Fairchild AFB is accessed from U.S. Highway 2 via Mitchell Drive to the Main Gate. According to the trip rates shown above, and assuming that the personnel living in the 265 off-base private sector housing units would be traveling to and from Fairchild AFB during peak hours, the number of trips that would be expected to be added to the intersection of U.S. Highway 2 and Mitchell Drive would be:

- AM Peak Hour – 117 vehicles
- PM Peak Hour – 143 vehicles

The Washington State Department of Transportation *2003 Annual Traffic Report* reports an average daily traffic volume of 9,500 units after the junction with Brooks Road (heading east on U.S. Highway 2 west of Fairchild AFB) and 20,000 units after the junction with Craig Road (heading east on U.S. Highway 2 east of Fairchild AFB) (WSDOT 2003). Therefore, it can be assumed that approximately 5,250 vehicles travel U.S. Highway 2 to and from Fairchild AFB each day from points east.

The Main Gate is currently being renovated. According to the September 2003 *Environmental Assessment of Anti-Terrorism/Force Protection Gate Projects at Fairchild AFB, Washington,* traffic flow on U.S. Highway 2 and through the Main Gate should improve after construction activities are complete (USAF 2003). The addition of 117 and 143 vehicles to U.S. Highway 2 in the morning and afternoon peak hours, respectively, would not represent a significant increase in vehicular traffic on U.S. Highway 2 or through the Main Gate.

Electricity, Natural Gas, Communications, Water Supply, and Sanitary Sewer and Wastewater. Long-term direct minor beneficial effects on electrical, natural gas, communications, water supply, and sanitary sewer and wastewater systems would be expected. The Proposed Action would result in a decrease of 481 MFH units on base; therefore, there would be a decrease in demand on base utility systems.

Solid Waste. Short-term direct minor adverse effects would result from increased MSW production during construction. Long-term direct minor beneficial effects would result from the decrease in MFH units on base.

Solid waste generated from the proposed construction activities would consist of building materials such as solid pieces of concrete, metals (conduit, piping, and wiring), and lumber. Contractors would be required to recycle C&D to the greatest extent possible as part of base policy, and any recycled C&D waste would be diverted from landfills.

Analysis of effects associated with implementation of the Proposed Action is based on the following assumptions: (1) approximately 4 pounds of construction debris are generated for each square foot of floor area for new structures (USACE 1976), (2) approximately 92 pounds of demolition debris is generated for each square foot of floor area for old structures (USACE 1976), and (3) approximately 20 pounds of demolition debris is generated for each square foot of renovated structures (CCCCDD 2005). Table 4-4 shows the estimated tonnage of MSW that would be generated under the Proposed Action.

Table 4-4. Project Construction and Demolition Waste Generation for Proposed Action

Action (Number of Units)	Total Project Area (square feet)	MSW (tons)
Demolition (575)	770,488	35,443
Renovation (481)	531,982	5,320
Construction (94)	184,760	370
Total		**41,133**

As shown in Table 4-4, 35,443 tons of demolition debris, 5,320 tons of renovation debris, and 370 tons of construction debris, for a total of 41,133 tons of MSW, would be generated. It is assumed that 80 percent of demolition debris would be concrete building foundations, which could be stockpiled for future use. The remaining 20 percent (7,088 tons) of demolition debris and all of renovation debris would likely be contaminated with nails, rebar, or other building materials that would limit recycling. MSW generated from construction is generally uncontaminated and would be reused or recycled if possible. It is assumed that 50 percent of the remaining demolition, renovation, and construction would be recycled. Therefore,

approximately 6,389 tons of MSW would be sent to the Graham Road Landfill as a result of the Proposed Action. As described in Section 2.1.1, this would occur over an estimated 6-year timeframe. Based on current usage rates, the Graham Road Landfill has sufficient operating capacity for the next 80 years (Miller 2005). Construction, renovation, and demolition associated with the Proposed Action would not be expected to affect landfill capacity. MSW generation would be a short-term direct minor adverse effect from construction.

The reduction in the number of MFH units on base would result in less solid wastes generated. However, creation of open grassy spaces would increase the amount of yard wastes generated. Overall, these effects would be negligible.

Alternative A

Short-term direct minor adverse effects would result from increased MSW production during construction. Long-term direct minor beneficial effects would result from the decrease in MFH units on base. Long-term indirect minor adverse effects would result from increased commuter traffic; these effects would be the same as those described for the Proposed Action.

Table 4-5 shows the estimated tonnage of MSW that would be generated under Alternative A, using the assumptions applicable to the Proposed Action.

As shown in Table 4-5, 61,987 tons of demolition debris and 2,359 tons of construction debris, for a total of 64,346 tons of MSW, would be generated. Using the same assumptions as in the Proposed Action, approximately 7,378 tons of debris would be sent to the Graham Road Landfill as a result of Alternative A. As described in Section 2.1.1, this would occur over an estimated 6-year timeframe. MSW generation would be a short-term direct minor adverse effect from construction.

The reduction in the number of MFH units on base would result in less solid wastes generated. However, creation of open grassy spaces would increase the amount of yard wastes generated. Overall, these effects would be negligible.

Table 4-5. Project Construction and Demolition Waste Generation for Alternative A

Action (Number of Units)	Total Project Area (square feet)	MSW (tons)
Demolition (1,077)	1,347,544	61,987
Construction (596)	1,179,274	2,359
Total		**64,346**

Alternative B

Short-term direct minor adverse effects would result from increased MSW production during construction. Long-term direct minor beneficial effects would result from the decrease in MFH units on base. Long-term indirect minor adverse effects would result from increased commuter traffic; these effects would be the same as those described for the Proposed Action.

Table 4-6 shows the estimated tonnage of MSW that would be generated under Alternative B, using the assumptions applicable to the Proposed Action.

As shown in Table 4-6, 30,885 tons of demolition debris and 6,965 tons of renovation debris, for a total of 37,850 tons of MSW, would be generated. Using the same assumptions as in the Proposed Action, approximately 6,571 tons of debris would be sent to the Graham Road Landfill as a result of Alternative B. As described in Section 2.1.1, this would occur over an estimated 6-year timeframe. MSW generation would be a short-term direct minor adverse effect from construction.

The reduction in the number of MFH units on base would result in less solid wastes generated. However, creation of open grassy spaces would increase the amount of yard wastes generated. Overall, these effects would be negligible.

Table 4-6. Project Construction and Demolition Waste Generation for Alternative B

Action (Number of Units)	Total Project Area (square feet)	MSW (tons)
Demolition (481)	671,419	30,885
Renovation (596)	696,444	6,965
Total		**37,850**

4.2.11 Hazardous Materials and Waste Management

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed construction, renovation, and demolition projects for the privatization of the MFH. It is anticipated that the quantity of products containing hazardous materials used during the construction and demolition of MFH units would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Therefore, hazardous materials management at Fairchild AFB would not be impacted by the Proposed Action.

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from proposed construction, renovation, and demolition activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations. Implementation of the Proposed Action would not impact the base's hazardous waste management program.

Pollution Prevention. It is anticipated that the Proposed Action would result in minor adverse impacts on the Pollution Prevention Program at Fairchild AFB. Quantities of hazardous material and chemical purchases, off-base transport of hazardous waste, disposal of MSW, and energy consumption would increase during the construction and/or renovation phases. However, the Pollution Prevention Program at Fairchild AFB can accommodate the Proposed Action.

Asbestos-Containing Materials. Prior to demolition or renovation of a facility, it must first be inspected for the presence of ACMs. When disturbance of these materials becomes necessary, properly trained personnel using the proper protective equipment abate the material, disposing it in the manner prescribed by current environmental regulations (92 ARW 2004). Specifications for the proposed construction activities and USAF regulations prohibit the use of ACM for new construction.

Some of the buildings scheduled for demolition or renovation might contain ACM. ACM could be of concern with the demolition or renovation of units in Army Capehart, Fort Wright Village, Galena Station, and Officer Capehart complexes. Sampling for ACM would occur prior to demolition or renovation activities and would be handled in accordance with the Asbestos Management Plan and USAF policy.

Lead-Based Paint. Prior to demolition or renovation of a facility it must first be checked for the presence of LBP. When disturbance of these materials becomes necessary, properly trained personnel using the proper protective equipment abate the material, disposing it in the manner prescribed by current environmental regulations (92 ARW 2004). Specifications for the proposed construction activities and USAF regulations prohibit the use of LBP for new construction.

Some of the buildings scheduled for demolition or renovation might contain LBP. LBP could be of concern with the demolition of units in NCO Capehart and Officer Capehart areas. Sampling for LBP would occur prior to demolition or renovation activities and would be handled in accordance with the Lead-Based Paint Management Plan and USAF policy.

Radon. Radon surveys conducted over the past decade have found a very few number of units which have required mitigation. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Fort Wright Village and Officer Capehart MFH complexes. New or renovated on-Base housing (831 units) requires preliminary screening. A recently completed radon study found several MFH units that had radon levels up to 6.5 pCi/L. The MFH units will be mitigated per AFI 48-148, *Ionizing Radiation Protection*.

Storage Tanks: Aboveground, Dry Tanks, and Underground. There are no tanks of concern on the MFH complexes or in the optional parcel and Housing Maintenance Office. Therefore, the Proposed Action would not affect storage tanks on Fairchild AFB.

Environmental Restoration Program. Most of the ERP sites near the Proposed Action have a signed Record of Decision (ROD) and no longer pose an environmental threat. The ERP Site that raises the highest level of potential environmental concern involves the orphan TCE plume (SS-39) (see Figure 3-7). Studies have determined that on-base groundwater contains low concentrations of TCE and its breakdown products (1,2-dichloroethene and vinyl chloride), and that the contamination has no identifiable source. Additional studies have also determined that the plume contains concentrations of carbon tetrachloride, a probable human carcinogen (92 ARW 2004). Regardless of the source, groundwater flow has carried the plume past the southeastern boundary of Officer Capehart and towards the eastern boundary of Fort Wright Village and into the optional parcel. Ongoing monitoring is being conducted to assess this site.

Given the depth of the groundwater plume plus the addition of the clay layer, incidental resident contact (i.e., dermal or ingestion) with the contaminated groundwater is highly unlikely. Future construction or minor excavation activities should not increase the risk of incidental contact. However, should contamination be encountered, the handling, storage, transportation and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, and AFIs. Implementation of the Proposed Action would have negligible impacts, if any on the ERP at Fairchild AFB.

Alternative A

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed construction and demolition projects for the privatization of the MFH. It is anticipated that the quantity of products containing hazardous materials used during the construction and demolition of MFH units would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state

regulations. Therefore, hazardous materials management at Fairchild AFB would not be impacted by Alternative A.

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from proposed construction and demolition activities would be negligible. Contractors would be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations. Implementation of Alternative A would not impact the base's hazardous waste management program.

Pollution Prevention. It is anticipated that Alternative A would result in minor adverse impacts on the Pollution Prevention Program at Fairchild AFB. Quantities of hazardous material and chemical purchases, off-base transport of hazardous waste, disposal of MSW, and energy consumption would increase during the construction phase. However, the Pollution Prevention Program at Fairchild AFB can accommodate Alternative A.

Asbestos-Containing Materials. Some of the buildings scheduled for demolition or construction might contain ACM. ACM could be of concern with the demolition or construction of units in Army Capehart, Fort Wright Village, Galena Station, and Officer Capehart complexes. Sampling for ACM would occur concurrent with demolition and construction activities and would be handled in accordance with the Asbestos Management Plan and USAF policy. Effects from implementation of Alternative A would be the same as under the Proposed Action.

Lead-Based Paint. Some of the buildings scheduled for demolition might contain LBP. LBP could be of concern with the demolition of units in NCO Capehart and Officer Capehart MFH complexes. Sampling for LBP would occur concurrent with demolition activities and would be handled in accordance with the Lead-Based Paint Management Plan and USAF policy. Effects from implementation of Alternative A would be the same as under the Proposed Action.

Radon. Radon surveys conducted over the past decade have found a very few number of units which have required mitigation. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Fort Wright Village and Officer Capehart MFH complexes. A recently completed radon study found several MFH units that had radon levels up to 6.5 pCi/L. The MFH units will be mitigated per AFI 48-148, *Ionizing Radiation Protection*. Newly constructed on-base housing would require preliminary screening, but it is anticipated no further action would be necessary since the levels are so low. Effects from implementation of Alternative A would be the same as under the Proposed Action.

Storage Tanks: Aboveground, Dry Tanks, and Underground. There are no tanks of concern on the MFH complexes or in the optional parcel and Housing Maintenance Office. Therefore, Alternative A would not affect storage tanks on Fairchild AFB.

Environmental Restoration Program. Most of the ERP sites near the Proposed Action have a signed Record of Decision (ROD) and no longer pose an environmental threat. The ERP Site that raises the highest level of potential environmental concern involves the orphan TCE plume (SS-39) (see Figure 3-7). Studies have determined that on-base groundwater contains low concentrations of TCE and its breakdown products (1,2-dichloroethene and vinyl chloride), and that the contamination has no identifiable source. Additional studies have also determined that the plume contains concentrations of carbon tetrachloride, a probable human carcinogen (92 ARW 2004). Regardless of the source, groundwater flow has carried the plume past the southeastern boundary of Officer Capehart and towards the eastern boundary of Fort Wright Village and into the optional parcel. Ongoing monitoring is being conducted to assess this site.

Given the depth of the groundwater plume plus the addition of the clay layer, incidental resident contact (i.e., dermal or ingestion) with the contaminated groundwater is highly unlikely. Future construction or minor excavation activities should not increase the risk of incidental contact. However, should contamination be encountered, the handling, storage, transportation and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, and AFIs. Implementation of the Proposed Action would have negligible impacts, if any on the ERP at Fairchild AFB. Effects from implementation of Alternative A would be the same as under the Proposed Action.

Alternative B

Hazardous Materials. Products containing hazardous materials would be procured and used during the proposed renovation and demolition projects for the privatization of the MFH. It is anticipated that the quantity of products containing hazardous materials used during the renovation and demolition of MFH units would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Therefore, hazardous materials management at Fairchild AFB would not be impacted by Alternative B.

Hazardous Wastes. It is anticipated that the quantity of hazardous wastes generated from proposed renovation and demolition activities would be negligible. Contractors would be responsible for the

disposal of hazardous wastes in accordance with Federal and state laws and regulations. Implementation of Alternative B would not impact the base's hazardous waste management program.

Pollution Prevention. It is anticipated that Alternative B would result in minor adverse impacts on the Pollution Prevention Program at Fairchild AFB. Quantities of hazardous material and chemical purchases, off-base transport of hazardous waste, disposal of MSW, and energy consumption would increase during the construction and renovation phases. However, the Pollution Prevention Program at Fairchild AFB can accommodate Alternative B.

Asbestos-Containing Materials. Some of the buildings scheduled for demolition or renovation might contain ACM. ACM could be of concern with the demolition or renovation of units in Army Capehart, Fort Wright Village, Galena Station, and Officer Capehart complexes. Sampling for ACM would occur concurrent with demolition and renovation activities and would be handled in accordance with the Asbestos Management Plan and USAF policy. Under Alternative B, ACM abatement would occur, having a beneficial effect on ACM.

Lead-Based Paint. Some of the buildings scheduled for demolition or renovation might contain LBP. LBP could be of concern with the demolition of units in NCO Capehart and Officer Capehart MFH complexes. Sampling for LBP would occur concurrent with demolition activities and would be handled in accordance with the Lead-Based Paint Management Plan and USAF policy. Effects from implementation of Alternative B would be the same as under the Proposed Action.

Radon. Radon surveys conducted over the past decade have found a very few number of units which have required mitigation. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Fort Wright Village and Officer Capehart MFH complexes. A recently completed radon study found several MFH units that had radon levels up to 6.5 pCi/L. The MFH units will be mitigated per Air Force Instruction (AFI) 48-148, *Ionizing Radiation Protection*. Newly constructed on-base housing would require preliminary screening, but it is anticipated no further action would be necessary since the levels are so low. Effects from implementation of Alternative B would be the same as under the Proposed Action.

Storage Tanks: Aboveground, Dry Tanks, and Underground. There are no tanks of concern on the MFH complexes or in the optional parcel and Housing Maintenance Office. Therefore, Alternative B would not affect storage tanks on Fairchild AFB.

Environmental Restoration Program. Most of the ERP sites near the Proposed Action have a signed Record of Decision (ROD) and no longer pose an environmental threat. The ERP Site that raises the highest level of potential environmental concern involves the orphan TCE plume (SS-39) (see Figure 3-7). Studies have determined that on-base groundwater contains low concentrations of TCE and its breakdown products (1,2-dichloroethene and vinyl chloride), and that the contamination has no identifiable source. Additional studies have also determined that the plume contains concentrations of carbon tetrachloride, a probable human carcinogen (92 ARW 2004). Regardless of the source, groundwater flow has carried the plume past the southeastern boundary of Officer Capehart and towards the eastern boundary of Fort Wright Village and into the optional parcel. Ongoing monitoring is being conducted to assess this site.

