



Final

ENVIRONMENTAL ASSESSMENT



**Addressing the Privatization of
Military Family Housing
at
Ellsworth Air Force Base,
South Dakota**



September 2011

ACRONYMS AND ABBREVIATIONS

$\mu\text{g}/\text{m}^3$	micrograms per cubic meter	DOE/EIA	U.S. Department of Energy, Energy Information Administration
28 BW	28th Bomb Wing		
ACC	Air Combat Command		
ACHP	Advisory Council on Historic Preservation	EA	Environmental Assessment
ACM	asbestos-containing material	EBS	Environmental Baseline Survey
AFB	Air Force Base	EDA	Ellsworth Development Authority
AFH	Air Force Handbook	EIAP	Environmental Impact Analysis Process
AFI	Air Force Instruction	EIS	Environmental Impact Statement
AFPAM	Air Force Pamphlet	EISA	Energy Independence and Security Act
AFPD	Air Force Policy Directive		
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health	ELG	Effluent Limitations Guideline
		EMS	Environmental Management Systems
AFS	Air Force Station	EO	Executive Order
AICUZ	Air Installation Compatible Use Zone	ERP	Environmental Restoration Program
AOC	Area of Concern	ESA	Endangered Species Act
APE	Area of Potential Effect	ESCP	Erosion-and-Sediment-Control Plan
APZ	accident potential zone		
ARPA	Archaeological Resources Protection Act of 1979	FAA	Federal Aviation Administration
		FEMA	Federal Emergency Management Agency
AST	aboveground storage tank	FFA	Federal Facilities Agreement
AQCR	Air Quality Control Region	FIRM	Flood Insurance Rate Map
BAH	Basic Allowance for Housing	FONPA	Finding of No Practicable Alternative
BASH	bird/wildlife aircraft strike hazard		
BHPL	Black Hills Power and Light		
BHRCI	Black Hills-Rapid City Intrastate	FONSI	Finding of No Significant Impact
BMP	best management practice	FPPA	Farmland Protection Policy Act
BMW	Bombardment Wing	FR	Federal Register
BTU	British thermal unit	ft ²	square feet
CAA	Clean Air Act	FY	Fiscal Year
CAP	central accumulation point	GHG	greenhouse gas
CATEX	Categorical Exclusion	GOQ	General Officers' Quarters
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	HAP	hazardous air pollutant
		HAZMART	hazardous materials pharmacy
		HCP	Housing Community Profile
CEQ	Council on Environmental Quality	HMMP	hazardous material management program
CFR	Code of Federal Regulations		
CGP	Construction General Permit	HRMA	Housing Requirements and Market Analysis
CO	carbon monoxide		
CO ₂	carbon dioxide	HUD	U.S. Department of Housing and Urban Development
CWA	Clean Water Act		
dba	A-weighted decibel	ICRMP	Integrated Cultural Resources Management Plan
DENR	Department of Environment and Natural Resources	I	Interstate
DNL	Day-Night Average Sound Level	IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
DOD	Department of Defense		

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INRMP	Integrated Natural Resources Management Plan	PM ₁₀	particulate matter equal to or less than 10 microns in diameter
IRT	Innovative Readiness Training	PO	Project Owner
LBP	lead-based paint	POD	point of demarcation
LID	low-impact development	PPE	personal protective equipment
LQG	large-quantity generator	ppm	parts per million
LTM	long-term monitoring	PSD	Prevention of Significant Deterioration
LUC	Land Use Control	PVC	polyvinyl chloride
MFH	Military Family Housing	QD	quantity-distance
mg/m ³	milligrams per cubic meter	RA-O	Remedial Action-Operation
MGD	million gallons per day	RCRA	Resource Conservation and Recovery Act
MHPI	Military Housing Privatization Initiative	RWWTP	Regional Waste Water Treatment Plant
MILCON	military construction	SAC	Strategic Air Command
MSA	Metropolitan Statistical Area	SAP	satellite accumulation point
MSDS	Material Safety Data Sheets	SDAAQS	South Dakota Ambient Air Quality Standards
msl	mean sea level	SDAR	South Dakota Administrative Rule
NAAQS	National Ambient Air Quality Standards	SDGFP	South Dakota Department of Game, Fish, and Parks
NAGPRA	Native American Graves Protection and Repatriation Act	SDSWDS	South Dakota Surface Water Discharge System
NEPA	National Environmental Policy Act	SDWA	Safe Drinking Water Act
NFRAP	No Further Remedial Action Planned	SHPO	State Historic Preservation Office
NHPA	National Historic Preservation Act	SIP	State Implementation Plan
NLR	noise level reduction	SO ₂	sulfur dioxide
NPL	National Priorities List	SWPPP	Storm Water Pollution Prevention Plan
NOA	Notice of Availability	TCE	trichloroethylene
NO ₂	Nitrogen dioxide	TCP	traditional cultural property
NO _x	nitrogen oxides	TMDL	Total Maximum Daily Load
NPDES	National Pollutant Discharge Elimination System	TNW	Traditional Navigable Waters
NRCS	Natural Resources Conservation Service	tpy	tons per year
NRHP	National Register of Historic Places	UFC	Unified Facilities Criteria
ntu	nephelometric turbidity units	U.S.C.	United States Code
O ₃	ozone	USACE	U.S. Army Corps of Engineers
OSHA	Occupational Safety and Health Administration	USAF	U.S. Air Force
OU	Operable Unit	USEPA	U.S. Environmental Protection Agency
OWS	Operation Walking Shield	USFWS	U.S. Fish and Wildlife Service
Pb	lead	USGS	U.S. Geologic Survey
PCB	polychlorinated biphenyl	UST	underground storage tank
pCi/L	picoCuries per liter	UXO	unexploded ordnance
percent g	percentage of the force of gravity	VOC	volatile organic compound
P.L.	Public Law	WAPA	Western Area Power Administration
PM _{2.5}	particulate matter equal to or less than 2.5 microns in diameter	WWTP	Waste Water Treatment Plant

COVER SHEET

FINAL ENVIRONMENTAL ASSESSMENT ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING AT ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Combat Command (ACC), Langley Air Force Base (AFB), Virginia, and Ellsworth AFB, South Dakota.

Affected Location: Ellsworth AFB.

Proposed Action: Privatization of Military Family Housing (MFH) at Ellsworth AFB.

Report Designation: Final Environmental Assessment (EA).

Abstract: Consistent with the USAF Housing Privatization Program, ACC proposes to convey its MFH units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer (the Project Owner [PO]). If approved, the transition period would begin upon completion of the signing of the lease initiating the Proposed Action and would last for up to 6 years. During that time, the number of available MFH units at Ellsworth AFB would be increased from 283 to 497 units.

Specific transactions that would occur between Ellsworth AFB and the PO as part of the Proposed Action are as follows:

- Ellsworth AFB would convey 283 MFH units to the PO.
- Ellsworth AFB would grant 50-year leases for three parcels of land totaling 279 acres.
- The PO would continue use of 283 units in their present condition and construct 214 new units, for an end-state total of 497 units. In addition, 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 for Ellsworth AFB. These features could include construction of a community center/clubhouse, housing management office, storage facilities for new MFH units, and additional playgrounds and trails.
- Tot lots, playgrounds, a half-basketball court, bus stops, neighborhood sign marquees, common mailbox clusters, and the housing maintenance facility would be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

The EA has been prepared to evaluate the Proposed Action and alternatives, including the No Action Alternative, and to aid in determining whether a Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA) can be prepared or whether an Environmental Impact Statement is needed. In addition, this Proposed Action has the potential to impact floodplains. Resources that were considered in the impacts analysis are noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety.

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Final

ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
PRIVATIZATION OF MILITARY FAMILY HOUSING
AT
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

HEADQUARTERS AIR COMBAT COMMAND
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SEPTEMBER 2011

Executive Summary

Introduction

The U.S. Air Force (USAF) operates and maintains approximately 104,000 military family housing (MFH) 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-installation housing exceeds supply. The lack of adequate MFH forces many military members and their families to live in on-installation housing that is in need of repair, renovation, or replacement; or requires them to live off-installation where the cost and quality of housing can vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as \$7.6 billion would be needed to bring its on-installation housing up to current standards.

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 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. The MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction (MILCON) processes would allow.

Consistent with the USAF Housing Privatization Program, Headquarters Air Combat Command (ACC) proposes to convey MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities at Ellsworth Air Force Base (AFB), South Dakota, to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Mountain Home AFB, Idaho; Cavalier Air Force Station (AFS), Grand Forks AFB, and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; and Cannon AFB, New Mexico.

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 Ellsworth AFB. The need for the Proposed Action is to provide affordable, quality housing and ancillary facilities to military members and their families through replacement and renovation of existing family housing units as appropriate so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. MFH privatization would help accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving the morale of USAF personnel and their families. All the Air Force-owned MFH units on Ellsworth AFB have been constructed in the past 6 years and are in excellent condition.

Description of the Proposed Action and No Action Alternative

Proposed Action. Consistent with the USAF Housing Privatization Program, Headquarters ACC proposes to convey 283 MFH units, lease 3 parcels of land totaling approximately 279 acres, and transfer responsibility for providing housing and ancillary supporting facilities at Ellsworth AFB to the PO.

Ellsworth AFB has USAF-owned MFH units in two neighborhoods. These neighborhoods (and their number of MFH units) are Rushmore Heights (183 units) and Prairie View (100 units). Both

neighborhoods have been renovated with newly constructed housing units within the past 6 years. In addition to the existing occupied neighborhoods, the project footprint includes one additional parcel, the former Black Hills Estates housing area, which is being considered for housing development. The former Black Hills Estates area contained 500 occupied housing units until 2008, and the housing units were demolished by 2009. The potential impacts of these actions have been addressed in previously prepared EAs or Categorical Exclusions (CATEXs). The 2008 Ellsworth AFB Housing Community Profile (HCP) indicates that the installation should have no more than 621 MFH units. A subsequent determination was made to construct 80 percent of the number of units identified in the HCP; therefore, the current end-state number of housing units under the Proposed Action is 497 units. Specific transactions that would occur between Ellsworth AFB and the PO would be as follows:

- Ellsworth AFB would convey all 283 existing USAF-owned MFH units to the PO.
- Ellsworth AFB would grant 50-year leases for 279 acres of land underlying the existing housing areas and potential housing area.
- The PO would continue use of 283 units in their present condition and construct 214 new units. In addition, 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 for Ellsworth AFB. These features include construction of a community center/clubhouse, housing management office, storage facilities for new MFH units, and additional playgrounds and trails. For the purposes of this EA, it is assumed that these features would occur as part of the Proposed Action.
- Tot lots, playgrounds, a half-basketball court, bus stops, neighborhood sign marquees, and common mailbox clusters would be conveyed to the PO. The housing maintenance facility (i.e., Buildings 17650 and 17652) would be conveyed to the PO for their sole use when the Section 801 lease period ends in July 2011. The housing office building would not be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Integrated Natural Resources Management Plan and Integrated Cultural Resources Management Plan. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

No Action Alternative. Under the No Action Alternative, Ellsworth AFB would not implement the Proposed Action. The USAF would continue to own MFH at Ellsworth AFB and provide for the housing needs of military personnel and family members.

Ellsworth AFB has 283 MFH units that have been constructed since 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would likely be required to construct additional units to support housing needs of military personnel and families.

Ellsworth AFB would continue to obtain funding for MFH renovation projects 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.

Summary of Environmental Effects

Noise. Construction activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities. Short-term, negligible to minor, adverse impacts on the ambient noise environment are anticipated as a result of the increase in construction vehicle traffic under the Proposed Action. The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. The effects of noise generation could be minimized by restricting construction to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and the use of measures such as equipment exhaust mufflers. Long-term, moderate, adverse impacts from aircraft noise would be expected from constructing MFH units inside the 65+ A-weighted decibel (dBA) Day-Night Average Sound Level (DNL) noise contours around the installation's airfield. USAF guidelines (AFH 32-7084) state that residential uses are discouraged inside the 65 to 69 dBA DNL noise zone and strongly discouraged inside the 70 to 74 dBA DNL noise zone. However, long-term impacts from noise would be mitigated through noise level reduction (NLR) measures in MFH units, which currently do not have NLR measures installed. Outdoor activity areas such as playgrounds should be minimized in high-level noise zones, as they would not benefit from NLR measures. Land use compatibility with respect to noise from aircraft operations is discussed in the following *Land Use* paragraph.

Land Use. The Proposed Action would continue the Housing (Accompanied) land use in the Prairie View and Rushmore Heights neighborhoods, and reintroduce family housing uses in the former Black Hills Estates area through construction of 214 new MFH units. Long-term, negligible, adverse impacts on the *Ellsworth AFB General Plan* would be expected due to the potential need to change land use designations to accommodate community services or outdoor recreation facilities. The Proposed Action would not result in any impacts on municipal and county land use plans or policies. MFH privatization would occur entirely inside the 65 dBA DNL noise contour for aircraft operations at Ellsworth AFB. The Proposed Action would involve construction of MFH units at the Black Hills Estates area, which is within the 65 to 69 dBA and 70 to 74 dBA DNL noise zones. Construction of new MFH units with NLR measures in the former Black Hills Estates area would result in a long-term, moderate, adverse impact on land use compatibility with respect to impacts from noise.

Air Quality. Short-term and long-term, minor, adverse impacts on air quality would be expected from implementation of the Proposed Action. The construction and renovation projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite effects. All emissions associated with construction activities would be temporary in nature. Long-term, negligible emissions would be associated with boilers associated with the community facility. The proposed project would have negligible contribution towards the South Dakota statewide greenhouse gas (GHG) inventory. Ellsworth AFB is located in Meade County, South Dakota, which is in attainment for all criteria pollutants associated with the National Ambient Air Quality Standards; therefore, a Clean Air Act Formal Conformity Determination is not required.

Geological Resources. Long-term, negligible, adverse effects would be expected on the natural topography and geography as a result of construction of new housing units, renovations to current units, and repairs to subsurface utilities. Short- and long-term, minor, adverse effects on soils would be expected from implementation of the Proposed Action. The primary short-term effects would occur during construction activities when vegetation is cleared and the earth is bare, resulting in increased soil erosion. The total number of housing units would increase from 283 units to 497 units once building construction activities have been completed. Long-term, minor, adverse effects on soils would be expected upon completion of all projects associated with the Proposed Action as impervious surfaces could increase. Effects would be anticipated to be minor and adverse, as the soils within the footprint of

the Proposed Action have been previously disturbed. Impacts would be reduced by implementing best management practices (BMPs).

Water Resources. The Proposed Action would result in short- and long-term, negligible to minor, adverse effects on groundwater and surface water, as impervious surfaces would increase. Assuming appropriate BMPs are implemented during construction activities, short-term, negligible, adverse effects on groundwater would be expected. Long-term, indirect, adverse effects would result from the overall increase in impervious surfaces because the number of MFH units would increase from 283 to 497 units. Short-term and long-term, negligible to minor, adverse impacts on water resources would occur from the use of heavy equipment, which could compact soils and could result in a decrease in soil permeability and water infiltration rates and potential subsequent alteration of drainage patterns. Impacts on the water supply are discussed in the *Infrastructure* paragraph.

Long-term, minor, indirect, adverse impacts on floodplains would be expected from the Proposed Action due to an increase in impervious surfaces in the former Black Hills Estates housing area. An increase in impervious surfaces would decrease the amount of permeable land available for groundwater recharge and increase storm water runoff to the Coolidge Floodway, leading to higher storm water volumes and a greater potential for flooding events. The incorporation of proper storm water management measures in the project design would help minimize long-term, adverse impacts. The Coolidge Floodway was originally delineated when 500 MFH units were still present in the former Black Hills Estates housing area. Therefore, it is unlikely that new construction of 214 MFH units, which is a decrease from the 500 units once present in this area, would extend the boundaries of the 100-year floodplain beyond previous conditions.

Biological Resources. Short-term, negligible, adverse effects on vegetation would be expected from temporary disturbances during construction activities (e.g., trampling and removal). Long-term, negligible, adverse effects on vegetation could be expected from construction of the MFH units due to direct removal of vegetation. The Proposed Action would have short-term, minor, adverse effects on wildlife due to disturbances (e.g., noise and motion) from construction activities and heavy equipment use. Long-term, negligible, adverse impacts on wildlife would be expected from the removal of habitat from construction of the 214 MFH units within the former Black Hills Estates area, although this area has only been relatively undeveloped since 2009.

Cultural Resources. The Proposed Action would occur either in areas that have been previously surveyed that did not identify any archaeological resources, or areas of previous disturbance including housing with low probabilities for archaeological resources. Therefore, no impacts on archaeological resources would be expected. In the event that cultural resources are inadvertently discovered during construction or other ground-disturbing activities, all construction activity in the immediate vicinity would cease. An appropriate treatment strategy would be developed in consultation with the State Historic Preservation Office (SHPO) and tribal representatives as appropriate and as outlined in the Ellsworth AFB Integrated Cultural Resources Management Plan (ICRMP). The Proposed Action would not be expected to impact National Register of Historic Properties (NRHP)-eligible architectural resources on Ellsworth AFB. The consultation process prescribed in Section 106 of the National Historic Preservation Act (NHPA) has been completed for the Proposed Action and is provided in Appendix C of the EA.

Socioeconomic Resources and Environmental Justice. Short-term and long-term, minor, beneficial effects would be expected on socioeconomic resources as a result of implementing the Proposed Action. The Proposed Action would be expected to generate revenue for the purchase of construction materials and related supplies from local suppliers. Long-term, beneficial effects on housing availability and quality would be expected under the Proposed Action. Construction and development of 214 new MFH

units would increase the value of property and improve the quality of housing for qualified personnel and their families. Minority and low-income populations would not be adversely or disproportionately affected by the Proposed Action; therefore, no impacts on environmental justice are expected.

Infrastructure. Short-term, negligible to minor, adverse effects on the Ellsworth AFB transportation system would be expected from implementation of the Proposed Action. The proposed construction of 214 MFH units, a community center, and other ancillary facilities would result in a slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving at the work sites.

Short-term and long-term, minor, adverse effects on electrical, water supply, storm water drainage, and solid waste management would be expected from the implementation of the Proposed Action. Short-term, negligible to minor, adverse effects would be expected on the natural gas supply and communications systems, and long-term, moderate, adverse effects would be expected on the sanitary sewer and wastewater system. Overall demand of utilities and infrastructure would increase slightly from addition of 214 MFH units.

Hazardous Materials and Wastes. Short-term and long-term, moderate, adverse and long-term, beneficial impacts would be expected on hazardous materials and wastes. Construction activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Short-term, minor, adverse impacts would be expected on hazardous wastes as a result of a minor increase in the quantity of hazardous wastes generated from proposed construction activities.

Asbestos-containing transite water piping is present in the former Black Hills Estates area; however, it has been capped and abandoned in place. If the transite piping is encountered during construction, it would be removed by certified individuals and disposed of at a U.S. Environmental Protection Agency (USEPA)-approved landfill, resulting in a beneficial impact. Trichloroethylene (TCE) contamination associated with Environmental Restoration Program (ERP) site Operable Unit (OU)-11 at Ellsworth AFB could result in vapor intrusion in the former Black Hills Estates area. However, remedial actions are currently in place to address TCE contamination associated with OU-11 and vapor intrusion. For new MFH units constructed in the former Black Hills Estates area, mitigation systems would be installed, as necessary, to address potential TCE as well as radon vapor intrusion issues.

Safety. Short-term, negligible to minor, direct, adverse and long-term, beneficial effects on health and safety would be expected from the Proposed Action. The short-term risk associated with construction contractors would slightly increase during the normal workday as construction activity levels would increase. The potential also exists for short-term exposure to construction workers from TCE vapors; however, no long-term adverse impacts on safety of residents are expected because mitigation systems would be installed in new MFH units, as necessary, to address potential radon and TCE vapor intrusion issues. Implementation of the Proposed Action could result in short- and long-term, negligible to minor, adverse effects on safety due to the potential to encounter asbestos-containing transite piping in the former Black Hills Estates area during construction. However, once ACM is removed, long-term, beneficial impacts would be expected from the reduced exposure potential for military personnel and families.

Mitigation Measures

Specific mitigation measures to offset adverse impacts would be stipulated between the USAF and the PO if the Proposed Action were implemented. These specific mitigation measures relate to existing aircraft noise and existing groundwater contamination related to an ERP site at Ellsworth AFB. New MFH units would include NLR measures to mitigate impacts associated with noise from existing aircraft activity at

Ellsworth AFB. Inclusion of NLR measures would help to mitigate and offset adverse impacts associated with noise. If construction of MFH units in the 100-year floodplain cannot be avoided, any structures built within the 100-year floodplain boundary would be constructed at least 1 foot above the base flood elevation level to elevate the structure above the base flood elevation within the floodway. Construction of other infrastructure inside the floodplain boundary would be kept to a minimum where possible. The PO would obtain the City of Box Elder's floodplain surveyor certification for structures built in or close to the floodplain. New MFH units constructed in the former Black Hills Estates area would include mitigation systems, as necessary, to address potential radon and TCE vapor intrusion issues. These mitigation systems would help mitigate and offset adverse impacts associated with OU-11.

Cumulative Impacts

Cumulative impacts on environmental resources result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts would result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

Future projects at Ellsworth AFB or in its vicinity that have been identified as contributing to potential cumulative effects on environmental resources include past MILCON-funded MFH demolition and construction activities, annexation of a portion of Ellsworth AFB by the City of Box Elder, construction of a regional waste water treatment plant (RWWTP), and expansion of the South Dakota Air and Space Museum. Anticipated adverse cumulative effects would be related to environmental impacts from construction activities (e.g., increased demand of infrastructure and utilities, ground disturbances and soil erosion, sedimentation and increased pollution in waterways). Anticipated beneficial cumulative effects on socioeconomics in the surrounding area would be expected from economic expenditures associated with the RWWTP, and annexation of Ellsworth AFB. No significant cumulative impacts on the environment would be anticipated from the Proposed Action in conjunction with other activities.

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OF MILITARY FAMILY HOUSING
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1. Purpose of and Need for the Action

This Environmental Assessment (EA) describes and analyzes the Air Combat Command's (ACC) proposal to privatize military family housing (MFH) at Ellsworth Air Force Base (AFB), South Dakota. This section presents background information, the purpose of and need for privatized MFH, the location and mission of Ellsworth AFB, the scope of environmental review, and an introduction to the organization of this document.

1.1 Background

The U.S. Air Force (USAF) operates and maintains approximately 104,000 MFH 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-installation housing exceeds supply. The lack of adequate MFH forces many military members and their families to live in housing in need of repair, renovation, or replacement; or to live off-installation where the cost and quality of housing vary considerably. Often, the cost to military members and their families to live off-installation is 15 to 20 percent greater than the cost to live on-installation. The USAF estimates that as much as \$7 billion would be needed to bring its housing up to current standards (HQ USAF 2007).

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year (FY) 1996 (Public Law [P.L.] 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 MHPI was designed and developed to attract private sector financing, expertise, and innovation to provide necessary housing faster and more efficiently than traditional military construction (MILCON) processes would allow. 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. Inadequate housing does not meet USAF housing standards as specified in Air Force Policy Directive (AFPD) 32-6002, *Family Housing Planning, Programming, Design, and Construction* (15 January 2008). Per AFPD 32-60, *Housing* (10 November 2009), inadequate housing is “any housing unit requiring whole-house improvement or replacement as identified by the services condition assessments, typically exceeding a per-unit cost of \$50,000 adjusted by the area cost factor. Services condition assessments utilize private sector housing industry construction codes and sizing standards as a basis for assessing inventory adequacy.”

1.2 Purpose of and Need for the Proposed Action

The USAF Housing Privatization Program incorporates the MHPI legislation enacted by Congress in 1996. Consistent with the USAF Housing Privatization Program, USAF Headquarters ACC proposes to convey its MFH units, grant leases of land, and transfer responsibility for providing housing and ancillary supporting facilities to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Mountain Home AFB, Idaho; Cavalier Air Force Station (AFS), Grand Forks AFB, and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; and Cannon AFB, New Mexico.

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Ellsworth AFB. The need for the Proposed Action is to provide affordable, quality housing and ancillary facilities

to military members and their families through replacement and renovation of existing family housing units as appropriate so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families access to safe, secure, quality, affordable, well-maintained housing in a military community where they choose to live. MFH privatization would help accelerate housing improvements, alleviate housing shortages, and reduce waiting times for adequate housing, ultimately improving morale of USAF personnel and their families. All the Air Force-owned MFH units on Ellsworth AFB have been constructed in the past 6 years and are in excellent condition.

1.3 Location and Mission

Ellsworth AFB consists of approximately 5,415 acres in Meade and Pennington counties in southwestern South Dakota, 7 miles northeast of Rapid City (see **Figure 1-1**). The City of Box Elder borders the installation to the south.

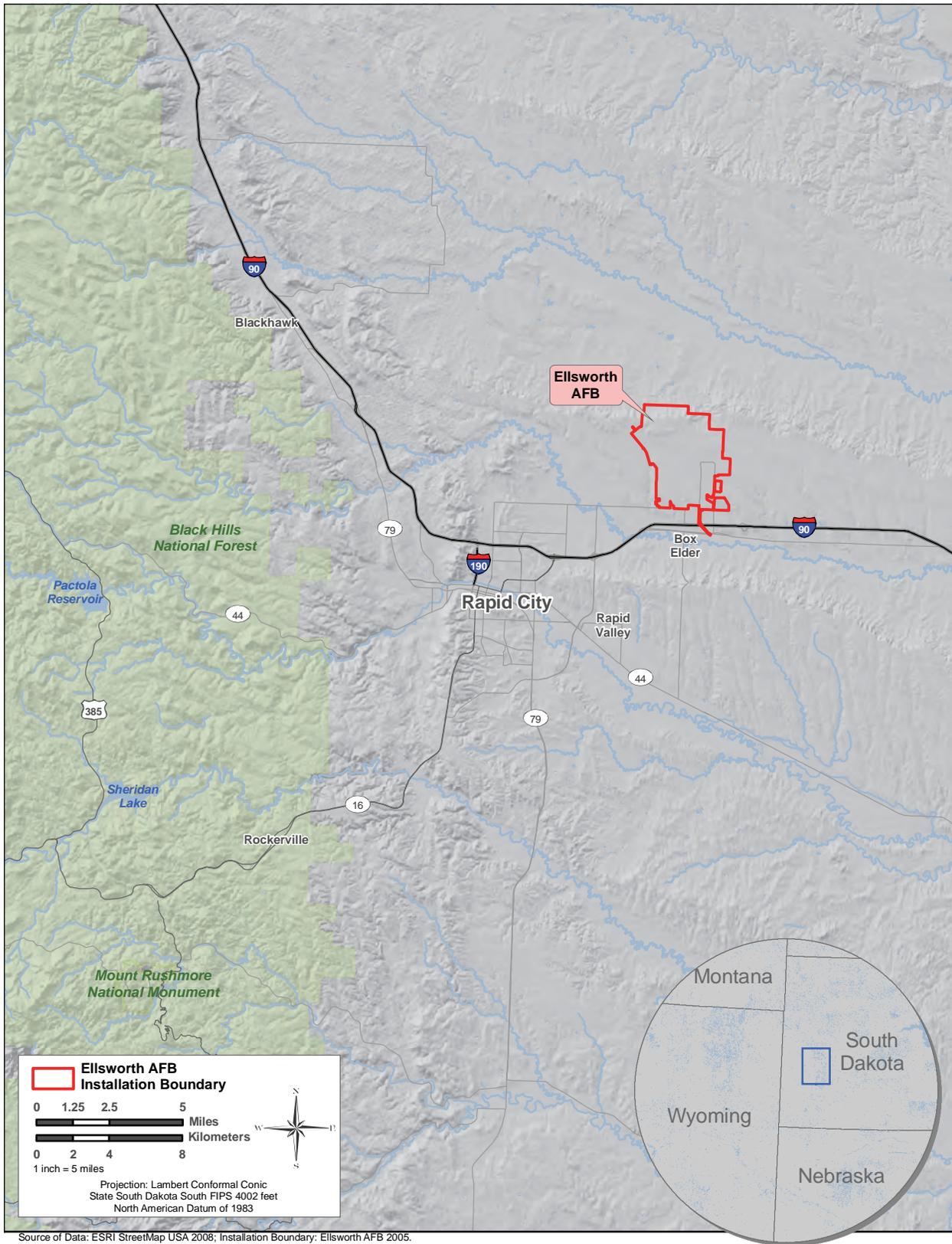
Ellsworth AFB originated as the Rapid City Army Air Base in January 1942. The installation was renamed Ellsworth AFB in honor of Brigadier General Richard E. Ellsworth, commander of the 28th Strategic Reconnaissance Wing in 1953. The primary unit initially assigned to the installation was the 28th Bombardment Wing (BMW) flying the B-29 “Super Fortress.” In July 1949, the 28 BMW began conversion from B-29s to the B-36 Peacemaker, and in June 1957 the B-36s were replaced with the B-52 Stratofortress. In 1958, all units on the installation came under the command of the Strategic Air Command’s (SAC) 821st Strategic Aerospace Division, headquartered at Ellsworth AFB. In addition to its strategic bombardment mission, under SAC Ellsworth AFB was home to intercontinental ballistic missile squadrons from 1960 until the early 1990s. In January 1987, the installation received its first B-1 bomber to replace the aging B-52s, and the 12th Air Division moved to Ellsworth AFB to provide advanced bomber aircrew training. The 28th BMW became the 28th Bomb Wing (28 BW) in September 1991 and absorbed all the functions of the 821st. In 1992, the 28 BW was assigned to the newly formed ACC (EAFB 2008a).

Today, the installation has a population of approximately 11,000 military members, family members, and civilian employees, and there are 1,306 MFH units on the installation (EAFB 2008a). Of these, 1,028 MFH units are on-installation in the Centennial Estates neighborhood and off-installation in the nearby Dakota Ridge neighborhood. These units are under a “Section 801” Build-to-Lease agreement with a private contractor (see **Section 2.2.1**). The remaining 283 MFH units on Ellsworth AFB are owned by the USAF and are included in the Proposed Action, as described in **Section 2**.

1.4 Summary of Key Environmental Compliance Requirements

1.4.1 National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. Section 4321–4347) is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are taken. The intent of NEPA is to help decisionmakers make well-informed decisions based on an understanding of the potential environmental consequences and take actions to protect, restore, or enhance the environment. NEPA established the Council on Environmental Quality (CEQ) that is charged with the development of implementing regulations and ensuring Federal agency compliance with NEPA. The CEQ regulations mandate that all Federal agencies use a prescribed structured approach to environmental impact analysis. This approach also requires Federal agencies to



Source of Data: ESRI StreetMap USA 2008; Installation Boundary: Ellsworth AFB 2005.

Figure 1-1. Ellsworth AFB and Surrounding Area

use an interdisciplinary and systematic approach in their decisionmaking process. This process evaluates potential environmental consequences associated with a proposed action and considers alternative courses of action. 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 Policy Act*. The CEQ was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to provide evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA), where a FONPA is appropriate, as stipulated in Executive Order (EO) 11988, *Floodplain Management*, EO 11990, *Protection of Wetlands*, and 32 CFR Part 989 (see **Section 1.4.2**), or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency’s compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required. 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 key 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, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety. 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 EO, regulation, or policy.

Air Force Instruction (AFI) 32-7063, *Air Installation Compatible Use Zone Program* (USAF 2005), sets forth land use guidelines for recommended compatible land use classifications or coding for those areas impacted by aircraft noise and potential aircraft safety. Air Force Handbook (AFH) 32-7084, *AICUZ Program Manager’s Guide* (USAF 1999) identifies that, although local conditions might require land in a particular area to be used for residential use, it is discouraged inside the 65 A-weighted decibel (dBA) Day-Night Average Sound Level (DNL) noise contour and strongly discouraged inside the 70 dBA DNL noise contour. The absence of viable alternative development options should be determined and an evaluation indicating that a demonstrated community need for residential use would not be met if development were prohibited in these zones should be conducted prior to approvals. Where it is determined that residential uses must be allowed, measures to achieve outdoor-to-indoor Noise Level Reduction (NLR) for these noise zones should be incorporated into building codes and considered in individual approvals. NLR criteria will not eliminate outdoor noise problems. However, building location and site planning, and design and use of berms and barriers can help mitigate outdoor exposure, particularly from near ground-level sources. Measures that reduce outdoor noise should be used whenever practical in preference to measures which only protect interior spaces.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high

performance sustainable Federal building design, construction, operation, and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas (GHG) emissions, water use, pollution prevention, regional development and transportation planning, and sustainable building design; and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the *Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings*. The CEQ regulations at 40 CFR 1502.16(e) direct agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), directs Federal agencies to coordinate and consult with Indian tribal governments whose interests might be directly and substantially affected by activities on federally administered lands.

EO 11988, *Floodplain Management*, and EO 11990, *Protection of Wetlands*, state that if the head of an agency finds that the only practicable alternative is development within a floodplain or wetland, the agency shall design or modify its action to minimize potential harm to or within the floodplain or wetland, and prepare and circulate a notice explaining why the action is proposed within a floodplain or wetland. In accordance with EOs 11988 and 11990 and 32 CFR Part 989, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within the floodplain or wetland. Where the only practicable alternative is to site a portion of an action in a floodplain, a specific process must be followed to comply with EO 11988. This eight-step process is detailed in the Federal Emergency Management Agency (FEMA) document titled “Further Advice on EO 11988 Floodplain Management.” The eight steps are as follows:

1. Determine whether the action will occur in, or stimulate development in, a floodplain
2. Receive public review/input of the Proposed Action
3. Identify and evaluate practicable alternatives to locating in the floodplain
4. Identify the impacts of the Proposed Action (when it occurs in a floodplain)
5. Minimize threats to life, property, and natural and beneficial floodplain values, and restore and preserve natural and beneficial floodplain values
6. Reevaluate alternatives in light of any new information that might have become available
7. Issue findings and a public explanation
8. Implement the action.

In accordance with EOs 11988 and 11990 and 32 CFR Part 989, a FONPA must accompany the FONSI stating why there are no practicable alternatives to development within the floodplain.

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** will be discussed in more detail in the text of the EA.

1.4.3 Interagency and Intergovernmental Coordination for Environmental Planning, Native American Consultation, and Public Involvement

Interagency and Intergovernmental Coordination for Environmental Planning (IICEP). 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. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental Planning*, requires the USAF to implement the IICEP process, which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, Ellsworth AFB notified relevant Federal, state, and local agencies of the Proposed Action and alternatives, and provided them sufficient time to make known their environmental concerns specific to the action. The IICEP process also provided Ellsworth AFB the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. All IICEP materials related to this EA are included in **Appendix C**.

Comments from the South Dakota State Historic Preservation Office (SHPO), South Dakota Department of Environment and Natural Resources (DENR), and the U.S. Fish and Wildlife Service (USFWS) were received on the Draft EA and Draft FONSI/FONPA during the 30-day review period (see **Appendix C**). These comments were considered prior to a decision being made as to whether or not to sign a FONSI/FONPA.

Native American Tribal Consultation. EO 13175, *Consultation and Coordination with Indian Tribal Governments* (6 November 2000) directs Federal agencies to coordinate and consult with Native American tribal governments whose interests might be directly and substantially affected by activities on federally administered lands. To comply with legal mandates, federally recognized tribes that are affiliated historically within the Ellsworth AFB geographic region are invited to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Because many tribes were displaced from their original homelands during the historical period, tribes with cultural roots in an area may not currently reside in the region where the undertaking is to occur. Effective consultation requires identification of tribes based on ethnographic and historical data and not simply a tribe's current proximity to a project area. The tribal consultation process is distinct from NEPA consultation or the IICEP processes and requires separate notification of all relevant tribes by Ellsworth AFB. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The Ellsworth AFB Installation Commander is the Government representative point-of-contact for coordination with Native American tribes. The Ellsworth AFB Government point-of-contact for consultation with the South Dakota SHPO and the Advisory Council on Historic Preservation (ACHP) is the Cultural Resource Manager.

A letter requesting consultation was sent to each affiliated tribe describing the Proposed Action on Ellsworth AFB and asking for them to identify any potential concerns they may have (see **Appendix C**). The goal of the tribal consultation process is not to simply consult on a particular undertaking but rather to build constructive relationships with the appropriate Native American tribes. Consultation should lead to constructive dialogs in which Native American tribes are active participants in the planning process. No comments on the Draft EA or Draft FONSI/FONPA were received from Native American tribes during the review period.

Public Involvement. A Notice of Availability for the Draft EA and Draft FONSI/FONPA was published in the *Rapid City Journal* and *The Plainsman* on 11 May 2011 (see **Appendix C**), and the Draft EA and Draft FONSI/FONPA were made available to the public for a 30-day review period. Apart from the agency comments identified above, no public comments were received during the 30-day review period.

1.4.4 Operation Walking Shield

Operation Walking Shield (OWS) is a unique civilian and military collaborative program that seeks integration of combined civilian and military activities through the DOD's Innovative Readiness Training (IRT) program. The IRT program uses U.S. military expertise to address the inadequate health care, infrastructure, and housing on American Indian reservations. To address the chronic overcrowding and homelessness facing American Indian reservations, OWS has provided more than 1,000 excess housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota (OWS 2010). The OWS Program helps support cost-efficient, quality, and safe housing options while greatly reducing the demolition and waste management burden for the U.S. military. The USAF seeks to collaborate with the OWS Program to the maximum extent practicable by donating existing MFH units. However, all the existing housing units at Ellsworth AFB were constructed between 2004 and 2009, so none would be suitable for the OWS Program in the near future.

1.5 Organization of this Document

This EA is organized into six sections plus appendices. **Section 1** provides the purpose and need for the Proposed Action. **Section 2** contains a description of the Proposed Action, alternatives to the Proposed Action, and No Action Alternative. **Section 3** contains a general description of the physical resources, baseline conditions that could potentially be affected by the Proposed Action, the alternatives, and the No Action Alternative; and presents an analysis of the potential environmental consequences of implementing the Proposed Action, the alternatives, and the No Action Alternative. **Section 4** includes an analysis of the potential cumulative impacts at Ellsworth AFB. **Section 5** lists the preparers of the document. **Section 6** 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 potentially relevant to NEPA analysis. **Appendix C** includes all IICEP and public involvement correspondence. **Appendix D** contains the desired features for Ellsworth AFB privatized housing units. **Appendix E** provides representative photos of MFH areas at Ellsworth AFB. **Appendix F** contains air emissions calculations. **Appendix G** contains a Mitigation Plan detailing specific mitigation measures and best management practices (BMPs) for the Proposed Action set forth in this EA.

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2. Description of the Proposed Action and Alternatives

This section presents information on the USAF's Housing Privatization Program and Ellsworth AFB's Proposed Action under that initiative. **Section 2.1** describes how the Proposed Action would be implemented at Ellsworth 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 Ellsworth AFB's Preferred Alternative.

2.1 Detailed Description of the Proposed Action

Consistent with the USAF Housing Privatization Program, Headquarters ACC proposes to convey 283 MFH units, lease three parcels of land totaling approximately 279 acres, and transfer responsibility for providing housing and ancillary supporting facilities at Ellsworth AFB to the PO.

Ellsworth AFB has USAF-owned MFH units in two neighborhoods. These neighborhoods (and their number of MFH units) are Rushmore Heights (183 units) and Prairie View (100 units). Both neighborhoods have been renovated within the past 6 years. **Figure 2-1** shows the locations of the MFH neighborhoods on the installation and the project footprint. In addition to the existing occupied neighborhoods, the project footprint includes one additional parcel, the former Black Hills Estates area, which is being considered for housing development. The former Black Hills Estates area contained 500 occupied housing units until 2008, and the housing units were demolished by 2009. The potential impacts of these actions have been addressed in previously prepared EAs or Categorical Exclusions (CATEXs).

Appendix A contains the MHPI upon which the USAF Housing Privatization Program and the Proposed Action are based. Application of the provisions of the USAF Housing Privatization Program would be tailored to Ellsworth AFB's specific circumstances and requirements.

Under the Proposed Action, Ellsworth AFB would execute agreements with the PO to convey real property, lease land, and have the PO assume responsibility to operate a rental housing development for the benefit of USAF and other personnel. Under agreements with the Air Force, the PO would be responsible to plan, design, develop, renovate, demolish, construct, own, operate, maintain, and manage all necessary assets for MFH and designated ancillary supporting facilities. Additionally, the PO would be required to implement and follow appropriate environmental management laws, efforts, and plans regarding resources including land, soil, water, air, vegetation, hazardous materials and wastes, and cultural resources. The PO would be responsible for following Ellsworth AFB's Integrated Natural Resources Management Plan (INRMP) while maintaining installation property under the lease. In addition, the ground lease agreement would: (a) restrict the PO from taking any action that would be inconsistent with the corresponding INRMP and Integrated Cultural Resources Management Plan (ICRMP); and (b) ensure that the Government retains the right to access and manage those natural and cultural resources covered by such plans, at the Government's expense, except when such Government action results from PO action or inaction. The PO would not take any action that interferes with the USAF's preservation efforts under the current INRMP.