Given the depth of the groundwater plume plus the addition of the clay layer, incidental resident contact (i.e., dermal or ingestion) with the contaminated groundwater is highly unlikely. Future construction or minor excavation activities should not increase the risk of incidental contact. However, should contamination be encountered, the handling, storage, transportation and disposal activities would be conducted in accordance with applicable Federal, state, and local regulations, and AFIs. Implementation of the Proposed Action would have negligible impacts, if any, on the ERP at Fairchild AFB.

4.3 Geiger Heights

4.3.1 Noise

No direct or indirect effects on noise would occur at Geiger Heights under the Proposed Action. The 226 housing units of Cheney MFH would be conveyed to a private developer and the land would continue to be used as it has been in the past, as a residential neighborhood. Beyond the conveyance of the land to the private developer, any actions taken in the future would be up to the developer and local building authorities.

4.3.2 Land Use

No direct or indirect effects on land use would occur at Geiger Heights under the Proposed Action. The 226 housing units of Geiger Heights MFH would be conveyed to a private developer and the land would continue to be used as it has been in the past, as a residential neighborhood. Beyond the conveyance of the land to the private developer, any actions taken in the future would be up to the developer and local building authorities.

4.3.3 Air Quality

No direct or indirect effects on air quality would occur at Geiger Heights under the Proposed Action. The 226 housing units of Geiger Heights MFH would be conveyed to a private developer and the land would continue to be used as it has been in the past, as a residential neighborhood. Beyond the conveyance of the land to the private developer, any actions taken in the future would be up to the developer and local building authorities.

4.3.4 Safety

Long-term minor adverse effects would be expected. Under the Proposed Action, all 226 Geiger Heights MFH units and associated land would be conveyed to an unidentified private developer. Specific effects of the Proposed Action on building safety, public safety, and occupational safety at Geiger Heights cannot be established. Implementation of the Proposed Action would result in long-term minor adverse effects on the Spokane County Sheriff's Department and the Spokane County Fire District No. 3, which would provide police, fire, and emergency medical services to the property.

The Spokane County Sheriff's Department has a variety of responsibilities and divisions. The Patrol Division consists of deputies assigned to uniformed patrol who are responsible for responding to calls, conducting investigations, and processing evidence and property. This division also consists of deputies assigned to the Traffic Unit, K-9, courthouse security, and other special units (SCSO 2005a). The Investigative Division consists of 17 commissioned officers assigned to crimes against persons, 15 commissioned officers assigned to crimes against property, and 14 commissioned officers conducting drug investigations (SCSO 2005b). The Civil Division carries out the directives of the courts, including serving subpoenas and court orders, carrying out evictions, and conducting Sheriff's sales (SCSO 2005c).

The Spokane County Fire District No. 3 protects 15,000 people living in an area of 560 square miles. It has 10 fire stations, 25 pieces of equipment, and a combination of 115 paid and volunteer fire fighters. It is responsible for providing firefighting, hazardous materials response, emergency medical, vehicle rescue, and search and rescue services to the local community (SCFPD 2005).

Implementation of the Proposed Action also would result in long-term minor beneficial effects on base personnel in terms of occupational safety and emergency services. The 92 CES/CEF and 92d Security Forces Squadron would no longer be responsible for providing emergency services to the Geiger Heights MFH complex. No effects would occur on base personnel in terms of building safety because the Geiger Heights MFH units are not currently occupied or utilized by any USAF personnel. The Proposed Action would have no direct or indirect effects with respect to aircraft safety, because any demolition,

construction, or renovation at the Geiger Heights MFH complex would still be subject to the provisions of Part 77 of the FAR.

4.3.5 Geological Resources

No direct or indirect effects on geological resources would occur from conveyance and reuse of Geiger Heights MFH. Upon implementation of the Proposed Action, the property would again be subject to local zoning and other planning regimes. Change of ownership of the Geiger Heights site would not affect geological resources. The site would continue to support residential structures.

4.3.6 Water Resources

No direct or indirect effects on water resources would occur from conveyance and reuse of Geiger Heights MFH. Upon implementation of the Proposed Action, the property would again be subject to local zoning and other planning regimes. Change of ownership of the Geiger Heights site would not affect water resources. The site would continue to support residential structures.

4.3.7 Biological Resources

No direct or indirect effects on biological resources would occur from conveyance and reuse of Geiger Heights MFH. Vegetation at this site consists of natural and introduced species that are maintained primarily for aesthetic purposes. Wildlife at Geiger Heights consists of species adapted to human presence. No wetlands have been identified at the site. Upon implementation of the Proposed Action, the property would again be subject to local zoning and other planning regimes. Change of ownership of the Geiger Heights site would not affect biological resources. The site would continue to support residential structures.

4.3.8 Cultural Resources

No direct or indirect effects on cultural resources would be expected under the Proposed Action. The environmental consequences of implementing the Proposed Action at Geiger Heights would essentially be the same as those discussed for on-base MFH. There are no known potential prehistoric or historic sites in the areas where ground-disturbing activities would occur. The Geiger Heights MFH units are not considered historically significant. The potential for discovering sites culturally significant to the Spokane or Coeur d'Alene Tribes is low. Therefore, no direct or indirect effects on cultural resources would be expected. In the event of an inadvertent discovery of artifacts, archaeological resources, or human remains, the private developer would contact the Fairchild AFB installation commander and

immediately protect the site and material from disturbance. Fairchild AFB would coordinate with the SHPO or the appropriate Native American tribe, if necessary.

4.3.9 Socioeconomics and Environmental Justice

No effects would be expected within the ROI. As Geiger Heights is part of the ROI defined for the Proposed Action, and in light of there being no demolition or construction activity in association with the conveyance of Geiger Heights, analysis of potential effects would be the same as presented in Section 4.2.9.

4.3.10 Infrastructure

Transportation Network. No direct or indirect effects on the transportation network would occur as a result of conveyance of Geiger Heights MFH.

Electricity, Natural Gas, Communications, Water Supply, and Sanitary Sewer and Wastewater. No direct or indirect effects on utilities would occur as a result of conveyance of Geiger Heights MFH. The electrical, water, and sanitary sewer and wastewater systems would be conveyed to the developer. However, the natural gas and communications systems would not be conveyed to the developer because they are owned by their respective utilities. Further coordination between the developer and the City of Spokane might be required concerning the groundwater infiltration problem with the sanitary sewer system.

The Cheney Public Schools system has expressed their concern regarding Windsor Elementary School's water and sanitary sewer service, which is currently metered on Geiger Heights. HQ AMC sent Cheney Public Schools a written response and further correspondence has been initiated (see IICEP letter and response in Appendix C).

Solid Waste. No direct or indirect effects on solid waste management would be expected. Recycling drop-offs are located throughout the county. Solid waste management and recycling would be handled through the Spokane Regional Solid Waste System; solid waste would be taken to the Waste to Energy incineration plant.

4.3.11 Hazardous Materials and Waste Management

Hazardous Materials. No effects would be expected. Geiger Heights would no longer be used for MFH, though use of the residential structures would likely occur. Future residents' activities with respect to hazardous materials would be subject to applicable Federal, state, and local laws and regulations.

Hazardous Wastes. No effects would be expected. Generation of hazardous wastes in private residential settings would be minimal and subject to applicable Federal, state, and local laws and regulations.

Pollution Prevention. No effects would be expected. Conveyance of Geiger Heights would remove that area from further management efforts to reduce pollution.

Asbestos-Containing Materials. No effects would be expected. ACM could be of concern in the event future owners elect to demolish or renovate the Geiger Heights MFH complex. Sampling for ACM would occur prior to demolition and renovation activities and would be handled in accordance with the applicable legal requirements.

Lead-Based Paint. No effects would be expected. LBP could be of concern should future owners elect to demolish or renovate units in the Geiger Heights MFH complex. Sampling for LBP would occur prior to demolition activities. Actions to abate or remove LBP would be taken in accordance with applicable Federal, state, and local requirements.

Radon. No effects would be expected. Previous surveys have detected levels of radon at levels above 4 pCi/L in the Geiger Heights MFH complex, but not at levels rendering the houses unfit for occupancy.

Storage Tanks: Aboveground, Dry Tanks, and Underground. On-going clean-up efforts would continue. Under the Proposed Action, the land would be conveyed prior to a "no further action" decision from state regulators.

Environmental Restoration Program. There would be no impact on the Fairchild AFB ERP from implementation of the Proposed Action at Geiger Heights MFH complex.

4.4 Cheney MFH

4.4.1 Noise

No direct or indirect effects on noise would occur at Cheney under the Proposed Action. The 16 housing units of Cheney MFH would be conveyed to a private developer, and the land would continue to be used as it has been in the past, as a residential neighborhood. Beyond the conveyance of the land to the private developer, any actions taken in the future would be at the discretion of the future developer.

4.4.2 Land Use

No direct or indirect effects on land use would occur at Cheney under the Proposed Action. The 16 housing units of Cheney MFH would be conveyed to a private developer, and the land would continue to

be used as it has been in the past, as a residential neighborhood. Neither the 16-residence parcel nor adjacent parcels would incur any changes in land use character or designation upon implementation of the Proposed Action.

4.4.3 Air Quality

No direct or indirect effects on air quality would occur at Cheney under the Proposed Action. The 16 housing units of Cheney MFH would be conveyed to a private developer, and the land would continue to be used as it has been in the past, as a residential neighborhood.

4.4.4 Safety

Long-term minor adverse effects would be expected. Under the Proposed Action, all 16 Cheney MFH units and associated land would be conveyed to an unidentified private developer. Specific effects of the Proposed Action on building safety, public safety, and occupational safety at Cheney cannot be established. Implementation of the Proposed Action would result in long-term minor adverse effects on the City of Cheney Fire Department and the City of Cheney Police Department, which provide fire, emergency medical, and police services to the property.

The City of Cheney has a full-time population of 9,855 people and an additional part-time student population of 9,775 due to the presence of Eastern Washington University (City of Cheney 2005a). The City of Cheney Fire Department has 9 full-time personnel, 4 residents, and 25 volunteers. The fire station has 3 fire engines, 1 ladder truck, and 1 rescue unit (City of Cheney 2005b). The City of Cheney Police Department has 1 police chief, 3 sergeants, 1 detective, and 5 patrolmen. Eastern Washington University provides its own police and security services (Kelly 2005).

Implementation of the Proposed Action would result in long-term minor beneficial effects on base personnel in terms of occupational safety and emergency services. The 92 CES/CEF and 92d Security Forces Squadron would no longer be responsible for providing emergency services to the Cheney MFH complex. No effects would occur on base personnel in terms of building safety because the Cheney MFH units are not currently occupied or utilized by any USAF personnel. The Proposed Action would have no direct or indirect effects with respect to aircraft safety, because any demolition, construction, or renovation at the Cheney MFH complex would remain subject to the provisions of Part 77 of the FAR.

4.4.5 Geological Resources

No direct or indirect effects on geological resources would occur from conveyance and reuse of Cheney MFH. Upon implementation of the Proposed Action, the property would again be subject to local zoning

and other planning regimes. Change of ownership of the Cheney site would not affect geological resources. The site would continue to support residential structures.

4.4.6 Water Resources

No direct or indirect effects on water resources would occur from conveyance and reuse of Cheney MFH. Upon implementation of the Proposed Action, the property would again be subject to local zoning and other planning regimes. Change of ownership of the Cheney site would not affect water resources. The site would continue to support residential structures.

4.4.7 Biological Resources

No direct or indirect effects on biological resources would occur from conveyance and reuse of Cheney MFH. Vegetation at this site consists of natural and introduced species that are maintained primarily for aesthetic purposes. Wildlife at Cheney consists of species adapted to human presence. No wetlands have been identified at the site. Upon implementation of the Proposed Action, the property would again be subject to local zoning and other planning regimes. Change of ownership of the Cheney site would not affect biological resources. The site would continue to support residential structures.

4.4.8 Cultural Resources

No direct or indirect effects on cultural resources would be expected under the Proposed Action. The environmental consequences of implementing the Proposed Action at Cheney would essentially be the same as those discussed for on-base MFH. There are no known potential prehistoric or historic sites in the areas where ground-disturbing activities would occur. The Cheney MFH units are not considered historically significant. The potential for discovering sites culturally significant to the Spokane or Coeur d'Alene Tribes is low. Therefore, no direct or indirect effects on cultural resources would be expected. In the event of an inadvertent discovery of artifacts, archaeological resources, or human remains, the private developer would contact the Fairchild AFB installation commander and immediately protect the site and material from disturbance. Fairchild AFB would coordinate with the SHPO or the appropriate Native American tribe, if necessary.

4.4.9 Socioeconomics and Environmental Justice

No effects would be expected within the ROI. As the Cheney area is part of the ROI defined for the Proposed Action, and in light of there being no demolition or construction activity in association with the conveyance of the Cheney area, analysis of potential effects would be the same as presented in Section 4.2.9.

4.4.10 Infrastructure

Transportation Network. No direct or indirect effects on the transportation network would occur as a result of conveyance of Cheney MFH.

Electricity, Natural Gas, Communications, Water Supply, and Sanitary Sewer and Wastewater. No direct or indirect effects on utilities would occur as a result of conveyance of Cheney MFH. All utilities are currently owned by the City of Cheney or the utility provider.

Solid Waste. No direct or indirect effects on solid waste management would be expected. Solid waste management and recycling would no longer be handled under Fairchild AFB contracts. The City of Cheney would handle solid waste management and recycling. The City of Cheney has a community recycling center that accepts deposited recyclables. Solid waste would be taken to the Waste to Energy Facility.

4.4.11 Hazardous Materials and Waste Management

Hazardous Materials. No effects would be expected. The Cheney MFH area would no longer be used for MFH though the continued use of the Cheney housing for other functions would likely occur. Future residents' activities with respect to hazardous materials would be subject to applicable Federal, state, and local laws and regulations.

Hazardous Wastes. No effects would be expected. Generation of hazardous wastes in private residential settings would be minimal and subject to applicable Federal, state, and local laws and regulations.

Pollution Prevention. No effects would be expected. Conveyance of the Cheney housing would remove that area from further management efforts to reduce pollution.

Asbestos Containing Materials. No effects would be expected. ACM could be of concern in the event future owners elect to demolish or renovate the Cheney housing. Sampling for ACM would occur prior to demolition and renovation activities and would be handled in accordance with the applicable legal requirements.

Lead-Based Paint. No effects would be expected. LBP could be of concern should future owners elect to demolish or renovate units in the Cheney housing area. Sampling for LBP would occur prior to demolition activities. Actions to abate or remove LBP would be taken in accordance with applicable Federal, state, and local requirements.

Radon. No effects would be expected. Previous surveys did not detect levels of radon above 4 pCi/L in the Cheney MFH complex.

Storage Tanks: Aboveground, Dry Tanks, and Underground. The USAF intends to convey the property in as-is condition. Fairchild AFB would not remove the 16 USTs, investigate potential contamination under the USTs, nor remediate the surface hydrocarbon deposits.

Environmental Restoration Program. There are no ERP sites on the Cheney MFH complex.

4.5 No Action Alternative

Under the No Action Alternative, there would be no change in baseline conditions, and none of the proposed demolition, construction, or renovation projects would occur. It is assumed that the amount of Congressional funding for existing MFH would not change and that the housing maintenance backlog would continue to increase. Activities required to upgrade substandard housing would likely occur at a slower pace than would occur under the privatization initiative, thereby preventing project goals from being met by the year 2010.

Under the No Action Alternative, there would be no effects on noise, air quality, safety, geological resources, water resources, biological resources, cultural resources, and hazardous materials and wastes because there would be no change from the baseline conditions.

Long-term minor adverse effects could occur on land use, especially in the Geiger Heights and Cheney areas as a result of continued non- or reduced use of those properties for residential purposes. Such idle properties would be susceptible to taking on the appearance of blight and, thereby, have the potential to affect decisions of adjacent owners in developing their properties. Long-term minor adverse effects on infrastructure might also occur from the No Action Alternative. Existing infrastructure would continue to degrade in the older on-base MFH units with repairs as needed. Infrastructure at Geiger Heights and Cheney would deteriorate from nonuse and lack of maintenance. Long-term minor adverse effects on socioeconomics and quality of life would also occur from deteriorating on-base MFH. Minor adverse effects on quality of life would not arise at the Geiger Heights and Cheney areas unless those areas were once again actively used for MFH. Vacant housing at Geiger Heights and Cheney could invite vandalism and consequent loss in economic value as a result of property damages.

5. Cumulative Impacts

CEQ defines cumulative effects as the "impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7.). Although individual impacts of various actions might be minor, taken together their effects could be significant.

Impacts subject to cumulative effects analysis are identified by reference to the temporal span and spatial area in which the proposed action would cause effects. For the purposes of this analysis, the temporal span of the Proposed Action is 10 years. Although the agreement to privatize housing at Fairchild AFB would extend for 50 years, estimates of effects beyond 10 years would be speculative and of dubious reliability. For most resources, the spatial area for consideration of cumulative effects is Fairchild AFB.