In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

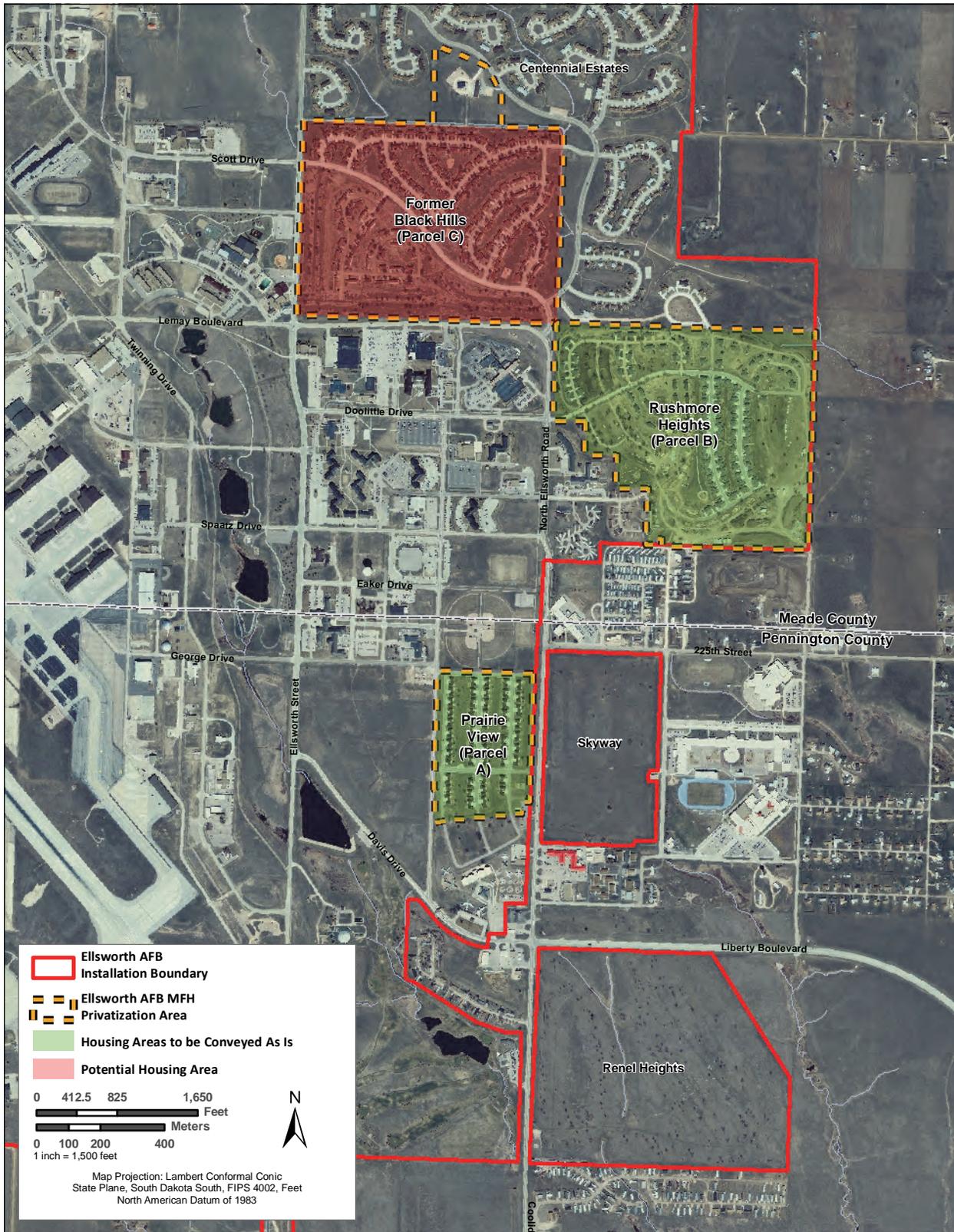


Figure 2-1. MFH Neighborhoods on Ellsworth AFB

The 2008 Ellsworth AFB Housing Community Profile (HCP)¹ indicates that the installation should have no more than 621 MFH units (EAFB 2008b). A subsequent determination was made to construct 80 percent of the number of units identified in the HCP; therefore, the current end-state number of housing units under the Proposed Action is 497. Specific transactions that would occur between Ellsworth AFB and the PO would be as follows:

- Ellsworth AFB would convey all 283 existing USAF-owned MFH units to the PO.
- Ellsworth AFB would grant 50-year leases for 279 acres of land underlying the existing housing areas (Parcels A and B) and potential housing area (Parcel C) (see **Figure 2-1** for housing area boundaries).
- The PO would continue use of 283 units in their present condition and construct 214 new units. In addition, the USAF Housing Privatization Program has identified several desired features (see **Appendix D**) for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for Ellsworth AFB. These features could include construction of a community center/clubhouse, housing management office, storage facilities for new MFH units, and additional playgrounds and trails. For the purposes of this EA, it is assumed that these features would occur as part of the Proposed Action.
- Tot lots, playgrounds, a half-basketball court, bus stops, neighborhood sign marquees, and common mailbox clusters would be conveyed to the PO. The housing maintenance facility (i.e., Buildings 17650 and 17652) would be conveyed to the PO for its sole use when the Section 801 lease period ends in July 2011. The housing office building would not be conveyed to the PO.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current INRMP and ICRMP. The Government retains the right to access and manage those natural and cultural resources covered by such plans.

Table 2-1 indicates the actions that would be taken with respect to the current MFH inventory. The actions presented represent the end-state inventory of 497 MFH units.

Some actions shown in **Table 2-1** would occur at various times within the first 6 years of the 50-year privatization program. For the purpose of the analyses in this EA, it is assumed that construction and renovation activities would occur evenly over the 6 years of the transition period.

The PO would remove all existing aboveground utilities within the leased MFH privatization area. Underground utility mains scheduled for demolition could be capped at the main and abandoned in place; however, the PO would remove all laterals. In addition, the PO would remove all roadways and fences in areas scheduled for demolition.

The PO would be responsible for maintaining the remaining or any new electrical, natural gas, water, and sewer utilities from each MFH unit to the point of demarcation (POD) as specified in the lease agreement. The POD is defined as the point on the utility system where ownership changes from the utility system owner to the facility owner. The USAF would retain ownership of the utility systems from the POD onto the rest of the installation outside the housing areas, including overhead and underground distribution lines and primary and secondary lines. Telephone, network, and cable television distribution systems would not be conveyed to the PO and would be obtained from off-installation, commercial sources.

¹ DOD guidance states that the local community should be the first source for satisfying the demand for housing generated by military families. The HCP identifies specific housing deficiencies and needs at each installation based on a Housing Requirements and Market Analysis (HRMA) for Ellsworth AFB completed in 2007 that studied current and projected supply and demand for family housing and analyzed the local housing market to determine its ability to provide suitable housing for military personnel.

Table 2-1. Conveyance of Existing Housing by Area

Housing Area	Acreage	Number of Existing Units (Year Built)	Proposed Action	Proposed Lease Term
Prairie View	33	100 (2004)	Use 100 units “as is”	50 years
Rushmore Heights	115	183 (2005–2008)	Use 183 units “as is”	50 years
Potential Future Housing Area: Former Black Hills Estates area*	131	N/A	Construct 214 new units*	50 years
Total	279	283	Demolish: 0 Use “as is”: 283 Construct: 214 End State: 497	

Note: * Construction of 214 new MFH units would occur only in the former Black Hills Estates area. The exact locations of the 214 units within this area would be negotiated with the PO.

The PO would be required to procure electricity, water, and gas from an off-installation, commercial source. It would be the PO’s responsibility to connect the electrical and water lines to a local source within the first year of the initial development period to obtain electrical power and water instead of obtaining these utilities from Ellsworth AFB.

Because there are no active landfills on Ellsworth AFB, all construction debris would be handled, maintained, transported, and delivered by the PO to a Government-approved landfill in accordance with applicable Federal, state, and local laws.

The USAF Housing Privatization Program has identified several desired financial and site development features for new construction and renovation of MFH, its privatized communities, facilities maintenance, and property management for the Northern Group installations. Projects associated with the Proposed Action could include indoor and outdoor renovations and new construction activities within the 6-year transition period. These desired features are intended to result in substantial improvements in the overall quality of housing for qualified personnel. Additional desired features at Ellsworth AFB could include communitywide and neighborhoodwide recreational facilities in the interior of MFH areas, including group picnic areas, tennis courts, volleyball courts, community center/clubhouse, concrete walks or asphalt trails leading to playgrounds, road and trail connectivity among MFH areas, and covered bus shelters. The required and desired features for MFH for new housing and renovations are provided in **Appendix D**. These projects will be evaluated in the EA. The Proposed Action has the potential to have an impact on floodplains, which requires a FONPA (see **Section 1.4.2**) and implementation of additional BMPs. Development would occur within the 100-year floodplain of the Coolidge Floodway through the former Black Hills Estates housing area. As no practicable alternative to constructing within the floodplain has been identified, a FONPA will be issued for his project and accompanies the FONSI.

2.1.1 Operational Provisions

The following paragraphs 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 PO and approved by Ellsworth AFB. The plan would include project development and the methodology for providing utilities and services during and after the transition period. The transition

period would begin upon completion of the signing of the lease initiating the Proposed Action and would last for up to 6 years. During the transition period, the number of available MFH units would be gradually increased from 283 to 497 units.

Lease of Land. The USAF would grant the PO a lease of approximately 279 acres, as described in **Table 2-1**. 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, and established access routes for roadways and utilities located, or to be located, on the premises. The lease would do the following:

- Prohibit the PO from storing hazardous wastes (above those quantities generated in routine operations that are immediately disposed of) or taking any actions that would cause irreparable injury to the land. The PO 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 operation by the PO of satellite hazardous waste accumulation sites on Ellsworth AFB. The PO would be responsible for appropriate storage and disposal of hazardous waste and universal waste (e.g., fluorescent bulbs, batteries, thermostats). The PO would be responsible for any environmental fines or penalties arising from accidental, negligent, or intentional acts on the property. The PO 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-installation at the PO's expense. Recycling materials such as paper, cardboard, glass, and plastic would be collected and recycled at an off-installation facility per local regulations, if applicable.
- Prohibit the use of asbestos or asbestos-containing material (ACM) or lead-based paint (LBP) in the construction of new housing units.
- 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 such, any historical, archaeological, architectural, or cultural artifacts, relics, remains, or objects of antiquity. In the event such items are discovered, the PO 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, water, vegetation, and designated natural resources areas using appropriate measures to prevent or control soil erosion, spread of noxious weeds, and spread of infectious vegetation diseases within the installation. These measures would be addressed in permits (e.g. Clean Water Act [CWA] Section 404 permit), the installation's INRMP and ICRMP, P.L. 93-629 (noxious weed control), and storm water pollution prevention plans (SWPPPs). The PO would be required to comply with all applicable permits, including the storm water permit and accompanying SWPPP.
- Prohibit the cutting and sale of timber; mining operations; and the removal of sand, gravel, or like substances from the ground by the PO.

Federal laws, regulations, and EOs, such as the CWA; Endangered Species Act (ESA); Archaeological Resources Protection Act (ARPA); EO 11988, *Floodplain Management*; and EO 11990, *Protection of Wetlands*, continue to be applicable and enforced by the USAF on the leased property. Potentially applicable laws, regulations, and EOs are summarized in **Appendix B**.

Conveyances. A total of 283 MFH units and approximately 279 acres of land would be conveyed to the PO. The USAF would convey this property with encumbrances, notices, and requirements obligating the PO to certain actions. The USAF completed an Environmental Baseline Survey (EBS) to determine the location and extent of possible contamination from underground storage tanks (USTs) or other sources (EAFB 2010a). 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 would 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, and any subsequent successors or assigns.

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 Standards. Construction and renovation standards reflect consideration of Meade County, Pennington County, and State of South Dakota building codes, standards, and regulations. If MFH units are constructed in the future, construction 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 Star² criteria. Design features would include optimizing glass locations and areas; 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 PO 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 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, the PO would consider recycled products and environmentally preferable purchasing criteria developed by the U.S. Environmental Protection Agency (USEPA).

The contractor would be responsible for conducting ACM inspections prior to construction activities, and handling any ACM in accordance with applicable laws, including removal, disposal, and abatement. An asbestos disposal plan would identify the proposed disposal site for any ACM. The PO would handle, maintain, transport, and deliver all debris to a Government-approved landfill in accordance with applicable Federal, state, and local laws.

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

² The U.S. Environmental Protection Agency and 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 and commercial products. Energy Star products include appliances (e.g., refrigerators, dishwashers, and room air conditioners) and residential heating ventilation and air conditioning equipment (e.g., programmable thermostats, boilers, furnaces, heat pumps, and central air conditioners).

Rental Rates and Payments. The rental rate charged by the PO would not exceed a military occupant's BAH. Ellsworth 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.

Utilities. The PO would pay all utility costs until utility meters are installed on each housing unit. During such period, the military member would surrender his or her entire BAH for rent and utilities. No later than the end of the transition period (approximately 6 years), the PO must have individual meters installed on the end-state units. The PO would then establish a fixed rent for those units at an amount not to exceed the BAH rate minus an amount sufficient to cover 110 percent of estimated average reasonable utility charges at the dependent rate of the military grade that the unit is designated for, in accordance with the Project Development Demographics. The PO would pay for all water, sewer, and refuse collection services, including curbside recycling pickup, throughout the duration of the privatization agreement. The PO would obtain potable water from the City of Box Elder or another source off-installation.

Occupancy Guarantee. Ellsworth AFB would not guarantee the level of occupancy of MFH by military members. The Ellsworth AFB Housing Office would provide "Referral Tenants." All military personnel assigned to the local area would be required to process through the Ellsworth AFB Housing Office upon arrival prior to signing a lease for housing. Freedom of housing choice would be preserved. The PO would compile and maintain a waiting list. After the transition period, if vacancy rates exceed 5 percent, the PO may immediately rent to other active-duty members of the uniformed services and their families. If vacancy rates exceed 5 percent for more than 30 consecutive days, the PO may rent to Federal civil service, retired military members, and retired Federal civil service and their families. If vacancy rates exceed 5 percent for more than 60 consecutive days, the PO may rent to DOD contractor permanent employees (U.S. citizens) and their families. If vacancy rates exceed 5 percent for more than 90 consecutive days, the PO may rent to the general public with a written notice to the Government. Should this type of situation arise, the PO 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. Legislative jurisdiction of the Prairie View neighborhood is exclusive. Air Force-owned family housing areas at Ellsworth AFB are exclusive. The term "exclusive legislative jurisdiction" is applied when the Federal government possesses, by whatever method acquired, all the authority of the state, and in which the state concerned has not reserved to itself the right to exercise any of the authority concurrently with the United States except the right to serve civil or criminal process in the area relative to activities that occurred outside the area. The legal jurisdiction of the Rushmore Heights and Black Hills Estates neighborhoods is proprietary, meaning the Federal government has not obtained any measure of the state's legislative authority over these areas. The Federal Government maintains immunity and supremacy for inherently governmental functions. Privatization would not change existing legislative jurisdiction. The Government would, however, reserve 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 PO for property taxes or other costs.

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

2.2 Alternatives Considered but Eliminated from Detailed Study

In compliance with NEPA, reasonable alternatives to the Proposed Action must be considered in an EA. Considering alternatives helps to avoid unnecessary impacts and allows an analysis of reasonable ways to achieve the stated purpose. To warrant detailed evaluation, an alternative must be reasonable and meet the purpose and need for a proposed action. To be considered reasonable, an alternative must be suitable for decisionmaking (i.e., any necessary preceding events have taken place), capable of implementation, and satisfactory with respect to meeting the purpose of and the need for the action. The following selection standards were used to assess reasonable alternatives:

- Maintain compliance with the requirements specified in the MHPI legislation enacted by Congress
- Determine if the monetary and other benefits of leasing outweigh transferring existing MFH
- Conform to land use principles and goals of the Ellsworth AFB General Plan (EAFB 2008c) and consider the strategies identified in the Ellsworth AFB Air Installation Compatible Use Zone (AICUZ) Study (EAFB 2008d)
- MFH areas should ultimately be contiguous, adjacent, or within the same area on the installation in order to be readily accessible to one another and to common amenities such as community and recreational facilities among the neighborhoods.

The following discussion identifies alternatives considered by the USAF and identifies whether they are reasonable and, hence, subject to detailed evaluation in the EA. The evaluated alternatives to the Proposed Action (see **Sections 2.2.1** through **2.2.4**) did not meet the selection standards listed above and therefore were eliminated from further detailed analysis in this EA.

2.2.1 Other Areas Potentially Available for Housing on Ellsworth AFB

Several areas on Ellsworth AFB, including the former Skyway and Renel Heights MFH areas (see **Figure 2-1**), were considered for the Proposed Action. Other areas on the installation were deemed unsuitable for MFH units because of development constraints, future build-out plans for the installation, or existing constraints, or they did not meet the selection standards listed in **Section 2.2**. Portions of Ellsworth AFB were recently annexed to the City of Box Elder to encourage development activities for the city (see **Section 3.2.2** and **Figure 3-2** in that section). The former Skyway and Renel Heights MFH areas on the installation are included within the annexation boundary and are planned to be transferred to the South Dakota Ellsworth Development Authority (EDA) as permitted by legislation in the 2010 National Defense Authorization Act. These areas are being planned for potential future commercial or other development activities in the City of Box Elder. Therefore, the former Skyway and Renel Heights MFH areas would not be suitable for MFH units under the Proposed Action. The on-installation Centennial Estates neighborhood to the north of the former Black Hills Estates area (see **Figure 2-1**) and off-installation Dakota Ridge neighborhood were not considered under the Proposed Action because these units are currently under a "Section 801" Build-to-Lease agreement with a private contractor.

Although the General Plan for Ellsworth AFB supports development of open space areas, the preferred conversion of developable open space areas would be to support added tasking, construction, or new or

expanded missions (EAFB 2008c). These developable areas south and southeast of the runway (see **Figure 2-1**) would not be suitable for new MFH units (and more suitable for mission support) because these areas are inside the 75 dBA DNL contours as indicated in Ellsworth AFB's AICUZ study (EAFB 2008d), and a portion of these areas are within the accident potential zones (APZs) associated with aircraft operations. Other open space areas on the installation were considered for new MFH units but were deemed not developable or available. The former Skyway and Renel Heights areas have been reserved for transfer as discussed above. Open space in the northeast portion of the installation overlap explosive safety zones associated with the Munitions Storage Area and the small arms training range and supporting ammunition storage area east of the Munitions Storage Area. Open space along the west side of Ellsworth Street is limited by the presence of Gateway Lake and other surface water features and adjoining wetlands and floodplains associated with this tributary to Box Elder Creek (see **Figure 2-1**). Therefore, the only areas being considered for MFH privatization on Ellsworth AFB and being carried forth for further detailed analysis in this EA are presented in **Section 2.1** and analyzed for potential environmental impacts in **Section 3**.

2.2.2 The Partial Privatization Alternative

Under this alternative, Ellsworth AFB would privatize only a portion of the installation'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 Ellsworth AFB's MFH inventory would have several substantial drawbacks. First, the condition of the MFH units 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 PO'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. This alternative would not meet the MHPI legislation enacted by Congress and would therefore not meet the selection standards in **Section 2.2**. Together, these factors render consideration of partial privatization at Ellsworth AFB not feasible and, therefore, such an alternative will not be further evaluated in detail in the EA.

2.2.3 The Private Sector Reliance Alternative

Under this alternative, Ellsworth AFB would rely solely on the private sector to meet the housing needs of personnel assigned to the installation. The installation 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 has shown those military members and their families living off-installation must cover between 15 and 20 percent of their costs out of pocket. Moreover, living on-installation has several intangible benefits to military members 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 Ellsworth 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, and schools, shops, roads, and other support amenities, on short notice.

Termination of MFH programs would involve abandonment of the considerable 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 continued use with only minor renovations, termination of a family housing construction and maintenance program would gravely contravene the fiscal responsibilities that Congress expects of the USAF and this alternative would not be consistent with the MHPI legislation enacted by Congress. For these reasons, this alternative is not reasonable and will not be further evaluated in detail in the EA.

2.2.4 The Leasing Alternative

Statutory authorities exist for Ellsworth 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 PO. Ellsworth AFB currently leases 1,028 MFH units under the Section 801 Program. These leases are set to expire beginning in September 2010 through July 2011. The USAF does not intend to purchase these units upon lease expiration.
- *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 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 on-installation 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 the 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 will not be further evaluated in detail in the EA.

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, Ellsworth AFB would not implement the Proposed Action. The USAF would continue to own MFH at Ellsworth AFB and provide for the housing needs of military personnel and family members.

Ellsworth AFB has 283 MFH units that have been constructed since 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would likely be required to construct additional units to support housing needs of military personnel and families.

Under the No Action Alternative, Ellsworth AFB would continue to maintain and upgrade MFH and associated infrastructure as required. Ellsworth AFB would continue to obtain funding for MFH renovation projects 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.

2.4 Identification of the Preferred Alternative

The preferred alternative is the Proposed Action, as described in **Section 2.1**. Upon completion of the EA, the USAF would determine whether the Proposed Action would result in significant impacts. If such impacts are predicted, the USAF would undertake an EIS or abandon the Proposed Action. The EA would also be used as a guide in implementing the Proposed Action in a manner consistent with the USAF standards for environmental stewardship.

2.5 Environmental Protection Measures

Table 2-2 presents BMPs, environmental protection measures, and mitigation that Ellsworth AFB and their contractors would comply with to minimize or eliminate impacts on environmental resources. **Appendix G** contains a Mitigation Plan that details specific mitigation measures and BMPs for the Proposed Action set forth in this EA, discusses how ACC will execute them, and identifies who will fund and implement these activities.

Table 2-2. Environmental Protection Measures

Environmental Resource	Environmental Protection Measures
General	<ul style="list-style-type: none"> • The PO would take initial awareness training in Environmental Management Systems (EMS) and be familiar with how their actions affect the installation's EMS program.
Noise (see Section 3.1)	<ul style="list-style-type: none"> • Noise generation would last only for the duration of construction and demolition activities and would be isolated to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). • NLR measures would include use of triple-pane windows and additional insulation. Building location and site planning; and design and use of berms, barriers, and vegetative buffers could help mitigate outdoor noise exposure. • No new housing construction would occur inside the 75 dBA noise zone.
Land Use (see Section 3.2)	<ul style="list-style-type: none"> • Continued adherence to the Ellsworth AFB AICUZ study and General Plan to ensure compatibility with on- and off-installation land uses. • NLR measures would include use of triple-pane windows and additional insulation. Building location and site planning; and design and use of berms, barriers, and vegetative buffers could help mitigate outdoor noise exposure. • Due to trichloroethylene (TCE) contamination associated with Operable Unit (OU)-11 on the installation, a Land Use Control (LUC) is in place that restricts installation of new groundwater wells in the vicinity of OU-11.
Air Quality (see Section 3.3)	<ul style="list-style-type: none"> • Implementation of fugitive dust-control measures (e.g., windbreaks and barriers, control of vehicle access). • Construction and demolition equipment would be properly tuned and maintained prior to and during construction and demolition activities.
Geological Resources (see Section 3.4)	<ul style="list-style-type: none"> • Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust. • Implementation of erosion and storm water management practices. • Section 438 of the Energy Independence and Security Act (EISA) would be adhered to so that pre- and post-development hydrology would be similar. • Implementation of standard erosion-control measures (e.g., silt fencing, sediment traps).

Environmental Resource	Environmental Protection Measures
<p>Water Resources (see Section 3.5)</p>	<ul style="list-style-type: none"> • All fuels and other potentially hazardous materials would be contained and stored appropriately • A National Pollutant Discharge Elimination System (NPDES) permit would be obtained as applicable prior to demolition activities. • Development of an erosion-and-sediment-control plan and SWPPP. • Implementation of standard erosion-control measures (e.g., silt fencing, sediment traps). • Proper housekeeping, retention of debris, construction equipment maintenance, petroleum and hazardous material storage, and adherence to the Spill Prevention, Control, and Countermeasures Plan in the event of a spill to minimize the introduction of pollutants to surface waters. • If construction of MFH units in the 100-year floodplain cannot be avoided, any structures built within the 100-year floodplain boundary would be constructed at least 1 foot above the base flood elevation level to elevate the structure above the base flood elevation within the floodway. Construction of other infrastructure inside the floodplain boundary would be kept to a minimum where possible. • The PO would obtain the City of Box Elder’s floodplain surveyor certification for structures built in or close to the floodplain. • Due to TCE contamination associated with OU-11 on the installation, an LUC is in place that restricts installation of new groundwater wells in the vicinity of OU-11.

Environmental Resource	Environmental Protection Measures
<p>Biological Resources (see Section 3.6)</p>	<ul style="list-style-type: none"> • Revegetation in the Project area upon completion of demolition and construction activities. • Existing trees would be left in place to the greatest extent possible. • Disturbed areas would be seeded or planted in sod and maintained to prevent the establishment of invasive plant species during the lease period. • If burrowing owl nests are discovered within or adjacent to the former Black Hills Estates area, the following BMPs for migratory birds should be implemented: <ul style="list-style-type: none"> ○ Any groundbreaking construction activities should be performed before migratory birds return to Ellsworth AFB or after all young have fledged to avoid incidental take. ○ If construction is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting within the project area. Once a nest is established, they should not be harassed until all young have fledged and are capable of leaving the nest site. ○ If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed starting at least 2 weeks prior to site clearing. If nesting birds are found during the survey, buffer areas should be established around nests. Construction should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.
<p>Cultural Resources (see Section 3.7)</p>	<ul style="list-style-type: none"> • In the event of an inadvertent discovery on Ellsworth AFB, all work in the immediate vicinity of the discovery would be halted until the materials are identified and documented and an appropriate treatment strategy is developed in consultation with the SHPO and other consulting parties.
<p>Socioeconomic Resources and Environmental Justice (see Section 3.8)</p>	<ul style="list-style-type: none"> • No environmental protection measures have been identified for socioeconomic resources and environmental justice.
<p>Infrastructure (see Section 3.9)</p>	<ul style="list-style-type: none"> • Contractors would be required to recycle construction debris to the greatest extent possible, thereby diverting it from landfills.

Environmental Resource	Environmental Protection Measures
<p>Hazardous Materials and Wastes (see Section 3.10)</p>	<ul style="list-style-type: none"> • Preparation of a health and safety plan by the contractor prior to commencement of construction and demolition activities. • If contamination is encountered, the handling storage, transportation, and disposal activities would be conducted in accordance with appropriate regulations. • Any USTs discovered would be removed and disposed of in accordance with Federal, state, and local regulations prior to commencement of construction activities. • If the transite piping is encountered during construction, it would be removed by certified individuals and disposed of at a USEPA-approved landfill. • All new MFH units would have a passive system installed to dissipate radon. • Mitigation systems would be installed in new MFH units, as necessary, to address potential TCE vapor intrusion.
<p>Safety (see Section 3.11)</p>	<ul style="list-style-type: none"> • Contractors would follow ground safety regulations and workers compensation programs. • Contractors would be responsible for an industrial hygiene program. • Upon discovery of munitions, unexploded ordinance (UXO), or Chemical Agent Identification Sets during construction or demolition, contractors would cease work in the area and notify the Ellsworth AFB Explosive Ordnance Disposal Flight.

3. Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ, and EIAP (32 CFR Part 989) guidelines, the following discussion of the affected environment and environmental consequences focuses only on those resource areas considered potentially subject to impacts and with potentially significant environmental issues. This section includes noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomic resources and environmental justice, infrastructure, hazardous materials and wastes, and safety. Some environmental resources that are often analyzed in an EA have been omitted from this analysis. The basis for such exclusions is as follows:

Coastal Zone Management. Ellsworth AFB is not within a coastal zone and, therefore, implementation of the Proposed Action would not alter coastal zone resources. Accordingly, a detailed examination of coastal zone management has been omitted.

Visual/Aesthetic Resources. The Proposed Action does not involve any activities that would significantly alter the aesthetic qualities of the area or landscape, as there are no visual or aesthetic resources within view from the MFH privatization area. The Proposed Action would be consistent with the current characteristic features of the area and landscape. Accordingly, a detailed examination of visual/aesthetic resources in this EA has been omitted.

Airspace Management. None of the activities associated with the Proposed Action are within designated airspace. The Proposed Action does not involve any activities that would impact designated airspace or military aircraft operations conducted within designated airspace. Accordingly, a detailed examination of airspace management in this EA has been omitted.

This section presents an analysis of the potential direct and indirect impacts that each alternative would have on the affected environment. Each alternative was evaluated for its potential to affect physical, biological, and socioeconomic resources in accordance with CEQ guidelines at 40 CFR 1508.8.

The following discussion elaborates on the nature of the characteristics that might relate to various impacts:

Short-term or long-term. These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.

Direct or indirect. A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action. For example, a direct effect of erosion on a stream might include sediment-laden waters in the vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of spawning and result in lowered reproduction rates of indigenous fish downstream.

Negligible, minor, moderate, or major. These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts are generally those that might be perceptible but are at the lower level of detection. A minor impact is slight, but detectable. A moderate impact is readily apparent. A major impact is one that is severely adverse or exceptionally beneficial.

Adverse or beneficial. An adverse impact is one having unfavorable or undesirable outcomes on the man-made or natural environment. A beneficial impact is one having positive outcomes on the man-made or natural environment. A single act might result in adverse impacts on one environmental resource and beneficial impacts on another resource.

Context. Context relates intensity to the value a sensitive receptor has to its environment or resource. A sensitive receptor can be anything that is protected or regulated by law or of high esteemed value. A sensitive receptor can be a living organism, a condition such as a critical habitat, or an object such as a historic district. If a resource's sensitive receptors are not located within the affected area then the resource is not a "significant issue" because it fails the context test for significance.

Intensity. The intensity of an impact is determined through consideration of several factors, including whether an alternative might have an adverse impact on the unique characteristics of an area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered or threatened species or designated critical habitat. Impacts are also considered in terms of their potential for violation of Federal, state, or local environmental laws; their controversial nature; the degree of uncertainty or unknown impacts, or unique or unknown risks; if there are precedent-setting impacts; and their cumulative impacts (see **Section 4**).

The impacts analyses consider all alternatives discussed in **Section 2** that have been identified as reasonable for meeting the purpose of and need for action. These alternatives include the following:

- The Proposed Action (described in **Section 2.1**)
- The No Action Alternative (described in **Section 2.3**).

Sections 3.1 through 3.11 discuss potential environmental and socioeconomic impacts on the affected environment.

3.1 Noise

3.1.1 Definition of the Resource

Sound is defined as a particular auditory effect produced by a given source, for example the sound of rain on a rooftop. Noise and sound share the same physical aspects, but noise is considered a disturbance while sound is defined as an auditory effect. Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise annoying. Noise can be intermittent or continuous, steady or impulsive, and can involve any number of sources and frequencies. It can be readily identifiable or generally nondescript. Human response to increased sound levels varies according to the source type, characteristics of the sound source, distance between source and receptor, receptor sensitivity, and time of day. How an individual responds to the sound source will determine if the sound is viewed as music to one's ears or as annoying noise. Affected receptors are specific (e.g., schools, churches, or hospitals) or broad (e.g., nature preserves or designated districts) areas in which occasional or persistent sensitivity to noise above ambient levels exists.

Noise Metrics and Regulations. Although human response to noise varies, measurements can be calculated with instruments that record instantaneous sound levels in decibels. dBA is used to characterize sound levels that can be sensed by the human ear. "A-weighted" denotes the adjustment of the frequency range to what the average human ear can sense when experiencing an audible event. It has been shown that the threshold of audibility is generally within the range of 10 to 25 dBA for normal hearing. The threshold of pain occurs at the upper boundary of audibility, which is normally in the region

of 135 dBA (USEPA 1981a). **Table 3-1** compares common sounds and shows how they rank in terms of the effects of hearing. As shown, a whisper is normally 30 dBA and considered to be very quiet while an air conditioning unit 20 feet away is considered an intrusive noise at 60 dBA. Noise levels can become annoying at 80 dBA and very annoying at 90 dBA. To the human ear, each 10 dBA increase seems twice as loud (USEPA 1981b).

Table 3-1. Sound Levels and Human Response

Noise Level (dBA)	Common Sounds	Effect
10	Just audible	Negligible*
30	Soft whisper (15 feet)	Very quiet
50	Light auto traffic (100 feet)	Quiet
60	Air conditioning unit (20 feet)	Intrusive
70	Noisy restaurant or freeway traffic	Telephone use difficult
80	Alarm clock (2 feet)	Annoying
90	Heavy truck (50 feet) or city traffic	Very annoying; Hearing damage (8 hours)
100	Garbage truck	Very annoying*
110	Pile drivers	Strained vocal effort*
120	Jet takeoff (200 feet) or auto horn (3 feet)	Maximum vocal effort
140	Carrier deck jet operation	Painfully loud

Source: USEPA 1981a and *HDR, Inc. (environmental consultant) extrapolation

Sound levels, resulting from multiple single events, are used to characterize community noise effects from aircraft or vehicle activity and are measured in DNL. The DNL noise metric incorporates a “penalty” for nighttime noise events to account for increased annoyance. DNL is the energy-averaged sound level measured over a 24-hour period, with a 10-dBA penalty assigned to noise events occurring between 10:00 p.m. and 7:00 a.m. DNL values are obtained by averaging single event values for a given 24-hour period. DNL is the preferred sound level metric used to characterize noise impacts of the Federal Aviation Administration (FAA), U.S. Department of Housing and Urban Development (HUD), USEPA, and DOD for modeling airport environments.

DNL is the metric recognized by the U.S. Government for measuring noise and its impacts on humans. According to the USAF, the FAA, and the HUD criteria, residential units and other noise-sensitive land uses are “clearly unacceptable” in areas where the noise exposure exceeds 75 dBA DNL, “normally unacceptable” in regions exposed to noise between 65 dBA and 75 dBA DNL, and “normally acceptable” in areas exposed to noise of 65 dBA DNL or under. The Federal Interagency Committee on Noise developed land use compatibility guidelines for noise in terms of a DNL (FICON 1992). For outdoor activities, the USEPA recommends 55 dBA DNL as the sound level below which there is no reason to suspect that the general population would be at risk from any of the effects of noise (USEPA 1974).

Under the Noise Control Act of 1972, the Occupational Safety and Health Administration (OSHA) established workplace standards for noise. The minimum requirement states that constant noise exposure must not exceed 90 dBA over an 8-hour period. The highest allowable sound level to which workers can be constantly exposed is 115 dBA and exposure to this level must not exceed 15 minutes within an 8-hour period. The standards limit instantaneous exposure, such as impact noise, to 140 dBA. If noise levels exceed these standards, employers are required to provide hearing protection equipment that will reduce sound levels to acceptable limits (29 CFR Part 1910.95).

Construction Sound Levels. Building demolition and construction work can cause an increase in sound that is well above the ambient level. A variety of sounds are emitted from loaders, trucks, saws, and other work equipment. **Table 3-2** lists noise levels associated with common types of construction equipment. Construction equipment usually exceeds the ambient sound levels by 20 to 25 dBA in an urban environment and up to 30 to 35 dBA in a quiet suburban area.

Table 3-2. Predicted Noise Levels for Construction Equipment

Construction Category and Equipment	Predicted Noise Level at 50 feet (dBA)
Clearing and Grading	
Bulldozer	80
Grader	80–93
Truck	83–94
Roller	73–75
Excavation	
Backhoe	72–93
Jackhammer	81–98
Building Construction	
Concrete mixer	74–88
Welding generator	71–82
Pile driver	91–105
Crane	75–87
Paver	86–88

Source: USEPA 1971

3.1.2 Existing Conditions

The ambient noise environment around Ellsworth AFB is affected mainly by aircraft operations and vehicle traffic. Noise from aircraft operations dominates the ambient environment throughout Ellsworth AFB as a result of operations performed by the 28 BW and transient operations. The 28 BW operations include the B-1B aircraft, while transient operations consist of a range of aircraft, such as KC-135, RC-135, F-18, T-38, other fixed-wing aircraft, and helicopters (EAFB 2008d). An AICUZ study was conducted for the installation in 2008 (EAFB 2008d). The noise contours from aircraft operations at Ellsworth AFB, based on 2008 data, extend northwest and southeast from the runway centerline and parallel the runway, as shown on **Figure 3-1**. The land inside the noise contours include off-installation property and encompass portions of the City of Box Elder and other areas of Meade and Pennington counties (EAFB 2008d). The 65 to 80+ dBA DNL noise contours encompass the Proposed Action area. The area encompassed by a noise contour is a noise exposure zone, also referred to as a noise zone. **Table 3-3** identifies where the housing areas (neighborhoods) that make up the MFH privatization area would fall within the DNL noise zones.

Vehicle use also contributes to the ambient noise environment at Ellsworth AFB. Vehicle use for military operations and support functions consists of passenger vehicles, delivery and fuel trucks, and other military vehicles. Passenger vehicles likely compose most of the vehicles present at Ellsworth AFB, including the Proposed Action areas, and the surrounding community roadways. South Gate Road, Liberty Boulevard, and North Ellsworth Road provide access to the installation from Interstate (I)-90. Primary roads within the MFH areas include Vine Street, Washington Avenue, and Scott Drive.

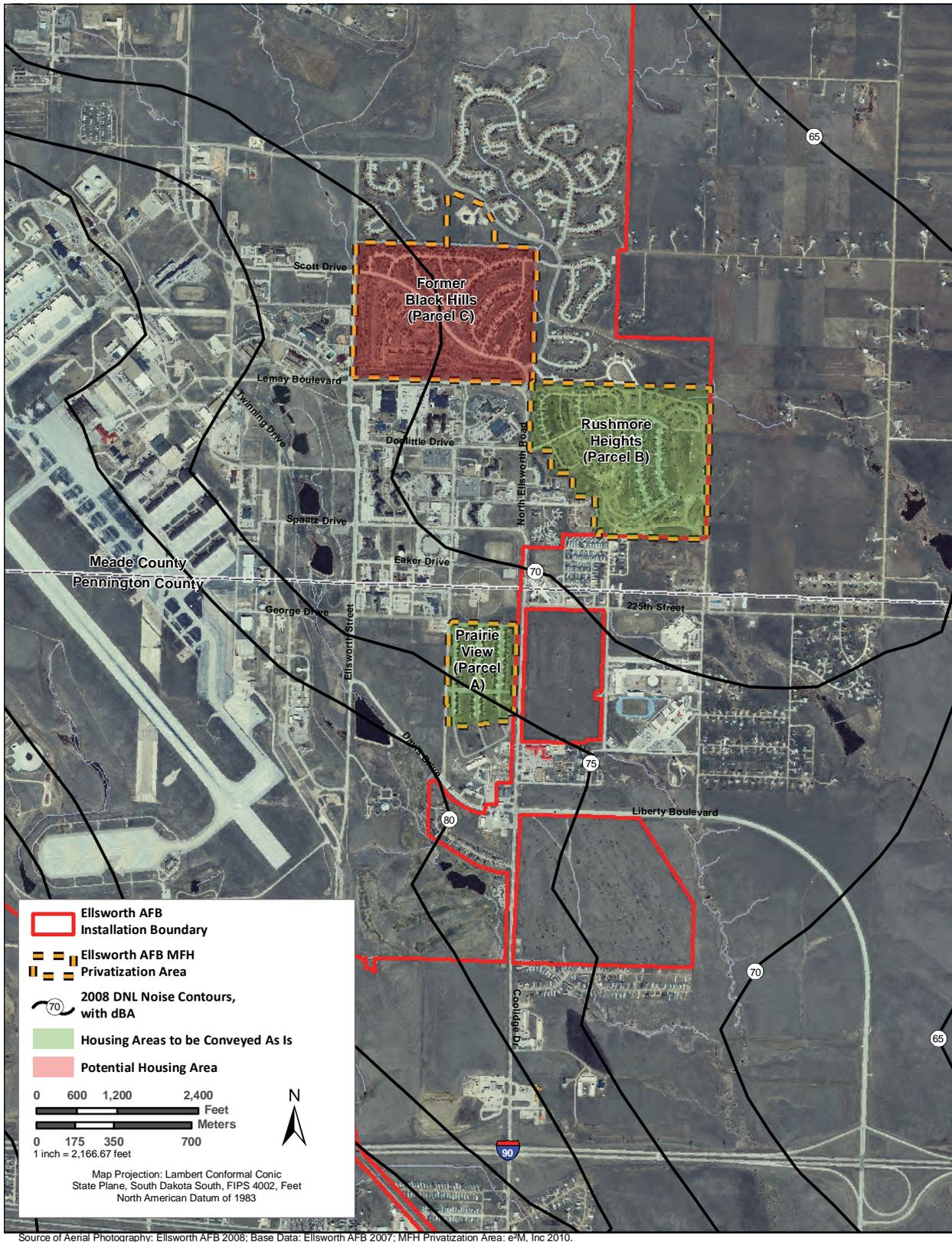


Figure 3-1. DNL Noise Zones at Ellsworth AFB

Table 3-3. DNL Noise Zones in the Vicinity of the MFH Privatization Area

Housing Area	DNL Noise Zones
Prairie View	70–74 dBA 75–79 dBA
Rushmore Heights	65–69 dBA
Former Black Hills Estates Area	65–69 dBA 70–74 dBA

Source: EAFB 2008d

3.1.3 Environmental Consequences

3.1.3.1 Evaluation Criteria

Noise impact analyses typically evaluate potential changes to the existing noise environment that would result from implementation of a proposed action. Potential changes in the acoustical environment can be beneficial (i.e., if they reduce the number of sensitive receptors exposed to unacceptable noise levels or reduce the ambient sound level), negligible (i.e., if the total number of sensitive receptors to unacceptable noise levels is essentially unchanged), or adverse (i.e., if they result in increased sound exposure to unacceptable noise levels or ultimately increase the ambient sound level). Projected noise effects were evaluated qualitatively for the Proposed Action and No Action Alternative.

3.1.3.2 Proposed Action

The components of the Proposed Action consist of construction of 214 new MFH units, minor maintenance and upgrades of the existing MFH units and ancillary facilities, construction of desired features (e.g., recreational facilities such as playgrounds, picnic areas, and multipurpose courts; community center; and trails), and use of the new MFH units and desired features as discussed in **Section 2.1**.

Noise from construction activities varies depending on the type of equipment being used, the area that the action would occur in, and the distance from the noise source. To predict how construction activities would impact adjacent populations, noise from the probable construction activities was estimated. For example, as shown in **Table 3-1**, construction usually involves several pieces of equipment (e.g., trucks and bulldozers) that can be used simultaneously. Under the Proposed Action, the cumulative noise from the equipment, during the busiest day, was estimated to determine the total impact of noise from construction activities at a given distance. Examples of expected total construction noise during daytime hours at specified distances are shown in **Table 3-4**. These sound levels were predicted at 100, 150, 200, 400, 800, and 1,200 feet from the source of the noise.

The noise from construction equipment would be localized, short-term, and intermittent during machinery operations. Heavy equipment would be used periodically during construction; therefore, noise levels from the equipment would fluctuate throughout the day. The proposed construction would be expected to result in noise levels comparable to those indicated in **Table 3-4**.

Under the Proposed Action, 214 new MFH units would be constructed in the former Black Hills Estates area over the 6-year transition period. Construction in this neighborhood would be adjacent to several noise-sensitive receptors, including the Centennial Estates neighborhood to the north and east, outdoor recreational facilities to the west, and a chapel and clinic to the south. The closest existing housing unit to

Table 3-4. Predicted Noise Levels from Construction Activities

Distance from Noise Source	Predicted Noise Level
100 feet	86 dBA
150 feet	82 dBA
200 feet	80 dBA
400 feet	74 dBA
800 feet	68 dBA
1,200 feet	64 dBA

the former Black Hills Estates area is approximately 75 feet away. Assuming the housing units 75 feet away are occupied, residents of these units could experience intermittent noise levels of more than 86 dBA during construction activities. However, it is likely that the new MFH units would be set back from the boundary of the former Black Hills Estates area; therefore, the construction noise heard by nearby existing housing units would be less than 86 dBA. Most existing housing units are more than 250 feet away from the former Black Hills Estates area. There is an athletic field approximately 100 feet west of the former Black Hills area. Users of this field could experience intermittent noise levels of 86 dBA during construction. There are two additional noise-sensitive uses on Ellsworth AFB south of the former Black Hills Estates area: a chapel approximately 250 feet south, and the medical clinic approximately 350 feet south. The chapel and clinic are indoor facilities, and, thus, populations would not likely experience significant noise from construction activities under the Proposed Action when they are inside. Noise levels would decrease as the distance between the construction activities and the noise receptor increases; therefore, other MFH units, outdoor recreational facilities, and community uses in the vicinity of the former Black Hills Estates area would experience lower noise levels. It is not anticipated that the short-term increase in ambient noise levels from the Proposed Action would cause significant adverse effects on the surrounding populations.

The construction activities within the former Black Hills Estates area would fall within the 65 to 74 dBA noise zones from aircraft operations at Ellsworth AFB (see **Figure 3-1**). Consequently, populations in this area would hear single noise events from aircraft. Since multiple single noise events create the cumulative value that represents the noise contours, the actual sound levels that a person hears when they are within the noise contours or adjacent to them fluctuates throughout a 24-hour period. Therefore, populations within this area are likely accustomed to fluctuations of noise levels in the 70 to 90 dBA range that would occur during the construction activities. Noise generation would last only for the duration of construction and would diminish as activities moved farther away from the receptor. The effects of noise generation could be minimized by restricting construction to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and the use of measures such as equipment exhaust mufflers. Consequently, construction activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction.

The Proposed Action would also include minor maintenance and upgrades of existing MFH units and ancillary facilities in the Prairie View and Rushmore Heights neighborhoods, and construction of desired features. The specific location of these maintenance and construction activities is not presently known; however, if these activities require the use of heavy equipment and occur near noise-sensitive receptors, these receptors would experience intermittent noise levels. The maintenance and construction activities would only be temporary during completion of the activity, and would occur during normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.). In addition to the former Black Hills Estates area, the

Prairie View and Rushmore Heights neighborhoods are also within the noise zones from aircraft operations at Ellsworth AFB. Prairie View is within the 70 to 79 dBA DNL noise zone and Rushmore Heights is within the 65 to 74 dBA DNL noise zones. Therefore, populations within these areas are likely accustomed to fluctuations of noise levels in the 70 to 90 dBA range that would occur during the maintenance and construction activities. Therefore, the maintenance and construction of desired features could result in short-term, minor, adverse impacts on the noise environment.

USAF recommendations (AFH 32-7084) state that residential uses are discouraged within the 65 to 69 dBA DNL noise zone and strongly discouraged within the 70 to 74 dBA DNL noise zone. Generally most cultural and recreational uses and facilities are compatible within the 65 to 74 dBA DNL noise zones with restrictions or incorporation of NLR measures. The entire MFH privatization area would be within the 65 to 79 dBA DNL noise zones; however, under the Proposed Action, new MFH units would only be sited within the 65 to 74 dBA DNL noise zones. The specific locations of the proposed desired features (e.g., community center and other outdoor recreational facilities) have not been specifically sited at this time. The entire Prairie View neighborhood in which MFH units would be conveyed “as is,” and the western half of the former Black Hills Estates area where new MFH units could be constructed would be within the 70 to 74 dBA DNL noise zone. Existing MFH units at Ellsworth AFB do not currently employ NLR measures. Ellsworth AFB and the PO would agree to measures to achieve indoor NLR, such as use of triple-pane windows and additional insulation, which would be incorporated into project design and construction of all MFH units constructed in the former Black Hills Estates area. Building location and site planning; and design and use of berms, barriers, and vegetative buffers could help mitigate outdoor noise exposure; however, even with these measures, noise would be heard outdoors. Any future renovations to MFH units that cost more than 50 percent of an MFH unit's replacement value would require the installation of additional NLR measures. Privatization has been proposed for the former Black Hills Estates because there are no other feasible locations for MFH housing within Ellsworth AFB as discussed in **Section 2.2.1**. Because MFH already exists in Prairie View and Rushmore Heights, the only remaining location for additional MFH units is the former Black Hills Estates area. Siting of new MFH units within the 65 to 74 dBA DNL noise zones and potentially siting desired features within the 65 to 79 dBA DNL noise zone could result in land use incompatibility due to noise exposure levels generated by existing military aircraft at Ellsworth AFB. Long-term, moderate, adverse impacts on noise would be expected from constructing MFH units in these noise zones. However, long-term impacts on noise would be mitigated through NLR measures. See **Section 3.2.3** for more information on effects of noise on land use compatibility.

Short- and long-term, negligible to minor, adverse impacts on the ambient noise environment are anticipated as a result of the increase in vehicle traffic under the Proposed Action. Construction traffic and potential future traffic from new residents would use existing roadways as discussed in **Section 3.1.2** to access the MFH areas. Consequently, the additional traffic resulting from construction and privately owned vehicles would likely cause negligible to minor increases in noise levels on noise-sensitive populations adjacent to these roadways.

3.1.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and conditions described in **Section 3.1.2** would remain the same. The proposed construction maintenance activities would not occur, and only minor maintenance and repairs would be required on the 283 existing MFH units. No new MFH units would be sited within the 65 to 74 dBA DNL noise zones. The No Action Alternative would result in short-term, negligible, adverse impacts on the noise environment from periodic maintenance activities.

3.2 Land Use

3.2.1 Definition of the Resource

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activity occurring on a parcel. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories. As a result, the meanings of various land use descriptions, “labels,” and definitions vary among jurisdictions. Natural conditions of property can be described or categorized as unimproved, undeveloped, conservation or preservation area, and natural or scenic area. There is a wide variety of land use categories resulting from human activity. Descriptive terms often used include residential, commercial, industrial, agricultural, institutional, and recreational. USAF installation land use planning commonly uses 12 general land use classifications: Airfield, Aircraft Operations and Maintenance, Industrial, Administrative, Community (Commercial), Community (Service), Medical, Housing (Accompanied), Housing (Unaccompanied), Outdoor Recreation, Open Space, and Water (USAF 1998).

Two main objectives of land use planning are to ensure orderly growth and compatible uses among adjacent property parcels or areas. Compatibility among land uses fosters the societal interest of obtaining the highest and best uses of real property. Tools supporting land use planning within the civilian sector include written master plans/management plans, policies, and zoning regulations. According to Air Force Pamphlet (AFPAM) 32-1010, *Land Use Planning*, land use planning is the arrangement of compatible activities in the most functionally effective and efficient manner. The USAF comprehensive planning process also uses functional analysis, which determines the degree of connectivity among installation land uses as well as between on-installation and off-installation land uses, to determine future installation development and facilities planning (USAF 1998).

In appropriate cases, the location and extent of a proposed action needs to be evaluated for its potential effects on a project site and adjacent land uses. The foremost factor affecting a proposed action in terms of land use is its compliance with any applicable land use or zoning regulations. Other relevant factors include matters such as existing land use at the project site, the types of land uses on adjacent properties and their proximity to a proposed action, the duration of a proposed activity, and its “permanence.”

3.2.2 Existing Conditions

Ellsworth AFB consists of approximately 5,415 acres in Meade and Pennington counties in southwestern South Dakota, 7 miles northeast of Rapid City (see **Figure 1-1**). The City of Box Elder borders the installation to the southeast. A portion of the installation was recently annexed to the City of Box Elder to encourage development activities for the city.

On-installation Land Use. Land use patterns on Ellsworth AFB are compatibly arranged to support mission requirements. Ellsworth AFB maintains a residual amount of open space to buffer incompatible uses and to support future installation functions or expanded missions (EAFB 2008c).

The *Ellsworth AFB General Plan* identifies 11 land use categories: Administrative, Aircraft Operations and Maintenance, Airfield and Airfield Pavements, Community (Commercial), Community (Services), Housing (Accompanied), Housing (Unaccompanied), Industrial, Medical, Open Space (includes water), and Outdoor Recreation (EAFB 2008c). **Figure 3-1** shows the existing land uses that have been defined at Ellsworth AFB. The dominant land use designation at Ellsworth AFB, representing 34 percent of the installation, is Open Space. The Airfield and Airfield Pavements land use represents the second largest use at Ellsworth AFB (26 percent). The airfield runs northwest-southeast in the southwestern portion of the installation. Due to their interdependent nature, Aircraft Operations and Maintenance and Industrial

uses are found in close proximity to the airfield. The main cantonment area is in the eastern portion of the installation and includes most of the Administration, Housing (Accompanied and Unaccompanied), Medical, Community (Commercial and Services), and Outdoor Recreation uses. See **Table 3-5** for these existing land use types and corresponding acreages.

Table 3-5. Existing Land Use at Ellsworth AFB

Land Use Designation	Current Acres	Percent of Installation
Administrative	62	1
Aircraft Operations and Maintenance	89	2
Airfield and Airfield Pavements	1,327	26
Community (Commercial)	49	1
Community (Services)	49	1
Housing (Accompanied)	563	11
Housing (Unaccompanied)	69	1
Industrial	823	16
Medical	17	< 1
Missile Operations and Maintenance	43	1
Open Space	1,731	34
Outdoor Recreation	259	5
Water (includes wetlands)	9	< 1

Source: EAFB 2008c

The Proposed Action would occur within several installation land use designations, including Housing (Accompanied), Community (Services), Outdoor Recreation, and Open Space.

Fishing and agricultural use (e.g., grazing) are permitted in specific areas of Ellsworth AFB. There are no formal agricultural outleasing agreements; however, there is a Grazing Plan which allows the Riding Club to use 946 acres of the installation land for grazing (EAFB 2005a, EAFB 2008c). There is an informal cooperative agreement with the South Dakota Department of Game, Fish, and Parks (SDGFP) to stock and manage Gateway Lake and Bandit Lake with bass and panfish, and Heritage Lake with trout for sport fishing purposes (EAFB 2005a).

The MFH privatization area, including the Prairie View and Rushmore Heights neighborhood, and the former Black Hills Estates area, would be inside the 65 dBA DNL noise contour from aircraft operations at Ellsworth AFB (see **Figures 3-1**). The noise contours are based on an AICUZ study conducted for the installation in 2008 (EAFB 2008d). See **Section 3.1** for more information on noise zones at Ellsworth AFB.

Under the existing noise environment, a majority of the Prairie View neighborhood and the western half of the former Black Hills Estates area are within the 70 to 74 dBA DNL noise zone, while the southern end of Prairie View neighborhood is in the 75 to 79 dBA DNL noise zone. The Rushmore Heights neighborhood and eastern half of the former Black Hills Estates area are within the 65 to 69 dBA DNL noise zone (EAFB 2008d).

An Environmental Restoration Program (ERP) site, OU-11, is in the former Black Hills Estates area. OU-11 includes a TCE-contaminated groundwater plume at the former Black Hills Estates area. Due to this contamination, there is a Land Use Control (LUC) in place for OU-11 that restricts the installation of new groundwater wells in the vicinity of OU-11 (EAFB 2006a). See **Section 3.10** for more information on ERP sites.

Off-installation Land Use. Ellsworth AFB is in unincorporated areas of Meade and Pennington counties in southwestern South Dakota, although the installation's residential areas are incorporated in the City of Box Elder. The installation is 7 miles north of the City of Rapid City, and is adjacent to two populated areas, including the City of Box Elder to the south-southeast and the unincorporated community of Ashland Heights to the southwest. Access to Ellsworth AFB is provided by I-90 (U.S. Route 14), which is immediately south of the installation.

Since the 1940s, growth in several communities, including Box Elder, has increased, thereby impacting land use surrounding Ellsworth AFB. Current land use surrounding Ellsworth AFB is mixed. Land use in areas to the west, north, and intermittently to the east of Ellsworth AFB is classified as low-density rural-agricultural. The City of Box Elder is adjacent to Ellsworth AFB, southeast of the installation boundary. Land uses within Box Elder consist of open space/low-density uses with residential and commercial uses along major transportation routes.

In recent years the City of Box Elder has sought to attract businesses to provide economic opportunities and retail and dining options for those living on- and off-installation. Some businesses have declined relocating to the City of Box Elder because population levels in the city were not large enough to meet their requirements. In 2009, the City of Box Elder annexed portions of the residential areas of Ellsworth AFB. This annexation allowed the City of Box Elder to increase their population and tax revenues in hopes of attracting new businesses (Box Elder undated, Box Elder 2009). **Figure 3-2** shows the land use on Ellsworth AFB and the annexation boundary.

The *City of Box Elder Comprehensive Plan: Goal and Policies* serves as a guide for policy decisions relating to the physical growth and economic development of the City of Box Elder. The City of Box Elder zoning districts that surround Ellsworth AFB include Agriculture, Residential, and Commercial (Meade County 2010).

Current and future land use for Pennington County is driven by the Pennington County zoning districts, which are published in the *Pennington County Comprehensive Plan*. The unincorporated area surrounding Ellsworth AFB primarily consists of the General Agriculture zoning district; however, there are scattered parcels of Limited Agriculture, Suburban Residential, and Low-Density Residential zoning districts (EAFB 2008c, Rapid City and Pennington County 2010).

Land use policies and decisionmaking for Meade County is guided by the *Meade County Comprehensive Plan*. The Meade County generalized current land use categories surrounding Ellsworth AFB primarily include Agricultural with scattered Residential and Commercial (Meade County 2009a). Future land use is generally similar; however, Industrial uses are identified to the west of the installation and Residential uses, including Residential and Residential 2, are identified north and east, respectively (Meade County 2009b).

The Proposed Action would occur entirely within the City of Box Elder; the Prairie View neighborhood is within Pennington County and the Rushmore Heights neighborhood and the former Black Hills Estates area are within Meade County.

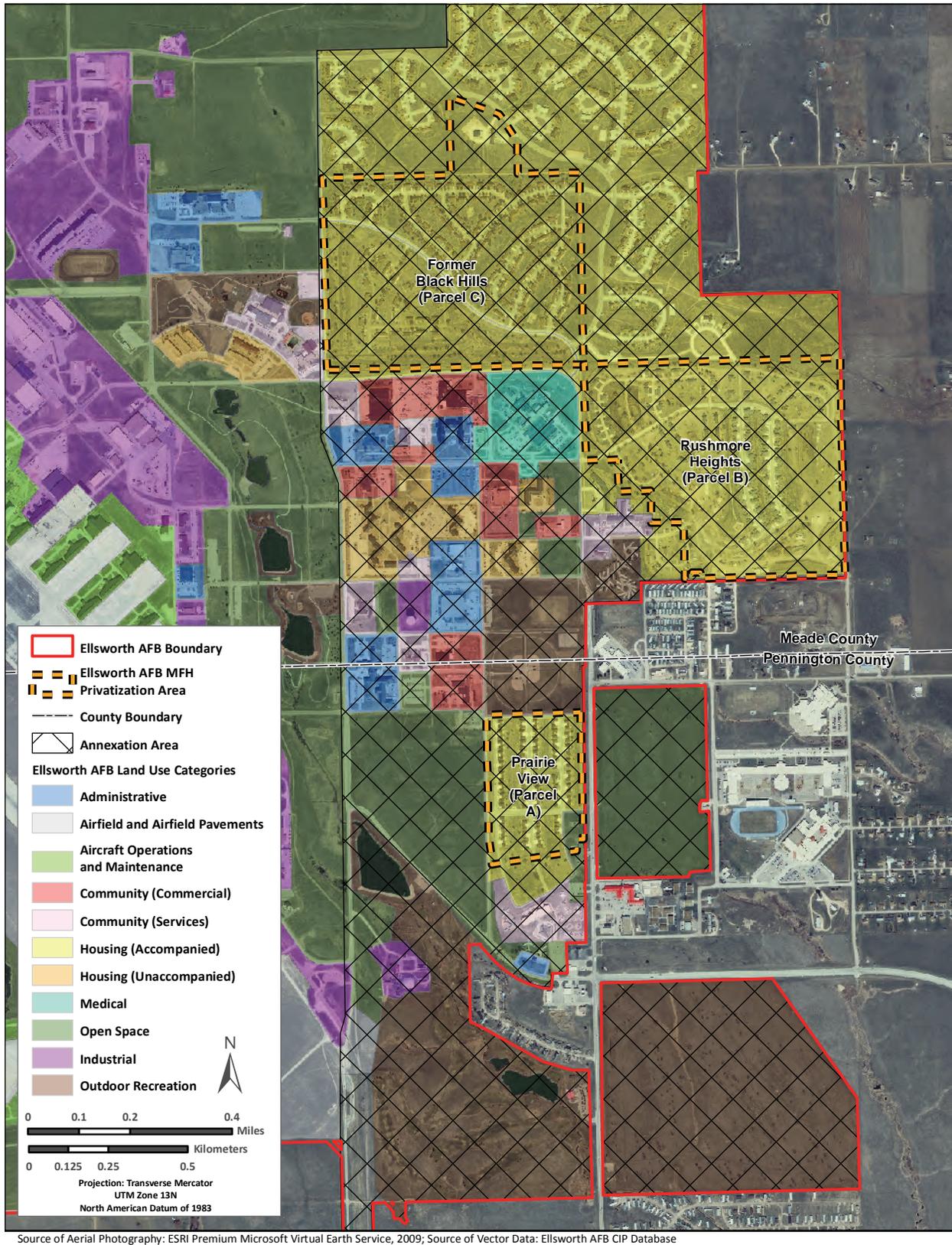


Figure 3-2. Land Use on Ellsworth AFB and Annexation Boundary

3.2.3 Environmental Consequences

3.2.3.1 Evaluation Criteria

The significance of potential land use effects is based on the level of land use sensitivity in areas affected by a proposed action and compatibility of proposed actions with existing conditions. A proposed action could have a significant effect with respect to land use if any the following were to occur:

- 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.

3.2.3.2 Proposed Action

The Proposed Action would be in compliance with the *Ellsworth AFB General Plan*, including the goals and the existing installation land use designations. The Proposed Action would be consistent with Ellsworth AFB's goals of fostering long-term, sustainable development through the wise use of the natural, social, and built environment, and promotion of fitness and wellness for the Airmen and their families through the modernization of living quarters and recreational facilities. The Proposed Action would occur within several land use designations, including Housing (Accompanied), Commercial (Community and Services), Outdoor Recreation, and Open Space. It would not require changes to the current land use designations except if desired features such as outdoor recreational facilities or a community center/clubhouse are constructed. While similar features are currently within the Housing (Accompanied) land use designation, if outdoor recreational facilities such as playgrounds and multipurpose courts, and a community center/clubhouse are constructed within land designated as Housing (Accompanied), these areas could require changing the land use designation to Outdoor Recreation and Community (Services), respectively. The Proposed Action would continue the Housing (Accompanied) land use in the Prairie View and Rushmore Heights neighborhoods, and reintroduce family housing uses in the former Black Hills Estates area through construction of 214 new MFH units. Long-term, negligible, adverse impacts on the General Plan would be expected due to the potential need to change these land use designations.

The Proposed Action would not violate local zoning ordinances, including those of the City of Box Elder and Pennington and Meade counties, because municipal and county zoning regulations do not apply to Federal property. Therefore, the Proposed Action would not result in any impacts on municipal and county land use plans or policies.

The Proposed Action would be compatible with all surrounding land uses and would not preclude the viability or continued use and occupation of existing land uses at Ellsworth AFB. The continued maintenance and upgrades of the MFH units and ancillary facilities in these neighborhoods would make the units more livable, thereby reinforcing the viability and continued use of the units for MFH. The construction of 214 MFH units in the former Black Hills Estates area would introduce new MFH units in close proximity to Administrative uses and other work areas, and Community (Services and Commercial) and Outdoor Recreation uses. Enhancement of all three neighborhoods and construction of new MFH units would support the continued use of the adjacent Community and Outdoor Recreation land uses, which are both functionally important to the MFH land use (USAF 1998). Construction and maintenance activities could also result in noise that could be heard by nearby occupied MFH units and a temporary

lodging facility, outdoor recreational facilities, a chapel, and a child care center. However, the noise and disturbance produced would be short-term and minor and would not be of a level that would make it incompatible with these surrounding uses.

The Proposed Action would occur entirely inside the 65 dBA DNL noise contour for aircraft operations at Ellsworth AFB. The Proposed Action would involve construction of MFH units at the former Black Hills Estates area, which is within the 65 to 69 dBA and 70 to 74 dBA DNL noise zones. New MFH units have been proposed to be constructed in the former Black Hills Estates because there are no other feasible locations for MFH housing within Ellsworth AFB as discussed in **Section 2.2.1**. MFH already exists in Prairie View and Rushmore Heights and, thus, the only remaining location for additional MFH units is the former Black Hills Estates area. The existing MFH units in the Prairie View and Rushmore Heights neighborhoods, which are encompassed by the 65 to 79 dBA DNL noise zones, would be conveyed “as is,” and no new residential uses would be introduced in these areas.

AFH 32-7084 states that residential uses are discouraged inside the 65 dBA DNL noise contour and strongly discouraged inside the 70 dBA DNL noise contour (USAF 1999). The western half of the former Black Hills Estates area would be inside the 70 dBA DNL noise contour. AFH 32-7084 also states that alternative options should be considered prior to developing in these areas, including an evaluation that determines if a demonstrated community need for residential use would not be met if development were prohibited in these zones. After a community determines that residential uses must be allowed, residential household units are generally acceptable within the 65 to 69 dBA and 70 to 74 dBA DNL noise zones with the incorporation of NLR measures into the design and construction of the units (USAF 1999). Therefore, construction of new MFH units would be compatible in the entire former Black Hills Estates area if the new units include outdoor to indoor NLR measures to achieve NLR for the appropriate DNL noise zone (i.e., the 65 to 69 dBA DNL noise zone or the 70 to 74 dBA DNL noise zone). Typical outdoor to indoor NLR measures include use of triple-pane windows and additional insulation and other design elements. In addition, building location and site planning; and design and use of berms, barriers, and vegetative buffers could help mitigate outdoor noise exposure; however, even with these measures, noise would be heard outdoors. Measures to achieve an overall NLR do not necessarily solve all noise issues and additional evaluation would be warranted (USAF 1999). Construction of new MFH units with NLR measures in the former Black Hills Estates area would result in a long-term, moderate, adverse impact on land use compatibility.

The specific locations of the proposed desired features (e.g., community center and other outdoor recreational facilities) with the MFH privatization area have not yet been identified. Generally, most cultural and recreational uses and facilities are incompatible within the 75 to 79 dBA DNL noise zone, but compatible within lower noise zones with restrictions or incorporation of NLR measures (USAF 1999). Therefore, the proposed desired features (e.g., community center and other outdoor recreational facilities) would not be sited within the 75 to 79 dBA DNL noise zone, which includes the southern portion of the Prairie View neighborhood under existing noise conditions. The desired features would be compatible outside of the 75 dBA DNL noise contour with some restrictions and the incorporation of NLR measures. If the desired features were constructed in the area outside of the 75 dBA DNL noise contour, it would result in a long-term, moderate, adverse, impact on land use compatibility, whereas siting of these features inside of the 75 dBA DNL noise contour would result in greater impacts on land use compatibility.

The Proposed Action would result in long-term, moderate, adverse impacts on land use compatibility with respect to public health and safety planning criteria related to noise exposure. See **Section 3.1.3** for more information on noise impacts.

An LUC in place for OU-11 at the former Black Hills Estates area restricts or places limitations on the installation of any new groundwater wells. Under the Proposed Action, up to 214 MFH units are

proposed to be constructed at the former Black Hills Estates area. Existing underground water lines or polyvinyl chloride (PVC) water mains would be replaced in the former Black Hills Estates area to provide potable water service to the MFH units proposed for construction. No new groundwater wells are proposed. Therefore, the Proposed Action would not result in any impact on land use from the existing OU-11 LUC because no groundwater wells would be installed in the former Black Hills Estates area. See **Sections 3.9.3** and **3.10.3** for impacts on infrastructure and hazardous materials and wastes, respectively.

3.2.3.3 No Action Alternative

The No Action Alternative would result in a continuation of the existing land use conditions described in **Section 3.2.2**. Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. The No Action Alternative would not result in any impacts on land use, and would avoid the short- and long-term adverse impacts on land use associated with the Proposed Action.

3.3 Air Quality

3.3.1 Definition of the Resource

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), milligrams per cubic meter (mg/m^3), or micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). 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 the USEPA to develop, implement, and enforce strong 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 [$\text{PM}_{2.5}$]), 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. South Dakota has adopted the NAAQS by reference (SD DENR 2010a). These standards are termed the South Dakota Ambient Air Quality Standards (SDAAQS). **Table 3-6** presents the primary and secondary USEPA NAAQS and SDAAQS.

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 .

Table 3-6. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal ^a	State	
CO	8-hour ^b	9 ppm (10 mg/m ³)	Same	None
	1-hour ^b	35 ppm (40 mg/m ³)	Same	None
Pb	Quarterly average	1.5 µg/m ³	Same	Same as Primary
	Rolling 3-Month Average	0.15 µg/m ³ ^c	--	Same as Primary
NO ₂	Annual Arithmetic Mean	53 ppb ^d	Same	Same as Primary
	1-hour	100 ppb ^e	--	None
PM ₁₀	24-hour ^f	150 µg/m ³	Same	Same as Primary
PM _{2.5}	Annual Arithmetic Mean ^g	15 µg/m ³	Same	Same as Primary
	24-hour ^h	35 µg/m ³	Same	Same as Primary
O ₃	8-hour ⁱ	0.075 ppm (2008 Standard)	0.080	Same as Primary
	8-hour ^j	0.08 ppm (1997 Standard)	--	Same as Primary
	1-hour ^k	0.12 ppm	--	Same as Primary
SO ₂	Annual Arithmetic Mean	0.03 ppm	0.023 ppm	0.5 ppm (3-hour) ^b
	24-hour ^b	0.14 ppm	0.099 ppm	0.5 ppm (3-hour) ^b
	1-hour	75 ppb ^l	0.273 ppm	None

Sources: USEPA 2010e, SD DENR 2010a

Notes:

- a. Parenthetical values are approximate equivalent concentrations.
- b. Not to be exceeded more than once per year.
- c. Final rule signed 15 October 2008.
- d. The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
- e. To attain this standard, the 3-year average of the 98th percentile of the daily maximum 1-hour average at each monitor within an area must not exceed 100 ppb (effective 22 January 2010).
- f. Not to be exceeded more than once per year on average over 3 years.
- g. To attain this standard, the 3-year average of the weighted annual mean PM_{2.5} concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m³.
- h. To attain this standard, the 3-year average of the weighted annual of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m³ (effective 17 December 2006).
- i. 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 0.075 ppm (effective 27 May 2008).
- j.
 1. 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.
 2. The 1997 standard – and the implementation rules for that standard – will remain in place for implementation purposes as USEPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.
 3. USEPA is in the process of reconsidering these standards (set in March 2008).
- k.
 1. USEPA revoked the 1-hour ozone standard in all areas, although some areas have continuing obligations under that standard (anti-backsliding).
 2. The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤ 1.
- l. Final rule signed on 2 June 2010. To attain this standard, the 3-year average of the 99th percentile of daily maximum 1-hour average at each monitor within an area must not exceed 75 ppb.

Key: ppm = parts per million; mg/m³ = milligrams per cubic meter; µg/m³ = micrograms per cubic meter

As authorized by the CAA, 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.

In 1997, USEPA initiated work on new General Conformity rules and guidance to reflect the new 8-hour O₃, PM_{2.5}, and regional haze standards that were promulgated in that year. The 1-hour O₃ standard will no longer apply to an area 1 year after the effective date of the designation of that area for the 8-hour O₃ NAAQS. The effective designation date for most areas was June 15, 2004. USEPA designated PM_{2.5} nonattainment areas in December 2004, and finalized the PM_{2.5} implementation rule in January 2005. No county in the state of South Dakota was identified as being nonattainment for the PM_{2.5} standard.

On 22 September 2009, the USEPA issued a final rule for mandatory GHG reporting from large GHG emissions sources in the United States. The purpose of the rule is to collect comprehensive and accurate data on carbon dioxide (CO₂) and other GHG emissions that can be used to inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of CO₂ equivalent per year. The first emissions report is due in 2011 for 2010 emissions. GHG emissions will become factors in Prevention of Significant Deterioration (PSD) and Title V permitting and reporting, according to a USEPA rulemaking issued on 3 June 2010 (75 Federal Register [FR] 31514). GHG emissions thresholds of significance for permitting of stationary sources are 75,000 tons CO₂ equivalent per year and 100,000 tons CO₂ equivalent per year under these permit programs. GHGs became regulated pollutants under the CAA for purposes of air permitting in January 2011.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, was signed in October 2009 and requires agencies to set goals for reducing GHG emissions. One requirement within EO 13514 is the development and implementation of an agency Strategic Sustainability Performance Plan (SSPP) that prioritizes agency actions based on lifecycle return on investment. Each SSPP is required to identify, among other things, “agency activities, policies, plans, procedures, and practices” and “specific agency goals, a schedule, milestones, and approaches for achieving results, and quantifiable metrics” relevant to the implementation of EO 13514. On 26 August 2010, DOD released its SSPP to the public. This implementation plan describes specific actions DOD will take to achieve its individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. All SSPPs segregate GHG emissions into three categories: Scope 1, Scope 2, and Scope 3 emissions. Scope 1 GHG emissions are those directly occurring from sources that are owned or controlled by the agency. Scope 2 GHG emissions are indirect emissions generated in the production of electricity, heat, or steam purchased by the agency. Scope 3 GHG emissions are other indirect GHG emissions that result from agency activities but from sources that are not owned or directly controlled by the agency. The GHG emissions goals in the DOD SSPP include reducing Scope 1 and Scope 2 GHG emissions by 34 percent by 2020, relative to FY 2008 emissions, and reducing Scope 3 GHG emissions by 13.5 percent by 2020, relative to FY 2008 emissions. The first GHG air quality emissions report is due in 2011 for 2010 emissions.

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, installation, or activity) that has the potential to emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of an HAP, or 25 tpy of any combination of HAPs.

Federal PSD regulations apply in attainment areas to major stationary sources (e.g., sources with the potential to emit 250 tpy of any criteria pollutant) and significant modifications to major stationary

sources (e.g., change that adds 0.6 tpy for lead, or 10 tpy to 100 tpy depending on the criteria pollutant, to the facility’s potential to emit). Additional PSD permitting thresholds apply to increases in stationary source GHG emissions, as discussed above. PSD permitting can also apply to a proposed project that is a modification with a net emissions increase to an existing PSD major source and (1) the proposed project is within 10 kilometers of national parks or wilderness areas (i.e., Class I Areas) , and (2) regulated stationary source pollutant emissions would cause an increase in the 24-hour average concentration of any regulated pollutant in the Class I area of 1 microgram per cubic meter ($\mu\text{g}/\text{m}^3$) 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 class designation (40 CFR 52.21[c]) (USEPA 2009a). PSD regulations do not apply to the Proposed Action and are not discussed further in this EA because Ellsworth AFB is not an existing PSD major source and there are only minor stationary source emissions increases associated with the Proposed Action.

3.3.2 Existing Conditions

Ellsworth AFB is in Meade and Pennington counties and the City of Box Elder is in Pennington County. Meade and Pennington counties are within the Black Hills-Rapid City Intrastate (BHRCI) Air Quality Control Region (AQCR). The BHRCI AQCR consists of the counties of Butte, Custer, Fall River, Lawrence, Meade, and Pennington, South Dakota. As defined in 40 CFR 81.342, Meade and Pennington counties are designated as attainment/unclassifiable for all criteria pollutants (USEPA 2002a).

The most recent emissions inventories for Meade and Pennington counties and the BHRCI AQCR are shown in **Table 3-7**. Meade and Pennington counties are considered the local area of influence, and the BHRCI AQCR is considered the regional area of influence for the air quality analysis.

Table 3-7. Local and Regional Air Emissions Inventory for the Proposed Action (2002)

	NO _x (tpy)	VOC (tpy)	CO (tpy)	SO ₂ (tpy)	PM ₁₀ (tpy)	PM _{2.5} (tpy)
Meade County	1,546	1,360	9,680	136	5,069	787
Pennington County	9,559	5,799	40,433	2,738	8,409	1,802
BHRCI AQCR	15,082	9,923	68,289	3,295	22,883	4,248

Source: USEPA 2002b

The U.S. Department of Energy, Energy Information Administration (DOE/EIA) estimates that in 2005 gross CO₂ emissions in South Dakota were 14.4 million metric tons (DOE/EIA 2010).

The South Dakota DENR regulates air quality for the State of South Dakota. Ellsworth AFB is classified as a synthetic minor with the DENR (SD DENR 2007). As required by the DENR, Ellsworth AFB calculates annual criteria pollutant emissions from stationary sources and provides this information to the DENR. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, hot water heaters, fuel storage tanks, gasoline service stations, surface coating/paint booths, and miscellaneous chemical usage.

3.3.3 Environmental Consequences

3.3.3.1 Evaluation Criteria

The environmental consequences to 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
- Exceed any evaluation criteria established by a SIP or the existing South Dakota DENR Minor Air Permit for Ellsworth AFB
- Produce emissions representing an increase of 100 tons per year for any attainment criteria pollutant (i.e., NO_x, VOCs, CO, PM₁₀, PM_{2.5}, or SO₂), unless the proposed activity qualifies for an exemption under the Federal General Conformity Rule.

Although the 100 tons per year threshold is not a regulatory driven threshold, it is being applied as a conservative measure of significance in attainment areas. The rationale for this conservative threshold is that it is consistent with the highest General Conformity *de minimis* levels for nonattainment areas and maintenance areas. In addition, it is consistent with Federal stationary source major source thresholds for Title V permitting that formed the basis for the nonattainment *de minimis* levels.

3.3.3.2 Proposed Action

Short-term and long-term, minor, adverse impacts on air quality would be expected from implementation of the Proposed Action. The construction and renovation projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations, but these emissions would be temporary and would not be expected to generate any offsite effects. The Proposed Action would not result in a net increase in personnel or commuter vehicles. Therefore, the Proposed Action's emissions from existing personnel and commuter vehicles would not result in an adverse impact on regional air quality.

Construction operations would result in short-term emissions of criteria pollutants as combustion products from construction equipment, and as evaporative emissions from architectural coatings and asphalt paving operations. Emissions of all criteria pollutants would result from construction activities including combustion of fuels from on-road haul trucks transporting materials and from construction commuter emissions.

Construction would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Fugitive dust emissions would be greatest during 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. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions.

All emissions associated with construction and renovation activities would be temporary in nature. There would be negligible new operational emissions associated with the Proposed Action resulting in long-term, minor, adverse impacts on air quality. These operational emissions would be from combustion of natural gas in boilers and heaters used to heat the new community center. Per the South Dakota Air Pollution Control Regulations under South Dakota Administrative Rule (SDAR) 74:36:04:03, *Operating Permit Exemptions* (SDAR 2010), the air construction permit threshold for stationary fuel combustion sources is 3.5 million British thermal units (BTUs) per hour. Although the size of the new boilers and heaters are unknown, it is not anticipated they would be large enough to require an air construction permit. The new boilers and heaters might not require a modification of the facility's minor air operating permit until the next permit renewal because it is anticipated they would be considered insignificant

activities. According to South Dakota DENR Minor Air Quality Permit for Ellsworth AFB, insignificant activities are not required for inclusion in the annual emissions inventory (SD DENR 2007).

Although the Proposed Action could occur over the span of a 6-year period, the Proposed Action was analyzed as if it would occur in 1 calendar year. It is not expected that emissions from construction associated with the Proposed Action would contribute to or affect local or regional attainment status with the NAAQS and SDAAQS. Emissions from the Proposed Action are summarized in **Table 3-8**. Emissions estimation spreadsheets and a summary of the methodology used are included in **Appendix F**.

Table 3-8. Estimated Air Emissions Resulting from Proposed Action

Activity	NO _x tpy	VOC tpy	CO tpy	SO ₂ tpy	PM ₁₀ tpy	PM _{2.5} tpy	CO ₂ tpy
Combustion	5.244	0.992	2.292	0.386	0.372	0.361	597.791
Fugitive Dust	--	--	--	--	27.175	1.516	--
Haul Truck On-Road	1.500	1.085	4.408	0.118	1.784	0.464	379.775
Construction Worker Commuter	0.110	0.110	0.992	0.001	0.010	0.007	131.482
Total Proposed Action Emissions	6.854	2.186	7.691	0.506	29.341	2.347	1,109.047
Percent of BHRCI Inventory	0.045	0.022	0.011	0.015	0.128	0.055	0.007*

Note: * Percent of State of South Dakota CO₂ emissions.

Construction would generate particulate matter emissions as fugitive dust from ground-disturbing activities. Appropriate fugitive dust-control measures would be employed during construction activities to suppress emissions. Emissions of all criteria pollutants would result from construction activities, combustion of fuels from on-road haul trucks transporting materials, and from construction commuter emissions.

Fugitive dust emissions would be greatest during 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 AP-42. These estimates assume that the project duration is 12 months or 240 working days for construction. Emissions calculations and methodology used are included in **Appendix F**.

The Energy Information Administration estimates that in 2005 gross CO₂ emissions in South Dakota were 14.4 million metric tons (DOE/EIA 2010). Approximately 1,006 metric tons (1,109 tons) of CO₂ were estimated to be emitted by the Proposed Action, which is approximately 0.007 percent of the South Dakota statewide CO₂ emissions. Therefore, the proposed project would have negligible contribution towards the South Dakota statewide GHG inventory. CO₂ emissions estimates are included in **Appendix F**.

Because Ellsworth AFB is in attainment/unclassifiable for all criteria pollutants, General Conformity Rule requirements are not applicable. The Proposed Action would generate emissions well below 10 percent of the emissions inventory for the BHRCI AQCR and the emissions would be short-term. Therefore, the construction activities associated with the Proposed Action would not have significant impacts on air

quality at Ellsworth AFB or on regional or local air quality. **Appendix F** includes the air emissions estimation spreadsheets and methodology.

3.3.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented and no effects would be anticipated on air quality. Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. No impacts on air quality would be expected under the No Action Alternative.

3.4 Geological Resources

3.4.1 Definition of the Resource

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 and physiography, geology, soils, and, where applicable, geologic hazards and paleontology.

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

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 analysis based on observations of the surface and borings to identify subsurface composition.

Soils are the unconsolidated materials overlying bedrock or other parent material. Soils typically are 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, soil properties must be examined for their compatibility with particular construction activities or types of land use.

Prime farmland is protected under the Farmland Protection Policy Act (FPPA) of 1981. Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses. The soil qualities, growing season, and moisture supply are needed for a well-managed soil to produce a sustained high yield of crops in an economic manner. The land could be cropland, pasture, rangeland, or other land, but not urban built-up land or water. The intent of the FPPA is to minimize the extent that Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses. The Act also ensures that Federal programs are administered in a manner that, to the extent practicable, will be compatible with private, state, and local government programs and policies to protect farmland.

The implementing procedures of the FPPA and Natural Resources Conservation Service (NRCS) require Federal agencies to evaluate the adverse effects (direct and indirect) of their activities on prime and unique farmland, and farmland of statewide and local importance, and to consider alternative actions that could avoid adverse effects. Determination of whether an area is considered prime or unique farmland and potential impacts associated with a proposed action are based on preparation of the farmland conversion impact rating form AD-1006 for areas where prime farmland soils occur and by applying criteria established at Section 658.5 of the FPPA (7 CFR Part 658). The NRCS is responsible for overseeing compliance with the FPPA and has developed the rules and regulations for implementation of the Act (see 7 CFR Part 658, 5 July 1984).

3.4.2 Existing Conditions

Geology. Ellsworth AFB is within the Great Plains province displaying nearly level areas, called benches or tables. This flat-lying land is reflective of the mature stage of erosion of the province and more than 500 million years of tectonic stability. The plains are composed of marine and stream sediments deposited during the Mesozoic Era (60 to 255 million years before present) when a shallow sea covered the region. The flat plains are interrupted by conspicuous buttes, which are isolated flat-topped hills with steep slopes that are capped with erosion-resistant rock. Buttes primarily form as a result of an erosion-resistant cap rock overlying less resistant sedimentary rocks that are protected from erosion as a result of the cap. Surrounding less erosion-resistant sedimentary rocks erode more rapidly resulting in the formation of the butte over time (USGS 2002). Generally, the Great Plains slope gently to the east from the western border of the Black Hills towards the Missouri River. The Black Hills and adjoining areas were formed during tectonic uplift.

Ellsworth AFB is situated in the Kennedy Basin, consisting of a series of thick beds of sandstone, limestone, and shale, overlying crystalline basement rocks. A band of marine shale with intermittent sandstone and limestone beds, more than 1,000 feet in thickness, extends to the surface at the installation. The uppermost of these deposits is the Pierre Shale, which forms the bedrock surface at the installation, and is present from depths of 40 feet below ground surface to surface outcroppings. Unconsolidated materials, including colluvial and alluvial deposits, and residual material overlay the Pierre Shale on the installation (EAFB 2005a).

Topography. The topography of Ellsworth AFB is level to gently sloping, with the exception of the northernmost section of the installation that descends abruptly northward to a valley floor. The remainder of the installation slopes southward towards Box Elder Creek. Elevations of the installation range from 3,380 feet above mean sea level (msl) in the north to 3,080 feet above msl in the south. Elevations within the site of the Proposed Action range from approximately 3,110 to 3,150 feet above msl, with elevations sloping to the southeast (EAFB 2005a).

Soils. The soils mapped over the majority of the installation include loams and clay loams of the Nunn series. The Nunn series consists of very deep, well-drained soils that formed in loess and mixed alluvium. Runoff is negligible to low and permeability is moderately slow to slow. Nunn soils are on terraces or alluvial fans and in drainageways. Additionally, Onita clay loams compose a minor portion of the soils within the site of the Proposed Action. Onita clay loams are very deep, moderately well- to well-drained soils with moderately slow to slow permeability. These soils generally occur along swales and drainageways on the installation. Slopes range from 0 to 4 percent. Gilgai microrelief, which consists of small mounds and depressions formed from shrinking and swelling of the soil, is in most areas (USGS 2002).

At the site of the Proposed Action, soils are mapped primarily as clay loams with low slopes. Urban land is mapped at Prairie View. Approximately 85 percent of the soils at former Black Hills Estates area are composed of Nunn clay loams with 0 to 6 percent slopes. The remaining 15 percent of soils are composed of Onita clay loams, which are found along the drainageway in the central portion of the site. Approximately 90 percent of the soils at Rushmore Heights are composed of Nunn clay loams with 0 to 6 percent slopes, and the remaining 10 percent in the western and northeastern extents is composed of Onita clay loams with 0 to 4 percent slopes. Prairie View soils are mapped entirely as Nunn-Urban land complex with 0 to 3 percent slopes (USGS 2002).

Soils mapped at the site of the Proposed Action and soil limitations are shown in **Table 3-9**. Soil limitations were determined based on data available in the NRCS's web soil survey (NRCS 2009). Engineering limitations were considered for building construction. All soils mapped at the site were rated as very limited for building construction due to shrink-swell potential and depth to saturation.