The essence of the Proposed Action is redevelopment—demolition, renovation, new construction, use, and maintenance—of MFH on the base. Family housing demolition and construction activities would occur at the same time as several military construction projects. Major projects planned to occur at or near the installation include construction of a new civil engineer squadron complex, construction of Columbia Center (for wing staff, and elements of subordinate organizations), construction of a new mission support complex, construction of an isolated personnel training compound (at Spokane Satellite Tracking Site No. 1, near Airway Heights, Washington), alteration of the logistics complex (Building 2050), construction of a physical fitness center with pool and sports fields, and construction of an 80-room visiting quarters. Less substantial projects include repair of the Club Fairchild support systems; and repair of the exterior of the vehicle maintenance facility (Building B2115).

The MFH construction, in combination with the military construction projects, would have cumulative effects on air quality. Site preparation would produce fugitive dust, and use of heavy construction equipment would produce air emissions. With the exception of construction of an isolated personnel training compound off base, these effects on air quality would be limited to Fairchild AFB. Also, effects on air quality would be of a finite duration, lasting only during the period of site preparation or construction of each project.

New MFH would be in the present MFH areas. The military construction projects would be located in a variety of areas designated in the installation land use plan for airfield, airfield operations, industrial, administrative, and community uses. Many of these areas are presently developed; a substantial number of

the projects would include demolition of existing old or inadequate facilities. Nevertheless, there would continue to be a small degree of removal of natural resource components of the ecological environment. That is, construction would increase impervious surfaces, possibly eliminate small portions of habitat, and require the removal of vegetation (both native and ornamental). These types of effects would be minor due to the projects' occurring in previously developed locations. In the context of Fairchild AFB, the cumulative effects associated with the Proposed Action are long-term and adverse, but minor.

Two portions of the Proposed Action would occur off base. Upon transfer of the Geiger Heights and Cheney housing areas to the developer, those areas would no longer be used for MFH for USAF personnel. It is likely that Geiger Heights and Cheney areas would continue to be used for housing purposes. It is not presently known whether, or when, the future owner might choose to refurbish the Geiger Heights and Cheney units or remove the housing from the housing market. Future management actions could occur in a single event, or they could occur over a protracted period of several years. There are 226 housing units on 77.3 acres at Geiger Heights and 16 housing units on 3.6 acres at Cheney. Given these circumstances, any cumulative effects on nearby resources would likely be a combination of beneficial and adverse effects, with none rising above a *de minimis* level.

Under the Proposed Action, there would be a substantial reduction in the number of MFH units for USAF and other qualified personnel. Past management practices, based on a "customer demand" philosophy, led to the installation's having 1,319 housing units. Historically, even though in some instances the installation had more MFH units than it needed, so long as there was a 98 percent occupancy rate in the excess houses due to "customer demand," they were retained. Implementation of the Proposed Action, reflecting a different management philosophy,[6] would reduce the inventory of housing to not more than 596 units. The present action would reverse the past actions of constructing and maintaining a large on-base MFH inventory for USAF personnel. The majority of MFH for personnel assigned to Fairchild AFB would continue to be supplied by the local economy. No cumulative effects would be expected as a result of comparing the present action to historic actions leading to the base's relatively high inventory of MFH.

[6] In a revised paradigm, the USAF analyzes its housing needs in a way that typically results in there being fewer government housing units. Now, to establish the on-base minimum housing requirement, base officials identify four key demographic areas: the number of key and essential personnel, the number of historic housing units, 10 percent of all grades (enlisted and officer), and the number of service members whose total income is less than 50 percent of the average median income in the community. Using the highest number in each of those categories by grade, the base determines its minimum on-base housing requirement, also called the "floor requirement." The number of remaining personnel, representing those who need to be housed off base, is then compared to the availability of homes in the local community. When the community can meet the entire requirement, only the floor number is provided on base. If the community cannot provide adequate housing for those people, the number of people who cannot be housed in the local community is added to the floor requirement to get the total number of homes USAF needs to provide on base.

6. Preparers

Louise Baxter
e^2M
M.P.A. Public Administration
B.S. Political Science
Years of Experience: 6

Suanne Collinsworth
e^2M
M.S. Environmental Sciences and Engineering
B.S. Geology
Certificate of Water Quality Management
Years of Experience: 7

Tim Demorest
e^2M
A.M. Classical Studies
B.A. Classical Studies
Years of Experience: 3

Chris Holdridge
e^2M
M.S. Environmental Assessment
B.S. Environmental Science/Chemistry
Years of Experience: 9

Gus Hare
e^2M
B.S. Environmental Sciences
Registered Environmental Professional
Years of Experience: 11

Brian Hoppy–Program Manager
e^2M
B.S. Biology
Certificate of Environmental Management
Years of Experience: 15

Ron Lamb
e^2M
M.S. Environmental Science
M.A. Political Science/International Economics
B.S. Political Science
Years of Experience: 19

Sean McCain
e^2M
M.B.A. Business Administration
B.S. Forestry and Natural Resources Management
Years of Experience: 10

Dan Savercool
e^2M
M.S. Biological Oceanography
B.A. Zoology/Marine Science
A.A.S. Natural Resources Conservation
Certified Senior Ecologist, Certified Forest Stand Delineator
Years of Experience: 21

Devin Scherer
e^2M
B.S. Biology
Years of Experience: 1

Rachel Schneider
e^2M
B.A. Chemistry with Environmental Studies
Years of Experience: 4

Nick Steinke
e^2M
B.S. Manufacturing Engineering
Years of Experience: 4

Philip Werner
e^2M
B.S. Geology
Years of Experience: 15

Paul Wilbur
e^2M
J.D.
B.A. English
Years of Experience: 32

Mary Young
e^2M
B.S. Environmental Science
Years of Experience: 2

7. References

92 ARW 1999 — 92d Air Refueling Wing (92 ARW). 1999. *Hazardous Materials Emergency Response Plan and Community Right-To-Know Plan*. Fairchild Air Force Base, Washington. April 27, 1999.

92 ARW 2004 — 92 ARW. 2004. *Final General Plan for Fairchild Air Force Base, Washington*. May 2004.

92 ARW/CC 2003 — 92 ARW/CC. 2003. *Fairchild Air Force Base Hazardous Waste Management Plan*. Fairchild Air Force Base, Washington. April 2003.

92 ARW/CV 2003 — 92 ARW/CV. 2003. *Fairchild Air Force Base Lead Exposure and Lead-based Paint Management Plan*. Fairchild Air Force Base, Washington. February 2003.

92 BMW/LGC 1990 — 92 BMW/LGC. 1990. *Historic Resources Inventory: Fairchild Air Force Base. Submitted by Spokane City/County Historic Preservation Office for Operational Contracting Division, 92 BMW/LGC Building 2451A.*

92 CES/CEV 2000 — 92d Civil Engineering Squadron (92 CES/CEV). 2000. *Storm Water Pollution Prevention Plan for Fairchild Air Force Base*. 92d CES/CEV Fairchild Air Force Base, Washington. March 7, 2000.

92 CES/CEV 2002 — 92 CES/CEV. 2002. *Integrated Cultural Resources Management Plan*. Fairchild Air Force Base, Washington. January 2002.

92 CES/CEV 2005a — 92 CES/CEV. 2005. *Integrated Solid Waste Management Plan*. Fairchild Air Force Base, Washington. January 2005.

92 CES/CEV 2005b — 92 CES/CEV. 2005. Written communication from 92 CES/CEV to Lt Col Michael Ptak (AMC/A7HP) regarding comments received on the Fairchild AFB Draft Environmental Baseline Study. January 10, 2005.

AFCEE 2000 — Air Force Center for Environmental Excellence (AFCEE), Environmental Restoration Division. 2000. *Five-Year Review Report Fairchild Air Force Base*. AFCEE/ERD Brooks Air Force Base, Texas. November 2000.

AFCEE 2004 — AFCEE. 2004. Overview of Privatization. Available online <*http://www.hqafcee.brooks.af.mil/dc/dcp/news/legal/legalcontacts.as*p>. Accessed September 22, 2004.

AJG 2004 — Auble, Jolicoeur, and Gentry (AJG). 2004. *Cheney Housing Area, Cheney, Washington. Complete Appraisal Self-Contained Report*. Prepared by Scot D. Auble, MAI. May 20, 2004.

Bailey 1995 — Bailey, R.G. 1995. *Description of the Ecoregions of the United States: Intermountain Semidesert Province*. Available online <*http://www.fs.fed.us/institute/ecoregions/ecoreg1_home.html*>. Accessed February 08, 2005.

BLS 2005 — U.S. Bureau of Labor Statistics (BLS). 2005. "Local Area Unemployment Statistics: Spokane County and Washington". Available online <*http://:data.gov/PDQ/outside.jsp?survey=la*>. Accessed February 2005.

CCCCDD 2005 — Contra Costa County Community Development Department (CCCCDD). 2005. "Construction and Demolition Debris Recovery Program." Contra Costa County Waste Reduction and Recycling Website. Available online <*http://www.co.contra-costa.ca.us/depart/cd/recycle/debris.htm*>. Accessed February 5, 2005.

City of Cheney 2005a — City of Cheney. 2005. Welcome to Cheney. Available online <*http://www.cityofcheney.org/index.html*>. Accessed February 8, 2005.

City of Cheney 2005b — City of Cheney. 2005. Fire Department. Available online <*http://www.cityofcheney.org/fire.html*>. Accessed February 8, 2005.

Eaton 2000 — Eaton, S. 2000. "Construction Noise." *Workers' Compensation Board of British Columbia Engineering Section Report*. 7.11-99284. February 2000.

EDR 2004a — Environmental Data Resources, Inc. (EDR)-Radius Map, with GeoCheck® Report. Fort Wright Village/Officer Capehart/Undeveloped Parcel, Washington. Inquiry No. 0961547.1s. April 16, 2003.

EDR 2004b — EDR-Radius Map, with GeoCheck® Report. Geiger Heights, Washington. Inquiry No. 1272990.2s. September 22, 2004.

EDR 2004c — EDR-Radius Map, with GeoCheck® Report. NCO Capehart/Galena Station/Army Capehart, Washington. Inquiry No. 1272990.38s. September 22, 2004.

EDR 2004d — EDR-Radius Map, with GeoCheck® Report. Cheney, Washington. Inquiry No. 1272990.29s. September 22, 2004.

EDR 2004e — EDR-Radius Map, with GeoCheck® Report. GOQ/SOQ, Washington. Inquiry No. 1272990.11s. September 22, 2004.

FAFB 2000 — Fairchild Air Force Base (FAFB). *Pollution Prevention Management Action Plan.* Prepared for Air Force Center for Environmental Excellence. Fairchild Air Force Base, Washington. August 2000.

FAFB 2001a — FAFB. *Hazardous Material Management Plan*. Fairchild Air Force Base, Washington. July 1, 2001.

FAFB 2001b — FAFB. *Underground Storage Tank (UST) Management Plan*. Fairchild Air Force Base, Washington. September 1, 2001.

FAFB 2003a — FAFB. 2003. *Economic Impact Assessment, Fairchild AFB, Washington FY03.* September 30, 2003.

FAFB 2003b — FAFB. 2003. *Management Action Plan, Public Version*. Fairchild Air Force Base, Washington. September 2003.

FAFB 2004a — FAFB. 2004. *Draft Integrated Natural Resources Management Plan. Fairchild Air Force Base, Washington*. November 2004.

FAFB 2004b — FAFB. 2004. Fairchild Air Force Base Public Website (Education Installation Overview). Site updated September 30, 2004. Available online <*http://public.fairchild.amc.af.mil/*>. Accessed February 4, 2005.

ITE 1997 — Institute of Transportation Engineers (ITE). 1997. *Trip Generation*. 6th Edition

Kelly 2005 — Kelly, Patty. 2005. Personal communication between Ms. Patty Kelly (Police Dispatcher) and Mr. Chris Holdridge (e^2M, Inc) regarding the Eastern Washington University police procedures. February 8, 2005.

KGP 2004a — Kormendi\Gardner Partners (KGP). 2004. "Initial Concept: Economic Analysis; Appendix E" and "Market Analysis." Prepared for the Privatization of Military Family Housing at Fairchild AFB.

KGP 2004b — KGP. 2004. Draft Request for Proposal. Prepared for the Privatization of Military Family Housing at Fairchild AFB. October 29, 2004.

Landrum & Brown 2002 — Landrum & Brown, Inc. 2002. "Common Noise Sources." Available online <*www.landrum-brown.com/env/PVD/EIS/Jan%202002%20Chapter%204/ 4%201-1%20%20common_noise_sources.pdf*>. Accessed July 6, 2004.

Lowe et al. 1994 — Lowe, James A., Rhodes, Lori E., and Roxlau, Katherine J. Fairchild Air Force Base Cold War Material Culture Inventory. Prepared for United States Army Corps of Engineers (USACE), Fort Worth District by Mariah Associates, Inc. December 1994.

Miller 2005 — Miller, Sandy. 2005. Record of communication between Ms. Sandy Miller (Operations Specialist, Graham Road Landfill) and Ms. Mary Young (e^2M, Inc.) regarding the capacity of the Graham Road Landfill. February 5, 2005.

Nester 2005 — Nester, Kristin A. 2005. Written correspondence between Ms. Nester, Chief, Environmental Compliance (92 CES/CEV) and Mr. Brian Hoppy, Senior Vice President, Conservation and Planning (e^2M) about the status of Geiger Heights and Cheney housing complexes. February 25, 2005.

NOAA 2005 — National Oceanic and Atmospheric Administration (NOAA), Climate Prediction Center. 2005. "Calculated Soil Moisture Ranking Percentile, Jan 2005." Available online <*http://www.cpc.noaa.gov/products/soilmst/wrank_frame.html*>. Accessed February 25, 2005.

NPL 2004 — National Priorities List (NPL). 2004. NPL information for Fairchild Air Force Base, Spokane, Washington. Available online <*http://www.dtic.mil/envirodod/derpreport/ fairchild.html*>. Accessed February 2, 2004.

NRC 2002 — National Research Council (NRC). 2002. *Riparian Areas: Functions and Strategies for Management*. Washington, DC: National Academic Press.

NRCS 2003 — Natural Resource Conservation Service (NRCS). 2003. Wind Roses by State. Available online <*ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/ windrose/washington/spokane/*>. Accessed February 25, 2005.

Parsons 2003 — Parsons Corporation. 2003. *Housing Requirements and Market Analysis, 2002 2007*. Prepared for Fairchild AFB.

Reisenauer 2005 — Reisenauer, Bob. 2005. Personal communication between Mr. Bob Reisenauer (Director of Maintenance and Operations, Cheney School District) and Mr. Devin Scherer (e^2M, Inc) regarding information on the Cheney School District. February 11, 2005.

SCAPCA 2000 — Spokane County Air Pollution Control Authority (SCAPCA). 2000. *Statement of Basis for Fairchild Air Force Base Chapter 401 Air Operating Permit AOP-2*. September 1, 2000.

SCCD 2004 — Spokane County Conservation District (SCCD). 2004. Hangman (Latah) Creek Watershed Planning Project. Available online <*http://sccd.org/sccd/water/hangman/*>. Accessed February 8, 2005.

SCFPD 2005 — Spokane County Fire Protection District (SCFPD), No. 3. 2005. About Spokane County Fire Protection District #3. Available online <*http://departments.firehouse.com/ dept/Cheney2WA*>. Accessed February 8, 2005.

SCSO 2005a — Spokane County Sheriff's Office (SCSO). 2005. Patrol Division. Available online <*http://www.spokanesheriff.org/structure/*>. Accessed February 8, 2005.

SCSO 2005b — SCSO. 2005. Investigations. Available online <*http://www.spokanesheriff.org/ structure/investigations/*>. Accessed February 8, 2005.

SCSO 2005c — SCSO. 2005. Civil Division. Available online <*http://www.spokanesheriff.org/structure/civil/*>. Accessed February 8, 2005.

SMAQMD 1994 — Sacramento Metropolitan Air Quality Management District (SMAQMD). 1994. *Thresholds of Significance*. December 1994.

Spokane County 2001 — Spokane County. 2001. *Rural Comprehensive Plan Land Use Map in the Planning Commission Recommendation, Spokane County Comprehensive Plan*. March 2001.

SPS 2005 — Spokane Public Schools. 2005. "Visit Our Schools." Available online: <*http://www.spokaneschools.org/Schools/*>. Accessed February 2005.

U.S. Census Bureau 2000 — U.S. Census Bureau. 2000. "Data Sets: Census Tracts 104.01,104.02, 138, 139, 140.01, 140.02, Spokane City, Spokane County, Spokane MSA, Washington." Available online <*http://factfinder.census.gov/servlet/DatasetMainPageServlet?_program=DEC&_lang=en*>. Accessed February 2005.