Table 3-9. Properties of Soils Mapped at the Site of the Proposed Action

Mapping Unit	Texture and Slope	Housing Area	Farmland Classification	Construction Limitations
Nunn	Clay loam, 0 to 2 percent slopes	Former Black Hills area, Rushmore Heights	Prime farmland soil if irrigated	Very limited for building construction due to shrink-swell potential and depth to saturation
Nunn	Clay loam, 2 to 6 percent slopes	Former Black Hills area, Rushmore Heights	Prime farmland soil if irrigated	Very limited due to shrink-swell potential and depth to saturation
Nunn-Urban land complex	Variable texture, 0 to 3 percent slopes	Prairie View	Not prime farmland soil	Very limited due to shrink-swell potential
Onita	Clay loam, 0 to 4 percent slopes	Former Black Hills area, Rushmore Heights	Prime farmland soil if irrigated	Very limited due to shrink-swell potential

Prime Farmland. The two Nunn clay loam mapping units (with 0 to 2 percent slopes and 2 to 6 percent slopes) are considered to be a prime farmland soil if irrigated. However, this land is not available for agriculture because it is currently developed or considered to be urban or built-up land, which by definition cannot be prime farmland. According to the U.S. Department of Agriculture, urban or built-up land consists of land cover or land uses including residential, public administrative sites, and small parks (less than 10 acres) within urban and built-up areas (USDA NRCS 1999). Therefore, the areas where prime farmland soils are mapped at the site of the Proposed Action would not be considered prime farmland.

Geologic Hazards. The potential for damaging seismic activity at the installation is low. The U.S. Geological Survey (USGS) has produced seismic hazards maps based on current information about the rate at which earthquakes occur in different areas and on how far strong shaking extends from the quake source. The hazard maps show the levels of horizontal shaking that have a 2 in 100 chance of being exceeded in a 50-year period. Shaking is expressed as a percentage of the force of gravity (percent g) and is proportional to the hazard faced by a particular type of building. In general, little or no damage is expected at values less than 10 percent g, moderate damage could occur at 10 to 20 percent g, and major damage could occur at values greater than 20 percent g. The seismic hazards map for South Dakota shows that the region of Ellsworth AFB has a seismic hazard rating of approximately 6 percent g (USGS 2008).

Radon has the tendency to accumulate in enclosed spaces that are usually below ground and poorly ventilated (e.g., basements). 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 length of exposure increase. USEPA has established a guidance radon level of 4 picoCuries per liter (pCi/L) 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. Pennington and Meade counties have a Zone 2 listing for radon. Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L. Radon surveys indicated that some MFH units in the Rushmore Heights and Prairie View housing areas and the former Black Hills Estates area have radon levels that exceed the USEPA standard of 4 pCi/L. Each occupied MFH unit at Ellsworth AFB has a passive radon

elimination system that vents vapor from beneath foundations through a pipe if a monitor detects increased radon levels (EAFB 2010a).

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

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

Effects on geological resources were assessed by evaluating the following:

- Potential to destroy unique geological features
- Potential for soil erosion
- Proximity to or impact on geologic hazards (such as locating a proposed action in a seismic zone)
- Potential to affect soil or geological structures that control groundwater quality or groundwater availability
- Alteration of soil structure or function.

3.4.3.2 Proposed Action

Topography. Long-term, negligible, adverse effects would be expected on the natural topography as a result of implementing the Proposed Action. Construction of new housing units, renovations to current units, construction of community features, and repairs to subsurface utilities would occur within current housing and utility footprints, respectively. Modification of existing microtopography would occur as a result of grading, excavation, and filling to accommodate construction activities. Impacts would be expected to be negligible because the natural microtopography has been previously disturbed by past development activities.

Geology. Long-term, negligible effects on geological resources would be expected to result from implementing the Proposed Action. Construction of new housing units, renovations to current units, and repairs to subsurface utilities would occur within current housing and utility footprints, respectively. The surficial geology at the site of the Proposed Action has been altered previously through grading and recontouring activities, and therefore impacts on geological resources would be anticipated to be negligible.

Soils. Short- and long-term, minor, adverse effects on soils would be expected from implementation of the Proposed Action. The primary short-term effects would occur during construction activities when vegetation is cleared and the earth is bare, resulting in an increase in soil erosion potential. The total number of housing units would increase from 283 units to 497 units once building construction activities have been completed. Short-term adverse effects would be minimized with implementation of best management practices (BMPs), including wetting of soils and implementation of erosion and storm water management practices to contain soil and runoff onsite. Wetting of soils would occur on a daily basis as needed to prevent erosion and generation of dust (see discussion on Air Quality, **Section 3.3**). Additional ground-disturbing activities could occur in association with renovation of existing housing units and any

construction activities. However, soils have been previously disturbed during initial construction of housing units, so effects would be expected to be minor.

The Coolidge Floodway traverses the former Black Hills Estates and Rushmore Heights housing areas. Construction within the floodway would be avoided, and erosion-and-sediment-control plans (ESCPs) would be developed and implemented both during and following site development to contain soil and runoff on site. The ESCP would reduce the potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff on nearby water bodies, such as the Coolidge Floodway. Storm water runoff would be managed in compliance with Section 438 of the Energy Independence and Security Act (EISA) and the erosion and sedimentation control measures in USEPA's 2008 CGP (see **Section 3.5**).

Long-term, minor, adverse effects on soils would be expected upon completion of all projects associated with the Proposed Action. Impervious surfaces would increase by approximately 783,000 square feet (ft²) (18 acres) as a result of construction and renovation activities, construction of new paved areas, and by implementing community-desired features such as a storage facilities and a community center. Effects would be anticipated to be minor and adverse, as the soils within the footprint of the Proposed Action have been previously disturbed. Increased impervious surfaces could increase storm water runoff velocity and volume. BMPs would be implemented during and after construction activities, and approved ESCPs and SWPPPs would be followed to reduce effects of increased impervious surfaces. Section 438 of the EISA would be adhered to so that pre- and post-development hydrology would be equal.

No effects from radon gas would be anticipated as existing housing units with radon levels above 4 pCi/L have ventilation systems. Each occupied MFH unit at Ellsworth AFB has a passive radon elimination system that vents vapor from beneath foundations through a pipe if a monitor detects increased radon levels. Any future new MFH homes would have passive radon elimination systems as well.

3.4.3.3 No Action Alternative

Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. There would be no impacts on geological resources and soils under the Proposed Action.

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources are natural and man-made sources of water that are available for use by and for the benefit of humans and the environment. Water resources relevant to Ellsworth AFB's location in South Dakota include groundwater, surface water, floodplains, and wetlands. Evaluation of water resources examines the quantity and quality of the resource and its demand for various purposes. Hydrology concerns the distribution of water to water resources through the processes of evapotranspiration, atmospheric transport, precipitation, surface runoff and flow, and subsurface flow. Hydrology results primarily from temperature and total precipitation that determine evapotranspiration rates, topography that determines rate and direction of surface flow, and soil and geologic properties that determine rate of subsurface flow and recharge to the groundwater reservoir.

Groundwater. Groundwater is water that exists in the saturated zone beneath the earth's surface, and includes underground streams and aquifers. It is an essential resource that functions to recharge surface water and can be used for drinking, irrigation, and industrial processes. Groundwater typically can be

described in terms of depth from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic formations.

Groundwater quality and quantity are regulated under programs. The Federal Underground Injection Control regulations, authorized under the Safe Drinking Water Act (SDWA), require a permit for the discharge or disposal of fluids into a well. The Federal Sole Source Aquifer regulations, also authorized under the SDWA, protect aquifers that are critical to water supply.

Surface Water. Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is important for its contribution to the economic, ecological, recreational, and human health of a community or locale. Waters of the United States are defined within the CWA, as amended, and jurisdiction is addressed by the USEPA and the U.S. Army Corps of Engineers (USACE). In 2006, the Supreme Court addressed the jurisdictional scope of Section 404 of the CWA, specifically the term “the waters of the U.S.,” in *Rapanos v. U.S.* and in *Carabell v. U.S.* (referred to as *Rapanos*). As a result, these agencies now assert jurisdiction over the following categories of water bodies: Traditional Navigable Waters (TNWs), all wetlands adjacent to TNWs, non-navigable tributaries of TNWs that are relatively permanent (i.e., tributaries that typically flow year-round or have continuous flow at least seasonally), and wetlands that directly abut such tributaries. In addition, the agencies assert jurisdiction over every water body that is not a Relatively Permanent Water if that water body is determined (on the basis of a fact-specific analysis) to have a significant nexus with a TNW. The classes of water bodies that are subject to CWA jurisdiction only if such a significant nexus is demonstrated are non-navigable tributaries that do not typically flow year-round or have continuous flow at least seasonally; wetlands adjacent to such tributaries; and wetlands adjacent to but that do not directly abut a relatively permanent, non-navigable tributary. A significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, or biological integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the United States including wetlands. Encroachment into waters of the United States and wetlands requires a permit from the state and the Federal government. Wetland hydrology is discussed within this section. **Section 3.6** provides a discussion of wetland habitat occurring within the action areas and adjacent wetlands that might be affected by the actions being considered. A water body can be deemed impaired if water quality analyses conclude that the exceedances of water quality standards established by the CWA occur. The CWA requires that states establish a Section 303(d) list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the source(s) causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a water body without causing impairment. The CWA also mandated the National Pollutant Discharge Elimination System (NPDES) program, which regulates the discharge of point (end of pipe) and nonpoint (storm water) sources of water pollution and requires a permit under Section 402 for any discharge of pollutants into waters of the United States.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminants that could degrade surface waters. Proper management of storm water flows, which can be intensified by high proportions of impervious surfaces associated with buildings, roads, and parking lots, is important to the management of surface water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity associated with development and increased impervious surfaces has potential to impact adjacent streams as a result of stream bank erosion and channel widening or down cutting associated with the adjustment of the stream to the change in flow

characteristics. Storm water management systems are typically designed to contain runoff on site during construction, and to maintain predevelopment storm water flow characteristics following development through either the application of infiltration or retention practices. 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.

The USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New Performance Standards for the Construction and Development Point Source Category on 1 December 2009 to control the discharge of pollutants from construction sites. The Rule became effective on 1 February 2010. After this date, all USEPA- or state-issued construction general permits were to be revised to incorporate the ELG requirements, with the exception of the numeric limitation for turbidity, which has been suspended while the USEPA further evaluates this limitation. The USEPA currently regulates large and small (greater than 1 acre) construction activity through the 2008 Construction General Permit (CGP), which is scheduled to expire on 30 June 2011. However, the USEPA is in the process of extending this expiration date until 31 January 2012 to give the USEPA more time to evaluate the turbidity effluent limitation and revise the CGP to incorporate the ELG requirements.

Therefore, until the revised CGP to incorporate ELG requirements is finalized, all new construction sites would need to continue to meet the requirements outlined in the 2008 CGP, including technology-based and water-quality-based effluent limits that apply to all discharges, unless otherwise specified in the CGP. Permittees must select, install, and maintain effective erosion and sedimentation controls measures as identified and as necessary to comply with the 2008 CGP, including the following:

- Sediment controls (e.g., sediment basins, sediment traps, silt fences, vegetative buffer strips)
- Off-site sediment tracking and dust control
- Runoff management
- Erosive velocity control
- Post-construction storm water management
- Construction and waste materials management
- Non-construction waste management
- Erosion control and stabilization
- Spill/release prevention.

Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment. If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies during storm events, where water quality is reduced. Section 438 of the EISA (42 U.S.C. Section 17094) establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. EISA Section 438 requirements are independent of storm water requirements under the CWA. The project footprint consists of all horizontal hard surface and disturbed areas associated with project development. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm water retention and reuse technologies such as bioretention areas, permeable pavements, cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction analyses shall be conducted to evaluate the effectiveness of the as-built storm water reduction features. As stated in a DOD memorandum dated 19 January 2010, these regulations will be incorporated into applicable DOD Unified Facilities Criteria (UFC) within 6 months

(DOD 2010a). These regulations were incorporated into applicable DOD United Facilities Criteria in April 2010, which stated that low-impact development (LID) features would need to be incorporated into new construction activities to comply with the restrictions on storm water management promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LIDs can manage the increase in runoff between pre- and post-development conditions on the project site through interception, infiltration, storage, and evapotranspiration processes before the runoff is conveyed to receiving waters. Examples of the methods include bioretention, permeable pavements, cisterns/recycling, and green roofs (DOD 2010b). Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act* (USEPA 2009b).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic systems in which each component helps to maintain the characteristics of the environment that support it. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

Floodplains are 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, the size of the watershed above the floodplain, and upstream development. Flood potential is evaluated by FEMA, which defines the 100-year floodplain as an area within which there is a 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too great a risk to be 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 FEMA Flood Insurance Maps (FIRMs), which contain enough general information to determine the relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid floodplains to the maximum extent possible wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities" for the following actions:

- Acquiring, managing, and disposing of Federal lands and facilities
- Providing federally undertaken, financed, or assisted construction and improvements
- Conducting Federal activities and programs affecting land use, including water and related land resources planning, regulation, and licensing activities.

Wetlands. Wetlands perform several hydrologic functions, including water quality improvement, groundwater recharge and discharge, pollution mitigation, nutrient cycling, storm water attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of 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) (see discussion under *Surface Water*). The USACE defines wetlands as

“those areas that are inundated or saturated with ground or surface water at a frequency and duration to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Part 329).

Jurisdictional waters of the United States are areas that convey water, exhibit an “ordinary high water mark,” and do not meet the three-parameter criteria for wetlands. An ordinary high water mark is defined as the line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, or the presence of litter and debris (33 CFR 328.3). The USACE recognizes three distinct types of drainage features: ephemeral drainages, intermittent drainages, and perennial drainages. Ephemeral drainages are fed primarily by storm water. They convey flows during and immediately after storm events; however, they might stop flowing or begin to dry if the interval between storms is sufficiently long. Under recent United States Supreme Court rulings, ephemeral drainages must also show a significant nexus to navigable waters for it to be considered jurisdictional. Intermittent drainages are fed primarily by groundwater and supplemented by storm water and flow for extended periods, but cease to flow occasionally or seasonally as a result of groundwater draw down, seepage, or evapotranspiration. Perennial streams flow continuously except during periods of extended drought.

Per Section 401 of the CWA, any applicant for a Federal license or permit to conduct any activity including the construction or operation of facilities, which could result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the state in which the discharge originates or will originate. Under Section 401 and South Dakota Codified Law, anyone proposing to conduct such an activity must obtain a certification from the South Dakota DENR (SDDA 2001).

3.5.2 Existing Conditions

Groundwater. Groundwater occurs under confined and unconfined conditions under Ellsworth AFB. The installation is underlain by three confined aquifers and one shallow unconfined aquifer. The Inyan Kara Aquifer is confined by beds of Upper Cretaceous strata above and Permian-Jurassic strata below. This aquifer occurs in permeable sandstone belonging to the Fall River and Lakota formations. The Inyan Kara Aquifer supplies a large portion of the domestic water supply for Rapid City. The Minnelusa Aquifer lies below the Inyan Kara Aquifer and is confined by Permian-Jurassic strata above and Pennsylvanian confining beds below. Recharge for this limestone aquifer lies west of the installation among the foothills between Rapid City and the Black Hills. The upper portion of this aquifer is the most heavily used aquifer in the communities near Ellsworth AFB (EAFB 2005a). The deepest confined aquifer that underlies the installation is the Madison Aquifer, which is beneath Lower Pennsylvanian confining strata (EAFB 2005a). This aquifer is a limestone deposit and has the most dependable water quality of any of the regional confined aquifers (EAFB 2005a). The unconfined aquifer consists of the weathered/fractured zone of the Pierre Shale and the overlying unconsolidated deposits. The flow direction and velocity of groundwater varies across the installation (EAFB 2005a). None of the aquifers occurring in the region of Ellsworth AFB are designated as Sole Source by Region 8 of the USEPA (USEPA 2010a).

OU-11 is a defined plume that exceeds the groundwater standard for TCE under the installation and portions of Black Hills Estates due to past aircraft maintenance activities. No drinking water on the installation is obtained from groundwater wells. Off-installation wells obtain water from confined aquifers below strata where contamination is present or from gallery wells along Rapid Creek to the south of the installation. See **Section 3.10.2** for additional information concerning OU-11.

Drinking water for Ellsworth AFB is delivered by the Rapid City Water Division via a 16-inch water main. Sources for this water system include three infiltration galleries along the Rapid Creek alluvium, including the Jackson Springs Gallery, Meadowbrook Gallery, and Girl Scouts Gallery. Nine other off-installation wells operated by the Rapid City Water Division draw water from the subsurface Minnelusa and Madison Aquifers. During peak demand summer periods, the city also uses surface water from Rapid Creek, which originates in the Rapid Creek drainage area in the Black Hills west of Rapid City. This source includes the Deerfield and Pactola surface water reservoirs (EAFB 2007b). Ellsworth AFB previously used groundwater wells as a source of potable water; however, these wells have since been abandoned. The 28th Medical Group Bio-Environmental Engineering Flight is responsible for on-installation monitoring of the potable water distribution system. There are 22 on-installation monitoring points that are sampled at the rate of 11 points each month. Samples have historically been within limits (EAFB 2008e).

Surface Water. Ellsworth AFB is within the Missouri River Basin. Three major streams occur near Ellsworth AFB, including Elk Creek, Box Elder Creek, and Rapid Creek. Elk Creek and Rapid Creek are perennial streams, and Box Elder Creek is an ephemeral stream. A natural divide in the northern portion of the installation directs overland flow either north or south. The northern portion of Ellsworth AFB is drained by seven unnamed ephemeral drainages that discharge into Elk Creek, approximately 5 miles to the northeast. Surface drainage from the southern portion of the installation or the main drainage, flows generally south-southeast via retention ponds, ditches, storm sewers, and ephemeral streams. The Coolidge Floodway is an ephemeral stream that conveys surface drainage through the site of the Proposed Action from the northwest to the southeast. A portion of the Coolidge Floodway follows a paved road along the former Black Hills Estates area. Four impoundments on Ellsworth AFB are linked by the main drainage creek and eventually discharge into Box Elder Creek, approximately 1 mile south of the installation boundaries. Gateway Lake, Bandit Lake, Heritage Lake, and Golf Course Lake have a cumulative surface area of approximately 19.6 acres (EAFB 2005a). Surface water features are shown in **Figure 3-3**, including the Coolidge Floodway ephemeral stream channel and the 100-year floodplain that extends beyond the boundary of the drainage channel.

Storm water from industrial areas at the installation drains into seven defined watersheds. The outfalls from these watersheds are permitted by the South Dakota DENR (SD DENR 2010b). Four of the seven outfalls drain into unnamed tributaries of Box Elder Creek, and the other three outfalls drain into unnamed tributaries of Elk Creek. Both Box Elder and Elk Creek are tributaries of the Cheyenne River which eventually meets the Missouri River (EAFB 2005a).

The Waste Water Treatment Plant (WWTP) discharges effluent into the unnamed tributary of Box Elder Creek through one of the outfalls. Historically, the unnamed tributary was ephemeral, but since the beginning of WWTP discharges in 1943, the creek flow has become perennial (EAFB 2011). Regular sampling, in accordance with the South Dakota Surface Water Discharge permit (SD DENR 2010b), has not produced violations of water quality standards (EAFB 2008c).

Floodplains. According to a 1996 floodplain study, 262 acres of Ellsworth AFB property are within a 100-year floodplain (28 BW 2006). Floodplains lie along the main installation drainage, and along several of the creek drainages on the northern and southern portion of the installation. The Coolidge Floodway, a natural overland drainageway, crosses the central portion of the former Black Hills Estates area and the western edge of Rushmore Heights, and has a propensity to flood portions of these areas during storm events. The Coolidge Floodway was originally delineated while MFH units were present in Black Hills Estates and Rushmore Heights. The 100-year floodplain associated with this drainage is largely covered by road surfaces (EAFB 2007b, FEMA 2010).

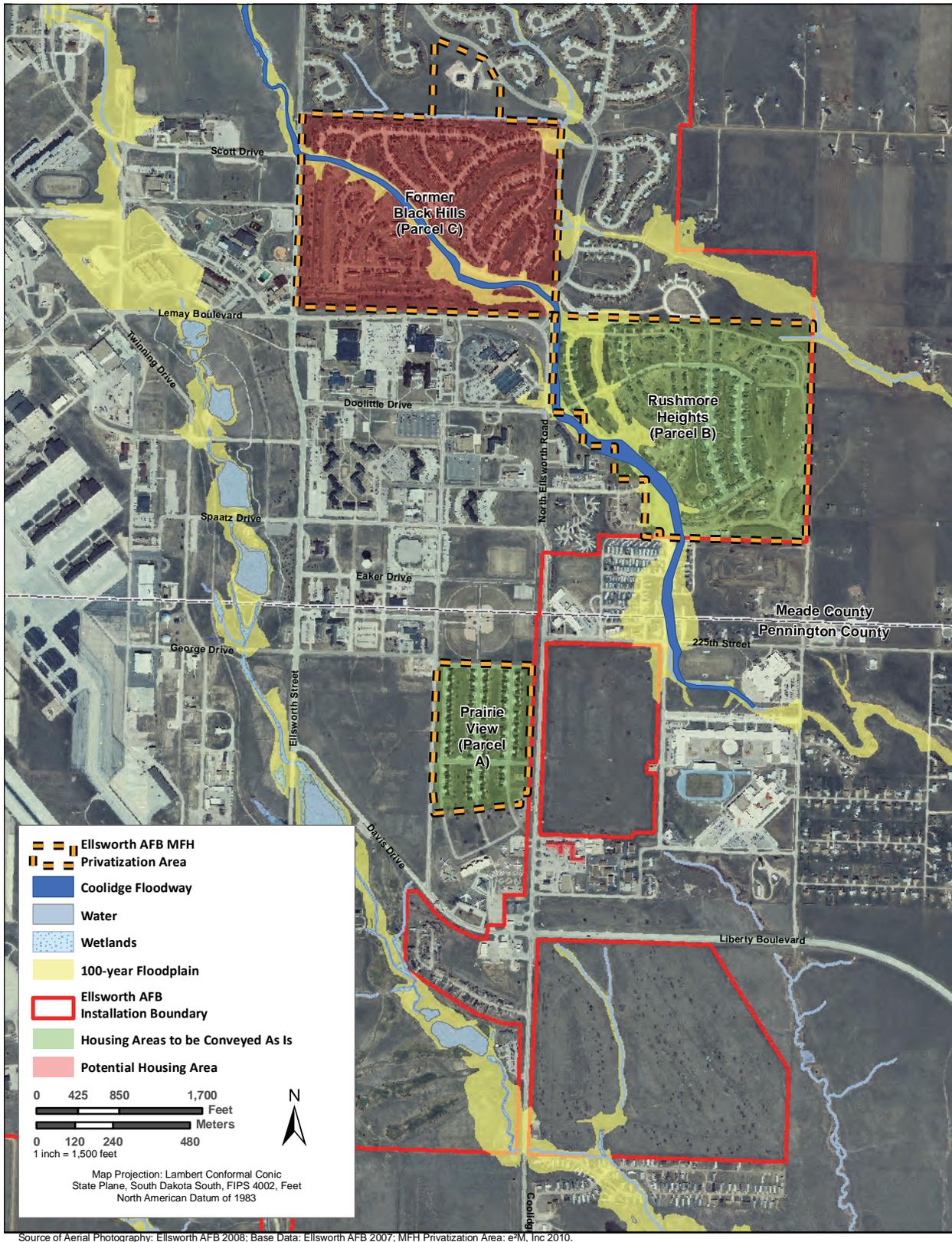


Figure 3-3. Surface Water Resources on Ellsworth AFB

Some of the existing MFH units at Ellsworth AFB overlap the Coolidge Floodway boundary. All existing MFH units on Ellsworth AFB inside the 100-year floodplain boundary were constructed at least 1 foot above the base flood elevation in accordance with FEMA standard requirement implemented for all new construction on the installation.

Wetlands. A 1994 installation-wide wetlands survey identified approximately 38.8 acres of jurisdictional wetlands including drainage channels, impoundments, and swales (EAFB 1994). The most recent wetland delineation for the installation identified approximately 44.6 acres of jurisdictional wetlands on Ellsworth AFB (EAFB 2003). These pockets of freshwater emergent wetlands are mostly located in the northern and eastern portions of the installation with a couple in the southwest (NWI 2010). There are no wetlands present in Prairie View, Rushmore Heights, or the former Black Hills Estates areas. The closest wetlands to the Proposed Action site are approximately 0.5 miles north of the former Black Hills Estates area.

A formal wetland delineation of the project site with a jurisdictional determination has not been conducted, but wetlands are not expected to occur based on site observations and past wetland surveys.

3.5.3 Environmental Consequences

3.5.3.1 Evaluation Criteria

Evaluation criteria for effects on water resources are based on water availability, quality, and use; existence of floodplains; and associated regulations. A proposed action could have significant effect with respect to water resources if any of the following were to occur:

- Substantially reduce water availability or supply to existing users
- Overdraft groundwater basins
- Exceed safe annual yield of water supply sources
- Substantially 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.

3.5.3.2 Proposed Action

Groundwater. The Proposed Action has the potential for long-term, negligible to minor, adverse impacts on groundwater. The potential for groundwater contamination would increase as various underground utilities (e.g., electric, water) are installed on the Proposed Action site. However, the installation of various underground utilities is not expected to affect OU-11, as appropriate BMPs would be implemented during construction activities to reduce the potential for adverse impacts. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in Ellsworth AFB's Pollution Prevention Plan (EAFB 2006b) would be followed (see **Section 3.10** for a discussion on hazardous materials and wastes).

Groundwater contamination associated with OU-11 would not impact the Proposed Action. *In situ* biodechlorination treatment would continue and no well drilling would be permitted in the MFH privatization area under the Proposed Action.

Long-term, negligible to minor, direct, adverse impacts on groundwater from the Proposed Action could be realized on groundwater quality and recharge. It is assumed that an overall increase in impervious surfaces (e.g., construction of new homes) would slightly increase runoff to streams and decrease recharge of the aquifer system.

Surface Water. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on surface water resources.

Long-term, indirect, adverse effects would result from the overall increase in impervious surfaces because the number of MFH units would increase from 283 to 497 units. 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 snowfall events, impervious surfaces increase the volume and 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 increases when impervious areas increase. Increased storm water runoff would have long-term, direct, minor, adverse effects on surface water and consequently, groundwater quality, in MFH areas.

Short-term and long-term, negligible to minor, adverse impacts on water resources would occur from the use of heavy equipment, which could compact soils and could result in a decrease in soil permeability and water infiltration rates and potential subsequent alteration of drainage patterns. Disturbance of soil and removal of vegetation associated with development could result in erosion of disturbed soils and transport of sediment and other pollutants into nearby water bodies during storm water flow events. However, adverse effects would be minimized by implementing erosion and sediment control and storm water management practices to minimize potential adverse effects associated with increased runoff.

The Proposed Action would result in an increase in impervious surfaces resulting in short- and long-term, adverse impacts on surface water due to increased runoff, velocity, and sediment transport. This runoff could impact surface water quality of the receiving water body. However, adverse effects would be minimized by implementing BMPs and following an approved ESCP. Under the USEPA 2008 CGP, projects that would disturb more than 1 acre of land would be required to use BMPs to ensure that soil disturbed during construction activities does not pollute nearby water bodies.

Short-term, direct, minor adverse effects from construction activities could result due to increased transport of contaminants via storm water runoff to surface water bodies. Surface water runoff occurring during construction activities could convey contaminants that could impact surface water quality in drainage channels and could also impact groundwater quality as a result of infiltration of contaminated runoff. The level of impact would be related to the type of contaminant that enters the water system. Increased sediment runoff from construction activities increases surface water turbidity in receiving waters, which can raise water temperature and impede photosynthetic processes. Sediment runoff into surface water also increases the potential for contaminants (e.g., heavy metals, excess nutrient concentrations) deposition on the substrate of receiving water bodies. In the event of a spill or leak of fuel or other construction-related products, there could be adverse effects on surface water quality. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in the installation's Pollution Prevention Plan (EAFB 2006b) would be followed to quickly contain and clean up a spill (see **Section 3.10** for a discussion on hazardous materials and wastes). Please refer to **Section 3.4.3** for additional discussion of erosion and sediment control, and storm water management regulations.

Overall, construction activities would have the potential for adverse effects on surface water quality, but the development of a site-specific SWPPP would minimize potential for adverse effects. Appropriate BMPs would be implemented and would follow the guidelines provided in documents such as Ellsworth AFB's SWPPP (EAFB 2009), Integrated Natural Resources Management Plan (EAFB 2005a), and Federal and state permitting processes. Assuming proper use of BMPs to contain the effects of establishing the Proposed Action, including potential nonpoint source pollution to water bodies associated with increased storm water runoff, potential increased erosion and sedimentation, removal of vegetation,

and soil compaction, impacts on water resources would be expected to be negligible (refer to **Section 3.4.3** for detailed discussion of sediment- and erosion-control procedures).

Floodplains. In accordance with EO 11988, *Floodplain Management*, the PO would avoid construction of MFH units within the 100-year floodplain where possible, including the Coolidge Floodway. Ellsworth AFB would be required to follow the eight-step process as detailed in the FEMA document “Further Advice on EO 11988 Floodplain Management” as discussed in **Section 1.4.2**. Per FEMA requirements, Meade County Ordinance No. 9, *Regulations for Flood Damage Prevention* (Meade County 2009a), and City of Box Elder Ordinance No. 491, *Flood Damage Prevention Regulations*, any structures in the 100-year floodplain, including the Coolidge Floodway, would be constructed at least 1 foot above the base flood elevation. There is the potential for bike paths, roads, and utilities to be constructed that would bisect the 100-year floodplain, including Coolidge Floodway. Therefore, short-term, negligible to minor, indirect, adverse impacts on floodplains could occur as a result of increased storm water flow and soil erosion during construction activities. The implementation of an ESCP and SWPPP would minimize these effects. The PO would also obtain the City of Box Elder’s floodplain surveyor certification for structures built in or close to the floodplain.

Long-term, minor, indirect, adverse impacts on floodplains would be expected from the Proposed Action due to an increase in impervious surfaces in the former Black Hills Estates housing area. An increase in impervious surfaces would decrease the amount of permeable land available for groundwater recharge and increase storm water runoff to the Coolidge Floodway, leading to higher storm water volumes and a greater potential for flooding events. The incorporation of proper storm water management measures in the project design would minimize long-term, adverse impacts. Until very recently, the former Black Hills Estates housing area contained 500 MFH units. The Coolidge Floodway was delineated while these MFH units were present; therefore, it is likely that the 100-year floodplain boundaries narrowed following the demolition of these units, since the amount of impervious surfaces in the former housing area decreased substantially. Additionally, it is unlikely that new construction of 214 MFH units, a decrease from the 500 units once present in the former Black Hills Estates, would extend the boundaries of the 100-year floodplain beyond previous conditions. Therefore, the Proposed Action would not be expected to alter the floodplain boundaries of the Coolidge Floodway beyond previously delineated conditions.

Wetlands. No direct or indirect, adverse impacts on wetlands would be expected from the Proposed Action. If it is determined that wetlands or other waters of the United States might be affected as a result of the Proposed Action, the area would be delineated, impacts would be avoided and minimized to the maximum extent practicable, and all required permitting would be obtained prior to implementing the action that could impact the habitat. This would minimize potential for adverse effects on wetlands or other waters of the United States associated with implementation of the Proposed Action.

3.5.3.3 No Action Alternative

Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would need to construct additional units to support housing needs of military personnel and families. Conditions would remain as described in **Section 3.5.2**; therefore, no impacts on water resources would be expected.

3.6 Biological Resources

3.6.1 Definition of the Resource

Biological resources include native or naturalized plants and animals and the habitats (e.g., grasslands, forests, and wetlands) in which they exist. Protected and sensitive biological resources include listed (threatened or endangered), proposed, and candidate species under the ESA (16 U.S.C. 1536) as designated by the USFWS, state-listed threatened or endangered species, and migratory birds. Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

The Federal Noxious Weed Act (P.L. 93-629) mandates control of noxious weeds by limiting possible weed seed transport from infested areas to noninfested sites. EO 13112, *Invasive Species*, requires all Federal agencies to prevent the introduction of invasive species; provide for their control; and minimize their economic, ecological, and human health impacts. Under EO 13112, installations shall not, to the extent practicable, authorize, fund, or carry out management actions that are likely to cause the introduction or spread of invasive species.

Under the ESA, an “endangered species” is defined as any species in danger of extinction throughout all or a significant portion of its range. A “threatened species” is defined as any species likely to become an endangered species in the foreseeable future. The USFWS also maintains a list of species considered to be candidates for possible listing under the ESA. Although candidate species receive no statutory protection under the ESA, the USFWS has attempted to advise government agencies, industry, and the public that these species are at risk and might warrant protection under the ESA.

The Migratory Bird Treaty Act of 1918 (16 U.S.C. 703–712) as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. If design and implementation of a Federal action cannot avoid measurable negative impact on migratory birds, EO 13186 directs the responsible agency to develop and implement, within 2 years, a Memorandum of Understanding with the USFWS that shall promote the conservation of migratory bird populations.

3.6.2 Existing Conditions

Vegetation. The National Hierarchical Framework of Ecological Units, adopted by the U.S. Forest Service in 1993, places Ellsworth AFB in the Northwestern Great Plains section of the Temperate Steppe division (USFS 1994). Currently, the majority of land on Ellsworth AFB is disturbed or improved, dominated by native Kentucky bluegrass (*Poa pratensis*) interspersed with hairy crabgrass (*Digitaria sanguinalis*), common broad-leaved plants including field bindweed (*Convolvulus arvensis*) and common dandelion (*Taraxacum officinale*), and several native and exotic ornamental species. Most of these grassy areas are maintained at a height of 7 to 14 inches, as recommended in Ellsworth AFB’s INRMP. Natural areas on the installation are covered in remnant mixed-grass prairie habitat with species such as western wheatgrass (*Pascopyrum smithii*), wheatgrass (*Agropyron cristatum*), and green needle-grass (*Stipa viridula*) (EAFB 2005a).

Small areas of riparian habitat occur on the installation along tributaries and impoundments. Dominant species found in the riparian habitat include eastern cottonwood (*Populus deltoides*), sandbar willow (*Salix exigua*), narrowleaf cattail (*Typha angustifolia*), and sedges (*Carex* spp.) (EAFB 2005a). Riparian trees surround the lakes, including eastern red cedar (*Juniperus virginiana*), green ash (*Fraxinus*

pennsylvanica), eastern cottonwood, and sandbar willow. These trees flourish due to their proximity to water and represent the major tree stands on the installation (EAFB 2008c).

Vegetation within the former Black Hills Estates area is largely modified due to its previous use as an MFH neighborhood, and includes grass that was planted following demolition of the former MFH units, remnant grass and landscaping from any undisturbed open spaces, and scattered ornamental trees that were left in place. The remaining portions in the MFH privatization area are existing housing areas that contain open space and vegetation, including lawns and scattered ornamental trees normally associated with landscaping in residential areas in South Dakota.

Wildlife. Wildlife that naturally occurs in the region of Ellsworth AFB includes many species of birds, reptiles, amphibians, and mammals that are characteristic of the Great Plains. Common wildlife species that occur near Ellsworth AFB are typical of semi-developed grassland areas. The most suitable wildlife habitat on the installation is restricted to the remnant mixed-grass prairie or riparian areas on the installation.

Common bird species on the installation include mallard (*Anas platyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferus*), greater yellow legs (*Tringa melanoleuca*), mourning dove (*Zenaidura macroura*), barn swallow (*Hirundo rustica*), and common grackle (*Quiscalus quiscula*). Common reptiles and amphibians on the installation include snapping turtle (*Chelydra serpentina*), bullsnake (*Pituophis melanoleucus*), prairie rattlesnake (*Crotalus viridis*), Blanchard's cricket frog (*Acris crepitans*), and bullfrog (*Rana catesbeiana*). Common mammals include mule deer (*Odocoileus hemionus*), white-tailed deer (*O. virginianus*), coyote (*Canis latrans*), red fox (*Vulpes vulpes*), white-tailed jackrabbit (*Lepus townsendii*), striped skunk (*Mephitis mephitis*), raccoon (*Procyon lotor*), black-tailed prairie dog (*Cynomys ludovicianus*), and big brown bat (*Eptesicus fuscus*) (EAFB 2005a).

Habitat within the former Black Hills Estates area is anticipated to be of relatively low value. The area underwent substantial disturbances between 2008 and 2009 from the demolition of 500 MFH units. Habitat currently consists of grass that was planted following demolition activities, remnant lawns and landscaping from any undisturbed open spaces, and remnant scattered ornamental trees. The habitat is fragmented by roadways from the former MFH neighborhood that were left in place. The project area is adjoined by residential and installation-related development on all sides. Species anticipated to use the MFH privatization area as habitat would predominantly be wildlife species typical of suburban habitats.

Sensitive and Protected Species. No federally or state-listed threatened or endangered species have been documented on Ellsworth AFB. One study with relevance to threatened and endangered species, *Biological Survey of Ellsworth Air Force Base, South Dakota*, was conducted on the installation in 1994 (EAFB 2005a). Three bird species and one mammal species were found on Ellsworth AFB that are classified as sensitive species by the South Dakota Natural Heritage Program (EAFB 2005a, SD NHP 2008). These are rare species requiring special attention; however, their populations do not warrant listing on the Federal or state threatened or endangered species lists. These species are the burrowing owl, Swainson's hawk (*Buteo swainsoni*), loggerhead shrike (*Lanius ludovicianus*), and silver-haired bat (*Lasiurus noctivagus*) (EAFB 2005a). According to Ellsworth AFB's INRMP, there are currently three species on Ellsworth AFB that are considered sensitive and warrant special attention: the Swainson's hawk, burrowing owl, and silver-haired bat (EAFB 2005a).

Per the INRMP and General Plan, although Swainson's hawk, burrowing owl, and silver-haired bat populations are relatively secure, special care should be taken during new construction to ensure minimal disturbance to their habitats (EAFB 2005a, EAFB 2008c). Habitat for the Swainson's hawk and silver-haired bat does not occur within the former Black Hills Estates area or other neighborhoods in the MFH privatization area. Swainson's hawks occur in unimproved open country such as grassland,

shrubland, and agricultural areas; and nest in solitary trees in open areas. Unimproved areas composed of grasses native to the mixed-grass prairie remain along the northern portion of the installation. These areas generally represent habitat that the Swainson's hawk would likely use (EAFB 2005a). The closest portion of the MFH privatization area to this native mixed-grass prairie habitat is the former Black Hills Estates area, which is more than 0.7 miles to the south of this habitat. Burrowing owls are present in prairie dog colonies on the installation (EAFB 2005a). As prairie dogs are considered a pest species within residential areas, they would generally be prevented from establishing colonies within the MFH areas; therefore, burrowing owls would not likely have available habitat within the former Black Hills Estates area. However, a prairie dog colony does exist northeast of the Rushmore Heights neighborhood and a portion of the colony crosses the northeasternmost corner of the MFH privatization area (see **Figure 3-4**). Burrowing owls might use abandoned burrows in this colony and are generally present on the installation from February 15 to August 15 (EAFB 2005a). Silver-haired bats inhabit coniferous and mixed deciduous-coniferous forests and woodlands. No substantial coniferous and mixed deciduous-coniferous forests occur on Ellsworth AFB; therefore, it is not likely that silver-haired bats roost on the installation, as they roost almost exclusively in trees. They might, however, forage near or over water bodies and open areas (e.g., grasslands).

The majority of birds on Ellsworth AFB are likely migratory species as defined in 50 CFR 10.13. Due to the installation's proximity to the Central Flyway, a north-south regional migratory bird route, migratory birds are a concern on Ellsworth AFB. The numerous bodies of water around the airfield create attractive nesting grounds for migratory birds. Ponding of rainwater on concrete surfaces is an attraction to gulls during the spring (EAFB 2008c). Due to bird/wildlife aircraft strike hazard concerns, Ellsworth AFB has a "zero tolerance" policy for gulls and nesting geese, meaning these birds are dispatched when they are observed on installation; and a "low tolerance" policy for ducks, hawks, and eagles, meaning dispersal techniques such as pyrotechnics, propane cannons, and all-terrain vehicles are used prior to depredation. Avian nesting habitat for these species develops primarily in riparian areas on or near the installation (EAFB 2008c).

3.6.3 Environmental Consequences

3.6.3.1 Evaluation Criteria

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. An impact on a biological resource would be considered significant if it was to cause a violation of the laws and regulations pertaining to biological resources as discussed in **Appendix B**, if species or habitats of high concern are adversely affected over relatively large areas, or if disturbances cause reductions in population size or distribution of a species of special concern. A habitat perspective is used to provide a framework for analysis of general classes of effects (i.e., removal of critical habitat, noise, human disturbance).