URS 2005 — URS Corporation. 2005. *Cheney Housing Area Fuel Oil Remediation Study*. Prepared by URS Corporation for Fairchild Air Force Base, Washington. February 9, 2005.

USACE 1976 — U.S. Army Corps of Engineers (USACE). 1976. *Development of Predictions Criteria for Demolition and Construction Solid Waste Management*. October 1976.

USAF 1995 — U.S. Air Force (USAF). 1995. *Air Installation Compatible Use Zone (AICUZ) Study, Volumes 1 and 2*. Fairchild Air Force Base, Washington. 1995

USAF 2003 — USAF. 2003. *Environmental Assessment Anti-Terrorism/Force Protection Gate Projects at Fairchild AFB, Washington*. September 2003.

USDA 1968 — U.S. Department of Agriculture (USDA). 1968. *Soil Survey*. Spokane County Washington. March 1968.

USDOT 1984 — U.S. Department of Transportation (USDOT). 1984. "Airport Noise Compatibility Planning; Development of Submission Aircraft Operator's Noise Exposure Map and Noise Compatibility Program; Final Rule and Request for Comments." 14 CFR Parts 11 and 150. *Federal Register* 49(244). December 18, 1980.

USEPA 1974 — U.S. Environmental Protection Agency (USEPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. Publication No. 550/9-74-004, Washington, D.C. March 1974.

USEPA 2004a — USEPA. 2004. "National Ambient Air Quality Standards." Available online <*http://www.epa.gov/air/criteria.html*>. Accessed January 17, 2005.

USEPA 2004b — USEPA. 2004. Spokane, Washington CO Attainment Plan. Available online <*http://yosemite.epa.gov/r10/airpage.nsf/283d45bd5bb068e68825650f0064cdc2/bb5e3bd7e960d4bc88256dc900768f11?OpenDocument&Highlight=0,Spokane*>. Accessed February 10, 2004.

USEPA 2004c — USEPA. 2004. "Green Book Nonattainment Areas for Criteria Pollutants." December 2004. Available online <*http://www.epa.gov/oar/oaqps/greenbk/*>. Accessed January 17, 2005.

USEPA 2004d — USEPA. 2004. Spokane, Washington PM-10 Attainment Plan. Available online <*http://yosemite.epa.gov/r10/airpage.nsf/283d45bd5bb068e68825650f0064cdc2/9fc95a8ae2453fa588256dc8006fa8ea?OpenDocument&Highlight=0,Spokane*>. Accessed February 10, 2004.

USEPA 2004e USEPA. 2004. Hangman: Watershed Profile. Available online <*http://cfpub.epa.gov/surf/huc.cfm?huc_code=17010306*>. Accessed February 8, 2005.

USFWS 2004 U.S. Fish and Wildlife Service (USFWS). 2004. Letter from Suzanne Audet, Supervisor, USFWS - Spokane Field Office to Christopher J. Roche, e2M, concerning the Species List for Fairchild AFB, WA- (1-9-05-SP-0036). November 19, 2004.

Veltri 2005 Veltri, Pam. 2005. Personal communication between Ms. Veltri (Assistant Superintendent, Medical Lake School District) and Mr. Devin Scherer (e^2M, Inc) regarding information on the Medical Lake School District. February 11, 2005.

WDNR 2001a Washington State Department of Natural Resources (WDNR). 2001. "The Geology of Washington." Last updated September 12, 2001. Available online <*http://www.dnr.wa.gov/geology/columbia.htm*>. Accessed January 7, 2004.

WDNR 2001b WDNR. 2001. "Earthquakes in Washington." Last updated July 13, 2001. Available online <http://www.dnr.wa.gov/geology/hazards/equakes.htm>. Accessed January 8, 2004.

WDOT 2003 Washington Department of Transportation. 2003. "2003 Annual Traffic Report." Available online <*http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/Annual_Traffic_Report_2003.pdf*>. Accessed February 8, 2005.

WNHP 2004 Washington Natural Heritage Program (WNHP). 2004. Letter from Sandy Swope Moody (Environmental Review Coordinator, WNHP) to Christopher J. Roche (e^2M) concerning the Species List in the Vicinity of Fairchild AFB, Washington. December 15, 2004.

WRCC 2004 Western Region Climate Center, Desert Research Institute (WRCC). 2004. Spokane Washington (457933), 1971–2000 Monthly Climate Summary. Available online <*http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?waspkn*>. Accessed February 10, 2004.

WDOE 2004 Washington State Department of Ecology (WDOE). 2004. WRIA Links. Available online <*http://www.ecy.wa.gov/programs/eap/wrias/index.html*>. Accessed February 8, 2005.

WSU 2001 Washington State University (WSU). 2001. "2001 Spokane Earthquake Sequence." Available online <*http://www.geophy.washington.edu/SEIS/EQ_Special.htm*>. Accessed January 8, 2004.

Wulf 2005 Wulf, D. 2005. Comment provided by Diane Wulf (Pollution Prevention Manager, Fairchild AFB) on the *Preliminary Draft Environmental Assessment of the Privatization of Military Family Housing, Fairchild AFB*. March 9, 2005.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX A

MILITARY HOUSING PRIVATIZATION INITIATIVE

Title 10	**Armed Forces**
Subtitle A	**General Military Law**
Part IV	**Service, Supply, and Procurement**
Chapter 169	**Military Construction and Military Family Housing**
Subchapter IV	**Alternative Authority for Acquisition and Improvement of Military Housing**

Sec. 2871. Definitions

In this subchapter:

(1) The term "ancillary supporting facilities" means facilities related to military housing units, including facilities to provide or support elementary or secondary education, child care centers, day care centers, tot lots, community centers, housing offices, dining facilities, unit offices, and other similar facilities for the support of military housing.

(2) The term "base closure law" means the following:

(A) Section 2687 of this title.

(B) Title II of the Defense Authorization Amendments and Base Closure and Realignment Act (Public Law 100-526; 10 U.S.C. 2687 note).

(C) The Defense Base Closure and Realignment Act of 1990 (part A of title XXIX of Public Law 101-510; 10 U.S.C. 2687 note).

(3) The term "construction" means the construction of military housing units and ancillary supporting facilities or the improvement or rehabilitation of existing units or ancillary supporting facilities.

(4) The term "contract" includes any contract, lease, or other agreement entered into under the authority of this subchapter.

(5) The term "eligible entity" means any private person, corporation, firm, partnership, company, State or local government, or housing authority of a State or local government.

(6) The term "Fund" means the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund established under section 2883(a) of this title.

(7) The term "military unaccompanied housing" means military housing intended to be occupied by members of the armed forces serving a tour of duty unaccompanied by dependents and transient housing intended to be occupied by members of the armed forces on temporary duty.

(8) The term "United States" includes the Commonwealth of Puerto Rico.

Sec. 2872. General authority

In addition to any other authority provided under this chapter for the acquisition or construction of military family housing or military unaccompanied housing, the Secretary concerned may exercise any authority or any combination of authorities provided under this subchapter in order to provide for the acquisition or construction by eligible entities of the following:

(1) Family housing units on or near military installations within the United States and its territories and possessions.

(2) Military unaccompanied housing units on or near such military installations.

Sec. 2872a. Utilities and services

(a) Authority To Furnish. - The Secretary concerned may furnish utilities and services referred to in subsection (b) in connection with any military housing acquired or constructed pursuant to the exercise of any authority or combination of authorities under this subchapter if the military housing is located on a military installation.

(b) Covered Utilities and Services. - The utilities and services that may be furnished under subsection (a) are the following:

(1) Electric power.

(2) Steam.

(3) Compressed air.

(4) Water.

(5) Sewage and garbage disposal.

(6) Natural gas.

(7) Pest control.

(8) Snow and ice removal.

(9) Mechanical refrigeration.

(10) Telecommunications service.

(11) Firefighting and fire protection services.

(12) Police protection services.

(c) Reimbursement.

(1) The Secretary concerned shall be reimbursed for any utilities or services furnished under subsection (a).

(2) The amount of any cash payment received under paragraph (1) shall be credited to the appropriation or working capital account from which the cost of furnishing the utilities or services concerned was paid. Amounts so credited to an appropriation or account shall be merged with funds in such appropriation or account, and shall be available to the same extent, and subject to the same terms and conditions, as such funds.

Sec. 2873. Direct loans and loan guarantees

(a) Direct Loans.

(1) Subject to subsection (c), the Secretary concerned may make direct loans to an eligible entity in order to provide funds to the eligible entity for the acquisition or construction of housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.

(2) The Secretary concerned shall establish such terms and conditions with respect to loans made under this subsection as the Secretary considers appropriate to protect the interests of the United States, including the period and frequency for repayment of such loans and the obligations of the obligors on such loans upon default.

(b) Loan Guarantees.

(1) Subject to subsection (c), the Secretary concerned may guarantee a loan made to an eligible entity if the proceeds of the loan are to be used by the eligible entity to acquire, or construct housing units that the Secretary determines are suitable for use as military family housing or as military unaccompanied housing.

(2) The amount of a guarantee on a loan that may be provided under paragraph (1) may not exceed the amount equal to the lesser of - (A) the amount equal to 80 percent of the value of the project; or (B) the amount of the outstanding principal of the loan.

(3) The Secretary concerned shall establish such terms and conditions with respect to guarantees of loans under this subsection as the Secretary considers appropriate to protect the interests of the United States, including the rights and obligations of obligors of such loans and the rights and obligations of the United States with respect to such guarantees.

(c) Limitation on Direct Loan and Guarantee Authority. – Direct loans and loan guarantees may be made under this section only to the extent that appropriations of budget authority to cover their cost (as defined in section 502(5) of the Federal Credit Reform Act of 1990 (2 U.S.C. 661a(5))) are made in advance, or authority is otherwise provided in appropriation Acts. If such appropriation or other authority is provided, there may be established a financing account (as defined in section 502(7) of such Act (2 U.S.C. 661a(7))), which shall be available for the disbursement of direct loans or payment of claims for payment on loan guarantees under this section and for all other cash flows to and from the Government as a result of direct loans and guarantees made under this section.

Sec. 2874. Leasing of housing

(a) Lease Authorized. - The Secretary concerned may enter into contracts for the lease of housing units that the Secretary determines are suitable for use as military family housing or military unaccompanied housing.

(b) Use of Leased Units. - The Secretary concerned shall utilize housing units leased under this section as military family housing or military unaccompanied housing, as appropriate.

(c) Lease Terms. - A contract under this section may be for any period that the Secretary concerned determines appropriate and may provide for the owner of the leased property to operate and maintain the property.

Sec. 2875. Investments

(a) Investments Authorized. - The Secretary concerned may make investments in an eligible entity carrying out projects for the acquisition or construction of housing units suitable for use as military family housing or as military unaccompanied housing.

(b) Forms of Investment. - An investment under this section may take the form of an acquisition of a limited partnership interest by the United States, a purchase of stock or other equity instruments by the United States, a purchase of bonds or other debt instruments by the United States, or any combination of such forms of investment.

(c) Limitation on Value of Investment.

(1) The cash amount of an investment under this section in an eligible entity may not exceed an amount equal to 33 1/3 percent of the capital cost (as determined by the Secretary concerned) of the project or projects that the eligible entity proposes to carry out under this section with the investment.

(2) If the Secretary concerned conveys land or facilities to an eligible entity as all or part of an investment in the eligible entity under this section, the total value of the investment by the Secretary under this section may not exceed an amount equal to 45 percent of the capital cost (as determined by the Secretary) of the project or projects that the eligible entity proposes to carry out under this section with the investment.

(3) In this subsection, the term "capital cost", with respect to a project for the acquisition or construction of housing, means the total amount of the costs included in the basis of the housing for Federal income tax purposes.

(d) Collateral Incentive Agreements. - The Secretary concerned shall enter into collateral incentive agreements with eligible entities in which the Secretary makes an investment under this section to ensure that a suitable preference will be afforded members of the armed forces and their dependents in the lease or purchase, as the case may be, of a reasonable number of the housing units covered by the investment.

(e) Congressional Notification Required. - Amounts in the Department of Defense Family Housing Improvement Fund or the Department of Defense Military Unaccompanied Housing Improvement Fund may be used to make a cash investment under this section in an eligible entity only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the investment to the appropriate committees of Congress.

Sec. 2876. Rental guarantees

The Secretary concerned may enter into agreements with eligible entities that acquire or construct military family housing units or military unaccompanied housing units under this subchapter in order to assure –

(1) the occupancy of such units at levels specified in the agreements; or

(2) rental income derived from rental of such units at levels specified in the agreements.

Sec. 2877. Differential lease payments

Pursuant to an agreement entered into by the Secretary concerned and a lessor of military family housing or military unaccompanied housing to members of the armed forces, the Secretary may pay the lessor an amount in addition to the rental payments for the housing made by the members as the Secretary determines appropriate to encourage the lessor to make the housing available to members of the armed forces as military family housing or as military unaccompanied housing.

Sec. 2878. Conveyance or lease of existing property and facilities

(a) Conveyance or Lease Authorized. - The Secretary concerned may convey or lease property or facilities (including ancillary supporting facilities) to eligible entities for purposes of using the proceeds of such conveyance or lease to carry out activities under this subchapter.

(b) Inapplicability to Property at Installation Approved for Closure. - The authority of this section does not apply to property or facilities located on or near a military installation approved for closure under a base closure law.

(c) Terms and Conditions.

(1) The conveyance or lease of property or facilities under this section shall be for such consideration and upon such terms and conditions as the Secretary concerned considers appropriate for the purposes of this subchapter and to protect the interests of the United States.

(2) As part or all of the consideration for a conveyance or lease under this section, the purchaser or lessor (as the case may be) shall enter into an agreement with the Secretary to ensure that a

suitable preference will be afforded members of the armed forces and their dependents in the lease or sublease of a reasonable number of the housing units covered by the conveyance or lease, as the case may be, or in the lease of other suitable housing units made available by the purchaser or lessee.

(d) Inapplicability of Certain Property Management Laws. – The conveyance or lease of property or facilities under this section shall not be subject to the following provisions of law:

(1) Section 2667 of this title.

(2) Subtitle I of title 40 and title III of the Federal Property and Administrative Services Act of 1949 (41 U.S.C. 251 et seq.).

(3) Section 1302 of title 40.

(4) Section 501 of the McKinney-Vento Homeless Assistance Act (42 U.S.C. 11411).

Sec. 2879.

(Repealed. Public Law 107-314, div. B, title XXVIII, Sec. 2802(c)(1), Dec. 2, 2002, 116 Stat. 2703)

Sec. 2880. Unit size and type

(a) Conformity With Similar Housing Units in Locale. – The Secretary concerned shall ensure that the room patterns and floor areas of military family housing units and military unaccompanied housing units acquired or constructed under this subchapter are generally comparable to the room patterns and floor areas of similar housing units in the locality concerned.

(b) Inapplicability of Limitations on Space by Pay Grade.

(1) Section 2826 of this title shall not apply to military family housing units acquired or constructed under this subchapter.

(2) The regulations prescribed under section 2856 of this title shall not apply to any military unaccompanied housing unit acquired or constructed under this subchapter unless the unit is located on a military installation.

Sec. 2881. Ancillary supporting facilities

(a) Authority To Acquire or Construct. - Any project for the acquisition or construction of military family housing units or military unaccompanied housing units under this subchapter may include the acquisition or construction of ancillary supporting facilities for the housing units concerned.

(b) Restriction. - A project referred to in subsection (a) may not include the acquisition or construction of an ancillary supporting facility if, as determined by the Secretary concerned, the facility is to be used for providing merchandise or services in direct competition with -

(1) the Army and Air Force Exchange Service;

(2) the Navy Exchange Service Command;

(3) a Marine Corps exchange;

(4) the Defense Commissary Agency; or

(5) any nonappropriated fund activity of the Department of Defense for the morale, welfare, and recreation of members of the armed forces.

Sec. 2881a. Pilot projects for acquisition or construction of military unaccompanied housing

(a) Pilot Projects Authorized. - The Secretary of the Navy may carry out not more than three pilot projects under the authority of this section or another provision of this subchapter to use the private sector for the acquisition or construction of military unaccompanied housing in the United States, including any territory or possession of the United States.

(b) Treatment of Housing; Assignment of Members. - The Secretary of the Navy may assign members of the armed forces without dependents to housing units acquired or constructed under the pilot projects, and such housing units shall be considered as quarters of the United States or a housing facility under the jurisdiction of the Secretary for purposes of section 403 of title 37.

(c) Basic Allowance for Housing.

(1) The Secretary of Defense may prescribe and, under section 403(n) of title 37, pay for members of the armed forces without dependents in privatized housing acquired or constructed under the pilot projects higher rates of partial basic allowance for housing than the rates authorized under paragraph (2) of such section.

(2) The partial basic allowance for housing paid for a member at a higher rate under this subsection may be paid directly to the private sector source of the housing to whom the member is obligated to pay rent or other charge for residing in such housing if the private sector source credits the amount so paid against the amount owed by the member for the rent or other charge.

(d) Funding.

(1) The Secretary of the Navy shall use the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under the pilot projects.

(2) Subject to 90 days prior notification to the appropriate committees of Congress, such additional amounts as the Secretary of Defense considers necessary may be transferred to the Department of Defense Military Unaccompanied Housing Improvement Fund from amounts appropriated for construction of military unaccompanied housing in military construction accounts. The amounts so transferred shall be merged with and be available for the same purposes and for the same period of time as amounts appropriated directly to the Fund.

(e) Reports.

(1) The Secretary of the Navy shall transmit to the appropriate committees of Congress a report describing –

(A) each contract for the acquisition of military unaccompanied housing that the Secretary proposes to solicit under the pilot projects;

(B) each conveyance or lease proposed under section 2878 of this title in furtherance of the pilot projects; and

(C) the proposed partial basic allowance for housing rates for each contract as they vary by grade of the member and how they compare to basic allowance for housing rates for other contracts written under the authority of the pilot programs.

(2) The report shall describe the proposed contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease and provide a justification of such method of participation. The report shall be submitted not later than 90 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

(f) Expiration. - Notwithstanding section 2885 of this title, the authority of the Secretary of the Navy to enter into a contract under the pilot programs shall expire September 30, 2007.

Sec. 2882. Assignment of members of the armed forces to housing units

(a) In General. - The Secretary concerned may assign members of the armed forces to housing units acquired or constructed under this subchapter.

(b) Effect of Certain Assignments on Entitlement to Housing Allowances.

(1) Except as provided in paragraph (2), housing referred to in subsection (a) shall be considered as quarters of the United States or a housing facility under the jurisdiction of a uniformed service for purposes of section 403 of title 37.

(2) A member of the armed forces who is assigned in accordance with subsection (a) to a housing unit not owned or leased by the United States shall be entitled to a basic allowance for housing under section 403 of title 37.

(c) Lease Payments Through Pay Allotments. - The Secretary concerned may require members of the armed forces who lease housing in housing units acquired or constructed under this subchapter to make lease payments for such housing pursuant to allotments of the pay of such members under section 701 of title 37.

Sec. 2883. Department of Defense Housing Funds

(a) Establishment. - There are hereby established on the books of the Treasury the following accounts:

(1) The Department of Defense Family Housing Improvement Fund.

(2) The Department of Defense Military Unaccompanied Housing Improvement Fund.

(b) Commingling of Funds Prohibited.

(1) The Secretary of Defense shall administer each Fund separately.

(2) Amounts in the Department of Defense Family Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military family housing.

(3) Amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund may be used only to carry out activities under this subchapter with respect to military unaccompanied housing.

(c) Credits to Funds.

(1) There shall be credited to the Department of Defense Family Housing Improvement Fund the following:

(A) Amounts authorized for and appropriated to that Fund.

(B) Subject to subsection (f), any amounts that the Secretary of Defense transfers, in such amounts as provided in appropriation Acts, to that Fund from amounts authorized and appropriated to the Department of Defense for the acquisition or construction of military family housing.

(C) Proceeds from the conveyance or lease of property or facilities under section 2878 of this title for the purpose of carrying out activities under this subchapter with respect to military family housing.

(D) Income derived from any activities under this subchapter with respect to military family housing, including interest on loans made under section 2873 of this title, income and gains realized from investments under section 2875 of this title, and any return of capital invested as part of such investments.

(E) Any amounts that the Secretary of the Navy transfers to that Fund pursuant to section 2814(i)(3) of this title, subject to the restrictions on the use of the transferred amounts specified in that section.

(2) There shall be credited to the Department of Defense Military Unaccompanied Housing Improvement Fund the following:

(A) Amounts authorized for and appropriated to that Fund.

(B) Subject to subsection (f), any amounts that the Secretary of Defense transfers, in such amounts as provided in appropriation Acts, to that Fund from amounts authorized and appropriated to the Department of Defense for the acquisition or construction of military unaccompanied housing.

(C) Proceeds from the conveyance or lease of property or facilities under section 2878 of this title for the purpose of carrying out activities under this subchapter with respect to military unaccompanied housing.

(D) Income derived from any activities under this subchapter with respect to military unaccompanied housing, including interest on loans made under section 2873 of this title, income and gains realized from investments under section 2875 of this title, and any return of capital invested as part of such investments.

(E) Any amounts that the Secretary of the Navy transfers to that Fund pursuant to section 2814(i)(3) of this title, subject to the restrictions on the use of the transferred amounts specified in that section.

(d) Use of Amounts in Funds.

(1) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Family Housing Improvement Fund to carry out activities under this subchapter with respect to military family housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.

(2) In such amounts as provided in appropriation Acts and except as provided in subsection (e), the Secretary of Defense may use amounts in the Department of Defense Military Unaccompanied Housing Improvement Fund to carry out activities under this subchapter with respect to military unaccompanied housing, including activities required in connection with the planning, execution, and administration of contracts entered into under the authority of this subchapter. The Secretary may also use for expenses of activities required in connection with the planning, execution, and administration of such contracts funds that are otherwise available to the Department of Defense for such types of expenses.

(3) Amounts made available under this subsection shall remain available until expended. The Secretary of Defense may transfer amounts made available under this subsection to the Secretaries of the military departments to permit such Secretaries to carry out the activities for which such amounts may be used.

(e) Limitation on Obligations. - The Secretary may not incur an obligation under a contract or other agreement entered into under this subchapter in excess of the unobligated balance, at the time the contract is entered into, of the Fund required to be used to satisfy the obligation.

(f) Notification Required for Transfers. - A transfer of appropriated amounts to a Fund under paragraph (1)(B) or (2)(B) of subsection (c) may be made only after the end of the 30-day period beginning on the date the Secretary of Defense submits written notice of, and justification for, the transfer to the appropriate committees of Congress.

(g) Limitation on Amount of Budget Authority. - The total value in budget authority of all contracts and investments undertaken using the authorities provided in this subchapter shall not exceed (1) $850,000,000 for the acquisition or construction of military family housing; and (2) $150,000,000 for the acquisition or construction of military unaccompanied housing.

Sec. 2883a. Funds for housing allowances of members of the armed forces assigned to certain military family housing units

(a) Authority to Transfer Funds To Cover Housing Allowances. - During the fiscal year in which a contract is awarded for the acquisition or construction of military family housing units under this subchapter that are not to be owned by the United States, the Secretary of Defense may transfer the amount determined under subsection (b) with respect to such housing from appropriations available for support of military housing for the armed force concerned for that fiscal year to appropriations available for pay and allowances of military personnel of that same armed force for that same fiscal year.

(b) Amount Transferred. - The total amount authorized to be transferred under subsection (a) in connection with a contract under this subchapter may not exceed an amount equal to any additional amounts payable during the fiscal year in which the contract is awarded to members of the armed forces assigned to the acquired or constructed housing units as basic allowance for housing under section 403 of title 37 that would not otherwise have been payable to such members if not for assignment to such housing units.

(c) Transfers Subject to Appropriations. - The transfer of funds under the authority of subsection (a) is limited to such amounts as may be provided in advance in appropriations Acts.

Sec. 2884. Reports

(a) Project Reports.

(1) The Secretary of Defense shall transmit to the appropriate committees of Congress a report describing -

(A) each contract for the acquisition or construction of family housing units or unaccompanied housing units that the Secretary proposes to solicit under this subchapter; and

(B) each conveyance or lease proposed under section 2878 of this title.

(2) The report shall describe the proposed contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease and provide a justification of such method of participation. The report shall be submitted not later than 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

(b) Annual Reports. - The Secretary of Defense shall include each year in the materials that the Secretary submits to Congress in support of the budget submitted by the President pursuant to section 1105 of title 31 the following:

(1) A report on the expenditures and receipts during the preceding fiscal year covering the Funds established under section 2883 of this title.

(2) A methodology for evaluating the extent and effectiveness of the use of the authorities under this subchapter during such preceding fiscal year.

(3) A description of the objectives of the Department of Defense for providing military family housing and military unaccompanied housing for members of the armed forces.

Sec. 2885. Expiration of authority

The authority to enter into a contract under this subchapter shall expire on December 31, 2012.

APPENDIX B

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

APPENDIX B

APPLICABLE LAWS, REGULATIONS, POLICIES, AND PLANNING CRITERIA

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

Noise

The Air Installation Compatible Use Zone (AICUZ) Program, (Air Force Instruction [AFI] 32-7063), provides guidance to air bases and local communities in planning land uses compatible with airfield operations. The AICUZ program describes existing aircraft noise and flight safety zones on and near U.S. Air Force (USAF) installations.

Land Use

Land use planning in the USAF is guided by *Land Use Planning Bulletin, Base Comprehensive Planning* (HQ USAF/LEEVX, August 1, 1986). This document provides for the use of 12 basic land use types found on an Air Force installation. In addition, land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise (FICON) are used to recommend acceptable levels of noise exposure for land use.

Air Quality

The Clean Air Act (CAA) of 1970, and Amendments of 1977 and 1990, recognizes that increases in air pollution result in danger to public health and welfare. To protect and enhance the quality of the Nation's air resources, the CAA authorizes the U.S. Environmental Protection Agency (USEPA) to set six National Ambient Air Quality Standards (NAAQSs) which regulate carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide, and particulate matter pollution emissions. The CAA seeks to reduce or eliminate the creation of pollutants at their source, and designates this responsibility to state and local governments. States are directed to utilize financial and technical assistance as well as leadership from the Federal government to develop implementation plans to achieve NAAQS. Geographic areas are officially designated by the USEPA as being in attainment or nonattainment to pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCR). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassifiable. Section 309 of the CAA authorizes the USEPA to review and comment on impact statements prepared by other agencies.

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

Safety

AFI 91-202, *USAF Mishap Prevention Program*, implements Air Force Policy Directive (AFPD) 91-2, *Safety Programs*. It establishes mishap prevention program requirements (including the Bird/Wildlife

Aircraft Strike Hazard [BASH] Program), assigns responsibilities for program elements, and contains program management information. This instruction applies to all USAF personnel.

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

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

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

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

The Safe Drinking Water Act (SDWA) of 1974 establishes a Federal program to monitor and increase the safety of all commercially and publicly supplied drinking water. Congress amended the SDWA in 1986, mandating dramatic changes in nationwide safeguards for drinking water and establishing new Federal enforcement responsibility on the part of USEPA. The 1986 amendments to the SDWA require the USEPA to establish Maximum Contaminant Levels (MCLs), Maximum Contaminant Level Goals (MCLGs), and Best Available Technology (BAT) treatment techniques for organic, inorganic, radioactive, and microbial contaminants, and turbidity. MCLGs are maximum concentrations below

which no negative human health effects are known to exist. The 1996 amendments set current Federal MCLs, MCLGs, and BATs for organic, inorganic, microbiological, and radiological contaminants in public drinking water supplies.

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

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

Biological Resources

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened and endangered plants and animals and their habitats. The ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened and endangered species. All Federal agencies must ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of an endangered or threatened species or result in the destruction of critical habitat for these species, unless the agency has been granted an exemption. The Secretary of the Interior, using the best available scientific data, determines which species are officially endangered or threatened, and the U.S. Fish and Wildlife Service (USFWS) maintains the list. A list of Federal endangered species can be obtained from the Endangered Species Division, USFWS (703-358-2171). States might also have their own lists of threatened and endangered species which can be obtained by calling the appropriate State Fish and Wildlife office. Some species, such as the bald eagle, also have laws specifically for their protection (e.g., Bald Eagle Protection Act).

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

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

information about existing or potential environmental problems with all interested parties, including the public, in order to obtain their views.

EO 11990, *Protection of Wetlands* (May 24, 1977) directs agencies to consider alternatives to avoid adverse effects and incompatible development in wetlands. Federal agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable alternative to construction in the wetland, and the proposed construction incorporates all possible measures to limit harm to the wetland. Agencies should use economic and environmental data, agency mission statements, and any other pertinent information when deciding whether or not to build in wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in wetlands.

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

Cultural Resources

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

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

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

under NEPA might still require Section 106 review under NHPA. It is the responsibility of the agency official to identify properties in the area of potential effects, and whether they are included or eligible for inclusion in the NRHP. Section 110 of the NHPA requires Federal agencies to identify, evaluate, and nominate historic property under agency control to the NRHP.

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

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

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

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

Socioeconomics and Environmental Justice

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

Hazardous Materials and Waste

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 authorizes the USEPA to respond to spills and other releases of hazardous substances to the environment, and authorizes the National Oil and Hazardous Substances Pollution Contingency Plan. CERCLA also provides a Federal "Superfund" to respond to emergencies immediately. Although the "Superfund" provides funds for clean up of sites where potentially responsible parties cannot be identified, the USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters.

The Pollution Prevention Act (PPA) of 1990 encourages manufacturers to avoid the generation of pollution by modifying equipment and processes, redesigning products, substituting raw materials, and making improvements in management techniques, training, and inventory control. EO 12856, *Federal Compliance with Right-to Know Laws and Pollution Prevention Requirements* (August 3, 1993) requires Federal agencies to comply with the provisions of the PPA and requires Federal agencies to ensure all necessary actions are taken to prevent pollution. In addition, in *Federal Register* Volume 58 Number 18 (January 29, 1993), CEQ provides guidance to Federal agencies on how to "incorporate pollution prevention principles, techniques, and mechanisms into their planning and decision making processes and to evaluate and report those efforts, as appropriate, in documents pursuant to NEPA."

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

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong cleanup standards and authorizes the USEPA to use a variety of incentives to encourage settlements. Title III of SARA authorizes the Emergency Planning and Community Right to Know Act (EPCRA), which requires facility operators with "hazardous substances" or "extremely hazardous substances" to prepare comprehensive emergency plans and to report accidental releases. EO 12856 requires Federal agencies to comply with the provisions of EPCRA. If a Federal agency acquires a contaminated site, it can be held liable for clean-up as the property owner/operator. A Federal agency can also incur liability if it leases a property, as the courts have found lessees liable as "owners." However, if the agency exercises due diligence by conducting a Phase I Environmental Site Assessment, it can claim the "innocent purchaser" defense under CERCLA. According to Title 42 U.S. Code (U.S.C.) 9601(35), the current owner/operator must show it undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice" before buying the property to use this defense.

The Toxic Substance Control Act (TSCA) of 1976 consists of four titles. Title I established requirements and authorities to identify and control toxic chemical hazards to human health and the environment. TSCA authorized the USEPA to gather information on chemical risks, require companies to test chemicals for toxic effects, and regulate chemicals with unreasonable risk. TSCA also singled out polychlorinated bi-phenyls (PCBs) for regulation, and, as a result, PCBs are being phased out. PCBs are persistent when released into the environment and accumulate in the tissues of living organisms. They have been shown to cause adverse health effects on laboratory animals and may cause adverse health effects in humans. TSCA and its regulations govern the manufacture, processing, distribution, use, marking, storage, disposal, clean-up, and release reporting requirements for numerous chemicals like

PCBs. TSCA Title II provides statutory framework for "Asbestos Hazard Emergency Response," which applies only to schools. TSCA Title III, "Indoor Radon Abatement," states indoor air in buildings of the U.S. should be as free of radon as the outside ambient air. Federal agencies are required to conduct studies on the extent of radon contamination in buildings they own. TSCA Title IV, "Lead Exposure Reduction," directs Federal agencies to "conduct a comprehensive program to promote safe, effective, and affordable monitoring, detection, and abatement of lead-based paint and other lead exposure hazards." Further, any Federal agency having jurisdiction over a property or facility must comply with all Federal, state, interstate, and local requirements concerning lead-based paint.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX C

INTERAGENCY AND INTERGOVERNMENTAL COORDINATION FOR ENVIRONMENTAL PLANNING CORRESPONDENCE AND PUBLIC REVIEW

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

MEMORANDUM FOR SEE DISTRIBUTION 14 January 2005

FROM: HQ AMC/A75
507 Symington Drive
Scott AFB IL 62225-5022

SUBJECT: Description of Proposed Action and Alternatives (DOPAA) for Military Privatization Initiative at Fairchild Air Force Base (AFB), Washington

1. The Air Mobility Command is preparing an Environmental Assessment (EA) of the Privatization of Military Family Housing, Fairchild AFB. The Proposed Action is to lease the military family housing units at Fairchild AFB to a private developer so that through construction, demolition, and renovation, the end-state total would be at least 596 housing units. The DOPAA is included with this correspondence.

2. The environmental impact analysis process for the Proposed Action, alternative to the Proposed Action, and the No Action Alternative is being conducted by the Air Mobility Command in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached DOPAA and solicit your comments concerning the proposal and any potential environmental consequences. Also enclosed is the distribution list of those Federal, state, and local agencies that have been contacted. If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

3. Please provide any comments or information directly to HQ AMC/A75, 507 Symington Drive, Scott AFB IL 62225-5022 by 14 February 2005.