Ground disturbance and noise associated with construction activities might directly or indirectly cause potential effects on biological resources. Direct effects from ground disturbance were evaluated by identifying the types and locations of potential ground-disturbing activities in correlation to important biological resources. Mortality of individuals, habitat removal, and damage or degradation of habitats are impacts that might be associated with ground-disturbing activities. Noise associated with a proposed action might be of sufficient magnitude to result in the direct loss of individuals and reduce reproductive output within certain ecological settings. Ultimately, extreme cases of such stresses could have the potential to lead to population declines or local or regional extinction. To evaluate effects, considerations

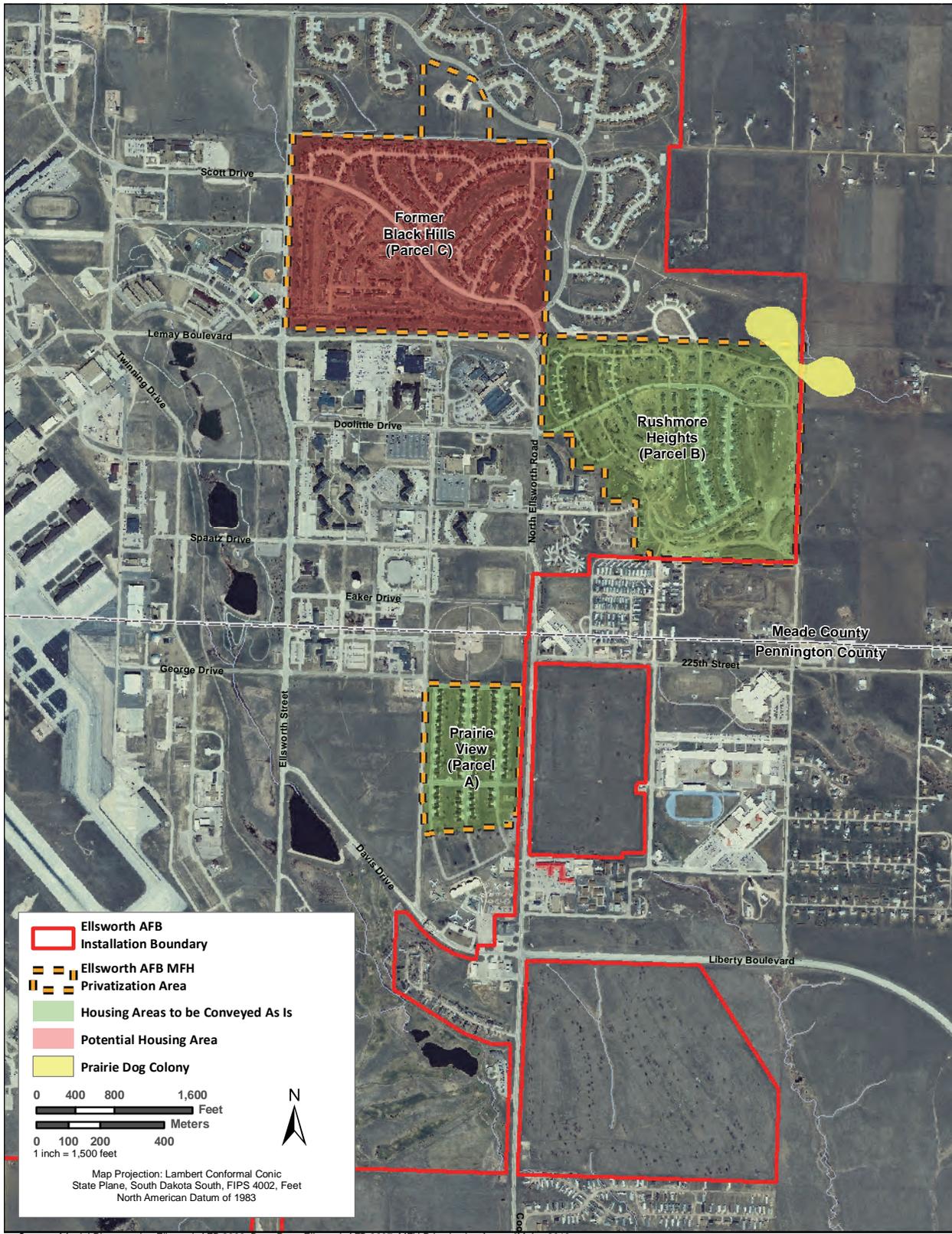


Figure 3-4. Prairie Dog Colonies near the MFH Privatization Area

were given to the number of individuals or critical species involved, amount of habitat affected, relationship of the area of potential effect to total available habitat within the region, type of stressors involved, and magnitude of the effects.

3.6.3.2 Proposed Action

Vegetation. The Proposed Action would be expected to result in short-term, negligible, adverse effects on vegetation on Ellsworth AFB. The majority of vegetation within the former Black Hills Estates area is modified, landscaped, and mowed regularly. Vegetation that could be disturbed within the former Black Hills Estates area includes grass, trees, and other landscaping. Short-term, negligible, adverse effects on vegetation would be expected from temporary disturbances during construction activities (e.g., trampling and removal). This vegetation would be expected to regenerate or be replanted once construction activities have ceased. As there have been no observations made of any unique native vegetative species occurring within the project area, all impacts on vegetation from construction disturbances are expected to be negligible.

Long-term, negligible, adverse effects on vegetation could be expected from construction of the MFH units due to direct removal of vegetation. It is assumed that the proposed MFH units would be constructed in the footprints of the former MFH units that were recently demolished. Existing vegetation within these footprints is likely grass that was planted following demolition. Existing trees would likely be left in place to the greatest extent possible. The majority of vegetation within the project area has been planted and is not within a native and naturally occurring vegetation community; therefore, impacts on vegetation from direct removal are anticipated to be negligible.

During and immediately following construction activities that result in ground disturbances, soils would be exposed and vegetation would be sparse in some areas, thus allowing opportunities for noxious weeds to establish in those areas. Construction activities create disturbances that can increase the spread of noxious weeds. The spread of noxious weeds is controlled by avoiding activities in or adjacent to heavily infested areas, removing seed sources and propagules from the site prior to conducting activities, or limiting operations to non-seed-producing seasons. Following activities that expose soils, the spread of noxious weeds can be controlled by covering the area with weed seed-free mulch or seeding the area with native species. Covering the soil reduces the germination of weed seeds, maintains soil moisture, and minimizes erosion. Under the Proposed Action, once demolition has ceased, the disturbed areas would be seeded or planted in sod and maintained to prevent the establishment of invasive plant species during the lease period. Therefore, noxious weeds would not be expected to become permanently established in disturbed areas and no long-term, adverse impacts from noxious weed establishment within the project area would be expected.

Natural resources on Ellsworth AFB would not be conveyed to the PO, but would continue to be owned by the Government. Ellsworth AFB would continue to be responsible for natural resources management in accordance with the INRMP. The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current INRMP. The Government retains the right to access and manage those natural resources covered by such plans.

Wildlife. The Proposed Action would have short-term, minor, adverse effects on wildlife due to disturbances (e.g., noise and motion) from construction activities and heavy equipment use. High noise events could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, minor, adverse effects. The area of disturbance would be within a developed area where disturbances are or have very recently been common (e.g., MFH unit demolition, mowing and landscaping, foot and vehicle traffic, runway). Most wildlife species in the former Black Hills Estates area would be expected to quickly recover once the construction disturbances have ceased for the day, or habituate to the

disturbances altogether; therefore, no long-term, adverse effects on wildlife would be expected as a result of temporary construction disturbances.

Long-term, negligible, adverse impacts on wildlife would be expected from the removal of habitat from construction of the 214 MFH units within the former Black Hills Estates area. Although the former Black Hills Estates area has only been relatively unimproved land since 2009 (when demolition of the former 500 MFH units was completed) it is likely that several animals, particularly songbirds, have established territories within this area since demolition. Impacts are anticipated to be negligible as the site was formerly a MFH neighborhood and habitat is not anticipated to be of high value or importance.

Protected and Sensitive Species. No federally or state-listed threatened or endangered species are known to occur on Ellsworth AFB; therefore, no impacts on threatened or endangered species would be expected from the Proposed Action. The three sensitive species occurring on Ellsworth AFB (i.e., Swainson's hawk, burrowing owl, and silver-haired bat) would not be expected to use the former Black Hills Estates area or adjacent lands as habitat; therefore, no impacts on sensitive species would be expected from the Proposed Action. Although a prairie dog colony crosses the northeasternmost corner of the Rushmore Heights neighborhood, short-term construction activities would not occur in this neighborhood, and therefore burrowing owls potentially in this area would not be anticipated to be impacted by the Proposed Action. If burrowing owl nests are discovered within or adjacent to the former Black Hills Estates area, BMPs outlined below for migratory birds should be implemented. Since silver-haired bats forage at night, construction activities from the Proposed Action would primarily occur between normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and would not be expected to impact foraging bats.

The Migratory Bird Treaty Act, as amended, and EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*, require Federal agencies to minimize or avoid impacts on migratory birds listed in 50 CFR 10.13. Construction associated with the Proposed Action would be conducted in a manner to avoid adverse impacts on migratory birds to the extent practicable and it is not anticipated that the Proposed Action would have any measureable negative impacts on migratory birds (e.g., direct mortality, decrease in population size, decrease in fitness, repetitive nest failure). However, short-term, negligible, adverse effects on migratory birds could be expected from noise and motion disturbances during construction activities. These impacts would most likely be in the form of escape or avoidance behaviors, and are anticipated to be temporary.

The most common migratory bird species within the MFH privatization area would likely include mourning doves, killdeer, barn swallows, and common grackles. The following BMPs are recommended for reduction or avoidance of impacts on migratory birds that could occur within the project area:

- Any groundbreaking construction activities should be performed before migratory birds return to Ellsworth AFB or after all young have fledged to avoid incidental take.
- If construction is scheduled to start during the period in which migratory bird species are present, steps should be taken to prevent migratory birds from establishing nests in the potential impact area. These steps could include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting within the project area. Once a nest is established, they should not be harassed until all young have fledged and have left the nest site.
- If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds should be performed starting at least 2 weeks prior to site clearing.

- If nesting birds are found during the survey, buffer areas should be established around nests. Construction should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged should be made by a qualified biologist.

3.6.3.3 No Action Alternative

Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would need to construct additional units to support housing needs of military personnel and families. Under the No Action Alternative, the Proposed Action would not occur and conditions would remain as described in **Section 3.6.2**; therefore, no impacts on biological resources would be expected

3.7 Cultural Resources

3.7.1 Definition of the Resource

Cultural resources is an umbrella term for many heritage-related resources, including prehistoric and historic sites, buildings, 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 the cultural practices of previous civilizations or they might retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the National Historic Preservation Act (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 (NAGPRA) (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); architectural resources (buildings or other structures or groups of structures, or designed landscapes that are of historic or aesthetic significance); or resources of traditional, religious, or cultural significance to Native American tribes.

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 eligible for the National Register of Historic Places (NRHP). More recent structures, such as Cold War-era resources, might warrant protection if they are of exceptional importance or if they have the potential to gain significance in the future.

Resources of traditional, religious, or cultural significance to Native American tribes 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 inventory resources under their purview to the NRHP. In accordance with the NHPA, determinations regarding the potential effects of an undertaking on historic properties are presented to the State Historic Preservation Office (SHPO). Federally recognized Native American tribes would be consulted with in accordance with EO 13175, *Consultation and Coordination With Indian Tribal Governments* (November 9, 2000).

3.7.2 Existing Conditions

Ellsworth AFB originated as the Rapid City Army Air Base in 1942. In 1953, the installation was renamed Ellsworth AFB in honor of Brigadier General Richard E. Ellsworth, commander of the 28th Strategic Reconnaissance Wing. Ellsworth AFB played a significant role in America's World War II military efforts and was an important Strategic Air Command facility throughout the Cold War years. The installation retains historic resources significant for their association with each of these periods (EAFB 2005b).

Ellsworth AFB encompasses the former Rushmore Air Force Station, which was operated by the Atomic Energy Commission (EAFB 2011). As a unit of the SAC, the installation continued to host long-range bomber aircraft. From the early 1960s until the early 1990s, the installation was the host unit for a group of 150 Minuteman intercontinental ballistic missiles; these were later upgraded to Minuteman II. As Cold War tensions ebbed in the early 1990s, the installation's alert functions and missile programs were decommissioned (EAFB 2007c).

Cultural resources site records are maintained by the South Dakota SHPO and the South Dakota State Archeological Research Center. Prior to 1994, no records existed of historic or prehistoric sites on Ellsworth AFB. In 1994, Dakota Research Services performed a comprehensive archaeological survey at the installation, covering all significant tracts of undisturbed land within the installation boundaries; both pedestrian survey and soil auger testing were conducted (EAFB 2007c). The survey identified no significant archaeological sites on Ellsworth AFB.

Archaeological Resources. The results of the archaeological surveys of Ellsworth AFB indicate no NAGPRA-related items are known or are likely to be encountered on-installation. The installation Cultural Resources Manager provided notice of this finding to federally recognized tribes in the area (EAFB 2005b). No sensitive American Indian resources or TCPs have been identified or are likely to be found on-installation.

The Ellsworth AFB Cultural Resources Manager determined that the archaeological survey of the installation is complete per Section 110 (a) (2) of the NHPA. Since no significant archaeological properties exist on-installation, further archaeological investigations are unnecessary (EAFB 2007c).

Architectural Resources. Most of the installation's original 1942 structures were demolished in the 1960s and 1970s, and few World War II-era buildings remain. The installation was once composed primarily of temporary buildings, nearly all of which have been demolished. Only a few of the original permanent buildings are still standing and, of these, even fewer retain historic integrity.

Cultural resources surveys have been conducted at Ellsworth AFB; one in 1994, two in 1997, one in 2006, and one in 2007. The 1994 archaeological survey covered all significant tracts of undisturbed land within the installation boundaries. An architectural survey was conducted at Ellsworth AFB in August

2006 as part of the 2007 ICRMP update (EAFB 2007c). The field work consisted of verifying physical location, appearance, and characteristics of 119 previously surveyed structures and 20 new structures (not previously surveyed) that were at least 45 years old. The report from this survey, finalized in February 2007, validated previous NRHP eligibility for 4 World War II- and 3 Cold War-era buildings and recommended individual eligibility status for an additional 14 Cold War-era buildings.

Four World War II-era properties are eligible for listing in the NRHP (see **Table 3-10**).

Table 3-10. World War II NRHP-Eligible Buildings

Building Number	Building Name/Original Function	Date Built
601	Base Engineering Maintenance and Inspection Building	1942
6904	Ordnance Storage	1942
6905	Ammunition Assembly and Maintenance Shop	1942
6908	Munitions Training (Small Arms)	1942

Building 601 was scheduled for demolition due to asbestos. Consultation with the SHPO took place and a Memorandum of Agreement was signed for the appropriate documentation of this historic building (EAFB 2007c). Building 601 remains standing and is currently being evaluated to determine if it should be demolished or renovated. Three Cold War-era properties have been considered eligible for listing in the NRHP (see **Table 3-11**).

Table 3-11. Cold War Era NRHP-Eligible Buildings

Building Number	Building Name/Original Function	Date Built
7504	B-36 Aircraft Hangar	1949
88106	Segmented (Munitions) Magazine Storage	1952
88289	Segmented (Munitions) Magazine Storage	1954

In addition, eight Cold War-era properties are potentially historically significant pending more detailed study of their remaining historic fabric. These Luria wing hangars (Buildings 7610, 7612, 7614, 7616, 7618, 7620, 7622, and 7624; and their associated docks) are “potentially significant” because they are an important part of the military landscape at Ellsworth AFB. These eight buildings are considered provisionally eligible for listing in the NRHP for purposes of compliance with Section 106 of the NHPA and 36 CFR Part 800 pending more detailed study (EAFB 2007c) The SHPO has not been consulted on NRHP eligibility of these eight buildings because further detailed study is required to determine their historic significance. None of these buildings are located in the footprint of the MFH housing areas (EAFB 2007c).

The 100 units in the Prairie View neighborhood were constructed in 2004, and the 183 units in the Rushmore Heights neighborhood were constructed from 2005 to 2008. Both of these neighborhoods were constructed too recently to be considered for NRHP eligibility.

In addition, there were 260 Capehart units in Black Hills Estates and Eagle Ridge (both included in the “former Black Hills Estates area”) that were demolished in 2007. The remaining 340 units were demolished in 2008 and 2009. The Section 106 compliance requirements for these Capehart units were

addressed by the Advisory Council's Program Comments on Capehart and Wherry Housing, signed in November 2004 (70 FR 69959).

Native American Tribal Resources. The largest Native American tribe in western South Dakota is the Oglala Sioux. The Rosebud Sioux, Crow Creek Sioux, Cheyenne River Sioux, Lower Brule Sioux, Yankton Sioux, Flandreau Santee Sioux, and Sisseton-Wahpeton Sioux are other federally recognized tribal entities also located within the state. There are currently no known traditional cultural properties (TCPs) at Ellsworth AFB (EAFB 2007c).

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

Under Section 106 of the NHPA, adverse effects on historic properties can include any of the following:

- 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 that alter its setting
- Neglecting the resource to the extent that it deteriorates or is destroyed
- 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.

Impacts on cultural resources include potential effects on buildings, sites, structures, districts, and objects eligible for or included in the NRHP; cultural items as defined in the NAGPRA; archaeological resources as defined by the ARPA; and archaeological artifact collections and associated records as defined by 36 CFR Part 79.

Under Section 106 of the NHPA, the Proposed Action might have no effect, no adverse effect, or an adverse effect on historic properties.

3.7.3.2 Proposed Action

The NHPA Section 106 consultation process has been completed for the Proposed Action and is provided in Appendix C.

Archaeological Resources. No impacts on known archaeological resources would be expected under the Proposed Action. The Proposed Action would occur either in areas that have been previously surveyed that did not identify any archaeological resources, or areas of previous disturbance including housing with low probabilities for archaeological resources.

In the event of an inadvertent discovery on Ellsworth AFB, all work in the immediate vicinity of the discovery would be halted until the materials are identified and documented. An appropriate treatment strategy would be developed in consultation with the SHPO and other consulting parties as outlined in the Ellsworth AFB ICRMP. In compliance with NAGPRA, tribal representatives would be notified and consulted about the proposed treatment of human remains and funerary and sacred objects should these be discovered during implementation of the Proposed Action. Accordingly, the Proposed Action is not expected to impact archaeological resources.

Architectural Resources. The Proposed Action would not be expected to impact NRHP-eligible architectural resources on Ellsworth AFB. The MFH units in Rushmore Heights and Prairie View are not eligible for the NRHP under criteria A through D or criterion consideration G. Additionally, the MFH units and the former Black Hills Estates area are not located near an NRHP-eligible building.

Resources of Traditional, Religious, or Cultural Significance to Native American Tribes. There are no known resources of significance to Native American tribes at Ellsworth AFB; therefore, no impacts are expected from the Proposed Action. If resources of traditional, religious, or cultural significance to Native American tribes are identified within the APE of the Proposed Action, Ellsworth AFB would consult with the tribes to avoid or mitigate any impacts from the Proposed Action on those resources.

The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current ICRMP.

3.7.3.3 No Action Alternative

Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would need to construct additional units to support housing needs of military personnel and families.

Under the No Action Alternative, the Proposed Action would not be implemented. Baseline conditions for cultural resources described in **Section 3.7.2** would remain unchanged. As a result, there would be no impacts on known archaeological resources. In addition, there would be no impacts on architectural resources or any known resources of traditional, religious, or cultural significance to Native American tribes under the No Action Alternative.

3.8 Socioeconomics and Environmental Justice

3.8.1 Definition of the Resource

Socioeconomics. Socioeconomics is defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Population levels are subject to fluctuations from regional birth and death rates and immigration and emigration of people. 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. For the purpose of analyzing the Proposed Action, this section focuses primarily on the construction industry and the real estate market. Socioeconomic data analyzed in this section represent the region of influence relative to its surrounding metropolitan city, county, and state levels to characterize baseline socioeconomic conditions relative to regional and state trends.

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.

The demographics of a geographic region can describe the socioeconomic environment, which represents a composite of several interrelated and nonrelated factors. There are several factors that can be used as

indicators of socioeconomic conditions for a geographic area, such as average educational attainment, personal income, percentage of residents living below the poverty level, employment/unemployment rates, employment by business sector, and cost of housing. These characteristics cumulatively measure the community quality of life. Data on employment can 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, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

Environmental Justice. Environmental justice is defined by EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued on February 11, 1994, by President Clinton. EO 12898 pertains to environmental justice issues and relates to various socioeconomic groups and the health effects that could be imposed on them. 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, 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.

Children's Environmental Health and Safety Risks. EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, states that each Federal agency "(a) shall make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children; and (b) shall ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

3.8.2 Existing Conditions

Ellsworth AFB is located in Pennington and Meade counties approximately 7 miles east of Rapid City, the state's second largest city in southwestern South Dakota. For the purposes of this EA, four spatial areas are used to define the socioeconomic baseline conditions: (1) census tracts 115 and 202, (2) Rapid City, (3) the Rapid City Metropolitan Statistical Area (MSA), and (4) the State of South Dakota. Census tracts 115 and 202 surrounding Ellsworth AFB are shown in **Figure 3-5**. The Rapid City MSA, which is composed of Meade and Pennington counties including Rapid City, best represents demographics for counties surrounding Ellsworth AFB. The State of South Dakota is also used as a baseline to compare the socioeconomic and environmental justice analysis.

Demographics. The population within census tracts 115 and 202 (4,209) is considerably less than the populations of Rapid City (59,607), Rapid City MSA (88,565), and South Dakota (754,844). Children under the age of 10 represent 20.3 percent of the total population within census tracts 115 and 202 (USCB 2000a, USCB 2000b, USCB 2000c, USCB 2000d).

Regional Employment. **Table 3-12** illustrates employment by industry for census tracts 115 and 202, Rapid City, the Rapid City MSA, and South Dakota based on 2000 census data. Based on 2000 census data, the percentage of employed persons that are in the Armed Forces is 47.8 for census tracts 115 and 202, significantly higher than the other spatial regions as shown in **Table 3-12**. The educational, health, and social services industry employs the most number of people in the four spatial areas. The retail trade

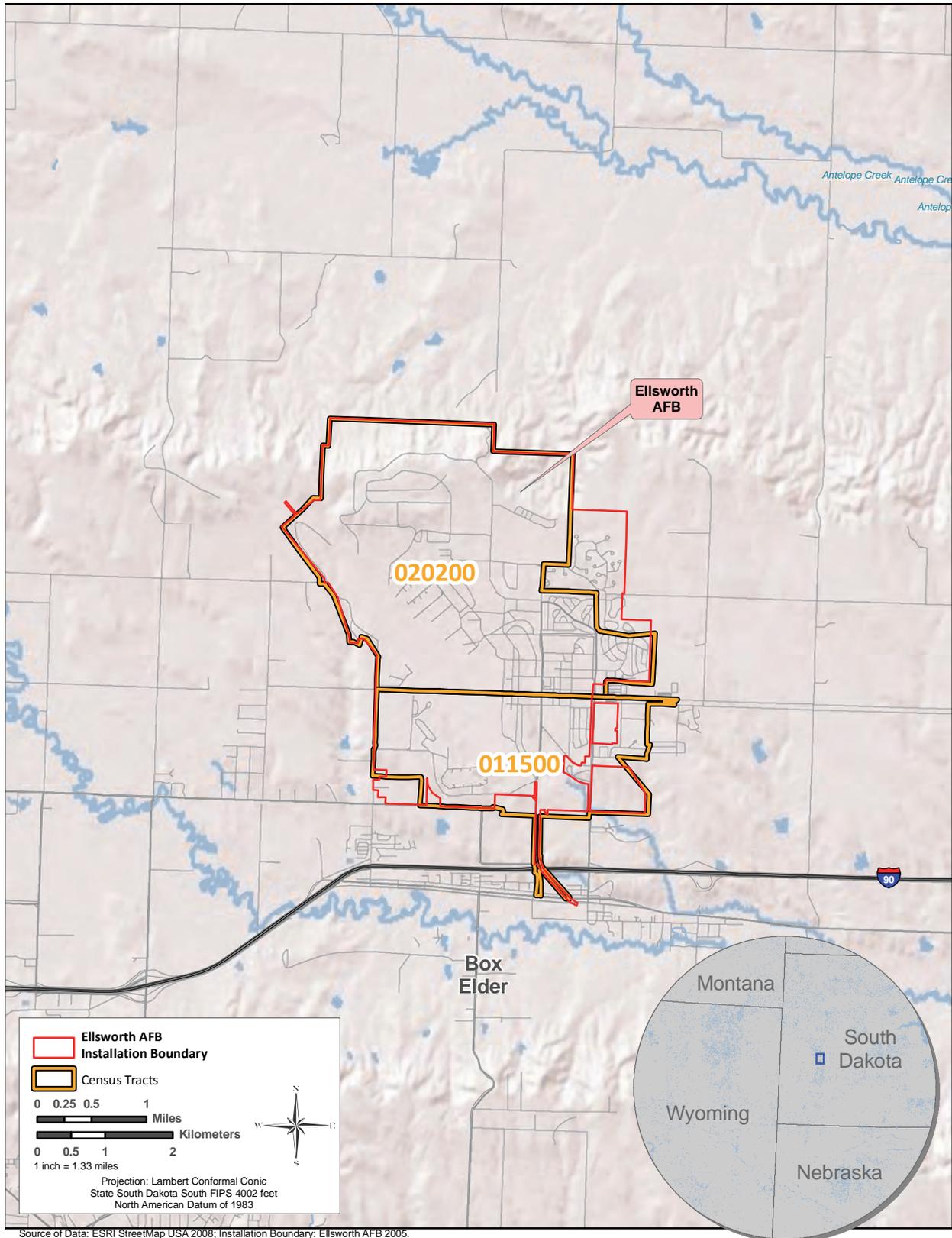


Figure 3-5. Census Tracts 115 and 202

Table 3-12. Employment Industry in Census Tracts 115 and 202, Rapid City, Rapid City MSA, and South Dakota

Employment Types	Census Tracts 115 and 202	Rapid City	Rapid City MSA	South Dakota
Population 16 Years and Over in the Labor Force	2,374	31,948	47,739	394,945
Percentage of Employed Persons in Armed Forces	39.5%	1.9%	1.8%	0.6%
Agriculture, forestry, fishing and hunting, and mining	0.7%	1.1 %	2.3%	8.1%
Construction	4.4%	6.6%	7.4%	6.3%
Manufacturing	4.6%	9.0%	9.2%	11.1%
Wholesale trade	0.8%	3.1%	3.1%	3.3%
Retail trade	11.4%	14.6%	14.3%	12.0%
Transportation and warehousing, and utilities	1.5%	3.7%	4.2%	4.7%
Information	1.1%	2.3%	2.2%	2.1%
Finance, insurance, real estate, and rental and leasing	8.2%	8.1%	7.4%	7.4%
Professional, scientific, management, administrative, and waste management services	2.3%	7.3%	6.8%	5.0%
Educational, health, and social services	31.2%	22.4%	21.8%	22.0%
Arts, entertainment, recreation, accommodation, and food services	10.2%	10.6%	10.2%	8.3%
Other services (except public administration)	5.2%	6.1%	6.0%	5.1%
Public administration	18.2%	5.2%	5.1%	4.8%

Sources: USCB 2000e, USCB 2000f

and the arts, entertainment, recreation, accommodation, and food service industries are the second and third leading employment types for Rapid City, the Rapid City MSA, and South Dakota.

Within census tracts 115 and 202, public administration is the second leading employment industry with 18.2 percent of the population followed by arts, entertainment, recreation, accommodation, and food services at 12.8 percent. Within census tracts 115 and 202, 86.1 percent of the population 16 years and older is employed compared to 68.8 percent for Rapid City and 63.9 percent for South Dakota (USCB 2000e, USCB 2000f). Unemployment levels and poverty levels are consequently lower in census tracts 115 and 202 at 3.5 percent. However, the percentage of individuals and families below the poverty limit remains consistent between all four spatial areas.

Ellsworth AFB Employment. Ellsworth AFB is the second largest employer in the State of South Dakota with a total of 4,220 active military and civilian workers. The 2008 Ellsworth AFB Economic Impact Analysis estimated the total economic impact of Ellsworth AFB to be \$300.7 million, of which \$163.7 million was payroll and \$95.1 million was direct expenditures for construction, services, commissary and base exchange, health, education, and other materials. An estimated 1,360 additional jobs were created as an indirect economic impact, valued at \$42.9 million (EAFB 2008f).

Housing Characteristics. Housing characteristics for the four spatial areas are shown in **Table 3-13**. According to 2000 census data, the number of available housing units in census tracts 115 and 202 was 1,103 with a vacancy rate of only 3 percent. The 2006 Ellsworth AFB HRMA estimated the supply of rental housing units to grow 1.0 percent annually from 10,124 in 2006 to 10,167 in 2011 (EAFB 2007e).

Environmental Justice and Children's Environmental Health and Safety Risks. Minority levels in census tracts 115 and 202 have a larger variance in comparison to minority levels between Rapid City, the

Table 3-13. Housing Characteristics, 2000

Housing Characteristics	Total Number of Units	Occupied Units		Vacant Units	Percent Vacant
		Owner Occupied	Renter Occupied		
Census Tracts 115 and 202	1,103	19	1056	28	3.0
Rapid City	25,096	14,211	9,758	1,127	4.5
Rapid City MSA	37,249	22,930	11,711	2,608	7.0
South Dakota	323,208	197,940	92,305	32,963	10.2

Sources: USCB 2000a, USCB 2000b, USCB 2000c, USCB 2000d

Rapid City MSA, and South Dakota (see **Table 3-14**). For instance, African-American populations are 6.0 percent in census tracts 115 and 202, compared to 1.0 percent in Rapid City, 0.9 percent in the Rapid City MSA, and 0.6 percent in South Dakota.

American Indian, Alaska Natives are significantly lower in census tracts 115 and 202 at 1.9 percent compared to Rapid City of 10.1 percent, 8.1 in Rapid City MSA, and 8.3 in South Dakota. Asian populations are 2.9 percent in census tracts 115 and 202, while Rapid City, Rapid City MSA, and South Dakota are 1.0, 0.9, and 0.6 percent, respectively.

The two highest minority populations in census tracts 115 and 202 are African Americans and Hispanic or Latinos. The highest minority population in Rapid City, the Rapid City MSA, and South Dakota is American Indian, Alaskan Native. Within census tracts 115 and 202 there is a significantly higher number of individuals under 5 years of age (16.5 percent) compared to Rapid City (7.0 percent), the Rapid City MSA (7.1 percent), and South Dakota (6.8 percent). Ellsworth AFB also supports the Douglas School District, the eleventh largest out of 165 in the state (EAFB 2008f).

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

The significance of socioeconomic impacts is assessed in terms of direct effects on the local economy and related effects on other socioeconomic resources (e.g., income, housing, employment). The magnitude of potential impacts can vary greatly, depending on the location of a proposed action. For example, implementation of an action that creates ten employment positions might be unnoticed in an urban area, but could have significant impacts in a rural community. If potential socioeconomic changes were to result in substantial shifts in population trends or in adverse effects on regional spending and earning patterns, they would be considered significant. This section also evaluates impacts on schools and environmental justice concerns to include disproportionate impacts on low-income or minority populations as well as children's environmental health and safety risks.

3.8.3.2 Proposed Action

Short- and long-term, minor, beneficial effects would be expected on socioeconomic resources as a result of implementing the Proposed Action; no effects would be expected on environmental justice. Ellsworth AFB would convey 283 existing USAF-owned MFH units to the PO under the Proposed Action. The PO would continue use of 283 existing MFH units in their current condition and construct 214 new units.

Table 3-14. Minority, Low-income, and Poverty Status for 2000

Demographic	Census Tracts 115 and 202	Rapid City	Rapid City MSA	South Dakota
Total Population	4,209	59,607	88,565	754,844
Percent Male	50.8	49.0	49.6	49.6
Percent Female	49.1	51.0	50.4	50.4
Percent Under 5 Years	16.5	7.0	7.1	6.8
Percent Over 65 Years	0.4	13.2	11.8	14.3
Percent White	81.1	84.3	86.7	88.7
Percent Black or African American	6.0	1.0	0.9	0.6
Percent American Indian, Alaska Native	1.9	10.1	8.1	8.3
Percent Asian	2.9	1.0	0.9	0.6
Percent Native Hawaiian and Other Pacific Islander	0.2	0.1	0.1	0.0
Percent Some Other Race	2.5	0.7	0.7	0.5
Percent Reporting 2 or more races	4.6	2.8	2.7	1.3
Percent Hispanic or Latino *	6.7	2.8	2.6	1.4
Percent of Individuals Below Poverty	11.1	12.7	11.5	13.2
Percent of Families Below Poverty	9.6	9.4	8.6	9.3
Per Capita Income	\$29,461	\$19,445	\$18,938	\$17,562
Median Household Income	\$28,944	\$35,978	\$37,485	\$35,282

Sources: USCB 2000a, USCB 2000b, USCB 2000c, USCB 2000d, USCB 2000e, USCB 2000f, USCB 2000g

Note: * Hispanic or Latino of any race

Socioeconomic Resources. No significant impacts would be expected on employment levels, household income, or poverty levels. There would be a minor, beneficial, short-term increase in employment related to the construction of the new MFH units.

Short-term, negligible, beneficial impacts on the local economy would be expected from a temporary increase in regional employment. The number of construction workers required for the proposed construction activities is relatively small, compared to the available work force in census tracts 115 and 202 and the county, and would not cause a significant effect on local employment levels. Local labor and supplies would be needed to complete construction of the new housing units. The Proposed Action would be expected to generate revenue for the purchase of construction materials and related supplies from local suppliers.

Short-term, minor, indirect, adverse effects on the housing industry might occur if some of the 214 new MFH units are occupied by personnel and families who currently live off-installation, resulting in an increase in the number of housing units for lease or sale and thereby increasing the supply of housing units. Long-term, beneficial effects on housing availability and quality would be expected under the Proposed Action. Construction and development of 214 new MFH units would improve the quality of housing for qualified personnel and their families. Household income and poverty levels would not be expected to incur significant impacts from the Proposed Action.

The Proposed Action would not be expected to affect educational needs for students on-installation. Although, transportation routes between MFH units and schools might be temporarily affected, there are no long-term, adverse impacts expected.

Environmental Justice and Children's Environmental Health and Safety Risks. No effects would be expected to occur on environmental justice. Minority and low-income populations would not be adversely or disproportionately affected by the Proposed Action. Construction associated with the Proposed Action would be in accordance with OSHA regulations ensuring that the safety of children would not be impacted. No impacts on children's health and safety risks would be expected as result of the Proposed Action.

3.8.3.3 No Action Alternative

Under the No Action Alternative, no impacts would be expected on environmental justice and socioeconomic resources. Ellsworth AFB would continue to provide for the current housing needs of military personnel and family members with the 283 MFH units that were constructed after 2004. It is anticipated that these newer MFH units would require only minor maintenance and repairs.

3.9 Infrastructure

3.9.1 Definition of the Resource

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 the economic growth of an area. The infrastructure components to be discussed in this section include transportation, utilities, and solid waste management.

Transportation includes major and minor roadways that feed into the installation and the security gates, roadways, and parking areas on the installation. Public transit, rail, and pedestrian networks are also elements of transportation. Utilities include electrical supply, central heating and cooling, natural gas supply, water supply, sanitary sewer and wastewater systems, storm water drainage, and communications systems. Solid waste management primarily relates to the availability of landfills to support a population's residential, commercial, and industrial needs.

3.9.2 Existing Conditions

Transportation. The primary entrance onto Ellsworth AFB is through the Liberty (Main) Gate. Liberty Boulevard serves as the principal route for traffic moving between the Liberty Gate and I-90 to the south. Secondary gates onto Ellsworth AFB include the Bismarck (commercial) Gate, which is accessed from Ellsworth Street, and the Patriot Gate, which is accessed from North Ellsworth Road (EAFB 2006c, EAFB 2008c). I-90 is immediately south of the installation and is the major east-west highway corridor through southern South Dakota. I-90 connects the installation with nearby Rapid City to the west. The installation does not experience traffic congestion during periods of peak travel.

The primary vehicular routes on the installation include Ellsworth Street, North Ellsworth Road, Lemay Boulevard, and Schriever Street. Secondary roads such as Ohio Avenue and Washington Avenue provide access to the Prairie View and Rushmore Heights neighborhoods, respectively (EAFB 2006c). Some pavement from former MFH development remains in the former Black Hills Estates area (AFCEE 2009).

Electrical Supply. Electrical power is supplied to Ellsworth AFB by Western Area Power Administration (WAPA) and Black Hills Power and Light (BHPL) Company of Rapid City. WAPA is the installation's primary supplier of electricity, while BHPL provides backup electrical service as needed. Electrical power is delivered to Ellsworth AFB through two 115-kilovolt feeders. The installation uses two 25 megavolt-ampere substations to dispense electrical power to ten primary distribution circuits, 9 of which are operational and 1 is reserve. Two secondary substations, a series of secondary transformers, and approximately 245 miles of interconnected electrical cable provide electrical power to the installation's facilities. Emergency electrical power is supplied to critical installation facilities by onsite, emergency backup generators. The overall electrical system at Ellsworth AFB was evaluated as in adequate condition during a 2007 system evaluation, and there is sufficient available electrical capacity for future installation development (EAFB 2008c).

Electrical supply mains in the two existing MFH neighborhoods (Prairie View and Rushmore Heights) were installed in 1994 and consist of 15-kilovolt circuits. Underground laterals were installed when these neighborhoods were renovated during the past 6 years. Functional electrical supply mains are in the former Black Hills Estates area. These electrical mains supported MFH units that have since been demolished and consist of 15-kilovolt circuits that were installed in 1994 (AFCEE 2009).

Central Heating and Cooling. Ellsworth AFB maintains a central heating and cooling system; however, no MFH units in the Prairie View and Rushmore Heights neighborhoods are connected to this system. Central heating and cooling service is only available to the Ellsworth AFB medical facility and the Cedar Inn visiting officers quarters (EAFB 2008c).

Natural Gas Supply. Natural gas is supplied to Ellsworth AFB through a 12-inch main by Montana-Dakota Utilities. There are approximately 44 miles of underground piping on the installation that deliver natural gas service to various buildings. Approximately 88 percent of the installation's natural gas piping is composed of polyethylene. The installation uses a propane-air mixture system to act as a backup. The overall Ellsworth AFB natural gas supply system was evaluated as in adequate condition during a 2007 system evaluation (EAFB 2008c).

Natural gas piping in the two existing MFH neighborhoods (Prairie View and Rushmore Heights) was installed between 2004 and 2008 at the time that these neighborhoods were constructed. All natural gas piping in the existing MFH neighborhoods is composed of polyethylene and is in good condition. No natural gas service is currently available to the former Black Hills Estates area. When the former MFH units in this neighborhood were demolished, the natural gas system was removed (AFCEE 2009).

Water Supply. Ellsworth AFB receives potable water from the Rapid City Water Division, which draws from nearby surface water and groundwater sources. Water is delivered to the installation through a 16-inch, concrete-lined steel main. A contract with the Rapid City Water Division currently limits the installation to 1.6 million gallons per day (MGD); however, this contract is under renegotiation and it is expected that the installation's water limit will be increased to 2.7 MGD (EAFB 2008c). Ellsworth AFB used approximately 196 million gallons of water during FY 2008, which equates to approximately 0.54 MGD on average (EAFB 2008g). Ellsworth AFB has approximately 3.8 million gallons of total water storage capacity at the installation. The installation has no backup water supply system, as all groundwater wells on the installation have been abandoned. The overall Ellsworth AFB water supply system was evaluated as in adequate condition during a 2007 system evaluation (EAFB 2008c).

The water distribution system at Ellsworth AFB is composed of more than 66 miles of piping (EAFB 2008c). Water supply lines in the two existing MFH neighborhoods (Prairie View and Rushmore Heights) consist of 8-inch diameter PVC pipes that were installed between 2003 and 2009 when these neighborhoods were developed into their current forms. Water lines that at one time were used for former

MFH units remain in the Rushmore Heights neighborhood and the former Black Hills Estates area; however, they have been abandoned in place and partially filled with concrete (AFCEE 2009). The City of Box Elder receives its drinking water from various wells. Currently Box Elder is able to handle its peak usage, but if needed there is backup capacity available from Rapid City (Todd 2010).

Sanitary Sewer and Wastewater Systems. Ellsworth AFB currently maintains its own sanitary sewer system and WWTP. Wastewater generated on-installation is transported via a system of gravity and force mains through as many as seven lift stations to the WWTP. The WWTP uses biological agents, sludge stabilization, and sludge dewatering processes to carry out primary and secondary treatment processes. The WWTP is designed to treat an average of 1.5 MGD (EAFB 2008c). The average flow to the WWTP is 0.6 MGD, and the maximum flow has been estimated at 0.91 MGD. Ellsworth AFB's WWTP exceeds South Dakota DENR surface water discharge limits for ammonia and is operating under a waiver that expires in 2014 (EAFB 2008e, EAFB 2011).

The City of Box Elder currently employs a lagoon treatment system to treat wastewater; however, this system is currently over capacity. For these reasons, the South Dakota EDA was established and is proposing to build a regional WWTP (RWWTP). The RWWTP is anticipated to be activated by 2014, at which time Ellsworth AFB's existing WWTP would be decommissioned. The replacement RWWTP would be located off-installation, meet all surface water discharge limits, and have sufficient capacity to meet current and future installation and regional wastewater needs (EAFB 2011). The RWWTP would treat wastewater from Ellsworth AFB and the City of Box Elder, and the installation's existing WWTP and the city's lagoon treatment facility would be decommissioned. Because the RWWTP is still in the planning stages, it is not considered as part of the baseline when evaluating impacts of the Proposed Action.

The sanitary sewer mains in the Prairie View neighborhood were installed during the original construction of this neighborhood and have been upgraded as required. The sanitary sewer mains in the Rushmore Heights neighborhood were installed during the redevelopment of the neighborhood between 2004 and 2008. Older mains used for former MFH units in this neighborhood were abandoned in place. No functional sanitary sewer mains are currently in the former Black Hills Estates area. When the former MFH units in this neighborhood were demolished, the sanitary sewer mains were abandoned in place and partially filled with concrete (AFCEE 2009).

Storm Water Drainage. Ellsworth AFB uses a network of swales, ditches, streams, lakes, and covered piping to control storm water. The installation's storm water drainage system discharges storm water into tributaries of Elk Creek and Box Elder Creek, which are north and south of the installation, respectively. Detention ponds have also been created to collect surface water runoff and decrease the rate of discharge into the tributaries. The storm water drainage system is in adequate condition and meets the needs of the installation (EAFB 2008c).

Storm water drainage systems are present in the two existing MFH neighborhoods (Prairie View and Rushmore Heights). These storm water systems were installed during the original development of these neighborhoods and have been upgraded as needed. Storm water drainage service was installed to the former Black Hills Estates area during the construction of former MFH units that have since been demolished. This storm water drainage infrastructure has remained functional following the demolition of the MFH units (AFCEE 2009).

Section 402(p) of the CWA states that storm water discharges associated with industrial activity to waters of the United States must be authorized by an NPDES permit. Ellsworth AFB currently operates under a South Dakota Surface Water Discharge Permit (Permit No. SD-0000281). The permit authorizes the

discharge of storm water associated with industrial activity to surface waters, in accordance with effluent limitations, monitoring requirements, and other conditions (EAFB 2002).

Communications Systems. Ellsworth AFB uses fiber optic and copper cables to support the installation's communications system. Telephone service is provided to the installation by Qwest Communications. The installation's telephone switching system has capacity for 6,000 lines, of which 80 percent are currently in service. The installation's computer data transmission system is in the process of being upgraded as copper cables are replaced with fiber optic cables (EAFB 2008c). All MFH units at Ellsworth AFB are provided with cable television and telephone service. Government computer network lines and secure-line government telephone service are provided to select MFH units (AFCEE 2009).

Solid Waste Management. There are no active landfills on Ellsworth AFB. Solid waste generated at the installation is collected by contractors and transported to the Rapid City Sanitary Landfill, which is a 450-acre landfill that has been in operation since 1960. The Rapid City Sanitary Landfill receives between 300 and 350 tons of solid waste each business day from the greater Rapid City area (EAFB 2008c, Rapid City 2010).

Ellsworth AFB manages a recycling program to reduce the amount of solid waste sent to landfills. Mandatory recycling has been instituted at Ellsworth AFB, and curbside recycling pickup is available in the MFH areas (EAFB 2008c). Recycled materials collected from Ellsworth AFB are transported to the Rapid City Municipal Recycling Facility and include paper, glass, plastic, cardboard, metal cans, and compost (EAFB 2005c). Additional recycling efforts are oftentimes included in specific construction and demolition projects.