4. If members of your staff have any questions, our point of contact is Mr. Mark Fetzer, HQ AMC/A75C, (618) 229-0843, or e-mail to mark.fetzer@scott.af.mil.

LARRY W. BRITTENHAM, Colonel, USAF
Chief, Plans and Programs Division
Directorate of Installations &
Mission Support

Attachment:
DOPAA

DISTRIBUTION: (listed on next page)

THIS PAGE INTENTIONALLY LEFT BLANK

State and Local Elected Officials

The Honorable Phillip D. Harris
Commissioner
County of Spokane, Third District
Spokane County Courthouse
1116 West Broadway Avenue
Spokane, WA 99260

The Honorable Christine Gregoire
Governor of Washington
Office of the Governor
P.O. Box 40002
Olympia, WA 98504-0002

The Honorable Amy Jo Sooy
Mayor, City of Cheney
609 Second Street
Cheney, WA 99004

The Honorable James West
Mayor, City of Spokane
808 W. Spokane Falls Blvd.
Spokane, WA 99201-3335

Federal Agency Contacts

Mr. Mark Bagdovitz
Chief, Habitat Conservation and Forest Resources
U.S. Fish and Wildlife Service, Region 1
Eastside Federal Complex
911 N.E. 11th Ave.
Portland, OR 97232-4181

Ms. Andree DuVarney
National Environmental Coordinator
U.S. Department of Agriculture
Natural Resources Conservation Service
14th and Independence Ave., SW
P.O. Box 2890
Washington, DC 20013

Mr. Horst Greczmiel
Council on Environmental Quality
360 Old Executive Office Building, NW
Washington, DC 20501

Mr. Don Klima
Director, Office of Planning and Review
Advisory Council on Historic Preservation
1100 Pennsylvania Ave., NW #809
The Old Post Office Building
Washington, DC 20004

Ms. Judith Leckrone Lee
Environmental Review Coordinator
U.S. Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, WA 98101

Ms. Paula Levin
Chief, Ecological Services
U.S. Fish and Wildlife Service, Region 1
Eastside Federal Complex
911 N.E. 11th Avenue
Portland, OR 97232-4181

Mr. Richard Sanderson
Director, Office of Federal Activities
U.S. Environmental Protection Agency
Federal Agency Liaison Division, 2251-A
401 M Street, SW
Washington, DC 20460

State and Local Agency Contacts

Dr. Allyson Brooks
State Historic Preservation Officer
Office of Archeology and Historic Preservation
P.O. Box 48343
Olympia, WA 98504-8343

Mr. Michael Dunn
Superintendent
Cheney Public Schools No. 360
520 Fourth Street
Cheney, WA 99004

Mr. Dale Lamphere
Principal
Michael Anderson Elementary
400 W. Fairchild Hwy
Fairchild AFB, WA 99011

Mr. James L. Manson
Director, Department of Building and Planning
Spokane County
Public Works Building
1026 W. Broadway Avenue
Spokane, WA 99260

Mr. John Mercer
Director, Spokane Planning Services
City of Spokane
808 W. Spokane Falls Blvd.
3rd Floor City Hall
Spokane, WA 99201

Mr. Tom Richardson
Director, Planning Department
City of Cheney
112 Anderson Road
Cheney, WA 99004

Ms. Barbara Ritchie
SEPA Unit Supervisor
Washington Department of Ecology
Environmental Review Section
P.O. Box 47703
Olympia, WA 98504-7703

Mr. Don Skillingstad
City Planner
City of Airway Heights Planning Department
P.O. Box 969
Airway Heights, WA 99001

Ms. Pam Veltri
Superintendent
Medical Lake School District No. 326
Box 128, West 116 Third Ave.
Medical Lake, WA 99022

Inspiring our children to reach for the stars

CHENEY PUBLIC SCHOOLS

520 FOURTH STREET, CHENEY, WA 99004

(509) 559-4599 * FAX 559-4508
www.cheneysd.org

February 9, 2005

HQ AMC/A75
507 Symington Drive
Scott AFB, IL 62225-5022

To Whom It May Concern:

The Cheney Public Schools appreciates the January 14, 2005 memorandum describing Proposed Action and Alternatives (DOPAA) for Military Privatization Initiative at Fairchild Air Force Base (AFB), Washington.

A thorough reading of this memorandum indicates that the impact of this initiative on our school district will be a conveyance of the already vacated units at Geiger Heights (226 units) and Cheney (16 units) to a private developer, with such units no longer used for military family housing. Because there has been an adverse impact on our district enrollment related to the vacation of said units, we welcome the possibility of a private developer re-opening these units for residence with a hopeful re-generation of student enrollment. The sooner that can happen the better it will be for a district whose plans had included continued occupancy of said units; closure of same came with little advanced notice.

One of our district's elementary schools (Windsor Elementary, recently modernized via a bond issue passed in 2000) is directly across Hallett Road from the Geiger Heights housing units. The Windsor School water and sewer service is currently provided by the Spokane Municipal Water System via the Geiger Housing Project on Hallett Road. Our district is billed for water and sewer by FAFB. As Fairchild Air Force Based vacates this project and conveys it to a private developer, it is our hope that the development will be connected to the City of Spokane water and sewer; and that Windsor Elementary water and sewer service will then also be connected to those municipal services. Any information you can provide us about such a transition will be genuinely appreciated.

Again, we appreciate the thorough information that was provided for our review.

Respectfully,

Michael Dunn
Superintendent

c: Board of Directors
Dave Sackville-West, Finance Director
Bob Reisenauer, Maintenance and Operations Director
Kaye Aucutt, Principal, Windsor Elementary School

THIS PAGE INTENTIONALLY LEFT BLANK

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

24 August 2005

TO: Mr. Michael Dunn, Superintendent
Cheney Public Schools
520 Fourth Street
Cheney, WA 99004

FROM: HQ AMC/A75
507 Symington Drive
Scott AFB IL 62225-5022

SUBJECT: Cheney Public Schools (Your Letter, 9 Feb 05)

1. Thank you for your letter of 9 February 2005 (see attached), concerning our proposal to privatize family housing at Fairchild Air Force Base (AFB). Pursuant to the Military Housing Privatization Initiative (MHPI) enacted by Congress, Fairchild AFB seeks to identify a successful offeror that can accomplish our goals to improve on-base housing. We would like to enter into a partnership to reduce our family housing inventory from 1,345 units to 596 units. We envision a combination of renovation, demolition, and new construction on base to reach our desired end state of 596 housing units.

2. As part of the arrangements we propose to enter into a MHPI with a successful offeror, we desire to convey fee title housing units and land at Geiger Heights and Cheney, two off-base housing areas no longer needed to meet our housing requirements. Future uses of those two areas would be within the sole discretion of the successful offeror.

3. We welcome your support of the proposed initiative. We understand your concerns and would like to work with you to ensure the continuation of necessary municipal services to Windsor Elementary School. Diane Topliffe, AMC Project Manager, welcomes the opportunity to meet with you and discuss your concerns. Mrs. Topliffe, HQ AMC/A7HP, can be contacted at (618) 229-0677, or e-mail *diane.topliffe@scott.af.mil*.

4. On behalf of the men and women of the Air Force who serve the Nation at Fairchild AFB, I thank you for your continued support. If members of your staff have any questions involving the preparation of the Environmental Assessment (EA), please contact Mr. Mark Fetzer, HQ AMC/A75C, (618) 229-0843, or e-mail *mark.fetzer.ctr@scott.af.mil*.

Michael W. Hutchison

MICHAEL W. HUTCHISON, Colonel, USAF
Chief, Plans and Programs Division
Directorate of Installations &
Mission Support

Attachment:
Cheney Public Schools letter, 9 February 2005

THIS PAGE INTENTIONALLY LEFT BLANK

City of Airway Heights
Community Development Division
1208 So. Lundstrom Ave.
Airway Heights, WA 99001
Tel (509) 244-2552 - Fax (509) 244-4746
e-mail commdevdir@city-of-airway-heights.org

February 9, 2005

Larry W. Brittenham, Colonel, USAF
Chief, Plans and Programs Division
HQ AMC/A75
507 Symington Drive
Scott AFB, IL 62225-5022

Dear Col. Brittenham:

Thank you very much for the opportunity to respond to the Description of Proposed Action and Alternatives for Military Privatization Initiative at Fairchild Air Force Base (FAFB), Washington. The City of Airway Heights is the closest community to FAFB, being approximately 2.5 miles directly east of the main gate on State Highway 2. We are also 8 miles west of downtown Spokane.

In a 2004 Forbes Magazine article, Spokane was ranked 91 out of 150 Northwest Cities, ahead of Seattle & Tacoma. Airway Heights has been realizing spillover and visibility from this strong economy resulting in growth in both residential and retail aspects of the community. The current traffic flow comprises an average of approximately 25,000+ cars per day which represents more of a transient population for the community and includes a large number of individuals in transit to and from FAFB. The City is basically located between the Spokane International Airport and FAFB, and north of Interstate 90, with State Route 2 bisecting the City.

Historically the City has provided for support housing solutions for the FAFB families, albeit to a limited degree. We have over the past two years, experienced a higher rate of growth in residential housing units in defined subdivision plats. At the present time the Aspen Grove project Phase II, III and IV include 161 one- and two-story single family residential units. The Russell Heights development includes 65 lots, each of which will have a duplex on them for 130 residential units. This project has several units in process. Adjacent to Russell Heights, the same builder has planned a 220 unit apartment complex, with construction anticipated to begin this summer. Also in the near vicinity is the Sunset Crossing development which includes 152 residential housing units with construction anticipated to begin this summer also. Just these projects total 663 housing units. Further to the east just outside the City limits are both a 400 unit apartment complex and a 270 home residential subdivision in process of construction. Combined, this is a total of 1,333 housing units.

A survey of large businesses in Airway Heights indicates that out of 2,145 employees with the 15 largest employers, approximately 79% or 1,695 commute to Airway Heights. In addition, there are approximately 2,500 individuals employed in the Spokane Airport vicinity (Airport / Fed Ex / Airborne Express / Postal Annex / UPS / Etc.) that also commute to the area. Again, the airport is about three miles southeast of the City. This totals 4,195 individuals commuting to the area for work.

The proposed action by FAFB on base housing will result in a depletion of 749 housing units, going from the existing 1,345 to an end state of 596. The downsizing of 749 when added to the 4,195 employees in the area that commute to the City represent a housing market potential of 4,944 individuals. Should there be a market penetration of 20%, this would represent filling 989 housing units out of an inventory of approximately 1,333.

At this time the City has in process the design / development of a large community recreation center to provide for a fitness center, group exercise studio, multi-purpose room, preschool, recreation activity pool with lap lanes and child watch room. In addition the design / development of a waste water treatment facility is in process. This will allow the City to separate from the City of Spokane Waste Treatment facility, guarantee waste treatment capacity for long term growth, and based on providing reclaimed water to the large commercial users, it would provide greater long term water capacity to the City which will also support future growth.

Based on the above information we can say that the City of Airway Heights has poised itself to realize a strong level of growth. The residential growth will absolutely generate additional retail and commercial expansion of services to the community.

It is in the best interest of both the City of Airway Heights and Fairchild Air Force Base populations to collaborate on the final action and alternatives for the privatization of military family housing. We strongly recommend that a joint planning committee be formed with members from the City, FAFB and representation of the private developer. The purpose of the committee would be to identify, promote and assist in development of expansion opportunities in the community for retail, social and recreational activities that would support the general needs of the community, including the existing and probable new military personnel and their families. The committee would be responsible for liaison activities between the private developer, FAFB Housing and subdivision developers / realtors to ensure that adequate marketing programs are structured to provide the replacement housing opportunities for base personnel.

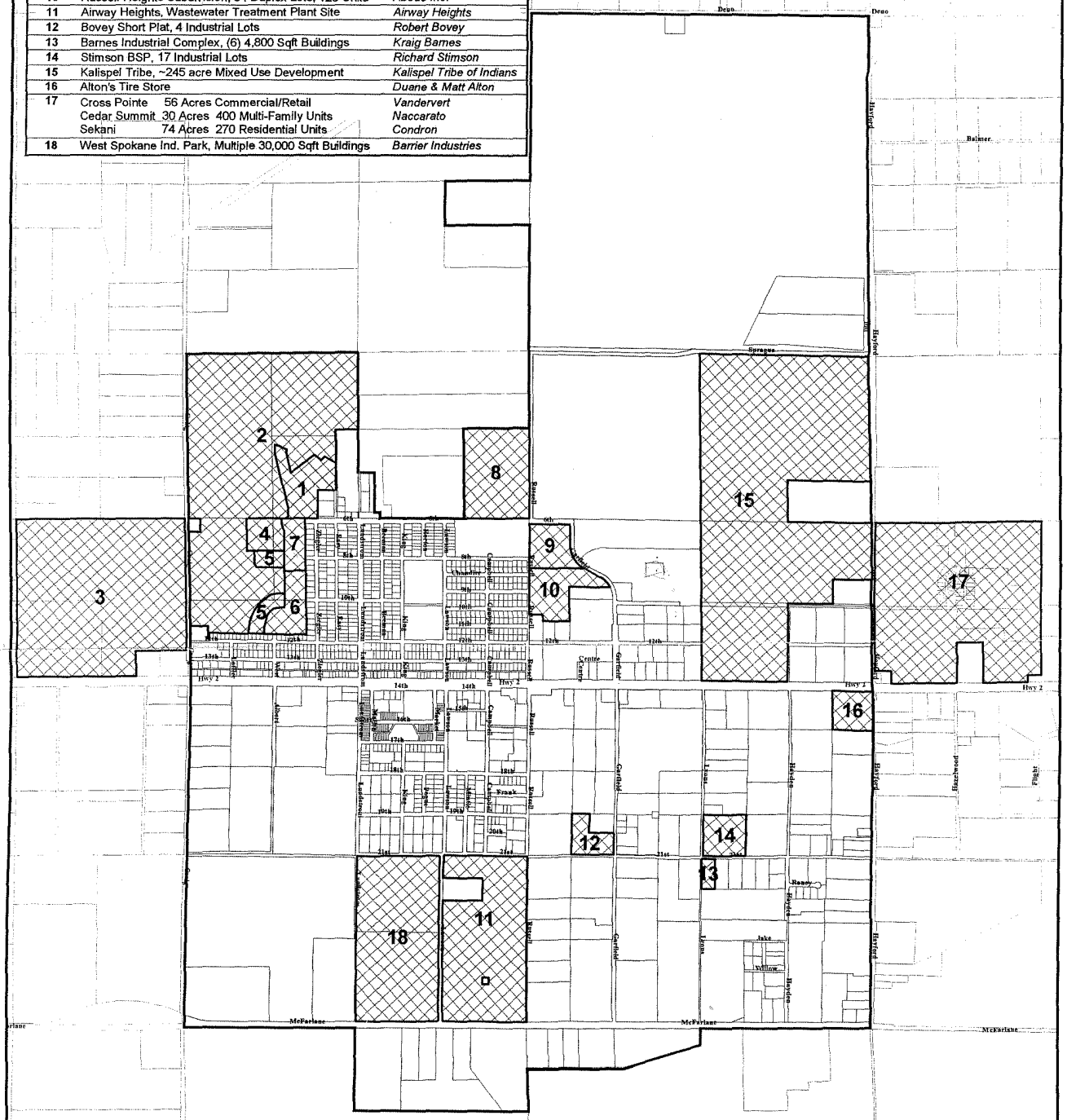
The City of Airway Heights considers the correlation of services available to both communities as a prime factor in the quality of life for all who live, work and play in this area. A concerted and consistent joint effort on our parts will significantly improve the opportunity for success of this important endeavor on the part of Fairchild Air Force Base.

We look forward to providing whatever additional support is necessary.