3.9.3 Environmental Consequences

3.9.3.1 Evaluation Criteria

Effects on infrastructure are evaluated for their potential to disrupt or improve existing levels of service and create additional needs for airfield and transportation resources, energy (electric, natural gas, and central heating and cooling), water, sanitary sewer and wastewater service, storm water drainage, communications, and solid waste management. For example, effects might arise from physical changes to traffic circulation or energy needs created by either direct or indirect workforce and population changes related to installation activities. An effect could be significant if the Proposed Action resulted in any of the following:

- Exceeded capacity of a utility
- A long-term interruption of the utility
- A violation of a permit condition
- A violation of an approved plan for that utility.

3.9.3.2 Proposed Action

Transportation. Short-term, negligible to minor, adverse effects on the Ellsworth AFB transportation system would be expected from implementation of the Proposed Action. The proposed construction of 214 MFH units, a community center, and other ancillary facilities would result in a slight increase in the amount of traffic at the installation from equipment being delivered, debris being removed, and contractors arriving to the work sites. However, construction traffic would compose a small percentage of the total existing traffic on the installation. Many of the heavy construction vehicles would be driven to the work sites and kept on site for the duration of construction activities, resulting in relatively few additional trips. The proposed construction activities would be spread over a period of 6 years. This

would further reduce effects on installation traffic. Any potential increases in traffic volume associated with the proposed construction activities would be temporary. New secondary and tertiary roads would be constructed in the former Black Hills Estates area to provide access to the MFH units proposed for construction.

Long-term, minor, adverse effects on the Ellsworth AFB transportation system would be expected from the Proposed Action. The Proposed Action would add 214 MFH units at Ellsworth AFB, which would increase the number of personnel living on-installation. The increase in the number of personnel living on-installation would result in a long-term, minor increase in the number of vehicles and the amount of traffic at the installation. However, the increase in the amount of traffic would be minimal compared to the total traffic already at Ellsworth AFB. The Ellsworth AFB road system is capable of handling the long-term increase in traffic from the Proposed Action.

Electrical Supply. Short-term, minor, adverse effects on electrical supply would be expected from the implementation of the Proposed Action. Temporary, minor electrical service interruptions might be experienced when electrical service is connected to the MFH units, the community center, and other ancillary facilities proposed for construction. Construction processes could result in a slight increase in the demand for electricity; however, because construction activities would be staggered over a 6-year time period, the increase in electrical demand at any one time would be minimal. No new electrical supply mains would be installed in the former Black Hills Estates area because the existing mains would be reused.

Long-term, minor, adverse effects on the electrical supply would be expected from the Proposed Action. Following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the overall electrical demand would increase by a minor amount. However, the local electrical utility providers have sufficient capacity to support this increase in electrical demand. The Proposed Action would convey all electrical supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for electrical systems would be the transformer-side of the meter, service panel box, or junction box of each MFH neighborhood, whichever is encountered first from the transformer. As such, the PO would be responsible for all long-term electrical system maintenance from the POD to the MFH units and within the MFH units.

Central Heating and Cooling. No short- or long-term effects on central heating and cooling would be expected from the Proposed Action. The existing MFH units in the Prairie View and Rushmore Heights neighborhoods do not use central heating and cooling resources, and the MFH units proposed for construction would not use central heating and cooling resources either. As such, the Proposed Action would not affect the installation's central heating and cooling system.

Natural Gas Supply. Short-term, negligible to minor, adverse effects on natural gas supply would be expected from the implementation of the Proposed Action. Temporary, minor natural gas service interruptions might be experienced when natural gas service is connected to the MFH units, the community center, and other ancillary facilities proposed for construction. Underground polyethylene natural gas mains and laterals would be installed to the former Black Hills Estates area to service the MFH units proposed for construction.

Long-term, minor, beneficial and adverse effects on natural gas supply would be expected from the Proposed Action. The expansion of the natural gas system to the former Black Hills Estates area with modern piping would be a long-term, minor, beneficial effect on the installation. However, following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the overall natural gas demand at Ellsworth AFB would increase. Montana-Dakota Utilities would be responsible for providing additional natural gas to meet any increase in demand. The Proposed Action would convey all

natural gas supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for natural gas systems would be the supply-side of the meter, pressure regulator, or shut-off valve for each MFH neighborhood. As such, the PO would be responsible for all long-term natural gas system maintenance from the POD to the MFH units and within the MFH units.

Water Supply. Short-term, minor, adverse effects on water supply would be expected from the implementation of the Proposed Action. Temporary, minor water service interruptions might be experienced when water service is connected to the MFH units, the community center, and other ancillary facilities proposed for construction. Construction activities would require minimal amounts of water, mostly for dust suppression. Because construction activities would be staggered over a 6-year time period, the increase in water demand at any one time would be minimal. Underground PVC water mains would be installed to the former Black Hills Estates area to service the MFH units proposed for construction.

Long-term, minor, beneficial and adverse effects on water supply would be expected from the Proposed Action. The expansion of the water supply system to the former Black Hills Estates area with modern piping would be a long-term, minor, beneficial effect on the installation. However, following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the demand for water at Ellsworth AFB would increase. There is sufficient capacity available from the City of Box Elder and Rapid City to accommodate the increase in water demand from the Proposed Action. The Proposed Action would convey all water supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for the water supply system would be the shut-off valve at the curb for each housing unit. As such, the PO would be responsible for all long-term water system maintenance from the POD to the MFH units and within the MFH units.

Sanitary Sewer and Wastewater Systems. Short-term, negligible to minor, adverse effects on the sanitary sewer and wastewater systems would be expected from the implementation of the Proposed Action. Temporary, minor sanitary sewer service interruptions might be experienced when wastewater piping is connected to the MFH units, the community center, and other ancillary facilities proposed for construction. Underground PVC sanitary sewer mains would be installed to the former Black Hills Estates area to service the MFH units proposed for construction.

Long-term, moderate, adverse effects on sanitary sewer and wastewater systems would be expected from the Proposed Action. The expansion of the sanitary sewer and wastewater system to the former Black Hills Estates area with modern piping would be a long-term, minor, beneficial effect on the installation. However, following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the amount of wastewater generated at Ellsworth AFB would increase. The provider for wastewater treatment has not yet been determined. The City of Box Elder's lagoon treatment facility could treat wastewater from Ellsworth AFB; however, the treatment lagoons are over capacity, which would result in short-term, moderate, adverse impacts on the sanitary sewer system. Alternatively, wastewater treatment could be provided by Ellsworth AFB's existing WWTP in the short-term. The proposed replacement RWWTP could have sufficient capacity in the long-term; however, this project is still in the planning stages. See **Section 4** for additional discussion on the RWWTP. The Proposed Action would convey all sanitary sewer and wastewater infrastructure between a predetermined POD and the MFH units to the PO. The POD for the wastewater system would be the cleanout closest to each housing unit. As such, the PO would be responsible for all long-term sanitary sewer and wastewater system maintenance from the POD to the MFH units and within the MFH units.

Storm Water Drainage. Short-term, minor, adverse effects on storm water drainage would be expected from the implementation of the Proposed Action. The proposed construction of 214 MFH units, the community center, and other ancillary facilities would require ground disturbance as heavy equipment

reworks and contours land surfaces. These activities would temporarily disrupt man-made storm water drainage systems and, consequently, increase the potential for storm water runoff to erode soil during construction activities. Construction BMPs that would minimize ground surface disturbance and attempt to provide adequate temporary storm water management techniques would be used to minimize adverse effects on storm water drainage during the implementation of the Proposed Action. Because construction activities would be staggered over a 6-year time period, the disruption to storm water systems would be minimized at any one time.

Long-term, minor, adverse effects on storm water drainage would be expected from the Proposed Action. Following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the amount of impervious surface at Ellsworth AFB would increase by approximately 783,000 ft² (18 acres). This increase in impervious surface would reduce the amount of surface area for storm water to permeate into the ground and increase the amount of storm water runoff. Operational storm water drainage infrastructure from previous MFH development is present in the former Black Hills Estates area, where the 214 proposed MFH units would be constructed. Additional storm water control infrastructure and upgrades to the existing infrastructure would be installed to reduce and control the volume of storm water runoff. With appropriate storm water management BMPs, long-term, adverse effects on storm water drainage would be minimized.

Communications Systems. Short-term, negligible to minor, adverse effects on communications systems would be expected from the implementation of the Proposed Action. Temporary, minor communications service interruptions might be experienced when communications lines are connected to the MFH units, the community center, and other ancillary facilities proposed for construction. Modern communications service lines would be installed to the former Black Hills Estates area to service the MFH units proposed for construction.

Long-term, minor, beneficial and adverse effects on communications systems would be expected from the Proposed Action. The expansion of the communications system to the former Black Hills Estates area with modern service lines would be a long-term, minor, beneficial effect on the installation. However, following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the demand for communications services at the Ellsworth AFB would increase from the added personnel and buildings. Communications system upgrades would be conducted as needed to meet any increases in communications demand from the Proposed Action. There is sufficient available capacity in the installation's telephone switching system to meet the increase in telephone service from the Proposed Action. The Proposed Action would not convey any communication infrastructure to the PO; therefore, installation personnel and local communications service providers would remain responsible for long-term communications system maintenance.

Solid Waste Management. Short-term, minor, adverse effects on solid waste management would be expected from the implementation of the Proposed Action. The construction of 214 MFH units, the community center, and other ancillary facilities would generate approximately 994 tons of solid waste (USEPA 2009c). **Table 3-15** summarizes the amounts of solid waste anticipated to be generated from the various aspects of the Proposed Action.

The solid wastes generated from the implementation of the Proposed Action would consist mainly of scrap building materials such as metals (conduit, piping, and wiring) and lumber and soil piles and yard debris, such as trees and shrubs. Contractors would be required to recycle construction debris to the greatest extent possible, thereby diverting it from landfills. Site-generated scrap metals, wiring, and steel would be separated and recycled off site. Vegetation debris would be converted to mulch or recycled to the greatest extent possible. Clean fill material, ground-up asphalt, and broken-up cement would be diverted from landfills and reused whenever possible. All excess soils generated would be reused to the

Table 3-15. Quantities of Construction Debris Generated from the Proposed Action

Project	Total Square Footage	Multiplier (pounds/ft ²)	Debris Generated	
			(pounds)	(tons)
Construction of 214 MFH Units *	428,000	4.34	1,857,520	929
Construction of Community Center	30,000	4.34	130,200	65
Construction of Storage Facilities	50,000	4.34	217,000	109
Construction of Housing Management Office	5,000	4.34	21,700	11
		TOTAL	1,987,720	1,114

Source: USEPA 2009c

Note: * Assumes an average size of 2,000 ft² per MFH unit.

greatest extent possible for grading and contouring. Effective recycling practices would substantially reduce the amount of solid waste to be landfilled.

Long-term, minor, adverse effects on solid waste management would be expected from the Proposed Action. Following the proposed construction of 214 MFH units, the community center, and other ancillary facilities, the amount of solid waste generated at Ellsworth AFB would increase from the added personnel and buildings. Contractors would be responsible for disposing of any additional solid waste generated because of the Proposed Action. The additional solid waste generated from the Proposed Action is not anticipated to exceed the capacity of the Rapid City Landfill.

3.9.3.3 No Action Alternative

The No Action Alternative would result in the continuation of the existing conditions of infrastructure resources, as discussed in **Section 3.9.2**. No additional effects on infrastructure resources would be expected as a result of the Proposed Action not being implemented.

3.10 Hazardous Materials and Waste

3.10.1 Definition of the Resource

A hazardous substance, pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601(14)), is defined as: “(A) any substance designated pursuant to section 1321(b)(2)(A) of Title 33; (B) any element, compound, mixture, solution, or substance designated pursuant to section 9602 of this title; (C) any hazardous waste having the characteristics identified under or listed pursuant to section 3001 of the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, (42 U.S.C. §6921); (D) any toxic pollutant listed under section 1317(a) of Title 33; (E) any HAP listed under section 112 of the CAA (42 U.S.C. §7412); and (F) any imminently hazardous chemical substance or mixture with respect to which the Administrator of the USEPA has taken action pursuant to section 2606 of Title 15. The term does not include petroleum, including crude oil or any fraction thereof, which is not otherwise specifically listed or designated as a hazardous substance, and the term does not include natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).”

Hazardous materials are defined by 49 CFR 171.8 as “hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions” in

49 CFR Part 173. Transportation of hazardous materials is regulated by the U.S. Department of Transportation regulations within 49 CFR Parts 105–180.

RCRA defines a hazardous waste in 42 U.S.C. 6903, as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may (A) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or (B) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.”

3.10.2 Existing Conditions

Hazardous Materials. AFI 32-7086, *Hazardous Materials Management*, establishes procedures and standards governing procurement, issuance, use, or disposal of hazardous materials and tracking and record-keeping for public safety and for compliance with all laws and regulations. Under AFI 32-7086, the USAF has established roles, responsibilities, and requirements for a hazardous material management program (HMMP). The purpose of the HMMP is to control the procurement and use of hazardous material to support USAF missions, ensure the safety and health of personnel and surrounding communities, and minimize USAF dependence on hazardous materials. The HMMP includes the activities and infrastructure required for ongoing identification, management, tracking, and minimization of hazardous materials. AFI 32-7080, *Pollution Prevention Program*, incorporates the requirements of all Federal regulations, Air Force Instructions (AFIs), and DOD Directives for the reduction of hazardous material uses and purchases. The primary hazardous materials addressed by AFI 32-7080 are ozone-depleting substances and the 17 chemicals listed under the USEPA Industrial Toxics Program. EO 12088, *Federal Compliance with Pollution Control Standards*, ensures that necessary actions are taken for the prevention, management, and abatement of environmental pollution from hazardous materials or hazardous waste due to Federal facility activities.

Ellsworth AFB maintains a *Pollution Prevention Management Action Plan*, the objective of which is to maintain compliance with environmental regulations by reducing hazardous material usage, properly managing hazardous materials, and increasing the purchase of recycled-content products (EAFB 2006b).

Ellsworth AFB has established a hazardous materials pharmacy (HAZMART), in accordance with AFI 32-7086, to provide a one-stop storage, issue, and collection point for recyclable hazardous materials (EAFB 2006b). The HAZMART manages customer accounts for tracking the purchase, issue, and disposal of hazardous and regulated materials throughout their lifecycle. The Air Force Environmental Management Information System is used to process and track hazardous materials and all issued materials are tracked sequentially with bar code labels. All hazardous material users are enrolled in the HAZMART system (EAFB 2005d).

Hazardous materials and substances that are common to MFH maintenance activities and that might be stored inside or outside the MFH units or the housing maintenance facility for domestic use include small quantities of paint, paint thinners, solvents, antifreeze, gasoline, motor oil, and pesticides.

Hazardous Wastes. AFI 32-7042, *Solid and Hazardous Waste Compliance*, directs roles and responsibilities with waste stream management including planning, training, emergency response, and pollution prevention. The management of hazardous waste is governed by the RCRA Subtitle C (40 CFR Parts 260 through 270) regulations, which are administered by the USEPA. The objective of the Ellsworth AFB hazardous waste management program is to implement the cradle-to-grave philosophy and to provide guidance which will enable personnel to maintain compliance with environmental regulations. Ellsworth AFB maintains a *Hazardous Waste Management Plan*, as directed by AFI 32-7042. This plan, in conjunction with the *Pollution Prevention Management Action Plan*, provides guidance in reducing the amount of hazardous wastes and used oil generated and properly managing

hazardous wastes and used oil. Ellsworth AFB has established a policy that requires all personnel to apply the “Compliance through Pollution Prevention” process along with BMPs to reduce the costs and the risks associated with treatment or disposal of regulated wastes (EAFB 2005d).

Ellsworth AFB is a large-quantity generator (LQG) of hazardous waste under RCRA (Handler Identification SD2571924644). An LQG generates more than 2,200 pounds of hazardous waste per month or more than 2.2 pounds of acute hazardous waste per month (USEPA 2010b). Hazardous wastes are generated primarily from aircraft maintenance and operations, fuel systems maintenance and operations, and expired shelf-life items (e.g., decontamination kits and fuel water bottoms, batteries, aerosol containers) returned from users (EAFB 2008c). Hazardous wastes are also generated by maintenance contractors at the MFH maintenance facility on the proposed project area and include rags with paint thinners and paint and waste paint. Hazardous wastes are collected through the HAZMART and are forwarded to the Defense Reutilization and Marketing Office for resale or disposal as hazardous waste. All hazardous waste generated by Ellsworth AFB is manifested to a USEPA-permitted treatment, storage, and disposal facility off-installation (EAFB undated).

Ellsworth AFB has a central accumulation point (CAP) that is operated by the HAZMART contractor. Three 90-day hazardous waste accumulation sites are managed as part of the CAP at the installation. A 90-day accumulation site is an area or facility for the temporary storage of hazardous waste from satellite accumulation points (SAPs). An SAP is an area at or near the point of waste generation where the user accumulates small quantities of “total regulated hazardous waste” up to 55 gallons or up to 1 quart of “acutely hazardous waste.” When volume exceeds these limits, the user must place the volume in excess of the limit in another container and transfer the full container to a 90-day accumulation site within 72 hours for a maximum of 90 days. The main active 90-day accumulation site storage area is at Building 1908. If additional storage is required, the HAZMART has two overflow accumulation sites at Buildings 1913 and 1914 (EAFB 2005d). Buildings 1908, 1913, and 1914 are all within approximately 0.5 miles of the Prairie View neighborhood.

An SAP can also accumulate nonhazardous waste and universal wastes. Regulatory accumulation limits are not imposed on nonhazardous wastes; however, there are accumulation time limits for universal wastes. Universal waste generators are allowed to accumulate universal waste at their location for no more than 9 months from the accumulation start date. Once the 9-month time limit has been reached, the universal waste must be moved to its designated waste accumulation site. In South Dakota, the DENR enforces hazardous waste regulations, including the universal waste rule. South Dakota’s Universal Waste Rule (40 CFR Part 273, *Standards for Universal Waste Management*) covers the following universal wastes:

- Batteries, including certain lead-acid batteries not recycled under other regulations; button silver-oxide and zinc-air batteries; and 9-volt, C, AA, coin, and button rechargeable lithium batteries
- Pesticides, including those that have been recalled or banned from use, obsolete pesticides, damaged pesticides, and those that are no longer needed
- Mercury-containing devices, including thermostats, switches, and other items where mercury is contained in a capsule or other container and the mercury is used to transmit pressure, temperature, or electricity
- Lamps, including fluorescent tubes, high-intensity discharge lamps, sodium vapor lamps, and mercury vapor lamps.

Environmental Restoration Program. The DOD’s ERP requires each installation to identify, investigate, and clean up hazardous waste disposal or release sites. The objectives of the ERP are to identify and fully

evaluate any areas suspected to be contaminated with hazardous materials caused by past USAF operations and to eliminate or control any hazards to the public health, welfare, or the environment. The ERP is a subcomponent of the Defense Environmental Restoration Program that became law under the Superfund Amendments and Reauthorization Act.

The ERP at Ellsworth AFB began in May 1985 with an installationwide records search that identified 15 ERP sites for further investigation. Supplemental site assessments and investigations in the 1980s and 1990s brought the total number of ERP sites on the installation to 20. Two additional ERP sites assigned to Ellsworth AFB, OT-18 and RW-27, are remotely located approximately 50 miles east-southeast of Rapid City and approximately 72 miles west-northwest of Ellsworth AFB, respectively. Of the 22 ERP sites, 7 are closed with No Further Remedial Action Planned (NFRAP), 1 is in the preliminary assessment/site investigation phase, 1 is under remedial investigation, 2 are in remedial action-operation phase, and 11 are under long-term monitoring (LTM). In addition, Ellsworth AFB has two Areas of Concern (AOCs), both of which are closed with NFRAP (EAFB 2007d). **Table 3-16** presents a summary of the ERP sites and AOCs at Ellsworth AFB.

Ellsworth AFB was added to the National Priorities List (NPL) on August 30, 1990 (USEPA No. SD2571924644) (USEPA 2010c). In January 1992, the USAF, USEPA, and South Dakota DENR signed a Federal Facilities Agreement (FFA), which identified discrete environmental study areas that are designated as OUs (USEPA 1992). Ellsworth AFB has 12 OUs, which are addressed under the ERP (see **Table 3-16**). Ten of the 12 identified OUs were deleted from the NPL in December 2006. The 2 remaining OUs (OU-1 and OU-11), received a partial deletion at that time, pending progress of remediation activities (EAFB 2007d). All clean-up activities are accomplished in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan, CERCLA guidance and policy, RCRA guidance and policy, and applicable South Dakota law (EAFB 2008c).

The groundwater component of all OUs was consolidated into OU-11 in 2005 in order to expedite partial site deletions and possible redevelopment of these areas, as long as the integrity of the remedy is maintained. OU-11 is a defined plume that exceeds the groundwater standard for TCE under the installation and portions of Black Hills Estates due to past aircraft maintenance activities. No drinking water on the installation is obtained from groundwater wells. Off-installation wells obtain water from confined aquifers below strata where contamination is present or from gallery wells along Rapid Creek to the south of the installation. *In situ* biodechlorination is in use in the OU-11 area to remediate the groundwater contamination. Contaminated groundwater is pumped out of the ground and cleaned to drinking water standards. The treated water is then either discharged to a local drainage or to the Ellsworth AFB WWTP, or re-injected into the ground. A groundwater pump and treat system on the eastern boundary of the installation has stopped the migration of the TCE-contaminated groundwater plume that flows approximately 5 miles off the installation. A gap in the plume beginning at the eastern boundary is now evident, indicating the success of the remediation. Originally, it was anticipated that it would take 20 to 30 years to complete the remediation of this plume, but it is currently believed that it could be 10 years or less (USEPA 2008). TCE contaminants associated with OU-11 could migrate to areas that are hydrogeologically downgradient. However, remedial systems operations (groundwater treatment at the downgradient installation boundary and *in situ* reductive treatment at various locations along the plume) are ongoing and historically the plume has remained within existing boundaries. The current status of OU-11 is listed as Remedial Action-Operation (RA-O). An LUC in place for OU-11 includes a continuing order to restrict the installation of new groundwater wells (EAFB 2006a). **Figure 3-6** shows the locations of the ERP sites and AOCs in the vicinity of the proposed project areas.

OU-6, which is also ERP site LF-06, is approximately 0.3 miles southwest and upgradient of the Prairie View MFH neighborhood. From 1960 to 1980, demolition debris and hardfill materials were placed in

Table 3-16. Summary of ERP Sites and AOCs at Ellsworth AFB

ERP Site	OU	Site Description	Status
FT-01	OU-1 ^a	Fire Training Area	RA-O
LF-02	OU-2 ^b	Landfills 1 and 6	LTM
LF-03	OU-3 ^b	Landfill 2	LTM
LF-04	OU-4 ^b	Landfill 3	LTM
LF-05	OU-5 ^b	Landfill 4	LTM
LF-06	OU-6 ^b	Landfill 5	LTM
RW-07	OU-7 ^b	Low-Level Radioactive Waste Burial Site	LTM
SS-08	N/A	Pump House 7	LTM
ST-10	N/A	Pump House Hydrant Leaks	LTM
SS-11	OU-8 ^b	Explosive Ordnance Disposal Area, Primitol Spill	LTM
ST-14	N/A	Pump House 6	LTM
OT-15	OU-9 ^b	Auto Hobby Shop	NFRAP
OT-16	OU-10 ^b	70 Row Hangar Row Complex	NFRAP
ST-17	N/A	Installationwide USTs	NFRAP
ST-19	OU-10 ^b	North Hangar Complex	NFRAP
OT-20	OU-11 ^a	Installationwide Groundwater	RA-O
LF-21	OU-12 ^b	Landfill 7	LTM
WP-22	N/A	Abandoned Industrial Wastewater Treatment Plant	NFRAP
ST-23	N/A	Abandoned World War II Petroleum, Oils, and Lubricants System	NFRAP
ST-26	N/A	Buildings 11000 and 11002	NFRAP
OT-18	N/A	Badlands Bombing Range Impact Area	PA/SI
RW-27	N/A	Former Sundance Radar Station	RI
AOC-465	OU-8 ^b	Explosive Ordnance Disposal Range	NFRAP
N/A	N/A	Gateway Lake AOC	Site Closed: Remediated incinerator ash site 1,000 feet southwest of Prairie View neighborhood.

Sources: EAFB 2007d, EAFB 2007a, EAFB 2008c

Notes:

a. Partial deletion from the NPL December 2006.

b. Deleted from the NPL in December 2006.

Key:

LTM = Long-Term Monitoring

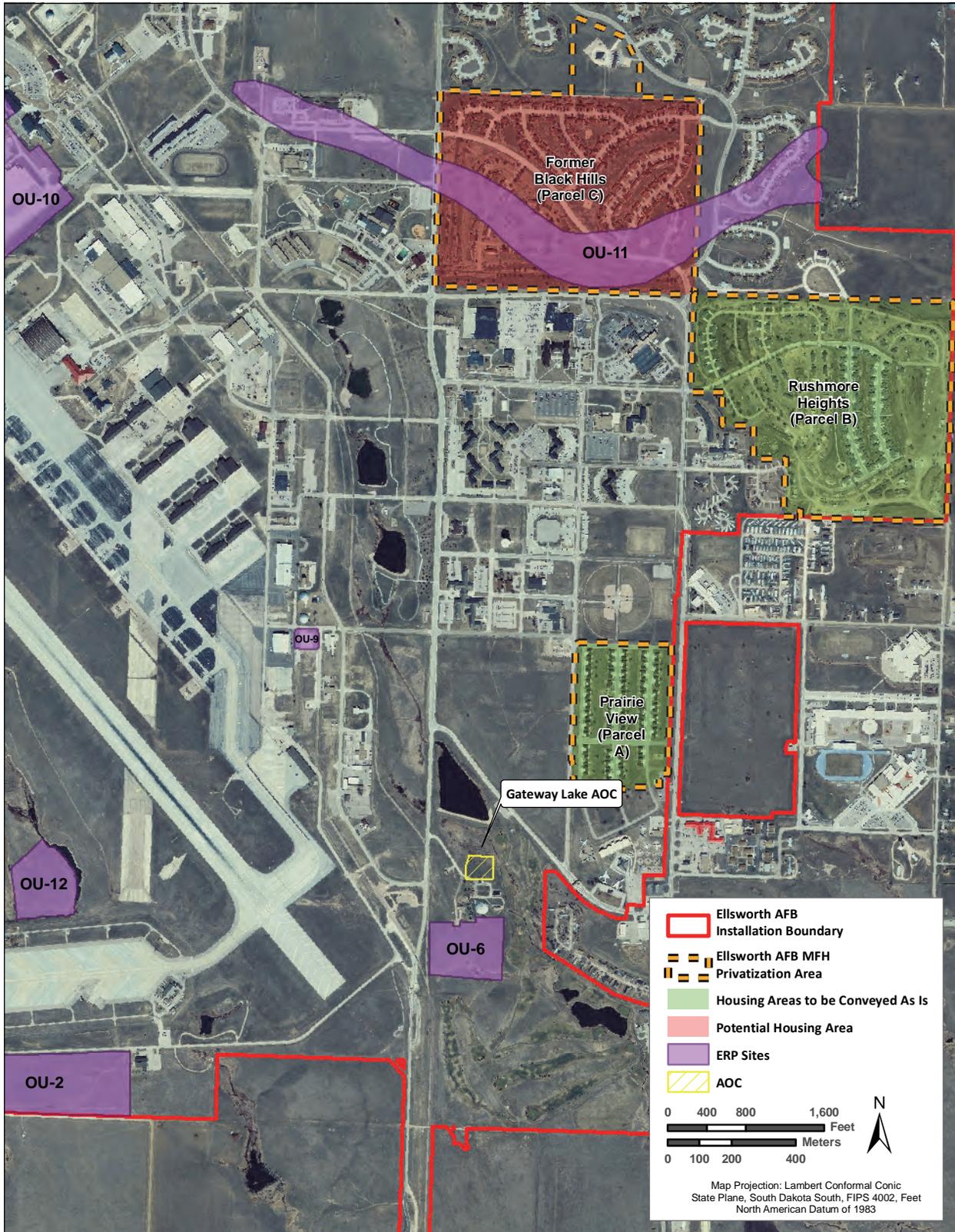
NFRAP = No Further Remedial Action Planned

PA/SI = Preliminary Assessment/Site Inspection

RA-O = Remedial Action/Operation

RI = Remedial Investigation

N/A = Not Applicable



Source of Aerial Photography: Ellsworth AFB 2008; ERP Sites: Ellsworth AFB 2006; Installation Boundary: Ellsworth AFB 2005; MFH Privatization Area: eM, Inc 2010.

Figure 3-6. ERP Sites and AOCs in the Vicinity of the Proposed Project Areas

the landfill along with miscellaneous refuse, dried sewage sludge, and possibly shop wastes. Primary contaminants of concern in the soil included semi-volatile organic compounds and pesticides. OU-6 has been tested, capped, and under LTM since 1996 (EAFB 2007d).

The USAF administers a waiver process for construction at or near ERP sites. If an ERP site is the best or only possible alternative location for a proposed construction project, the installation must request a waiver to construct on the site from ACC prior to proceeding with construction activities. If the ERP site is closed with unrestricted use or no institutional controls, a waiver is not required. The intent of the waiver process is to minimize impacts on human health and the environment through a notification process to construction workers of potential hazards (ACC 2005).

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, implements AFD 32-70. It identifies compliance requirements for USTs, ASTs, and associated piping that store petroleum products and hazardous substances. USTs are subject to regulation under RCRA, 42 U.S.C. 6901, and 40 CFR 280.

Ellsworth AFB currently has 58 active ASTs used for storage of various materials, including diesel, gasoline, jet fuel, heating oil, deicing fluid, detergent, contaminated water, and water. Currently, a program is in place to replace ASTs supporting emergency generators on Ellsworth AFB with double-walled tanks attached to the bottom of the generators. There are no ASTs at the proposed project area. There are three ASTs within the vicinity of the proposed project areas, including a 275-gallon diesel aboveground storage tank (AST), approximately 260 feet south of the former Black Hills Estates area; a 491-gallon diesel AST, approximately 600 feet west of the Rushmore Heights MFH area; and a 6,000-gallon AST, approximately 375 feet south of the former Black Hills Estates area and 460 feet west of the Rushmore Heights MFH area.

From the 1950s to the early 1980s, MFH units were heated by heating oil. Each MFH unit had its own heating oil UST. The use of these USTs discontinued in the 1980s. Approximately 86 USTs were formerly present in the Prairie View MFH area. These USTs were removed prior to demolition of the former MFH units and construction of new MFH units in 2004 (EAFB 2008c). It is assumed that these USTs were removed according to Federal and state regulation and discovered releases, if any, from these USTs were properly remediated. The Rushmore Heights MFH area and the former Black Hills Estates area, which were demolished by 2009, were also assumed to have formerly contained heating oil USTs, although no records of these USTs were available.

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 installations to develop an asbestos management plan to maintain a permanent record of the status and condition of ACM in installation facilities, and to document 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 under the CAA; Toxic Substances Control Act; CERCLA; and Century Code 23, *Health and Safety Chapter 25 Air Pollution Control*, with the authority promulgated under OSHA. Identification of ACM in installation facilities is governed by OSHA under the authority of the *Occupational Safety and Health Act*, 29 U.S.C. §§ 669 et seq. Section 112 of the CAA regulates emissions of asbestos fibers to ambient air. 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 and pipe insulation, will help keep the fibers from becoming airborne. Friable ACM is any material containing more than 1 percent asbestos, and that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable ACM is any ACM that does not meet the criteria for friable ACM. The South Dakota DENR is responsible for overseeing compliance with the requirements of the ACM program.

Asbestos-containing transite water piping was installed when the MFH areas were first constructed in the 1950s. These pipes likely remain in the former Black Hills Estates area (EAFB 2008h). The MFH units in the Rushmore Heights and Prairie View MFH areas do not contain ACM, as they were built since 2004, and transite piping was replaced with new utilities infrastructure.

Lead-Based Paint. Lead is a heavy, ductile metal commonly found simply as metallic lead or in association with organic compounds, oxides, and salts. It was commonly used in house paint until the Federal government banned the use of most LBP in 1978. Therefore, it is assumed that all structures built prior to 1978 could contain LBP. Paint chips that fall from the exterior of buildings can potentially contaminate the soil if the paint contains lead. The USEPA has established recommendations for maximum lead soil contamination levels. No action is required if the lead concentration is less than 400 ppm in areas expected to be used by children, or less than 2,000 ppm in areas where contact by children is less likely. Soil abatement and public notice are recommended when lead levels exceed 5,000 ppm.

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. In addition, the policy requires each installation to develop and implement a facility management plan for identifying, evaluating, managing, and abating LBP hazards. The Residential Lead-Based Paint Hazard Reduction Act of 1992, Subtitle B, Section 408 (commonly called Title X) 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.

In 1994, a LBP survey was conducted at Ellsworth AFB, which included a survey of the Youth Center (Building 7712), the Child Development Center (Building 8000), the Pediatrics Area of the hospital (Building 6000), and 141 MFH units; and a visual inspection of 904 MFH units. Results from the surveys indicated that 74 percent of MFH units at this time contained LBP (EAFB 1995); however, recent demolition of MFH units included disposal of LBP-containing materials, which were accomplished in accordance with LBP disposal regulations. The MFH units in Prairie View and Rushmore Heights MFH areas, which were constructed since 2004, do not contain LBP.

Polychlorinated Biphenyls. Polychlorinated biphenyls (PCBs) are a group of chemical mixtures used as insulators in electrical equipment such as transformers and fluorescent light ballasts. Federal regulations govern items containing 50 to 499 ppm PCBs. Chemicals classified as PCBs were widely manufactured and used in the United States throughout the 1950s and 1960s. PCB-containing oil is typically found in older electrical transformers and light fixtures (ballasts). Transformers containing greater than 500 ppm PCBs, between 50 and 500 ppm PCBs, and less than 50 ppm PCBs are considered PCB, PCB-contaminated, and non-PCB, respectively. Transformers containing PCBs were replaced or removed during past PCB removal efforts at the installation in the 1990s.

Radon. Ellsworth AFB and Meade County are in Federal USEPA Radon Zone 2, or the moderate priority zone, where the predicted average indoor radon screening level is between 2 and 4 pCi/L (USEPA 2010d). Radon surveys have indicated that some MFH units within the proposed project areas have radon levels that exceed 4 pCi/L (USAF undated). Each occupied MFH unit at Ellsworth AFB has a

passive radon elimination system that vents vapor from beneath foundations through a pipe if a monitor detects increased radon levels.

Pesticides. Pest management practices at Ellsworth AFB are addressed in the Pest Management Program. Ellsworth AFB's Pest Management Program currently focuses on control of pest species such as cockroaches (e.g., brown bandit and German cockroach), ants, mosquitoes, mice, prairie dogs, pigeons, noxious weeds, and other organisms. These species must be controlled to protect USAF property and personnel and, in the case of pigeons, to lower the probability for bird/wildlife aircraft strike hazard (BASH) incidents. Prairie dog burrows attract burrowing owls and other raptors, further increasing BASH potential. Pests are most commonly found in the MFH areas and food service facilities (EAFB 2008c).

Safe, effective, economical, and nonchemical procedures are employed as much as possible through an integrated pest management approach. Seasonal pest management programs include mosquito control, tree spraying, and weed control. Black Hills Hardware Store, the self-help store at the installation, offers pest management chemicals that can be applied by facility occupants for minor pest control. Installation Civil Engineering technicians are employed to control the more critical pest problems that exceed the resources of occupants (EAFB 2008c). Small amounts of nonrestricted pesticides are stored at the MFH maintenance facility and assumed to be used in MFH areas for household applications. Such uses include applications to herbaceous weeds, noxious weeds, landscape tree or shrub pests, and indoor pests. Chlordane was a commonly used pesticide prior to its ban by the USEPA in 1988, and it is possible that chlordane was used near structure foundations in MFH areas. Ellsworth AFB plans to conduct soil sampling at various locations of the MFH areas to determine the presence or absence of chlordane and remediation would occur as appropriate.

3.10.3 Environmental Consequences

3.10.3.1 Evaluation Criteria

Impacts on hazardous materials or hazardous waste would be considered significant if a proposed action resulted in noncompliance with applicable Federal or state regulations, or increased the amounts generated or procured beyond current Ellsworth AFB waste management procedures and capacities. Impacts on the ERP would be considered significant if a proposed action disturbed or created contaminated sites resulting in negative effects on human health or the environment, or if a proposed action made it more difficult or costly to remediate existing contaminated sites.

3.10.3.2 Proposed Action

Hazardous Materials. Short-term, minor, adverse impacts would be expected. Construction activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. It is anticipated that the quantity of products containing hazardous materials used during the Proposed Action would be minimal and their use would be of short duration. Contractors would be responsible for the management of hazardous materials and petroleum products, which would be handled in accordance with Federal, state, and USAF regulations. No long-term, direct or indirect, adverse impacts would be expected.

Hazardous Wastes. Short-term, minor, adverse impacts would be expected. The quantity of hazardous wastes generated from proposed construction activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. Hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and, therefore, would not be expected to increase the risks of exposure to workers and installation personnel. Prior to commencement

of construction activities, the contractor would be required to obtain the necessary permits. Household hazardous materials including mercury-containing thermostats have been previously removed from the MFH areas. No long-term, direct or indirect, adverse impacts would be expected.

Environmental Restoration Program. Long-term, moderate, adverse impacts could be expected. TCE contamination associated with OU-11 could result in vapor intrusion in the former Black Hills Estates area. However, remedial action is currently in place to address TCE contamination associated with OU-11 and vapor intrusion. Should new MFH units be constructed in the former Black Hills Estates area, mitigation systems would be installed in new MFH units, as necessary, to address potential TCE vapor intrusion issues and offset adverse impacts. The PO would also comply with new on-installation vapor intrusion mitigation requirements in an expected upcoming amendment to the Record of Decision issued for OU-11 in 1997. In 2008, air sampling was conducted in the MFH areas at Ellsworth AFB to evaluate whether VOCs were migrating as a vapor from the TCE groundwater plume (OU-11) through overlying soil and into basements of MFH units. MFH units selected for air sampling were the former Black Hills Estates and Centennial Estates housing areas where groundwater TCE concentrations were high. This allowed for results that had the potential to represent the “worst-case scenario” for exposure to VOCs and vapor intrusion. Two samples were collected from each MFH unit. One sample was collected from the lowest living area inside the home, and another from either a crawl space or beneath the lowest level slab. Results of the sampling indicated that vapor intrusion was observed at five MFH units, two of which were in the former Black Hills Estates area and three of which were in the Centennial Estates housing area. TCE concentrations exceeded risk levels in the crawl space and beneath the lowest level slab; however, TCE concentrations were not detected in any of the lowest living areas. Sampling results indicated no unacceptable risk to on-installation residents from the vapor intrusion pathway under current conditions for housing units and groundwater plume concentrations (EAFB 2008i). The USAF would continue treatment and management of ERP sites after transaction closing, and contracts for conveyance of the MFH privatization area would include permitting the installation to continue conducting groundwater remediation activities from within the housing areas, as required. Because the Proposed Action would include construction in areas overlying OU-11, the PO, in coordination with Ellsworth AFB, would be required to obtain a construction waiver as discussed in **Section 3.10.2**. Because the proposed project area overlies an OU site, the USAF would also be required to notify the USEPA and the South Dakota DENR at least 30 days prior to entering into the lease agreement in accordance with the installation’s FFA.

Aboveground and Underground Storage Tanks. Short-term, minor, adverse impacts could be expected. There are no known ASTs or USTs within the proposed project areas. However, the former Black Hills Estates area is assumed to have formerly contained heating oil USTs, but no records of these USTs is available. Prior to commencement of construction activities, updated site-specific information regarding the location and status of potential former heating oil USTs within the former Black Hills Estates area would be obtained. Any USTs discovered would be removed and disposed of in accordance with Federal, state, and local regulations prior to commencement of construction activities. Active ASTs currently in operation within 0.5 miles of the proposed project area are not anticipated to be affected by the Proposed Action and would continue to be used with appropriate BMPs in place (e.g., secondary containment, leak detection systems, and alarm systems).

Asbestos-Containing Material. Short-term, minor, adverse, and long-term, beneficial impacts would be expected. Asbestos-containing transite water piping is present in the former Black Hills Estates area; however, it has been capped and abandoned in place. If the transite piping is encountered during construction, it would be removed by certified individuals and disposed of at a USEPA-approved landfill.

USAF regulations restrict the use of ACM for new construction. AFI 32-1023 requires that a substitution study be conducted whenever the use of an ACM in construction, maintenance, or repair is considered. If

it is determined that the ACM is superior in cost and performance characteristics, and has minimal actual or potential health hazards, then the ACM should be used. In all other cases non-ACM should be used.

Lead-Based Paint. No impacts would be expected. The MFH units in Prairie View and Rushmore Heights MFH areas, which were constructed since 2004, do not contain LBP.

Polychlorinated Biphenyls. No impacts would be expected. There are no PCB-contaminated transformers in the MFH areas and fluorescent lighting containing PCBs have been removed from the MFH areas.

Radon. Short-term, negligible impacts could occur, however existing MFH units at Ellsworth AFB have a passive radon elimination system that vents vapor from beneath foundations through a pipe if a monitor detects increased radon levels. In addition it is assumed that all new MFH units would have a passive system installed to remove radon.

Pesticides. No impacts would be expected. The Proposed Action would not require any change in the quantities of pesticides or herbicides used or significantly alter pesticide or herbicide application areas. In accordance with the Ellsworth AFB Pest Management Program, the least toxic method would continue to be used for controlling pests encountered within MFH areas. In addition, future pesticide and herbicide applications within the proposed project areas would be conducted according to the Ellsworth AFB Pest Management Program

3.10.3.3 No Action Alternative

Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would need to construct additional units to support housing needs of military personnel and families.

Under the No Action Alternative, Ellsworth AFB would not implement the Proposed Action and would continue to provide for the MFH needs of military personnel and family members. In general, there would be no change in hazardous materials and wastes at Ellsworth AFB if the Proposed Action were not implemented.

3.11 Safety

3.11.1 Definition of the Resource

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. Human health and safety addresses workers' health and safety during demolition activities and facilities construction, and public safety during demolition and construction activities and during subsequent operations of those facilities.