Sincerely,

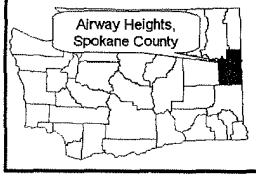
Thomas Lien
Community Development Director

Number	Project	Owner/Developer
1	Hunter's Crossing Phase I, 34 Residential Lots	*Airway Heights LLC*
2	Hunter's Crossing Future Development, Mixed Use	*Airway Heights LLC*
3	Spokane Tribe, ~145 acre Mixed Use Development	*Spokane Tribe of Indians*
4	Airway Pointe, 51-unit Low Income Apartment Housing	*Whitewater Creek Inc.*
5	Aspen Grove Subdivision Phase IV, 35 Residential Lots	*Korsumo Inc.*
6	Aspen Grove Subdivision Phase II, 97 Residential Lots	*Korsumo Inc.*
7	Aspen Grove Subdivision Phase III, 29 Residential Lots	*Korsumo Inc.*
8	Sunset Crossing Subdivision, 152 Residential Lots	*Hayden Homes Inc.*
9	Russell Heights Apartments, 220+ Apartment Units	*Abode Inc.*
10	Russell Heights Subdivision, 64 Duplex Lots, 128 Units	*Abode Inc.*
11	Airway Heights, Wastewater Treatment Plant Site	*Airway Heights*
12	Bovey Short Plat, 4 Industrial Lots	*Robert Bovey*
13	Barnes Industrial Complex, (6) 4,800 Sqft Buildings	*Kraig Barnes*
14	Stimson BSP, 17 Industrial Lots	*Richard Stimson*
15	Kalispel Tribe, ~245 acre Mixed Use Development	*Kalispel Tribe of Indians*
16	Alton's Tire Store	*Duane & Matt Alton*
17	Cross Pointe 56 Acres Commercial/Retail Cedar Summit 30 Acres 400 Multi-Family Units Sekani 74 Acres 270 Residential Units	*Vandervert* *Naccarato* *Condron*
18	West Spokane Ind. Park, Multiple 30,000 Sqft Buildings	*Barrier Industries*



City of Airway Heights

Current Projects



CITY OF AIRWAY HEIGHTS

0 1,200 2,400 4,800 Feet

N

Information displayed on this map was compiled from various sources and may not have been verified and should not be used to determine actual boundaries. This information should be used for planning purposes only

Source: Airway Heights GIS

Updated: December 22, 2004

Thomas Lien
Community Development Director

P.O. Box 969
13120 W. 13th Ave.
Airway Heights, WA 99001

Phone: 509-244-2552
FAX: 509-244-4746
CELL: 208-818-0017
E-mail: commdevdir@city-of-airway-heights.org

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS AIR MOBILITY COMMAND

24 August 2005

TO: Thomas Lien, Community Development Direction
City of Airway Heights
Community Development Division
1208 So. Lundstrom Ave.
Airway Heights, WA 99001

FROM: HQ AMC/A75
507 Symington Drive
Scott AFB IL 62225-5022

SUBJECT: City of Airway Heights (Your Letter, 9 Feb 05)

1. Thank you for your letter of 9 February 2005, concerning our proposal to privatize family housing at Fairchild Air Force Base (AFB). Pursuant to the Military Housing Privatization Initiative (MHPI) enacted by Congress, Fairchild AFB seeks to identify a successful offeror that can accomplish our goals to improve on-base housing. We would like to enter into a partnership to reduce our family housing inventory from 1,345 units to 596 units. We envision a combination of renovation, demolition, and new construction on base to reach our desired end state of 596 housing units.

2. As part of the arrangements we propose to enter into a MHPI with a successful offeror, we desire to convey fee title housing units and land at Geiger Heights and Cheney, two off-base housing areas no longer needed to meet our housing requirements. Future uses of those two areas would be within the sole discretion of the successful offeror.

3. As this housing initiative moves forward, we are pleased to be able to keep the communities surrounding Fairchild AFB informed of our intentions. At present, this communications link with our neighbors will be maintained through the environmental impact analysis process, rather than any particular, formalized collaboration mechanism such as a joint planning committee.

4. On behalf of the men and women of the Air Force who serve the Nation at Fairchild AFB, I thank you for your continued support. If members of your staff have any questions involving the preparation of the Environmental Assessment (EA), please contact Mr. Mark Fetzer, HQ AMC/A75C, (618) 229-0843, or e-mail *mark.fetzer.ctr@scott.af.mil.*

Michael W. Hutchison

MICHAEL W. HUTCHISON, Colonel, USAF
Chief, Plans and Programs Division
Directorate of Installations &
Mission Support

Attachment:
City of Airway Heights letter, 9 February 2005

THIS PAGE INTENTIONALLY LEFT BLANK

The Environmental Assessment and Draft Finding of No Significant Impact were made available for public review from March 4 through April 2, 2006, in the Spokane County Public Library. The below Notice of Availability was published in the *Spokesman-Review* on March 4, 2006.

PUBLIC NOTICE

Notice of Availability
Draft Finding of No Significant Impact for
Environmental Assessment

Headquarters Air Mobility Command is proposing to issue a Finding of No Significant Impact (FONSI) based on an Environmental Assessment (EA) of the Privatization of Military Family Housing, Fairchild Air Force Base (AFB), Washington.

The analysis considered in detail potential effects of the Proposed Action and other reasonable alternatives including the No Action Alternative on the following resources: noise, land use, air quality, safety, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, hazardous materials and waste management, and infrastructure. The results, as found in the EA, show that the Proposed Action would not have an adverse impact on the environment, indicating that a FONSI would be appropriate. An Environmental Impact Statement should not be necessary to implement the Proposed Action.

Copies of the Draft FONSI and EA showing the analysis are available for review at Spokane County Public Library, 906 West Main, Spokane, Washington 99201.

Public comments on the Draft FONSI and EA will be accepted through April 2, 2006. Please contact Gerald Johnson, Fairchild AFB Environmental Flight Chief, at 509-247-2313 to submit comments.

In addition, the Privacy Advisory below was published on the Cover Sheet of the Environmental Assessment.

Privacy Advisory

Your comments on this EA are requested. Letters or other written comments provided may be published in the EA. Comments will normally be addressed in the EA and made available to the public. Any personal information provided will be used only to identify your desire to make a statement during the public comment period or to fulfill requests for copies of the EA or associated documents. Private addresses will be compiled to develop a mailing list for those requesting copies of the EA. However, only the names of the individuals making comments and specific comments will be disclosed; personal home addresses and phone numbers will not be published in the EA.

engineering-environmental management

Acct: 46718

Affidavit of Publication

STATE OF WASHINGTON
County of Spokane. } ss.

I, Jan Eastman do solemnly swear that I am the Principal Clerk of the Spokesman-Review, a newspaper established and regularly published, once each day in the English language, in and of general circulation in the City of Spokane County, Washington; that said newspaper has been so established and regularly published and has had said general circulation continuously for more than six (6) months prior to the 23rd day of July, 1941; that said newspaper is printed in an office maintained at its place of publication in the City of Spokane, Washington; that said newspaper was approved and designated as a legal newspaper by order of the Superior Court of the State of Washington for Spokane County on the 23rd day of July, 1941, and that said order has not been revoked and is in full force and effect; that the notice attached hereto and which is a part of the proof of publication, was published in said newspaper one times, the publication having been made once each time on the following dates:

Saturday, March 4, 2006

That said notice was published in the regular and entire issue of every number of the paper during the period of time of publication, and that the notice was published in the newspaper proper and not in a supplement.

Jan Eastman

Subscribed and sworn to before me at the City of Spokane, this 7th day of, March, 19~~--~~ 2006

Sherry M Fischer

Notary Public in and for the State of Washington, residing at Spokane, Wash.

SHERRY M. FISCHER NOTARY PUBLIC COMMISSION EXPIRES APRIL 09, 2007 STATE OF WASHINGTON

Form G-16

APPENDIX D

DESIRED FEATURES FOR FAIRCHILD AFB PRIVATIZED HOUSING UNITS

APPENDIX D

DESIRED FEATURES FOR FAIRCHILD AFB PRIVATIZED HOUSING UNITS

Features desired in new construction (Housing Privatization Program)

- Three-bedroom units in lieu of two-bedroom units
- Newly constructed units in lieu of renovated units
- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- More single-family units in lieu of multiplex units
- Reduced number of dwelling units per building
- Walk-in clothes closets
- Double sinks in bathrooms
- Ceiling fans with light fixtures
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats
- Built in microwave ovens

Features desired by Fairchild AFB in new construction

- 2 car garages for detached homes
- 2 bathrooms for 3 and 4 bedroom units
- Finished garages with automatic door openers
- Central heating/air conditioning/ventilating systems for each unit
- At least one off-street parking space per unit in addition to garage
- Laundry rooms provided within conditioned space and dedicated utility connections for a freezer, clothes washer, and dryer.
- Hard finish flooring in kitchen, informal dining area, wet areas, and high traffic areas
- Carpet in bedrooms and other living areas
- Ceiling fans with light in living room and bedrooms, separately switched at the room entry door, overhead lighting in all other rooms, switched at the room entry door
- Carbon monoxide/heat detectors
- Two telephone and cable television jacks per habitable room
- Screening to provide some private area in the rear of each unit
- Security lighting in outside front entry area, garage, and rear patio area
- Exterior trash storage areas screened

Renovation requirements specified by Fairchild AFB

- Repair wet basements and foundations
- Repair drainage/grading

- Repair streets
- Refurbish kitchens
- Refurbish bathrooms
- High-quality, durable, low-maintenance hard finish flooring in kitchen, informal dining area, wet areas, and high traffic areas
- Carpet in bedrooms and other living areas
- Replace interior doors
- Replace interior light fixtures
- Replace windows
- Replace roofing
- Install natural gas and electric meters
- Construct new exterior storage
- Install privacy screening between units
- Install Heating, Ventilation, and Air Conditioning (HVAC) System

Features desired by Fairchild AFB in new construction and renovation

- Limit multiplex units to no more than two units each
- Provide refrigerator-freezers with ice-makers and all associated plumbing.
- Provide large well-lit kitchens with extensive pantry storage that is accessible to the cooking triangle.
- Provide a large laundry area with adequate space for hanging rods and ironing.
- Provide bedrooms that are larger and easily accommodate larger beds and bedroom furniture.
- Provide two-car garages with openers for attached units. Provide individual double-wide driveways to each unit that does not have shared access.
- Provide underground irrigation systems for each unit expandable for bubblers for individualized landscaping area (Successful Offeror-controlled).
- Provide enlarged patios beyond typical construction standards.
- Enclose backyards for each unit, whether units are detached or multiplex, with nonchain link low-maintenance fencing that provides for privacy and yard enclosure.
- Vinyl fencing material is preferred.
- Provide windows that can be opened to provide fresh air and ventilation in all living areas.

Desired community features identified by Fairchild AFB

- Community-wide and neighborhood-wide recreational facilities (except additional playgrounds) in the interior of family housing areas, including group picnic areas (with such amenities such as pavilions, tables, grills, etc.)
- Concrete walks or asphalt trails leading to playgrounds, where possible, providing secure and safe connectivity among various housing areas
- Covered bus shelters
- Provide outdoor rollerblade rink(s) that can be utilized in the winter time as ice-skating rink(s)

- Provide outdoor skateboard parks accessible to the various housing areas
- Tennis courts (preferably lighted)
- Volleyball courts
- Community center/clubhouse

Desired Facility Maintenance Features

- Operation of a Self-Help Store
- Hazardous waste pick-up
- Snow removal on all common-use sidewalks, paths and trails

Desired Property Management Features

- Full-time live service call response by telephone
- Scheduling of routine service call maintenance after normal duty hours to accommodate occupant's work schedule
- A web-site for the purpose of accessing waiting lists, tenants submitting work requests, and tenant newsletter, etc.

THIS PAGE INTENTIONALLY LEFT BLANK

APPENDIX E

AIR QUALITY EMISSIONS CALCULATIONS SPREADSHEETS

Emissions Estimates for EA of the Privatization of Military Family Housing at Fairchild AFB, Washington

This workbook contains

Summary	(this worksheet) Summarizes total emissions by calendar year.
Combustion	(one sheet for each calendar year) Estimates emissions from non-road equipment exhaust as well as painting.
Grading	(one sheet for each calendar year) Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions)
Fugitive	(one sheet for each calendar year) Estimates fine particulate emissions from earthmoving, vehicle traffic, and windblown dust.

Assumptions

The project will be conducted over a six year period starting in Calendar Year (CY) 2007 and ending on CY 2012
All demolition estimates were based off gross square footage and were divided over a six year period.
All construction estimates were based off maximum gross square footage provided in the Fairchild RFP 2004 Table 5A and were divided over a six year period.
Each new home will require a driveway. All driveways will be 1,875 ft2 (25 ft x 75 ft).

Summary of Construction Emissions

Proposed Action CY2007-2012		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
	Combustion	32.78	9.89	30.03	1.59	2.48
	Fugitive Dust					5.39
	TOTAL CY2007-2012	32.78	9.89	30.03	1.59	7.87

Emissions shown above are only for one calendar year. Emissions would be the same for each calendar year.

Alternative 1 CY2007-2012		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
	Combustion	87.17	22.50	79.53	4.23	6.65
	Fugitive Dust					5.39
	TOTAL CY2007-2012	87.17	22.50	79.53	4.23	12.04

Emissions shown above are only for one calendar year. Emissions would be the same for each calendar year.

Alternative 2 CY2007-2012		NOx (ton)	VOC (ton)	CO (ton)	SO2 (ton)	PM10 (ton)
	Combustion	21.59	7.08	19.83	1.04	1.63
	Fugitive Dust					5.39
	TOTAL CY2007-2012	21.59	7.08	19.83	1.04	7.01

Emissions shown above are only for one calendar year. Emissions would be the same for each calendar year.

General Conformity Regional Significance Thresholds (10% of regional budget)

Since future year budgets were not readily available, actual 1999 air emissions inventories for the counties were used as an approximation of the regional inventory. Because the Proposed Action is several orders of magnitude below significance, the conclusion would be the same, regardless of whether future year budget data set were used.

Southwest Pennsylvania Intrastate AQCR

	Point and Area Sources Combined				
Year	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
1999	2,479	6,778	27,072	210	11,940

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/emcatrep.html?st~PA~Pennsylvania). Site visited on 01/19/05

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	2,479	6,778	27,072	210	11,940
Proposed Action 2007-2012 Emissions	32.78	9.89	30.03	1.59	7.87
Proposed Action %	**1.3226%**	**0.1459%**	**0.1109%**	**0.7582%**	**0.0659%**

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	2,479	6,778	27,072	210	11,940
Alternative A 2007-2012 Emissions	87.17	22.50	79.53	4.23	12.04
Proposed Action %	**3.5169%**	**0.3319%**	**0.2938%**	**2.0201%**	**0.1008%**

Determination Significance (Significance Threshold = 10%)

	Point and Area Sources Combined				
	NOx (tpy)	VOC (tpy)	CO (tpy)	SO2 (tpy)	PM10 (tpy)
Minimum -1999	2,479	6,778	27,072	210	11,940
Alternative B 2007-2012 Emissions	21.59	7.08	19.83	1.04	7.01
Proposed Action %	**0.8708%**	**0.1044%**	**0.0732%**	**0.4985%**	**0.0587%**

Construction Combustion Emissions for CY 2007-2012

Includes:

1	Demolition Activities	128,415	ft2	2.95	acres
2	New Home Construction Activities	30,793	ft2	0.71	acres
3	New Home Driveway Paving Activities	29,375	ft2	0.67	acres

Construction Site Air Emissions

Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction

User Inputs:

Total Building Area:	159,208	ft^2	(1 and 2)
Total Paved Area:	29,375	ft^2	(3)
Total Disturbed Area:	4.33	acres	(1-3)
Construction Duration:	1.0	years	(assumed)
Annual Construction Activity:	230	days/yr	(assumed)

Results:[Average per Year Over the Construction Period]

	VOC	NOx	SO2	CO	PM10
Emissions, lbs/day	86.00	285.06	13.82	261.11	21.59
Emissions, tons/yr	9.89	32.78	1.59	30.03	2.48

Calculation of Unmitigated Emissions

Summary of Input Parameters

	VOC	NOx	SO2	CO	PM10
Total new acres disturbed:	4.33	4.33	4.33	4.33	4.33
Total new acres paved:	0.67	0.67	0.67	0.67	0.67
Total new building space, ft^2:	159,208	159,208	159,208	159,208	159,208
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	4.33	4.33	4.33	4.33	4.33
Area paved, acres in 1 yr:	0.67	0.67	0.67	0.67	0.67
Building space, ft^2 in 1 yr:	159,208	159,208	159,208	159,208	159,208

Annual Emissions by Source (lbs/day)

	VOC	NOx	SO2	CO	PM10
Grading Equipment	1.1	6.9	0.5	1.5	1.2
Asphalt Paving	0.2	0.0	0.0	0.0	0.0
Stationary Equipment	26.7	21.8	1.5	4.7	1.3
Mobile Equipment	25.5	256.3	11.9	254.9	19.1
Architectural Coatings (Non-Res)	32.5	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	**86.0**	**285.1**	**13.8**	**261.1**	**21.6**

Emission Factors
Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

	SMAQMD Emission Factor				
Source	VOC	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft^2	1.37E-04 lbs/day/ft^2	9.11E-06 lbs/day/ft^2	2.97E-05 lbs/day/ft^2	8.00E-06 lbs/day/ft^2
Mobile Equipment	1.60E-04 lbs/day/ft^2	1.61E-03 lbs/day/ft^2	7.48E-05 lbs/day/ft^2	0.0016 lbs/day/ft^2	1.20E-04 lbs/day/ft^2
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Construction Fugitive Dust Emissions for CY 2007-2012

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	4.33	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	4.73	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50	%	(NOAA 2005 http://www.cpc.noaa.gov/products/soilmst/w.html)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	20	%	(ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/washington/spokane/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	3.00	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	8.7	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15	VMT/day	
Construction VMT per acre	16.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic (unpaved roads)	$[[(k(s/12)^{a} (W/3)^{b})]$ $[(365-P)/365]$	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.08 lbs/hr	8.7 hr/acre	0.7 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic (unpaved roads)	2.66 lbs/VMT	16.4 VMT/acre	43.6 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 7.5 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.75 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission	Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.7	lbs/acre	4.33	NA	3	0.00
Grading	0.8	lbs/acre	4.33	NA	3	0.00
Vehicle Traffic	43.6	lbs/acre	4.33	NA	189	0.09
Erosion of Soil Piles	0.8	lbs/acre/day	4.33	90	292	0.15
Erosion of Graded Surface	26.4	lbs/acre/day	4.33	90	10,286	5.14
TOTAL					10,774	5.39

Soil Disturbance EF: 45.1 lbs/acre
Wind Erosion EF: 27.15 lbs/acre/day

Back calculate to get EF: 525.7 lbs/acre/grading day

Construction (Grading) Schedule for CY 2007-2012

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 4.33 acres/yr (from "Combustion" Worksheet)

Qty Equipment: 3.00 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.

Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	4.33	7.22
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	4.33	2.12
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	2.16	2.18
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	2.16	0.90
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	4.33	1.79
TOTAL								14.20

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 14.20
Qty Equipment: 3.00
Grading days/yr: 4.73

Round to	5	grading days/yr

Construction Combustion Emissions for CY 2007-2012

Includes:

1	Demolition Activities	224,591	ft2	5.16	acres
2	New Home Construction Activities	196,546	ft2	4.51	acres
3	New Home Driveway Paving Activities	186,250	ft2	4.28	acres

Construction Site Air Emissions

Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction

User Inputs:

Total Building Area:	421,137	ft^2	(1 and 2)
Total Paved Area:	186,250	ft^2	(3)
Total Disturbed Area:	13.94	acres	(1-3)
Construction Duration:	1.0	years	(assumed)
Annual Construction Activity:	230	days/yr	(assumed)

Results:[Average per Year Over the Construction Period]

	VOC	NOx	SO2	CO	PM10
Emissions, lbs/day	195.63	758.04	36.82	691.55	57.81
Emissions, tons/yr	22.50	87.17	4.23	79.53	6.65

Calculation of Unmitigated Emissions

Summary of Input Parameters

	VOC	NOx	SO2	CO	PM10
Total new acres disturbed:	13.94	13.94	13.94	13.94	13.94
Total new acres paved:	4.28	4.28	4.28	4.28	4.28
Total new building space, ft^2:	421,137	421,137	421,137	421,137	421,137
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	13.94	13.94	13.94	13.94	13.94
Area paved, acres in 1 yr:	4.28	4.28	4.28	4.28	4.28
Building space, ft^2 in 1 yr:	421,137	421,137	421,137	421,137	421,137

Annual Emissions by Source (lbs/day)

	VOC	NOx	SO2	CO	PM10
Grading Equipment	3.5	22.3	1.5	4.8	3.9
Asphalt Paving	1.1	0.0	0.0	0.0	0.0
Stationary Equipment	70.8	57.7	3.8	12.5	3.4
Mobile Equipment	67.4	678.0	31.5	674.2	50.5
Architectural Coatings (Non-Res)	52.9	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	**195.6**	**758.0**	**36.8**	**691.6**	**57.8**

Emission Factors

Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

	SMAQMD Emission Factor				
Source	VOC	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft^2	1.37E-04 lbs/day/ft^2	9.11E-06 lbs/day/ft^2	2.97E-05 lbs/day/ft^2	8.00E-06 lbs/day/ft^2
Mobile Equipment	1.60E-04 lbs/day/ft^2	1.61E-03 lbs/day/ft^2	7.48E-05 lbs/day/ft^2	0.0016 lbs/day/ft^2	1.20E-04 lbs/day/ft^2
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Construction Fugitive Dust Emissions for CY 2007-2012

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	4.33	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	4.73	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50	%	(NOAA 2005 http://www.cpc.noaa.gov/products/soilmst/w.html)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	20	%	(ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/washington/spokane/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	3.00	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	8.7	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15	VMT/day	
Construction VMT per acre	16.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic (unpaved roads)	$[[(k(s/12)^{a} (W/3)^{b})]$ [(365-P)/365]	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.08 lbs/hr	8.7 hr/acre	0.7 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic (unpaved roads)	2.66 lbs/VMT	16.4 VMT/acre	43.6 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 7.5 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.75 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission	Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.7	lbs/acre	4.33	NA	3	0.00
Grading	0.8	lbs/acre	4.33	NA	3	0.00
Vehicle Traffic	43.6	lbs/acre	4.33	NA	189	0.09
Erosion of Soil Piles	0.8	lbs/acre/day	4.33	90	292	0.15
Erosion of Graded Surface	26.4	lbs/acre/day	4.33	90	10,286	5.14
TOTAL					10,774	5.39

Soil Disturbance EF: 45.1 lbs/acre
Wind Erosion EF: 27.15 lbs/acre/day

Back calculate to get EF: 525.7 lbs/acre/grading day

Construction (Grading) Schedule for CY 2007-2012

Estimate of time required to grade a specified area.

Input Parameters
Construction area: 4.33 acres/yr (from "Combustion" Worksheet)
Qty Equipment: 3.00 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.
Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	4.33	7.22
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	4.33	2.12
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	2.16	2.18
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	2.16	0.90
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	4.33	1.79
TOTAL								14.20

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 14.20
Qty Equipment: 3.00
Grading days/yr: 4.73

Round to	5	grading days/yr

Construction Combustion Emissions for CY 2007-2012

Includes:

1	Demolition Activities	105,228	ft2	2.42	acres
2	New Home Construction Activities	0	ft2	0.00	acres
3	New Home Driveway Paving Activities	0	ft2	0.00	acres

Construction Site Air Emissions

Combustion Emissions of ROG, NOx, SO2, CO and PM10 Due to Construction

User Inputs:

Total Building Area:	105,228	ft^2	(1 and 2)
Total Paved Area:	0	ft^2	(3)
Total Disturbed Area:	2.42	acres	(1-3)
Construction Duration:	1.0	years	(assumed)
Annual Construction Activity:	230	days/yr	(assumed)

Results:[Average per Year Over the Construction Period]

	VOC	NOx	SO2	CO	PM10
Emissions, lbs/day	61.56	187.70	9.09	172.43	14.15
Emissions, tons/yr	7.08	21.59	1.04	19.83	1.63

Calculation of Unmitigated Emissions

Summary of Input Parameters

	VOC	NOx	SO2	CO	PM10
Total new acres disturbed:	2.42	2.42	2.42	2.42	2.42
Total new acres paved:	0.00	0.00	0.00	0.00	0.00
Total new building space, ft^2:	105,228	105,228	105,228	105,228	105,228
Total years:	1.00	1.00	1.00	1.00	1.00
Area graded, acres in 1 yr:	2.42	2.42	2.42	2.42	2.42
Area paved, acres in 1 yr:	0.00	0.00	0.00	0.00	0.00
Building space, ft^2 in 1 yr:	105,228	105,228	105,228	105,228	105,228

Annual Emissions by Source (lbs/day)

	VOC	NOx	SO2	CO	PM10
Grading Equipment	0.6	3.9	0.3	0.8	0.7
Asphalt Paving	0.0	0.0	0.0	0.0	0.0
Stationary Equipment	17.7	14.4	1.0	3.1	0.8
Mobile Equipment	16.8	169.4	7.9	168.5	12.6
Architectural Coatings (Non-Res)	26.4	0.0	0.0	0.0	0.0
Total Emissions (lbs/day):	**61.6**	**187.7**	**9.1**	**172.4**	**14.1**

Emission Factors
Reference: Air Quality Thresholds of Significance, SMAQMD, 1994.

	SMAQMD Emission Factor				
Source	VOC	NOx	SO2 *	CO *	PM10
Grading Equipment	2.50E-01 lbs/acre/day	1.60E+00 lbs/acre/day	0.11 lbs/acre/day	0.35 lbs/acre/day	2.80E-01 lbs/acre/day
Asphalt Paving	2.62E-01 lbs/acre/day	NA	NA	NA	NA
Stationary Equipment	1.68E-04 lbs/day/ft^2	1.37E-04 lbs/day/ft^2	9.11E-06 lbs/day/ft^2	2.97E-05 lbs/day/ft^2	8.00E-06 lbs/day/ft^2
Mobile Equipment	1.60E-04 lbs/day/ft^2	1.61E-03 lbs/day/ft^2	7.48E-05 lbs/day/ft^2	0.0016 lbs/day/ft^2	1.20E-04 lbs/day/ft^2
Architectural Coatings (Non-Res)	8.15E-02 lbs/day/ft	NA	NA	NA	NA

* Factors for grading equipment and stationary equipment are calculated from AP-42 for diesel engines using ratios with the NOx factors. Factors for mobile equipment are calculated from ratios with Mobile5a 2001 NOx emission factors for heavy duty trucks for each site.

Construction Fugitive Dust Emissions for CY 2007-2012

Calculation of PM10 Emissions Due to Site Preparation (Uncontrolled).

User Input Parameters / Assumptions

Acres graded per year:	4.33	acres/yr	(From "Combustion" worksheet)
Grading days/yr:	4.73	days/yr	(From "Grading" worksheet)
Exposed days/yr:	90	assumed days/yr graded area is exposed	
Grading Hours/day:	8	hr/day	
Soil piles area fraction:	0.10	(assumed fraction of site area covered by soil piles)	
Soil percent silt, s:	8.5	%	(mean silt content; expected range: 0.5 to 23, AP-42 Table 13.2.2-1)
Soil percent moisture, M:	50	%	(NOAA 2005 http://www.cpc.noaa.gov/products/soilmst/w.html)
Annual rainfall days, p:	90	days/yr	rainfall exceeds 0.01 inch/day (AP-42 Fig 13.2.2-1)
Wind speed > 12 mph %, I:	20	%	(ftp://ftp.wcc.nrcs.usda.gov/downloads/climate/windrose/washington/spokane/)
Fraction of TSP, J:	0.5	(SCAQMD recommendation)	
Mean vehicle speed, S:	5	mi/hr	(On-site)
Dozer path width:	8	ft	
Qty construction vehicles:	3.00	vehicles	(From "Grading" worksheet)
On-site VMT/vehicle/day:	5	mi/veh/day	(Excluding bulldozer VMT during grading)
PM10 Adjustment Factor k	1.5	lb/VMT	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor a	0.9	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
PM10 Adjustment Factor b	0.45	(dimensionless)	(AP-42 Table 13.2.2-2 12/03 for PM10 for unpaved roads)
Mean Vehicle Weight W	40	tons	assumed for aggregate trucks

Emissions Due to Soil Disturbance Activities

Operation Parameters (Calculated from User Inputs)

Grading duration per acre	8.7	hr/acre	
Bulldozer mileage per acre	1	VMT/acre	(Miles traveled by bulldozer during grading)
Construction VMT per day	15	VMT/day	
Construction VMT per acre	16.4	VMT/acre	(Travel on unpaved surfaces within site)

Equations Used (Corrected for PM10)

Operation	Empirical Equation	Units	AP-42 Section (5th Edition)
Bulldozing	$0.75(s^{1.5})/(M^{1.4})$	lbs/hr	Table 11.9-18.24, Overburden
Grading	$(0.60)(0.051)s^{2.0}$	lbs/VMT	Table 11.9-18.24
Vehicle Traffic (unpaved roads)	$[[(k(s/12)^{a} (W/3)^{b})]$ [(365-P)/365]	lbs/VMT	Section 13.2.2

Source: Compilation of Air Pollutant Emission Factors, Vol. I, USEPA AP-42, Section 11.9 dated 10/98 and Section 13.2 dated 12/03

Calculation of PM10 Emission Factors for Each Operation

Operation	Emission Factor (mass/ unit)	Operation Parameter	Emission Factor (lbs/ acre)
Bulldozing	0.08 lbs/hr	8.7 hr/acre	0.7 lbs/acre
Grading	0.77 lbs/VMT	1 VMT/acre	0.8 lbs/acre
Vehicle Traffic (unpaved roads)	2.66 lbs/VMT	16.4 VMT/acre	43.6 lbs/acre

Emissions Due to Wind Erosion of Soil Piles and Exposed Graded Surface

Reference: Air Quality Thresholds of Significance, SCAQMD, 1994.

Soil Piles EF = 1.7(s/1.5)[(365 - H)/235](I/15)(J) = (s)(365 - H)(I)(J)/(3110.2941), p. A9-99.

Soil Piles EF = 7.5 lbs/day/acre covered by soil piles

Consider soil piles area fraction so that EF applies to graded area

Soil piles area fraction: 0.10 (Fraction of site area covered by soil piles)
Soil Piles EF = 0.75 lbs/day/acres graded

Graded Surface EF = 26.4 lbs/day/acre (recommended in CEQA Manual, p. A9-93).

Calculation of Annual PM10 Emissions

Source	Emission	Factor	Graded Acres/yr	Exposed days/yr	Emissions lbs/yr	Emissions tons/yr
Bulldozing	0.7	lbs/acre	4.33	NA	3	0.00
Grading	0.8	lbs/acre	4.33	NA	3	0.00
Vehicle Traffic	43.6	lbs/acre	4.33	NA	189	0.09
Erosion of Soil Piles	0.8	lbs/acre/day	4.33	90	292	0.15
Erosion of Graded Surface	26.4	lbs/acre/day	4.33	90	10,286	5.14
TOTAL					10,774	5.39

Soil Disturbance EF: 45.1 lbs/acre
Wind Erosion EF: 27.15 lbs/acre/day

Back calculate to get EF: 525.7 lbs/acre/grading day

Construction (Grading) Schedule for CY 2007-2012

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 4.33 acres/yr (from "Combustion" Worksheet)

Qty Equipment: 3.00 (calculated based on acres disturbed, assuming that up to three machines can effectively work on a 25 acre area, with a minimum of three machines for any job, regardless of area graded)

Assumptions.

Terrain is mostly flat.
An average of 6" soil is excavated from one half of the site and backfilled to the other half of the site; no soil is hauled off-site or borrowed.
200 hp bulldozers are used for site clearing.
300 hp bulldozers are used for stripping, excavation, and backfill.
Vibratory drum rollers are used for compacting.
Stripping, Excavation, Backfill and Compaction require an average of two passes each.
Excavation and Backfill are assumed to involve only half of the site.

Calculation of days required for one piece of equipment to grade the specified area.

Reference: Means Heavy Construction Cost Data, 6th Ed., R. S. Means, 1992.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr	Equip-days per year
021 108 0550	Site Clearing	Dozer & rake, medium brush	0.6	acre/day	0.6	1.67	4.33	7.22
021 144 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	4.33	2.12
022 242 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	2.16	2.18
022 208 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	2.16	0.90
022 226 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	1,950	cu. yd/day	2.42	0.41	4.33	1.79
TOTAL								14.20

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 14.20
Qty Equipment: 3.00
Grading days/yr: 4.73

Round to	5	grading days/yr

Eastern Washington-Northern Idaho Interstate Air Quality Control Region (EWNII AQCR)

			Area Source Emissions						Point Source Emissions					
Row #	State	County	CO	NOx	PM10	PM2.5	SO2	VOC	CO	NOx	PM10	PM2.5	SO2	VOC
	WA	Adams Co	17,897	4,027	10,710	2,369	231	1,957	0	0	0	0	0	0
	WA	Asotin Co	4,457	533	1,516	396	42.4	719	0	0	0	0	0	0
	WA	Columbia C	4,778	385	3,100	692	42.1	1,554	0	0	0	0	0	0
	WA	Garfield Co	2,408	395	3,195	800	42.6	469	0	0	0	0	0	0
	WA	Grant Co	39,086	6,036	13,724	3,149	353	5,149	64	22	72	57.2	0	5
	WA	Lincoln Co	11,933	2,972	9,693	2,318	208	1,860	0	0	0	0	0	0
	WA	Spokane Cc	124,157	16,117	12,258	4,285	1,017	18,702	22,765	1,234	650	493	5,237	1,149
	WA	Whitman Cc	10,135	2,506	16,692	3,603	246	2,577	240	286	53	33.4	173	32
	ID	Benewah C	10,936	892	6,328	1,943	90.1	3,245	0	0	0	0	0	0
	ID	Kootenai Cc	55,330	9,045	26,419	6,583	446	18,933	792	538	429	353	8.04	389
	ID	Latah Co	26,924	2,405	11,723	4,396	205	6,697	148	73.7	217	132	4.6	81.1
	ID	Nez Perce C	27,505	2,481	8,362	3,997	171	8,175	3,242	2,365	691	470	139	700
	ID	Shoshone C	9,511	1,488	7,294	1,401	238	4,437	0	0	0	0	0	0
	TOTAL		345,057	49,282	131,014	35,932	3,332	74,474	27,251	4,519	2,112	1,539	5,562	2,356

SOURCE:
http://www.epa.gov/air/data/emcatrep.html?st~WA~Washington
http://www.epa.gov/air/data/emcatrep.html?st~ID~Idaho