Construction Safety. Construction site safety requires adherence to regulatory requirements imposed for the benefit of employees. It includes implementation of engineering and administrative practices that aim to reduce risks of illness, injury, death, and property damage. The health and safety of onsite military and civilian workers are safeguarded by numerous DOD and USAF regulations designed to ensure compliance with standards issued by OSHA, USEPA, and state occupational safety and health agencies. These standards specify health and safety requirements, the amount and type of training required for

industrial workers, the use of personal protective equipment (PPE), administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

Health and safety hazards can often be identified and reduced or eliminated. Necessary elements for an accident-prone situation or environment include the presence of the hazard itself with the exposed (and possibly susceptible) population. The degree of exposure depends primarily on the proximity of the hazard to the population. Hazards include transportation, maintenance and repair activities, and the creation of noisy environments or a potential fire hazard. 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 due to noise or fire hazards for nearby populations. Noisy environments can also mask verbal or mechanical warning signals such as sirens, bells, or horns.

Explosives and Munitions Safety. Explosive safety clearance zones must be established around facilities used for storage, handling, or maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based upon quantity-distance (QD) criteria or the category and weight of the explosives contained within the facility.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements AFD 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.

3.11.2 Existing Conditions

Ellsworth AFB is a secure military installation. Access is limited to military personnel, civilian employees, and military families. Ellsworth AFB provides emergency services (e.g., fire, law enforcement) to the MFH area which would include emergency response and force protection. Therefore, emergency situations can be responded to within a quick timeframe.

Construction Safety. All contractors performing construction activities are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs address exposure to hazardous materials, use of PPE, and availability of Material Safety Data Sheets (MSDS). Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to review potentially hazardous workplace operation; to monitor exposure to workplace chemicals (e.g., asbestos, lead, hazardous material), physical hazards (e.g., noise propagation), and biological agents (e.g., infectious waste); to recommend and evaluate controls (e.g., ventilation, respirators) to ensure personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

In 1994, a survey of MFH units was performed to find friable ACM. The team evaluated 99 materials suspected of containing asbestos; 72 of which were confirmed through laboratory analysis (EAFB 1995). Asbestos-containing transite water piping was installed when the housing areas were first constructed in the 1950s. These pipes remain in the former Black Hills Estates area. The MFH units in Prairie View and Rushmore Heights were built in 2004 and therefore do not contain ACM. In addition, transite piping for Prairie View and Rushmore Heights was replaced with new utilities infrastructure (EAFB 2010a). An LBP survey conducted in 1994 found that 74 percent of the surveyed MFH units contained some LBP (EAFB 1995). However, recent demolition of MFH units included the disposal of LBP-containing

materials; and therefore minimal potential exists for lead from demolished MFH units to have leached into soils in the housing area (EAFB 2010a). MFH units in Prairie View and Rushmore Heights were constructed in 2004 and therefore do not contain LBP (EAFB undated).

There are 20 identified ERP sites and two AOCs on Ellsworth AFB (EAFB 2007d). One ERP site, OU-11 is present under portions of the former Black Hills Estates area (EAFB 2010a). This site is discussed in more detail in **Sections 3.5** and **3.10**. The other AOCs and ERP sites are not in the vicinity of the Proposed Action site (see **Figure 3-6**).

Explosives and Munitions Safety. Ellsworth AFB has Explosive Safety Zones which require QD arcs. These zones include the active runway, the bomber alert area south of the runway, the Munitions Storage Area in the northern portion of the installation, and the small arms training range and supporting ammunition storage area east of the Munitions Storage Area (EAFB 2008c). No ordnance is known or suspected to have been stored, used, or disposed of within the project area (EAFB 2010a).

3.11.3 Environmental Consequences

3.11.3.1 Evaluation Criteria

Any increase in safety risks would be considered an adverse effect on safety. A proposed action could have a significant effect with respect to health and safety if the following were to occur:

- Substantially increase risks associated with the safety of construction personnel, contractors, or the local community
- Substantially hinder the ability to respond to an emergency
- Introduce a new health or safety risk for which the installation is not prepared or does not have adequate management and response plans in place.

3.11.3.2 Proposed Action

Construction Safety. Short-term, minor, direct, adverse effects could occur from implementation of the Proposed Action. The short-term risk associated with construction contractors would increase slightly at Ellsworth AFB during the normal workday (i.e., 8 a.m. to 5 p.m.) as construction activity levels would increase. However, all construction contractors are required to follow and implement OSHA standards to establish and maintain safety procedures. Construction of new homes associated with the Proposed Action would not pose new or unacceptable safety risks to installation personnel or activities at the installation. The potential exists for short-term, moderate, adverse impacts on safety from exposure of construction workers to VOCs associated with OU-11. Construction activities would be performed partially outdoors so it is assumed that VOCs could be dispersed through the air. No long-term adverse impacts on safety of residents are expected because mitigation systems would be installed in new MFH units, as necessary, to address potential radon and TCE vapor intrusion issues. See **Section 3.10.3.2** for additional discussion on exposure to VOCs.

Implementation of the Proposed Action could result in short- and long-term, negligible to minor, direct, adverse effects on safety due to ACM in transite piping in the former Black Hills Estates area (EAFB 1995). If these materials are discovered, appropriate removal, handling, and disposal procedures must be followed in accordance with the Ellsworth AFB Hazardous Waste Management Plan (EAFB 2005d). All ACM-contaminated debris would be disposed of at a USEPA-approved landfill. Long-term, direct, beneficial impacts would be expected from the removal of ACM by reducing exposure to military personnel and families.

Explosives and Munitions Safety. Because there are no munitions stored or handled in the immediate vicinity of the Proposed Action at Ellsworth AFB, no short- or long-term, direct, adverse impacts on explosives and munitions safety would be anticipated. Further, munitions transport would not occur within the area of the proposed action during construction activities to minimize contractors' exposure to explosive safety hazards.

3.11.3.3 No Action Alternative

Under the No Action Alternative, Ellsworth AFB would not implement the Proposed Action. Ellsworth AFB has 283 MFH units that were constructed after 2004. It is anticipated that these newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs; however, this would not meet the requirement of 497 MFH units. Ellsworth AFB would need to construct additional units to support housing needs of military personnel and families.

Ellsworth AFB would continue to provide for the housing needs of military personnel and family members, which would result in the continuation of existing conditions as described in **Section 3.11.2**. No impacts on safety would be expected under the No Action Alternative.

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4. Cumulative and Other Adverse Effects

4.1 Cumulative Effects Analysis

CEQ regulations stipulate that the cumulative effects analysis in an EA should consider the potential environmental effects resulting from “the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7). CEQ guidance in considering cumulative effects affirms this requirement, stating that the first steps in assessing cumulative effects involves defining the scope of the other actions and their interrelationship with a proposed action. The scope must consider other projects that coincide with the location and timetable of a proposed action and other actions. Cumulative effects analyses must also evaluate the nature of interactions among these actions.

To identify cumulative effects, the analysis needs to address two fundamental questions:

1. Does a relationship exist such that affected resource areas of the Proposed Action or alternatives might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
2. If such a relationship exists, then does an EA or EIS reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

The scope of the cumulative effects analysis involves both timeframe and geographic extent in which effects could be expected to occur, as well as a description of what resources could potentially be cumulatively affected.

4.2 Projects Identified With the Potential for Cumulative Effects

Past MILCON-funded MFH Demolition and Construction Activities. Between 2004 and 2009, Ellsworth AFB renovated its Prairie View and Rushmore Heights housing areas with newly constructed MFH with MILCON funds. In addition, housing in Black Hills Estates was demolished by 2009. There were also two other MFH areas on Ellsworth AFB on the east side of North Ellsworth Road, Skyway and Renel Heights, that were demolished by 1991.

Annexation of Ellsworth AFB. In recent years the City of Box Elder has sought to attract businesses to provide economic opportunities and retail and dining options for those living on- and off-installation. Some businesses have declined relocating to the City of Box Elder because population levels in the city were not large enough to meet their requirements. In 2009, the City of Box Elder annexed portions of the residential areas of Ellsworth AFB. This annexation allowed the City of Box Elder to increase their population and tax revenues in hopes of attracting new businesses (Box Elder undated, Box Elder 2009). Through an agreement with the South Dakota EDA, the former MFH areas of Skyway and Renel Heights would be converted to mixed-use development. Legislation in the 2010 National Defense Authorization Act permits the conveyance of Skyway and Renel Heights to the South Dakota EDA. Additional changes are also planned for the City of Box Elder in areas south of the installation boundary that are within the APZs associated with the aircraft operations. These changes include potentially relocating the temporary mobile homes east of the golf course area and relocating homes south of the installation to more compatible areas, as these housing areas are inside the 75+ dBA DNL contours as indicated in Ellsworth AFB’s AICUZ study (EAFB 2008d).

Regional Wastewater Treatment Plant. The South Dakota EDA is proposing to construct an RWWTP to serve Ellsworth AFB and the City of Box Elder. Ellsworth AFB and the City of Box Elder are currently faced with upgrading their individual WWTPs to meet more stringent South Dakota Surface Water

Discharge System (SDSWDS) limits imposed by the South Dakota DENR that will become effective in January 2014. An engineering feasibility study indicated that it would be more cost-effective for an RWWTP to treat Ellsworth AFB's and City of Box Elder's sewage together versus using individual systems (EAFB 2008e). In addition, surrounding communities have a growing need for an RWWTP to provide a means for economic growth and to prevent nitrogen contamination in groundwater from private subsurface disposal systems. Box Elder's demand for wastewater treatment is expected to increase because of expected population growth in the region. The proposed RWWTP would be constructed directly adjacent to the current lagoon wastewater treatment facility in Box Elder. The existing Ellsworth AFB WWTP, southeast of the Prairie View housing area, would be decommissioned by 2014. The South Dakota EDA would acquire easements from the USAF and the City of Box Elder to construct a sanitary sewer pipeline from Ellsworth AFB to the RWWTP.

South Dakota Air and Space Museum Expansion. This museum, which currently has a visitor center and outdoor airpark, including aircraft and weaponry displays, would be expanded to accommodate additional facilities and displays. The proposed expansion area is to the north of the existing museum just northeast of the Ellsworth AFB's main Liberty Gate and south of the Prairie View housing area (EAFB 2008e, EAFB 2010b).

4.3 Potential Cumulative Effects

Cumulative impacts on environmental resources result from the incremental impact of the Proposed Action when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts would result from individually minor but collectively significant actions taking place over a period of time by various agencies (Federal, state, and local) or individuals. Informed decisionmaking is served by consideration of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future.

Cumulative effects of implementing the Proposed Action and the projects identified for potential cumulative effects are presented in **Table 4-1**. Past, present, and future projects at Ellsworth AFB or in its vicinity that have been identified as contributing to potential cumulative effects on environmental resources include past MILCON-funded MFH demolition and construction activities, annexation of a portion of Ellsworth AFB with the City of Box Elder, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum. Anticipated adverse cumulative effects would be related to environmental impacts from demolition and construction activities (e.g., increased demand of infrastructure and utilities, ground disturbances and soil erosion, sedimentation and increased pollution in waterways). However, because the former Black Hills Estates area previously contained MFH, construction of MFH units at this location would not be expected to result in long-term adverse cumulative impacts. Anticipated beneficial cumulative effects on socioeconomics in the surrounding area would be expected from economic expenditures associated with the RWWTP and annexation of Ellsworth AFB. No significant cumulative impacts on the environment would be anticipated from the Proposed Action in conjunction with other activities.

4.4 Unavoidable Adverse Impacts

Unavoidable adverse impacts would result from implementation of the Proposed Action. None of these impacts would be significant.

Table 4-1. Cumulative Effects Summary

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Noise	The ambient sound environment has been dominated by activities common to a military installation and aircraft operations.	Ambient sound environment is affected mainly by aircraft operations and vehicle traffic. Noise levels are comparable to a noisy urban residential area.	Short-term, minor, adverse impacts on the noise environment would be expected in the vicinity of construction activities. Short-term, negligible to minor, adverse impacts on the ambient noise environment are anticipated as a result of the increase in construction vehicle traffic under the Proposed Action. Long-term, moderate, adverse impacts from aircraft noise would be expected from constructing MFH units in the DNL 65+ dBA noise contours around the installation's airfield.	Short-term, minor, adverse effects are expected from construction activities related to the RWWTP and expansion of the South Dakota Air and Space Museum.	The noise environment would continue to be comparable to a noisy military aircraft area. No significant adverse cumulative effects expected.
Land Use	Ellsworth AFB has been used as a military installation at its current location since the 1940s. Surrounding area of Box Elder has developed but remains mostly rural.	The Proposed Action would occur within several installation land use designations, including Housing (Accompanied), Community (Services), Outdoor Recreation, and Open Space.	Long-term, negligible, adverse impacts on land use plans and policies would be expected due to the potential need to change land use designations to accommodate community services or outdoor recreation facilities. No impacts on municipal and county land use plans or policies would be expected. Construction of new MFH units with NLR measures in the former Black Hills Estates area would result in a long-term, moderate, adverse impact on land use compatibility with respect to impacts from noise.	Long-term, beneficial effects from annexation would be expected, as incompatible uses in APZs would be relocated to more compatible areas. Land use in the former MFH areas of Skyway and Renel Heights would be converted to mixed-use development. Short-term, adverse effects on land use would be expected during construction of the sanitary sewer pipeline from Ellsworth AFB to the RWWTP.	Changes in land uses as a result of the Proposed Action and known future actions would remain compatible with adjacent uses and would not preclude the viability or continued use and occupation of existing land uses at Ellsworth AFB. No significant adverse cumulative effects are expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Air Quality	Ellsworth AFB is within the BHRCI AQCR. Meade and Pennington counties are designated as attainment/unclassifiable for all criteria pollutants.	Air emissions include criteria pollutants and HAP from vehicles and buildings.	Short-term and long-term, minor, adverse impacts on air quality would be expected from the generation of air pollutant emissions as a result of grading, filling, compacting, trenching, and construction operations. Long-term, negligible, adverse impacts on air quality would be expected due to increased emissions from the boilers associated with the community facility. The proposed project would have negligible contribution towards the South Dakota statewide GHG inventory.	Short-term, adverse effects would be expected from construction activities. No long-term effects on air quality would be expected.	Air emissions associated with MFH construction, construction associated with annexation activities, construction of an RWWTP, demolition of the existing WWTP, and expansion of the South Dakota Air and Space Museum would not be expected to result in violations of NAAQS or noticeably degrade ambient air quality. No significant adverse cumulative effects expected.
Geological Resources	Past installation development activities have modified soils.	Demolition of MFH units has resulted in disturbances to geological resources.	Long-term, negligible, adverse effects would be expected on the natural topography and geography as a result of construction of new housing units, renovations to current units, and repairs to subsurface utilities. Short- and long-term, minor, adverse effects on soils would be expected from implementation of the Proposed Action.	Short-term, adverse effects are expected from construction activities. Long-term, adverse effects on soils are expected from increased impervious surfaces associated with development of annexed areas, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum.	Soils on Ellsworth AFB have been highly modified by previous development activities. Future actions would further disturb soils; however, no significant adverse cumulative effects expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
<p>Water Resources</p>	<p>Development of Ellsworth AFB has increased impervious surfaces and storm water flow to the various tributaries and impoundments on the installation.</p>	<p>The Coolidge Floodway, a natural overland drainageway, crosses the central portion of the former Black Hills Estates area and the western edge of Rushmore Heights, and has a propensity to flood portions of these areas during storm events. The Coolidge Floodway was originally delineated while MFH units were present in Black Hills Estates and Rushmore Heights. The 100-year floodplain associated with this drainage is largely covered by road surfaces. Some of the existing MFH units at Ellsworth AFB overlap the Coolidge Floodway boundary. All existing MFH units on Ellsworth AFB inside the 100-year floodplain boundary were constructed at least 1 foot above the base flood elevation in accordance with FEMA standard requirement implemented for all new construction on the installation.</p>	<p>Short- and long-term, negligible to minor, adverse effects on groundwater and surface water would be expected from the increase in ground disturbances, use of heavy equipment, and increased impervious surfaces under the Proposed Action. Long-term, minor, indirect, adverse impacts on floodplains would be expected from the Proposed Action due to an increase in impervious surfaces and a greater potential for flooding events in the former Black Hills Estates housing area.</p>	<p>Short-term, adverse effects on surface water would be expected from construction activities due to increased storm water runoff, soil erosion, and sedimentation within nearby waterways. Long-term, adverse effects would be expected from increased impervious surfaces associated with development of annexed areas, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum. Short-term, adverse effects on surface water and floodplains would be expected from construction of the sanitary sewer pipeline to the proposed RWWTP within an unnamed tributary of Box Elder Creek and the 100-year floodplain associated with this tributary.</p>	<p>Cumulative effects on water quality would be expected from the Proposed Action in combination with various proposed construction projects on- and off-installation. Construction and demolition projects would be expected to increase sedimentation and total suspended solids within Box Elder Creek and its unnamed tributary crossing Ellsworth AFB. Additionally, the increased effluent from Ellsworth AFB would be anticipated to increase pollutants such as total suspended solids, nutrients, and chlorine. However, the implementation of proper BMPs during construction and storm water management after construction would minimize adverse impacts on water quality and cumulative effects are not anticipated to be significant.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Biological Resources	Ellsworth AFB is a largely developed installation and the majority of land on Ellsworth AFB is disturbed or improved.	Wildlife species on-installation are relatively adapted to living in an urban environment with frequent noise and visual disturbances.	Short-term, negligible, adverse effects on vegetation would be expected from temporary disturbances during construction activities (e.g., trampling and removal). Long-term, negligible, adverse effects on vegetation could be expected from construction of the MFH units due to direct removal of vegetation. The Proposed Action would have short-term, minor, adverse effects on wildlife due to disturbances during construction activities. Long-term, negligible, adverse impacts on wildlife would be expected from the removal of habitat from construction of the 214 MFH units within the former Black Hills Estates area.	Short- and long-term adverse effects on vegetation and wildlife could occur from construction activities and loss of habitat due to development of annexed areas, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum. Long-term, adverse effects on wildlife could be expected from increased effluent into Box Elder Creek due to a decrease in water quality.	Various impacts from noise and visual disturbances on wildlife from construction activities under the Proposed Action and other on- and off-installation construction and demolition of future projects would be intermittent and short-term. Therefore, no significant cumulative impacts from short-term disturbances would be expected. Although minor habitat loss from the MFH construction and other known future actions would occur, no significant cumulative impacts from this habitat loss would be expected.
Cultural Resources	Ellsworth AFB became operational in 1942. Most of the 1942 structures were demolished in the 1960s and 1970s.	Four World War II- and three Cold War-era buildings were recommended for individual eligibility status for an additional 14 Cold War-era buildings. None of the buildings within this proposed project APE were found to be eligible. No significant archaeological properties exist on Ellsworth AFB.	No impacts on archaeological resources would be expected from the Proposed Action. The Proposed Action would not be expected to impact NRHP-eligible architectural resources on Ellsworth AFB.	No effects on cultural resources would be expected from known future actions.	No significant archaeological properties occur on-installation and few significant historic properties occur on-installation; therefore, no significant adverse, cumulative effects on cultural resources are expected.

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
<p>Socioeconomics and Environmental Justice</p>	<p>Ellsworth AFB has been a large employer and economic base in the area.</p>	<p>The top employment industry in the surrounding area is the educational, health, and social services industry.</p>	<p>Short-term and long-term, minor, beneficial effects on socioeconomic resources would be expected due to the generation of revenue from construction. Long-term, beneficial effects on housing availability and quality would be expected under the Proposed Action. Construction and development of 214 new MFH units would increase the value of property and improve the quality of housing for qualified personnel and their families. No impacts on environmental justice would be expected.</p>	<p>Short-term, minor, beneficial effects are expected from construction expenditures related to development of annexed areas, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum.</p>	<p>Economic expenditures associated with the MFH construction, construction and demolition activities associated with the RWWTP, construction associated with annexation activities, and expansion of the South Dakota Air and Space Museum would cumulatively have beneficial socioeconomic effects in the surrounding area. No significant adverse cumulative effects are expected.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
<p>Infrastructure</p>	<p>Infrastructure and utilities (including transportation networks) have been well-developed on Ellsworth AFB and in the surrounding urban area.</p>	<p>Most of the utilities and infrastructure systems are in good working condition, supporting the Ellsworth AFB population. However, Ellsworth AFB continues to improve utility and infrastructure systems, as needed.</p>	<p>Short-term, negligible to minor, adverse effects on the Ellsworth AFB transportation system would be expected from implementation of the Proposed Action due to a slight temporary increase in the amount of traffic at the installation during construction activities. Short- and long-term, minor, adverse effects on electrical, water supply, storm water drainage, and solid waste management would be expected from the implementation of the Proposed Action. Short-term, negligible to minor, adverse effects would be expected on the natural gas supply and communications systems, and long-term, moderate, adverse effects would be expected on the sanitary sewer and wastewater system. Overall demand of utilities and infrastructure would increase slightly from addition of 214 MFH units.</p>	<p>Short-term, negligible to minor, adverse affects on infrastructure and utilities (including transportation) would be expected during construction activities. Long-term, adverse impacts on the storm water drainage system would be expected due to increases in storm water runoff from increased impermeable surfaces.</p>	<p>Short-term, adverse effects ranging from negligible to minor could occur during construction and demolition activities. Long-term, adverse cumulative effects ranging from negligible to moderate could occur upon completion of the projects due to increases in demand. Long-term, beneficial effects would be expected from upgrading and expanding aged or inefficient utilities and infrastructure. No significant cumulative effects on infrastructure are expected.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
<p>Hazardous Materials and Waste</p>	<p>Hazardous wastes and materials, ACM, LBP, pesticides, ASTs and USTs, compliance-related clean-up sites, ERP sites, ordnance, and MMRP sites occur at Ellsworth AFB as a result of historic use as a military installation.</p>	<p>Hazardous wastes and materials, ACM, LBP, pesticides, ASTs and USTs, compliance-related clean-up sites, ERP sites, ordnance, and MMRP sites are managed in accordance with USAF and other applicable Federal regulations.</p>	<p>Short-term and long-term, moderate, adverse and long-term, beneficial impacts on hazardous materials and wastes would be expected. Construction activities would require the use of certain hazardous materials such as paints, welding gases, solvents, preservatives, and sealants. Short-term, minor, adverse impacts would be expected from a minor increase in the quantity of hazardous wastes generated from construction activities. If abandoned asbestos-containing transite piping is encountered during construction, it would be removed by certified individuals and disposed of at an approved landfill, resulting in a beneficial impact. TCE contamination associated with OU-11 at Ellsworth AFB could result in vapor intrusion in the former Black Hills Estates area. Should new MFH units be constructed in the former Black Hills Estates area, mitigation systems would be installed in new MFH units, as necessary, to address potential TCE vapor intrusion issues.</p>	<p>Short-term, minor, adverse effects on hazardous materials management could be expected from the use and storage of hazardous materials during construction activities related to development of annexed areas, construction of an RWWTP, and expansion of the South Dakota Air and Space Museum.</p>	<p>Cumulatively, use of hazardous materials and generation of solid waste would increase with the Proposed Action and known future actions. Handling and disposal of hazardous materials and wastes would be in accordance with USAF and other applicable Federal regulations. No significant adverse cumulative effects are expected.</p>

Resource Area	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
<p>Safety</p>	<p>Past renovation, demolition, and construction activities have resulted in short-term construction safety risks.</p>	<p>All contractors performing construction activities are responsible for following ground safety regulations and worker compensation programs and are required to conduct construction activities in a manner that does not pose any risk to workers or personnel. No ordnance is known or suspected to have been stored, used, or disposed of within the project area.</p>	<p>Short-term, negligible to minor, adverse impacts and long-term, beneficial effects on health and safety would be expected from the Proposed Action. The short-term risk associated with construction contractors would slightly increase as construction activity levels would increase. The potential also exists for short-term exposure to construction workers from TCE vapors; however, no long-term adverse impacts on safety of residents are expected because mitigation systems would be installed in new MFH units, as necessary, to address potential radon and TCE vapor intrusion issues. Implementation of the Proposed Action could result in short- and long-term, negligible to minor, adverse effects on safety due to the potential to encounter asbestos-containing transite piping in the former Black Hills Estates area during construction. However, once ACM is removed, long-term, beneficial impacts would be expected from the reduced exposure potential for military personnel and families.</p>	<p>Continued renovation and new construction could cause temporary safety risks.</p>	<p>Construction safety risks would cease upon completion of the construction and demolition activities associated with the Proposed Action and known future actions. No long-term or significant cumulative effects would be expected.</p>

Geological Resources. Under the Proposed Action, construction activities, such as excavating, would result in some minor soil disturbance. Implementation of BMPs during construction would limit environmental consequences resulting from construction activities. Standard erosion-control means would also reduce environmental consequences related to these characteristics to the construction site. Although unavoidable, impacts on soils at the installation are not considered significant.

Hazardous Wastes and Materials. Products containing hazardous materials would be used during future construction of MFH units. Contractors would be responsible for the management of hazardous materials, which would be handled in accordance with Federal and state regulations. Contractors must report use of hazardous materials. Contractors would also be responsible for the disposal of hazardous wastes in accordance with Federal and state laws and regulations, and the Hazardous Waste Management Plan. The potential for construction accidents or spills during fuel handling are unavoidable risks associated with the Proposed Action.

Energy Resources. The Proposed Action would require the use of fossil fuels for construction activities, a nonrenewable natural resource. The use of nonrenewable resources in construction activities would be unavoidable. Relatively small amounts of energy resources would be committed to the Proposed Action and are not considered significant. In addition, the Proposed Action and other projects identified would be expected to result in long-term, beneficial cumulative effects. The construction of an RWWTP and the upgrade and expansion of the sanitary sewer system on- and off-installation would be expected to have beneficial, cumulative effects on sanitary sewer and wastewater systems.

4.5 Compatibility of the Proposed Action and Alternatives with the Objectives of Federal, Regional, State, and Local Land Use Plans, Policies, and Controls

Impacts as a result of the Proposed Action would occur within the boundaries of the installation. MFH neighborhoods on Ellsworth AFB are well-established and compatible with off-installation land uses. The Proposed Action would not conflict with any applicable off-installation land use ordinances or designated Clear Zones. The Proposed Action would not affect the 1,028 MFH units on-installation in the Centennial Estates neighborhood and off-installation in the nearby Dakota Ridge neighborhood.

4.6 Relationship Between Short-term Use and Long-term Productivity

Short-term uses of the biophysical components of human environment include direct construction-related disturbances and direct impacts associated with an increase in population and activity that occurs over a period of less than 5 years. Long-term uses of the human environment include those impacts occurring over a period of more than 5 years, including permanent resource loss.

Several kinds of activities could result in short-term resource uses that compromise long-term productivity. Loss of especially important habitats and consumptive use of high-quality water at nonrenewable rates are examples of actions that affect long-term productivity.

The Proposed Action would not result in an intensification of land use at Ellsworth AFB and in the surrounding area. Development of the Proposed Action would not represent a significant loss of open space. Therefore, it is anticipated that the Proposed Action would not result in any cumulative land use or aesthetic impacts. Long-term productivity of these sites would be increased by the implementation of the Proposed Action.

4.7 Irreversible and Irretrievable Commitments of Resources

An irreversible or irretrievable commitment of resources refers to impacts on or losses to resources that cannot be reversed or recovered, even after an activity has ended and facilities have been decommissioned. A commitment of resources is related to use or destruction of nonrenewable resources, and effects that such a loss will have on future generations. For example, if prime farmland is developed there would be a permanent loss of agricultural productivity. Demolition of the existing WWTP involves the irreversible and irretrievable commitment of material resources and energy, land resources, landfill space, and human resources. The impacts on these resources would be permanent.

Material Resources. Material resources used for the Proposed Action and alternatives include building materials (for renovation or construction of facilities), concrete and asphalt (for parking lots and roads), and various material supplies (for infrastructure) and would be irreversibly lost. Most of the materials that would be consumed are not in short supply, would not limit other unrelated construction activities, and would not be considered significant.

Energy Resources. No significant impacts would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel), natural gas, and electricity. During construction, gasoline and diesel would be used for the operation of construction vehicles. During operation, gasoline or diesel would be used for the operation of privately owned and government-owned vehicles. Natural gas and electricity would be used by operational activities. Consumption of these energy resources would not place a significant demand on their availability in the region.

Human Resources. The use of human resources for construction and operation is considered an irretrievable loss, but only in that it would preclude such personnel from engaging in other work activities. However, the use of human resources for the Proposed Action and alternatives represent employment opportunities, and is considered beneficial.

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APPENDIX A

MILITARY HOUSING PRIVATIZATION INITIATIVE

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

Title 10 of the US Code as currently published by the US Government reflects the laws passed by Congress as of January 5, 2009.

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, child development centers, tot lots, community centers, housing offices, dining facilities, unit offices, and other similar facilities for the support of military housing.
2. The term “child development center” includes a facility, and the utilities to support such facility, the function of which is to support the daily care of children aged six weeks old through five years old for full-day, part-day, and hourly service.
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 that is prepared to enter into a contract as a partner with the Secretary concerned for the construction of military housing units and ancillary supporting facilities.
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 or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title.

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) Competitive Process.— The Secretary concerned shall ensure that the time, method, and terms and conditions of the reconveyance or lease of property or facilities under this section from the eligible entity permit full and free competition consistent with the value and nature of the property or facilities involved.

- (d) 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.
- (e) 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.— Sections 2826 and 2856 of this title shall not apply to military family housing or military unaccompanied housing units acquired or constructed under this subchapter.

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 (other than a child development center) 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 30 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 30 days before the date on which the Secretary issues the contract solicitation or offers the conveyance or lease.

- (f) Expiration.— The authority of the Secretary of the Navy to enter into a contract under the pilot programs shall expire September 30,2009.

Sec. 2882. Effect of assignment of members to housing units acquired or constructed under alternative authority

- (a) Treatment as Quarters of the United States.— Except as provided in subsection (b), housing units acquired or constructed under this subchapter 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.
- (b) Availability of Basic Allowance for Housing.— A member of the armed forces who is assigned to a housing unit acquired or constructed under this subchapter that is 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, improvement, 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.
 - (F) Any amounts that the Secretary concerned transfers to that Fund pursuant to section 2869 of this title.
 - (G) Subject to subsection (f), any amounts that the Secretary of Defense transfers to that Fund from amounts in the Department of Defense Base Closure Account 2005.
- (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.
- (1) 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.
 - (2) The Funds established under subsection (a) shall be the sole source of funds for activities carried out under this subchapter.
- (f) Notification Required for Transfers.— A transfer of appropriated amounts to a Fund under subparagraph (B) or (G) of paragraph (1) or subparagraph (B) or (G) of paragraph (2) 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 or, if earlier, the end of the 14-day period beginning on the date on which a copy of the notice and justification is provided in an electronic medium pursuant to section 480 of this title. In addition, the notice required in connection with a transfer under subparagraph (G) of paragraph (1) or subparagraph (G) of paragraph (2) shall include a certification that the amounts to be transferred from the Department of Defense Base Closure Account 2005 were specified in the conference report to accompany the most recent Military Construction Authorization Act.

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) For each proposed contract, conveyance, or lease described in paragraph (1), the report required by such paragraph shall include the following:
 - (A) A description of the contract, conveyance, or lease, including a summary of the terms of the contract, conveyance, or lease.
 - (B) A description of the authorities to be utilized in entering into the contract, conveyance, or lease and the intended method of participation of the United States in the contract, conveyance, or lease, including a justification of the intended method of participation.
 - (C) A statement of the scored cost of the contract, conveyance, or lease, as determined by the Office of Management and Budget.
 - (D) A statement of the United States funds required for the contract, conveyance, or lease and a description of the source of such funds, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred to the Funds established under section 2883 of this title in order to finance the contract, conveyance, or lease.
 - (E) An economic assessment of the life cycle costs of the contract, conveyance, or lease, including an estimate of the amount of United States funds that would be paid over the life of the contract, conveyance, or lease from amounts derived from payments of government allowances, including the basic allowance for housing under section 403 of title 37, if the housing affected by the project were fully occupied by military personnel over the life of the contract, conveyance, or lease.

- (3)
- (A) In the case of a contract described in paragraph (1) proposed to be entered into with a private party, the report shall specify whether the contract will or may include a guarantee (including the making of mortgage or rental payments) by the Secretary to the private party in the event of—
- (i) the closure or realignment of the installation for which housing will be provided under the contract;
 - (ii) a reduction in force of units stationed at such installation; or
 - (iii) the extended deployment of units stationed at such installation.
- (B) If the contract will or may include such a guarantee, the report shall also—
- (i) describe the nature of the guarantee; and
 - (ii) assess the extent and likelihood, if any, of the liability of the United States with respect to the guarantee.
- (4) 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 separate report on the expenditures and receipts during the preceding fiscal year covering each of the Funds established under section 2883 of this title, including a description of the specific construction, acquisition, or improvement projects from which funds were transferred and the privatization projects or contracts to which those funds were transferred. Each report shall also include, for each military department or defense agency, a description of all funds to be transferred to such Funds for the current fiscal year and the next fiscal year.
 - (2) A methodology for evaluating the extent and effectiveness of the use of the authorities under this subchapter during such preceding fiscal year, and such recommendations as the Secretary considers necessary for improving the extent and effectiveness of the use of such authorities in the future.
 - (3) A review of activities of the Secretary under this subchapter during such preceding fiscal year, shown for military family housing, military unaccompanied housing, dual military family housing and military unaccompanied housing, and ancillary supporting facilities.
 - (4) If a contract for the acquisition or construction of military family housing, military unaccompanied housing, or dual military family housing and military unaccompanied housing entered into during the preceding fiscal year did not include the acquisition or construction of the types of ancillary supporting facilities specifically referred to in section 2871 (1) of this title, a explanation of the reasons why such ancillary supporting facilities were not included.
 - (5) A report setting forth, by armed force—
 - (A) an estimate of the amounts of basic allowance for housing under section 403 of title 37 that will be paid, during the current fiscal year and the fiscal year for which the budget is submitted, to members of the armed forces living in housing provided under the authorities in this subchapter; and
 - (B) the number of units of military family housing and military unaccompanied housing upon which the estimate under subparagraph (A) for the current fiscal year and the next fiscal year is based.
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- (6) A description of the Secretary's plans for housing privatization activities under this subchapter:
 - (A) during the fiscal year for which the budget is submitted; and
 - (B) during the period covered by the then-current future-years defense plan under section 221 of this title.
- (7) A report on best practices for the execution of housing privatization initiatives, including—
 - (A) effective means to track and verify proper performance, schedule, and cash flow;
 - (B) means of overseeing the actions of bondholders to properly monitor construction progress and construction draws;
 - (C) effective structuring of transactions to ensure the United States Government has adequate abilities to oversee project owner performance;
 - (D) ensuring that notices to proceed on new work are not issued until proper bonding is in place; and
 - (E) such other topics that are identified as pertinent by the Department of Defense.
- (8) A report identifying each family housing unit acquired or constructed under this subchapter that is used, or intended to be used, as quarters for a general officer or flag officer and for which the total operation, maintenance, and repair costs for the unit exceeded \$50,000. For each housing unit so identified, the report shall also include the total of such operation, maintenance, and repair costs.

Sec. 2885. Oversight and accountability for privatization projects

- (a) Oversight and Accountability Measures.— Each Secretary concerned shall prescribe regulations to effectively oversee and manage military housing privatization projects carried out under this subchapter. The regulations shall include the following requirements for each privatization project:
 - (1) The installation asset manager shall conduct monthly site visits and provide quarterly reports on the progress of the construction or renovation of the housing units. The reports shall be submitted quarterly to the assistant secretary for installations and environment of the respective military department.
 - (2) The installation asset manager, and, as applicable, the resident construction manager, privatization asset manager, bondholder representative, project owner, developer, general contractor, and construction consultant for the project shall conduct meetings to ensure that the construction or renovation of the units meets performance and schedule requirements and that appropriate operating and ground lease agreements are in place and adhered to.
 - (3) If a project is 90 days or more behind schedule or otherwise appears to be substantially failing to adhere to the obligations or milestones under the contract, the assistant secretary for installations and environment of the respective military department shall submit a notice of deficiency to the Deputy Under Secretary of Defense (Installations and Environment), the Secretary concerned, the managing member, and the trustee for the project.
 - (4)
 - (A) Not later than 15 days after the submittal of a notice of deficiency under paragraph (3), the Secretary concerned or designated representative shall submit to the project owner, developer, or general contractor responsible for the project a summary of deficiencies related to the project.

- (B) If the project owner, developer, or general contractor responsible for the privatization project is unable, within 60 days after receiving a notice of deficiency under subparagraph (A), to make progress on the issues outlined in such notice, the Secretary concerned shall notify the congressional defense committees of the status of the project, and shall provide a recommended course of action to correct the problems.
- (b) Required Qualifications.— The Secretary concerned or designated representative shall ensure that the project owner, developer, or general contractor that is selected for each military housing privatization initiative project has construction experience commensurate with that required to complete the project.
- (c) Bonding Levels.— The Secretary concerned shall ensure that the project owner, developer, or general contractor responsible for a military housing privatization initiative project has sufficient payment and performance bonds or suitable instruments in place for each phase of a construction or renovation portion of the project to ensure successful completion of the work in amounts as agreed to in the project’s legal documents, but in no case less than 50 percent of the total value of the active phases of the project, prior to the commencement of work for that phase.
- (d) Reporting of Efforts To Select Successor in Event of Default.— In the event a military housing privatization initiative project enters into default, the assistant secretary for installations and environment of the respective military department shall submit a report to the congressional defense committees every 90 days detailing the status of negotiations to award the project to a new project owner, developer, or general contractor.
- (e) Effect of Notices of Deficiency on Contractors and Affiliated Entities.
- (1) The Secretary concerned shall keep a record of all plans of action or notices of deficiency issued to a project owner, developer, or general contractor under subsection (a)(4), including the identity of each parent, subsidiary, affiliate, or other controlling entity of such owner, developer, or contractor.
- (2) Each military department shall consult all records maintained under paragraph (1) when reviewing the past performance of owners, developers, and contractors in the bidding process for a contract or other agreement for a military housing privatization initiative project.

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 and Executive Orders (EOs) to be considered when preparing environmental analyses. These laws are summarized below.

NOTE: This is not a complete list of all applicable laws, regulations, policies, and planning criteria potentially applicable to documents, however, it does provide a general summary for use as a reference.

Airspace Management

Airspace management procedures assist in preventing potential conflicts or accidents associated with aircraft using designated airspace in the United States, including restricted military airspace. Airspace management involves the coordination, integration, and regulation of the use of airspace. The Federal Aviation Administration (FAA) has overall responsibility for managing airspace through a system of flight rules and regulations, airspace management actions, and air traffic control (ATC) procedures. All military and civilian aircraft are subject to Federal Aviation Regulations (FARs). The FAA's *Aeronautical Information Manual* defines the operational requirements for each of the various types or classes of military and civilian airspace.

Some military services have specific guidance for airspace management. For example, airspace management in the U.S. Air Force (USAF) is guided by Air Force Instruction (AFI) 13-201, *Air Force Airspace Management*. This AFI provides guidance and procedures for developing and processing special use airspace (SUA). It covers aeronautical matters governing the efficient planning, acquisition, use, and management of airspace required to support USAF flight operations. It applies to activities that have operational or administrative responsibility for using airspace, establishes practices to decrease disturbances from flight operations that might cause adverse public reaction, and provides flying unit commanders with general guidance for dealing with local problems. The U.S. Army, per Army Regulation (AR) 95-2, *Airspace, Airfields/Heliport, Flight Activities, Air Traffic Control and Navigational Aids*, provides similar guidance and procedures for U.S. Army airspace operations.

Noise

Federal, state, 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 Noise Control Act of 1972, as amended by the Quiet Communities Act of 1978, requires compliance with state and local noise laws and ordinances.

The U.S. Department of Housing and Urban Development (HUD), in coordination with the Department of Defense (DOD) and the FAA, has established criteria for acceptable noise levels for aircraft operations relative to various types of land use.

The U.S. Army, through AR 200-1, *Environmental Protection and Enhancement*, implements Federal laws concerning environmental noise from U.S. Army activities. The USAF's Air Installation Compatible Use Zone (AICUZ) Program, (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 USAF installations.

Land Use

The term “land use” refers to real property classifications that indicate either natural conditions or the types of human activities occurring on a defined parcel of land. In many cases, land use descriptions are codified in local zoning laws. However, there is no nationally recognized convention or uniform terminology for describing land use categories.

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 a USAF installation. In addition, land use guidelines established by the 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. The U.S. Army uses the 12 land use types for installation land use planning, and these land use types roughly parallel those employed by municipalities in the civilian sector.

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 (NAAQS) 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 and 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 for pollutants in relation to their compliance with NAAQS. Geographic regions established for air quality planning purposes are designated as Air Quality Control Regions (AQCRs). Pollutant concentration levels are measured at designated monitoring stations within the AQCR. An area with insufficient monitoring data is designated as unclassified. Section 309 of the CAA authorizes USEPA to review and comment on impact statements prepared by other agencies.

An agency should consider what effect an action might have on NAAQS due to short-term increases in air pollution during construction and long-term increases resulting from changes in traffic patterns. For actions in attainment areas, a Federal agency could 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.

The General Conformity Rule requires that any Federal action meet the requirements of a State Implementation Plan (SIP) or Federal Implementation Plan. More specifically, CAA conformity is ensured when a Federal action does not cause a new violation of the NAAQS; contribute to an increase in the frequency or severity of violations of NAAQS; or delay the timely attainment of any NAAQS, interim progress milestones, or other milestones toward achieving compliance with the NAAQS.

The General Conformity Rule applies only to actions in nonattainment or maintenance areas and considers both direct and indirect emissions. The rule applies only to Federal actions that are considered “regionally significant” or where the total emissions from the action meet or exceed the *de minimis* thresholds presented in 40 Code of Federal Regulations (CFR) 93.153. An action is regionally significant when the total nonattainment pollutant emissions exceed 10 percent of the AQCR’s total emissions inventory for that nonattainment pollutant. If a Federal action does not meet or exceed the *de minimis* thresholds and is not considered regionally significant, then a full Conformity Determination is not required.

On May 13, 2010, the USEPA issued the Greenhouse Gas (GHG) Tailoring Rule that sets thresholds for GHG emissions from large stationary sources. The new GHG emissions thresholds for large stationary sources define when permits under the New Source Review Prevention of PSD and Title V Operating Permit programs are required for new and existing industrial facilities. Beginning January 2, 2011, large industrial facilities that have CAA permits for non-GHG emissions must also include GHGs in these permits. Beginning July 1, 2011, all new construction or renovations that increase GHG emissions by 75,000 tons of carbon dioxide or equivalent per year or more will be required to obtain construction permits for GHG emissions. Operating permits will be needed by all sources that emit GHGs above 75,000 tons of carbon dioxide or equivalent per year beginning in July 2011.

Health and Safety

Human health and safety relates to workers’ health and safety during demolition or construction of facilities, or applies to work conditions during operations of a facility that could expose workers to conditions that pose a health or safety risk. The Federal Occupational Safety and Health Administration (OSHA) issues standards to protect persons from such risks, and the DOD and state and local jurisdictions issue guidance to comply with these OSHA standards. Safety also can refer to safe operations of aircraft or other equipment.

AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH) Program*, implements Air Force Policy Directive (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.

AFI 91-202, *USAF Mishap Prevention Program*, implements 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.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks* (April 23, 1997), directs Federal agencies to make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children. Federal agencies must also ensure that their policies, programs, activities, and standards address disproportionate risks to children that result from environmental health or safety risks.

Geology and Soil Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act (FPPA) to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland (7 CFR Part 658). Prime farmland is

described as soils that have a combination of soil and landscape properties that make them highly suitable for cropland, such as high inherent fertility, good water-holding capacity, and deep or thick effective rooting zones, and that are not subject to periodic flooding. Under the FPPA, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the FPPA include Federal permitting and licensing, projects on land already in urban development or used for water storage, construction for national defense purposes, or construction of new minor secondary structures such as a garage or storage shed.

Water Resources

The Clean Water Act (CWA) of 1977 is an amendment to the Federal Water Pollution Control Act of 1972, is administered by USEPA, and sets the basic structure for regulating discharges of pollutants into U.S. waters. The CWA requires 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 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 waterbody 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 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 USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New Performance Standards for the Construction and Development Point Source Category on 1 December 2009 to control the discharge of pollutants from construction sites. The Rule became effective on 1 February 2010. After this date, all USEPA- or state-issued construction general permits were to be revised to incorporate the ELG requirements, with the exception of the numeric limitation for turbidity, which has been suspended while the USEPA further evaluates this limitation. The USEPA currently regulates large and small (greater than 1 acre) construction activity through the 2008 Construction General Permit (CGP), which is scheduled to expire on 30 June 2011. However, the USEPA is in the process of extending this expiration date until 31 January 2012 to give the USEPA more time to evaluate the turbidity effluent limitation and revise the CGP to incorporate the ELG requirements.

Therefore, until the revised CGP to incorporate ELG requirements is finalized, all new construction sites would need to continue to meet the requirements outlined in the 2008 CGP, including technology-based and water-quality-based effluent limits that apply to all discharges, unless otherwise specified in the CGP. Permittees must select, install, and maintain effective erosion and sedimentation controls measures as identified and as necessary to comply with the 2008 CGP.

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 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 the 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.

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance* (October 5, 2009), directed the USEPA to issue guidance on Section 438 of the Energy Independence and Security Act (EISA). The EISA establishes into law new storm water design requirements for Federal construction projects that disturb a footprint of greater than 5,000 square feet of land. Under these requirements, predevelopment site hydrology must be maintained or restored to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow. Predevelopment hydrology would be calculated and site design would incorporate storm water retention and reuse technologies to the maximum extent technically feasible. Post-construction analyses will be conducted to evaluate the effectiveness of the as-built storm water reduction features. These regulations are applicable to DOD Unified Facilities Criteria. Additional guidance is provided in the USEPA's *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act*.

EO 13514 also requires Federal agencies to improve water efficiency and management by reducing potable water consumption intensity by 2 percent annually, or by 26 percent, by Fiscal Year (FY) 2020, relative to a FY 2007 baseline. Furthermore, Federal agencies must also reduce agency industrial, landscaping, and agricultural water consumption by 2 percent annually, or 20 percent, by FY 2020, relative to a FY 2010 baseline.

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 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, or 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.

The Sikes Act (16 U.S.C. 670a-670o, 74 Stat. 1052), as amended, Public Law (P.L.) 86-797, approved September 15, 1960, provides for cooperation by the Departments of the Interior and Defense with state agencies in planning, development, and maintenance of fish and wildlife resources on military reservations throughout the United States. In November 1997, the Sikes Act was amended via the Sikes Act Improvement Amendment (P.L. 105-85, Division B, Title XXIX) to require the Secretary of Defense to carry out a program to provide for the conservation and rehabilitation of natural resources on military installations. To facilitate this program, the amendments require the Secretaries of the military departments to prepare and implement Integrated Natural Resources Management Plans (INRMPs) for each military installation in the United States unless the absence of significant natural resources on a particular installation makes preparation of a plan for the installation inappropriate. INRMPs must be reviewed by the USFWS and applicable states every 5 years. The National Defense Authorization Act of 2004 modified Section 4(a) (3) of the ESA to preclude the designation of critical habitat on DOD lands that are subject to an INRMP, if the Secretary of the Interior determines in writing that such a plan provides a benefit to the species for which critical habitat is proposed for designation.

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 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). The 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 might 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 13175, *Consultation and Coordination with Indian Tribal Governments* (November 6, 2000), was issued to provide for regular and meaningful consultation and collaboration with Native American tribal officials in the development of Federal policies that have tribal implications, and to strengthen the United States government-to-government relationships with Native American tribes. EO 13175 recognizes the following fundamental principles: Native American tribes exercise inherent sovereignty over their lands and members, the United States government has a unique trust relationship with Native American tribes and deals with them on a government-to-government basis, and Native American tribes have the right to self-government and self-determination.

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 respect 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 agencywide 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 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 cleanup of sites where potentially responsible parties cannot be identified, USEPA is authorized to recover funds through damages collected from responsible parties. This funding process places the economic burden for cleanup on polluters. Section 120(h) of CERCLA requires Federal agencies to notify prospective buyers of contaminated Federal properties about the type, quantity, and location of hazardous substances that would be present.

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. Consistent with pollution prevention principles, EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 24, 2007 [revoking EO 13148]), sets a goal for all Federal agencies to promote environmental practices, including acquisition of biobased, environmentally preferable, energy-efficient, water-efficient, and recycled-content products; and use of paper of at least 30 percent post-consumer fiber content. In addition, EO 13423 sets a goal that requires Federal agencies to ensure that they reduce the quantity of toxic and hazardous chemicals and materials acquired, used, or disposed of; increase diversion of solid waste, as appropriate; and maintain cost-effective waste prevention and recycling programs at their facilities. Additionally, 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 decisionmaking 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 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 strengthens control of both hazardous and nonhazardous waste and emphasizes the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong clean-up standards and authorizes 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. If a Federal agency acquires a contaminated site, it can be held liable for cleanup 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 United States 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 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 biphenyls (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 could 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 United States 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.

Energy

The Energy Policy Act (EPAct) of 2005, P.L. 109-58, amended portions of the National Energy Conservation Policy Act and established energy management goals for Federal facilities and fleets. Section 109 of EPAct directs that new Federal buildings (commercial or residential) be designed 30 percent below American Society of Heating, Refrigerating, and Air-Conditioning Engineers standards or the International Energy Code. Section 109 also includes the application of sustainable design principles for new buildings and requires Federal agencies to identify new buildings in their budget requests that meet or exceed the standards. Section 203 of EPAct requires that all Federal agencies’ renewable electricity consumption meet or exceed 3 percent from FY 2007 through FY 2009, with increases to at least 5 percent in FY 2010 through FY 2012 and 7.5 percent in FY 2013 and thereafter. Section 203 also establishes a double credit bonus for Federal agencies if renewable electricity is produced onsite at a Federal facility, on Federal lands, or on Native American lands. Section 204 of EPAct establishes a photovoltaic energy commercialization program for Federal buildings.

EO 13514, *Federal Leadership In Environmental, Energy, And Economic Performance* (dated October 5, 2009), directs Federal agencies to improve water use efficiency and management; implement high performance sustainable Federal building design, construction, operation and management; and advance regional and local integrated planning by identifying and analyzing impacts from energy usage and alternative energy sources. EO 13514 also directs Federal agencies to prepare and implement a Strategic Sustainability Performance Plan to manage its greenhouse gas emissions, water use, pollution prevention, regional development and transportation planning, sustainable building design and promote sustainability in its acquisition of goods and services. Section 2(g) requires new construction, major renovation, or repair and alteration of buildings to comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings. The CEQ regulations at 40 CFR 1502.16(e) directs agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures.

Section 503(b) of EO 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, instructs Federal agencies to conduct their environmental, transportation, and energy-related activities under the law in support of their respective missions in an environmentally, economically, and fiscally sound, integrated, continuously improving, efficient, and sustainable manner. EO 13423 sets goals in energy efficiency, acquisition, renewable energy, toxic chemical reduction, recycling, sustainable buildings, electronics stewardship, fleets, and water conservation. Sustainable design measures such as the use of “green” technology (e.g., photovoltaic panels, solar collection, heat recovery systems, wind turbines, green roofs, and habitat-oriented storm water management) would be incorporated where practicable.

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APPENDIX C

**INTERAGENCY AND INTERGOVERNMENTAL COORDINATION
FOR ENVIRONMENTAL PLANNING, NATIVE AMERICAN CONSULTATION, AND
PUBLIC INVOLVEMENT CORRESPONDENCE**

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The Honorable John Thune
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The Honorable Mayor Alan Hanks
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315 Saint Joseph Street, Ste. 118
Rapid City, SD 57701

Mr. Doug Wells
Director
Pennington County Housing
1805 W. Fulton Street, Suite 101
Rapid City, SD 57702

Meade County Commissioners
1425 Sherman Street
Sturgis, SD 57785

Mr. Bill Rich
Planning Director
Meade County
1425 Sherman Street
Sturgis, SD 57785

Ms. Greta Chapman
Director
Rapid City Public Library
610 Quincy Street
Rapid City, SD 57701



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MEMORANDUM FOR DISTRIBUTION

MAY 11 2011

FROM: Ellsworth AFB
28 CES/CEA
2125 Scott Drive
Ellsworth AFB, South Dakota 57706-4711

SUBJECT: Draft Environmental Assessment (EA) Addressing the Privatization of Military Family Housing at Ellsworth Air Force Base (AFB), South Dakota

1. The U.S. Air Force is preparing an Environmental Assessment (EA) Addressing the Privatization of Military Family Housing at Ellsworth AFB. The Proposed Action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer so that through construction the end-state total would be 497 housing units. The Draft EA is included with this correspondence.

2. The environmental impact analysis process for the Proposed Action is being conducted by the U.S. Air Force 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 EA and solicit your comments concerning the proposal and any potential environmental concerns you may have. 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, information, or inquiries directly to Ms. Melody Jensen, 28 CES/CEAON, 2125 Scott Drive, Ellsworth AFB, South Dakota 57706-4711, by telephone to (605) 385-2685, and by email to melody.jensen@ellsworth.af.mil by

JUN 11 2011

MARK A. HOWARD
Environmental Flight Chief
Ellsworth AFB, South Dakota

Attachments:

1. Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative
2. Distribution List



This constitutes a report of the Department of the Interior prepared in accordance with the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.). We have reviewed and have NO OBJECTION to this proposed project.

5/23/11

Scottman
Supervisor

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACF)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MEMORANDUM FOR DISTRIBUTION

MAY 11 2011

FROM: Ellsworth AFB
28 CES/CEA
2125 Scott Drive
Ellsworth AFB, South Dakota 57706-4711

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Mark A. Howard

MARK A. HOWARD
Environmental Flight Chief
Ellsworth AFB, South Dakota

Attachments:

- 1. Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative
- 2. Distribution List



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

June 10, 2011

Melody Jensen
Ellsworth AFB
28 CES/CEAON
2125 Scott Drive
Ellsworth AFB, SD 57706-4711

Dear Ms. Jensen:

The South Dakota Department of Environment and Natural Resources (DENR) reviewed the U.S. Ellsworth AFB's draft Environmental Assessment (EA). This EA dated May 11, 2011 is for activities associated with the Privatization of Military Housing at Ellsworth Air Force Base (AFB). The Department has the following comments:

1. Based on the information provided, the department does not anticipate any adverse impacts to drinking waters of the state. The Drinking Water Program has no objections to this project. However, Plans and Specifications for new constructed water distribution systems must be submitted to Mark McIntire with the Drinking Water Program for review and approval.
2. A Surface Water Discharge (SWD) permit may be required if any construction dewatering should occur. Please contact Al Spangler at (605) 773-3351 concerning this permit.
3. The Plans and Specifications for the new waste water collection system must be submitted to Kelli Buscher with the Surface Water Program for review and approval.
4. At a minimum and regardless of project size, appropriate erosion and sediment control measures must be installed to control the discharge of pollutants from the construction site. Any construction activity that disturbs an area of one or more acres of land must have authorization under the General Permit for Storm Water Discharges Associated with Construction Activities. Contact the Department of Environment and Natural Resources for additional information or guidance at 1-800-SDSTORM (737-8676) or www.state.sd.us/denr/des/surfacewater/stormwater.htm.
5. The Waste Management Program does not anticipate any adverse impacts. Any construction debris needs to be disposed of at a permitted solid waste facility. Please contact the Waste Management Program if you have any questions on solid waste disposal at (605) 773-3153.

6. Based on the information provided, the Ground Water Quality Program does not anticipate adverse impacts to ground water quality by this project.

There have been petroleum and other chemical releases throughout the state. Of the releases reported to the Department, we have identified no release cases potentially in the vicinity of your project. However, the locational information provided to us regarding releases is sometimes inaccurate or incomplete. If you would like to do more research regarding releases, information on releases reported in South Dakota may be obtained at the following website: www.sddenr.net/env_events/. As with any construction activity in an existing commercial or residential area, there is a possibility of encountering existing buried petroleum tanks. If contamination is encountered during the activities, or caused by the activities, Ellsworth AFB, or its designated representative, must report the contamination to Department at (605) 773-3296.

If you have any questions concerning these comments, please contact me at (605) 773-3351.

Sincerely,



John Miller
Surface Water Quality Program

cc: Mark Mayer, Drinking Water Program
Vonni Kallemeyn, Waste Management Program
Matt Hicks, Ground Water Quality Program



**DEPARTMENT of ENVIRONMENT
and NATURAL RESOURCES**

PMB 2020
JOE FOSS BUILDING
523 EAST CAPITOL
PIERRE, SOUTH DAKOTA 57501-3182
www.state.sd.us/denr

June 10, 2011

Ms Melody Jensen
28 CES/CEAON
2125 Scott Drive
Ellsworth AFB, South Dakota 57706-4711

Dear Ms. Jensen:

The Air Quality Program has completed a review of the Draft Environmental Assessment addressing the Privatization of Military Family Housing at Ellsworth Air Force Base (AFB), South Dakota. The transfer by lease of the property and housing maintenance will have no impact on the air quality in this area. In general I find the proposed activities after the lease has been completed for the Military Family Housing Project planned for Ellsworth AFB will have only short term minor impact on the air pollution concentrations in this area. These impacts can further be reduced if effective control measures on fugitive dust are implemented during the construction of new buildings in the lease area.

Additional comments on the content of the Draft Environmental Assessment:

1. Page 3-15, 2nd paragraph, it is stated: "South Dakota has adopted a majority of the NAAQS and slightly exceed the NAAQS standard for O₃".

South Dakota adopts the air quality standards in 40 Code of Federal Regulations Part 50 by reference. Any standard change by EPA is implemented following EPA guidelines even if the current State Implementation Plan has not been updated to the most current regulation. Also South Dakota's ozone levels recorded at the six operating sites all have concentrations better than the standards set by EPA.

2. Table 3-6, lists South Dakota as having an annual PM10 standard. The PM10 annual standard was removed from our rules. In addition the 1-hour ozone standard no longer is applicable in South Dakota.
3. Page 3-17, 3rd paragraph, Green House Gases: Beginning in January of 2011, EPA began regulating Green House Gases.
4. Page 3-17, 6th paragraph, PSD, states: A major source or major modification of a source are subject to PSD impact analysis if they are within 10 kilometers of a Class I area.

Distance from a Class I area does not determine if a proposed project will be a major source or major modification subject to a PSD review. Air quality modeling of a PSD source impacts on a Class I area maybe required even if the major source is more than 10 kilometers from the Class I area.

5. If a community center is planned and constructed a permit from our office may be required if the heating plant meets certain specifications. Questions on permit requirements before construction is started should be directed to Jim Andersen in the department's regional office in Rapid City, South Dakota at 605-394-2385.

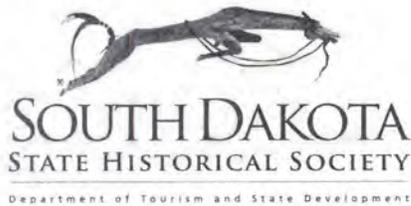
Thank you for supplying the EA information to the Air Quality Program for review.

Sincerely,



Brad Schultz
Environmental Scientist Manager I
Air Quality Program
605-773-6038

Cc: Jim Andersen, SD DENR Rapid City Regional Office



900 Governors Drive | Pierre, SD 57
Phone 605-773-3458 | Fax 605-773-6041 | www.history.sd.gov

May 16, 2011

Mr. Mark Howard
Environmental Flight Chief
Ellsworth AFB
28CES/CEA
2125 Scott Drive
Ellsworth AFB SD 57706-4711

SECTION 106 PROJECT CONSULTATION

Project: 110512008F – Proposed privatization of Military Family Housing (MFH) at Ellsworth AFB
Location: Multiple Counties
(USAF)

Dear Mr. Howard:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) is currently unable to comment on the effect of your proposed undertaking on the non-renewable cultural resources of South Dakota.

We received your letter and the Environmental Assessment on CD ROM on May 12, 2011. In order to evaluate the effects of this undertaking, we will need more information on the following issues. Please explain if archaeological surveys were conducted on the MFH sites prior to construction? Are any surveys planned to identify historic properties prior to the expansion of the housing development and transfer of federal lands? In order to comply with Section 106, is your agency coordinating NEPA compliance and Section 106 compliance?

Should you require additional information, please contact Paige Olson at (605) 773-6004 or Paul Porter at (605)773-6005. We appreciate your concern for the non-renewable cultural heritage of our state.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer

Paige Olson
Review and Compliance Coordinator



Department of
Tourism & State
Development

Office of Tourism TravelSD.com
Governor's Office of Economic Development SDreadytowork.com
Tribal Government Relations SDtribalrelations.com
Arts Council artscouncil.sd.gov
State Historical Society history.sd.gov
Housing Development Authority SDHDA.org

2010
initiative
2010initiative.com



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH MISSION SUPPORT GROUP (ACC)
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA

Mark A. Howard
Asset Management Flight Chief
28 CES/CEA
2125 Scott Dr
Ellsworth AFB SD 57706

24 AUG 2011

Ms. Paige Olson
South Dakota State Historical Society
Review and Compliance Coordinator
900 Governors Dr.
Pierre SD 57501

Dear Ms. Olson

This memorandum is in reference to Section 106 Project Consultation; SHPO Project: 110512008F – Proposed Privatization of MFH at Ellsworth AFB, SD; Location: Meade and Pennington Counties. A Draft Environmental Assessment was sent to your office in May 2011 for review. On May 16, 2011 your office responded requesting additional information before you could evaluate the undertaking.

Below are the responses to the questions raised by the SHPO Office.

Q. Were archaeological surveys completed on the MFH sites prior to construction?

A. The original MFH was constructed prior to the NHPA. Therefore, no archaeological surveys were completed prior to the construction of MFH at Ellsworth. MFH was first constructed at Ellsworth in the 1950s through the early 1960s. The areas being conveyed for privatization have been used for MFH since the 1950s and 1960s. Previously undeveloped areas or areas not previously used for MFH are not being considered for privatization; page 3-42 of the EA states, "The Ellsworth AFB Cultural Resources Manager determined that the archaeological survey of the installation is complete per Section 110 (a) (2) of the NHPA. Since no significant archaeological properties exist on-installation, further archaeological investigations are unnecessary (EAFB 2007c)." Although the MFH sites themselves have not been surveyed, they are areas previously disturbed by development, and there is a very low likelihood of archeological resources in this area.

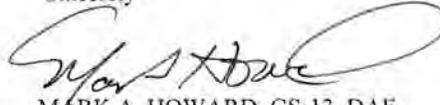
Q. Are any surveys planned to identify historic properties prior to the expansion of the housing development and transfer of federal lands?

Global Power For America

- A. A historic architectural survey was recently completed for the installation and there are no historic or potentially historic properties near the project area (EAFB 2007c). MFH areas will not be expanded at Ellsworth AFB. Parcels being considered for lease to a developer are parcels used for MFH since the 1950s and 1960s.
- Q. In order to comply with Section 106, is your agency coordinating NEPA compliance and Section 106 compliance?
- A. Yes. Section 3.7.3.1 on page 3-44 of the EA states that potential impacts on cultural resources were assessed in the EA in accordance with Section 106. Recent surveys for archaeological resources and historic properties have not identified cultural resources in or near the project area. We believe no further Section 106 processes are necessary.

Should you require additional information, please contact Ms. Melody Jensen, 28 CES/CEAON, 2125 Scott Drive, Ellsworth AFB, SD 57706, melody.jensen@ellsworth.af.mil, or by telephone at 605-385-2685.

Sincerely



MARK A. HOWARD, GS-13, DAF
Asset Management Flight Chief

From: [Jensen, Melody A Civ USAF ACC 28 CES/CEAON](mailto:Jensen.Melody.A.Civ.USAF.ACC.28.CES/CEAON)
To: Paige.Olson@state.sd.us
Cc: [Morgenstern, John E Civ USAF ACC 28 CES/CEANN](mailto:Morgenstern,John.E.Civ.USAF.ACC.28.CES/CEANN)
Subject: SHPO Project #110512008F - MPH Privatization - Ellsworth AFB
Date: Tuesday, August 30, 2011 11:39:28 AM

Ms. Olson,

Per your remarks dated 29 Aug 2011 pertaining to the determination of effect. The Privatization of MFH at Ellsworth AFB and construction of replacement housing at Ellsworth AFB will have a determination of No Historic Properties Affected for the proposed action.

If you have questions or need additional information, please let me know.

Sincerely,

Melody A. Jensen
EIAP Program Manager
28 CES/CEAON
DSN: 675-2685
COM: 605-385-2685

-----Original Message-----

From: Paige.Olson@state.sd.us [<mailto:Paige.Olson@state.sd.us>]
Sent: Monday, August 29, 2011 10:48 AM
To: Jensen, Melody A Civ USAF ACC 28 CES/CEAON
Cc: Morgenstern, John E Civ USAF ACC 28 CES/CEANN
Subject: SHPO Project #110512008F - MFH Privatization - Ellsworth AFB

Melody,

I missed that your letter did not contain a determination of effect. I would recommend a determination of No Historic Properties Affected for this project. Please just send a quick e-mail with the determination of effect.

Thanks,

Paige



900 Governors Drive | Pierre, SD 57501-2217
Phone 605-773-3458 | Fax 605-773-6041 | www.history.sd.gov

August 30, 2011

Mr. Mark Howard
Environmental Flight Chief
Ellsworth AFB
28CES/CEA
2125 Scott Drive
Ellsworth AFB SD 57706-4711

SECTION 106 PROJECT CONSULTATION

Project: 110512008F – Proposed privatization of Military Family Housing (MFH) at Ellsworth AFB

Location: Multiple Counties
(USAF)

Dear Mr. Howard:

Thank you for the opportunity to comment on the above referenced project pursuant to Section 106 of the National Historic Preservation Act of 1966 (as amended). The South Dakota Office of the State Historic Preservation Officer (SHPO) concurs with your determination regarding the effect of the proposed undertaking on the non-renewable cultural resources of South Dakota.

We have made this consensus determination based on the information provided in your correspondence received on May 12, 2011, and the additional submitted on August 26 and August 30, 2011. Given that the proposed project will occur within the boundaries of a recently demolished housing development, we concur with the determination of No Historic Properties Affected for this undertaking. Activities occurring in areas not identified in your request will require the submission of additional documentation pursuant to 36 CFR part 800.4.

If historic properties are discovered or unanticipated effects on historic properties are found after the agency official has completed the Section 106 process, the agency official shall avoid, minimize or mitigate the adverse effects to such properties and notify the SHPO and Indian tribes that might attach religious and cultural significance to the affected property within 48 hours of the discovery, pursuant to 36 CFR part 800.13.



Department of
Tourism & State
Development

Office of Tourism TravelSD.com
Governor's Office of Economic Development SDreadytowork.com
Tribal Government Relations SDtribalrelations.com
Arts Council artsouncil.sd.gov
State Historical Society history.sd.gov
Housing Development Authority SDHDA.org

2010
Initiative
2010initiative.com

Concurrence of the SHPO does not relieve the federal agency official from consulting with other appropriate parties, as described in 36CFR Part 800.2(c).

Should you require additional information, please contact Paige Olson at (605) 773-6004. We appreciate your concern for the non-renewable cultural heritage of our state.

Sincerely,

Jay D. Vogt
State Historic Preservation Officer



Paige Olson
Review and Compliance Coordinator

Native American Tribal Consultation Distribution List

Oglala Sioux Tribe
Mr. John Steele, President
Pine Ridge Reservation
P.O. Box 2070
Pine Ridge, SD 57770-2070

Rosebud Sioux Tribe
Mr. Rodney M. Bordeaux, President
P.O. Box 430
Rosebud, SD 57570-0430

Cheyenne River Sioux Tribe
Mr. Kevin Keckler, Chairman
P.O. Box 590
Eagle Butte, SD 57625-0590

Lower Brule Sioux Tribe
Mr. Michael Jandreau, Chairman
P.O. Box 187
Lower Brule, SD 57548-0187

Crow Creek Sioux Tribe
Mr. Duane Big Eagle, Chairman
P.O. Box 50
Ft. Thompson, SD 57339-0050

Yankton Sioux Tribe
Mr. Robert Cournoyer, Chairman
P.O. Box 248
Marty, SD 57361-0248

Flandreau Santee Sioux Tribe
Mr. Anthony Reider, Chairman
P.O. Box 283
Flandreau, SD 57028-0283

Sisseton Wahpeton Sioux Tribe
Mr. Robert Shepherd, Chairman
P.O. Box 509
Agency Village, SD 57262-0509

Standing Rock Sioux Tribe
Mr. Charles W. Murphy, Chairman
P.O. Box D
Fort Yates, ND 58538



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. John Steele, President
Oglala Sioux Tribe
Pine Ridge Reservation
P.O. Box 2070
Pine Ridge SD 57770-2070

Dear President Steele

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, Ellsworth AFB is providing you this EA to solicit comments on the proposed action. At this time no known cultural, historical, or religious impacts are anticipated by the proposed action. Please accept this letter to initiate coordination with your tribe regarding this action.

We request your participation by reviewing the attached draft EA and solicit your comments concerning the proposed action and any potential impacts or concerns you may have. We request written comments or information regarding the action within 30 days from the date of this letter. Comments may be submitted by email to melody.jensen@ellsworth.af.mil or mailed to Ms. Melody A. Jensen; 28 CES/CEAON; 2125 Scott Drive; Ellsworth AFB, SD 57706. We appreciate the opportunity to continue to grow our relationship with your tribe.

Sincerely

A handwritten signature in cursive script, appearing to read "Jeffrey B. Taliaferro".

JEFFREY B. TALIAFERRO, Colonel, USAF

Attachment:
Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Rodney M. Bordeaux, President
Rosebud Sioux Tribe
P.O. Box 430
Rosebud SD 57570-0430

Dear President Bordeaux

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Sincerely

JEFFREY B. TALIAFERRO, Colonel, USAF

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Kevin Keckler, Chairman
Cheyenne River Sioux Tribe
P.O. Box 590
Eagle Butte SD 57625-0590

Dear Chairman Keckler

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

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Sincerely

JEFFREY B. TALIAFERRO, Colonel, USAF

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DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Michael Jandreau, Chairman
Lower Brule Sioux Tribe
P.O. Box 187
Lower Brule SD 57548-0187

Dear Chairman Jandreau

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

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JEFFREY B. TALIAFERRO, Colonel, USAF

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Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Duane Big Eagle, Chairman
Crow Creek Sioux Tribe
P.O. Box 50
Ft. Thompson SD 57339-0050

Dear Chairman Big Eagle

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

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Sincerely

JEFFREY B. TALIAFERRO, Colonel, USAF

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Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Robert Cournoyer, Chairman
Yankton Sioux Tribe
P.O. Box 248
Marty SD 57361-0248

Dear Chairman Cournoyer

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

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Sincerely

A handwritten signature in black ink, appearing to read "Taliaferro", is written over the typed name of Jeffrey B. Taliaferro.

JEFFREY B. TALIAFERRO, Colonel, USAF

Attachment:
Draft EA and Finding of No Significant Impact/Finding of No Practicable Alternative



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 28TH BOMB WING (ACC)
ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Anthony Reider, Chairman
Flandreau Santee Sioux Tribe
P.O. Box 283
Flandreau SD 57028-0283

Dear Chairman Reider

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, Ellsworth AFB is providing you this EA to solicit comments on the proposed action. At this time no known cultural, historical, or religious impacts are anticipated by the proposed action. Please accept this letter to initiate coordination with your tribe regarding this action.

We request your participation by reviewing the attached draft EA and solicit your comments concerning the proposed action and any potential impacts or concerns you may have. We request written comments or information regarding the action within 30 days from the date of this letter. Comments may be submitted by email to melody.jensen@ellsworth.af.mil or mailed to Ms. Melody A. Jensen; 28 CES/CEAON; 2125 Scott Drive; Ellsworth AFB, SD 57706. We appreciate the opportunity to continue to grow our relationship with your tribe.

Sincerely

JEFFREY B. TALIAFERRO, Colonel, USAF

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Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Robert Shepherd, Chairman
Sisseton Wahpeton Sioux Tribe
P.O. Box 509
Agency Village SD 57262-0509

Dear Chairman Shepherd

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ELLSWORTH AIR FORCE BASE SOUTH DAKOTA

MAY 11 2011

Colonel Jeffrey B. Taliaferro
Commander, 28th Bomb Wing
1958 Scott Dr Ste 1
Ellsworth AFB SD 57706-4710

Mr. Charles W. Murphy, Chairman
Standing Rock Sioux Tribe
PO Box D
Fort Yates, ND 58538

Dear Chairman Murphy

The US Air Force is preparing an environmental assessment (EA) addressing the privatization of military family housing at Ellsworth AFB. The proposed action is to convey military family housing units, grant leases of land, and transfer responsibility for providing housing at Ellsworth AFB to a private developer—497 housing units after construction. The draft EA is included with this correspondence as an attachment.

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JEFFREY B. TALIAFERRO, Colonel, USAF

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Notice of Availability

The Draft EA and FONSI/FONPA were made available to the general public for a 30-day review period. The Notice of Availability (NOA) was published on 11 May 2011 in the *Rapid City Journal* and *The Plainsman*. Copies of the NOAs are included below. The Draft EA and FONSI/FONPA were made available to the general public at the Rapid City Public Library and online at <http://www.ellsworth.af.mil>. No comments from the general public were received.

PUBLIC NOTICE
United States Air Force
Notice of Availability
Draft Environmental Assessment (EA) Addressing
Privatization of Military Family Housing (MFH) at
Ellsworth Air Force Base (AFB), South Dakota

Ellsworth AFB, in conjunction with Headquarters Air Combat Command (ACC), has completed a Draft EA that evaluates the potential effects of conveying MFH units, granting leases of land, and transferring responsibility for providing housing at Ellsworth AFB to a private developer (the Project Owner [PO]). If approved, the transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. During that time, the number of available MFH units would increase from 283 to 497 units.

The analysis considered, in detail, potential environmental effects of the Proposed Action and the No Action Alternative. The results, as found in the EA, show that the Proposed Action would not have a significant adverse impact on the environment, indicating that a Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) would be appropriate. An Environmental Impact Statement would not be necessary to implement the Proposed Action.

Copies of the Draft EA showing the analysis are available for review at the following library:

Rapid City Public Library
610 Quincy Street
Rapid City, SD 57701

The document is also available online at <http://www.ellsworth.af.mil>.

Written comments on the Draft EA are invited and will be received for 30 days from the publication of this notice. Comments and inquiries on this document should be provided in writing to:

Ms. Melody Jensen
28 CES/CEAON
2125 Scott Drive
Ellsworth AFB, SD 57706-4711
(605) 385-2685
melody.jensen@ellsworth.af.mil

(Published once at the approximate cost of \$180.96).

As Published in the Rapid City Journal

PUBLIC NOTICE
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Ellsworth AFB, SD 57706-4711
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melody.jensen@ellsworth.af.mil

As Published in The Plainsman

APPENDIX D
REQUIRED AND DESIRED FEATURES
FOR PRIVATIZED ELLSWORTH AFB MFH UNITS

Required and Desired Features for Privatized Ellsworth AFB MFH Units

New Housing Construction

Design and construction of all new housing units shall provide the following:

General Requirements. Designs and construction shall comply with all applicable codes, standards, and regulations; meet basic requirements described herein; and shall be appropriate to the climate and lifestyle of the area. Designs shall provide innovative design and construction techniques conforming to local market (private sector) standards for quality housing. The local market area is defined as being within a 60-minute or 20-mile commute (whichever is greater) during peak driving conditions. Best professional judgment shall be exercised in choice of style, type, design, configuration, functional solutions, and materials. Each housing area shall have an identification sign at the entrance of each neighborhood.

Floor Plans. Floor plans shall incorporate orderly arrangement of functions, minimize circulation, and maximize open spaces. Designs shall provide inviting entrances, indoor/outdoor integration, and pleasing interior appearance. Kitchens shall have a modern, well-organized work area with quality fixtures, appliances, and finishes. Layout of bathrooms shall follow modern planning techniques and utilize quality fixtures. Maximized storage space is an essential element due to the mobility of Air Force families. Interior storage shall include conveniently located and adequately sized cabinets; and coat, linen, pantry, bulk storage, and clothes closets. Exterior storage shall include maximized space for bikes and mowers and shall have electrical outlets and lighting. All four bedroom units shall have, at a minimum, two full baths.

Handicap Accessibility. At least 5 percent of the total end-state number of housing units shall be compliant with the Americans with Disabilities Act (ADA), meaning either handicap accessible, or “readily adaptable” to be accessible, including entrance ramps, bathroom grab bars, and chair lifts. “Accessible” means the units can be approached, entered, and used by physically handicapped people. Modifications shall be accomplished on a high-priority basis when a requirement is identified. The housing units shall comply with the accessibility standards set forth in all applicable Federal, state, or local laws pertaining to accessibility, together with the Fair Housing Act (FHA) and the relevant provisions of the Uniform Federal Accessibility Standards (UFAS) dealing with accessibility. In complying with said authorities, the private developer (the Project Owner [PO]) shall abide by those provisions that are the most stringent including, but not limited to, the following:

- Kitchen and at least one bathroom with a 5-foot radius for wheelchair maneuvering
- 3-foot clearance between rooms leading to the kitchen
- Maximum threshold of 0.5 inches at all doors
- 34-inch-wide bedroom doors
- An accessible pathway to all accessible spaces (42-inch-wide hallways)
- Reinforced walls for grab bars in bathrooms
- Countertops, plumbing fixtures, and mirrors of the appropriate dimension and height
- Appropriate approach clearances for all fixtures and appliances

- Access ramp as necessary; alternatively, the “universal design” solution is to smoothly slope the approach to meet the doorway thresholds
- Clearance requirements for door swings
- Controls, doors, and windows that can be operated with minimum force
- FHA standards for kitchen and bathroom cabinetry, kitchen appliances, kitchen storage, and laundry facilities.

Should the PO choose to make the premises “readily adaptable” then the PO shall bear the cost of making the housing units accessible at its sole expense.

Elevations. Elevation designs shall provide pleasing and interesting appearances, comparable to other quality residential developments currently being built and marketed in the area. The elevations shall be inviting with modulated facades, rooflines, and massing to provide interest. Materials and colors shall be varied to break up facades of larger structures and prevent excessive uniformity among the smaller units.

Energy Efficiency. Design, materials, equipment, and construction methods shall reduce energy and water consumption to current Energy Star criteria. Design features shall include optimizing glass locations and areas; 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 shall be employed wherever possible.

Materials, Equipment, and Finishes. Materials, equipment, and finishes shall be durable, low maintenance, and functional. Choice of finishes shall be aesthetically pleasing with a richness of texture and detailing. Basic quality features include copper potable water plumbing, copper electrical wiring, dual-pane insulated windows and patio doors, storm doors with screens at main entrances, and overhead lighting in bedrooms and large closets.

Attached Units. Stacked units are not acceptable. No more than six dwelling units per building shall be constructed. Units shall include privacy features including a Sound Transmission Class (STC) rating of 55 between living units.

Parking and Roads. All units shall have provisions for parking two vehicles off-street. Additional parking spaces shall be provided throughout the neighborhoods for guest parking at a rate of one parking space for every two units except for General Officers Quarters (GOQ), Senior Officers Quarters (SOQ), and Prestige units which shall have nearby guest parking available for additional vehicles per unit. All attached units shall have a one-car garage with an automatic door opener. All single-family detached units shall have a two-car garage with an automatic door opener. All roads and turns shall be large enough to allow moving vans, fire trucks, etc. to adequately move around the community as needed, and all roads and parking areas shall have adequate snow stacking capacity and storm drainage.

Privacy. All units shall have patios with screened fencing or landscaping to provide a private area in the rear of each unit. Privacy fencing shall be a minimum of 6 feet tall and encompass at least the patio area.

Window Treatments. The PO shall provide window coverings (such as mini-blinds) in all units.

Floor Finishes. All units shall have high quality, durable, low-maintenance hard finish flooring in kitchen, informal dining area, wet areas, and high traffic areas. All units shall have carpet in bedrooms and other living areas.

Appliances. All appliances shall be energy-efficient, new, and from an established manufacturer. Each housing unit shall be provided with the following items:

- Combination refrigerator/freezer (minimum 18 cubic feet [ft³] for 2-bedroom units and 21 ft³ for 3-and 4-bedroom units)
- Built-in two-level dishwasher
- Four-burner stove with self-cleaning oven, view window, and vent hood
- Built-in microwave oven
- Garbage disposal
- Carbon monoxide detector
- Interior floor space and connections shall be provided for a full size washer and dryer (electric and natural gas connections)
- Interior floor space and connections for a full-size freezer.

Equipment. All units shall be provided with high-energy efficient heating and ventilation. Central air conditioning systems shall be new and from an established manufacturer.

Telephone and Cable. All residential units shall be prewired for cable television (CATV) and telephone jacks. Telephone systems shall be in accordance with those standards set forth by the local telephone company. Each bedroom, living area, and kitchen shall have one phone jack that can accommodate two lines and one cable outlet. The coordination of equipment locations and final design of utilities and services is subject to review by the government.

Mailboxes. The PO shall provide cluster mailboxes for all units in accordance with U.S. Postal Service regulations. Single mailboxes for the GOQ, SOQ, and Prestige Family Housing units shall be provided.

Utilities. All new utility systems shall be designed and constructed by the PO. The PO shall coordinate all tie-in locations with the government. The PO shall provide for the installation of all utility meters. All newly constructed units must have individual electric and natural gas meters. Utilities shall be connected to a utility provider by the PO by the end of the Transition Period.

Termite Treatment. New foundations shall have soil treated for termites in accordance with state law, to include a certificate of termite treatment by the provider.

Exterior Features. Easily accessible hose bibs and exterior electrical outlets on the front and rear of the house shall be provided. Hidden trash container storage area shall be provided.

Sound Attenuation. Privatized family housing construction is permitted, with acceptable noise attenuation, for areas anticipated to be exposed to noise in the 65 to 74 dB range (when there are no other alternatives available). New housing is strongly discouraged in areas anticipated to be exposed to noise in excess of 70 dB. Should the PO propose to locate new housing units or renovate existing housing units within areas subject to noise levels between 56 and 74 dB, such construction or renovation must exhibit appropriate noise attenuation measures to achieve a minimum of 25 dB sound attenuation.

Vapor Intrusion. The PO will take all necessary measures consistent with the Air Force Radon Assessment and Mitigation Program (RAMP) to ensure that levels of radon within all housing units are lower than the USAF action level of 4 pCi/L. In all new construction and renovation, the PO shall

implement prudent radon reduction measures consistent with the latest building practices. Owing to the potential for indoor air accumulation of radon gas and of TCE vapor into housing units constructed on the former Black Hills parcel, the PO shall incorporate functional, effective construction techniques, such as Radon Reduction New Construction (RRNC) techniques and/or mechanical extraction systems, in their unit designs to minimize the intrusion into and accumulation in indoor air of radon gas and TCE vapor in newly constructed facilities on that parcel.

Group Desired Community Features

Below are some desired community features of MFH neighborhoods:

- Covered bus shelters
- Community-wide and neighborhood-wide recreational facilities (except additional playgrounds) in the interior of family housing areas, including group picnic areas with amenities such as pavilions, tables, and grills
- Community center/clubhouse
- New community features (such as community centers and administrative facilities) designed and constructed such that they are capable of achieving “LEED for New Construction” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or Platinum standards)
- Tennis courts (preferably lighted)
- Volleyball courts
- Concrete walks or asphalt trails leading to playgrounds where possible.

Specific Requirements

In addition to the above General Requirements, proposed designs and construction shall provide the following:

Prestige Family Housing (E-9). Prestige housing may be detached single-family or attached multifamily-type housing. Any Prestige Family Housing units constructed at Ellsworth AFB shall be completed and ready for occupancy prior to the demolition of the existing Prestige Family Housing units. Prestige Housing shall meet at a minimum the following standards:

- A geographically separate location in base housing
- Two-car garages with automatic door openers and storage space
- Additional off-street parking
- Larger, enhanced patios with privacy screening
- Central air conditioning in all habitable areas
- Carpeted and/or upgraded floor treatments
- Ceiling fans and upgraded mini-blinds or other window treatments
- Upgraded kitchens and appliances
- At least two and a half bathrooms with upgraded fixtures and finishes.

Prestige Housing for all designated key and essential E-9 positions shall have 4-bedrooms. Newly constructed units to be designated for the Command Chiefs, shall be single-family detached units, at least 10 percent larger than the largest E-9 unit.

General Officers Quarters (O-7+). Any housing and associated improvements for General Officers (O-7+) shall be designed and constructed as single-family detached units. The design of any GOQs that are constructed at Ellsworth AFB shall be in conjunction with local architectural and climatic conditions. If any new GOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing GOQs. Refer to **Table E-1** for the square footage requirements for GOQ units.

Table E-1. GOQ and SOQ Housing Requirements for New Construction

Requirement	Type of Unit	
	Four-bedroom	
	Rank/Grade	
	O-6	O-7 to O-10
Minimum Gross (ft ²)	2,110	2,600
Programming Benchmark (ft ²)	2,520	3,330
Maximum Gross (ft ²)	2,920	4,060

Notes: All interior spaces within the exterior faces of exterior walls of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops. Two-car garages would be provided for detached homes.

The PO shall provide quality finishes for the floor, architectural millwork, wall base, walls, ceilings, window treatments and coverings, light fixtures, entryway, staircases (if applicable), cabinetry, countertops, and appliances for each habitable area. The PO shall also use quality roof materials, exterior wall finishes, exterior window and door finishes, and upscale landscaping.

In addition to standard residential telephone service, the PO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one Unshielded Twisted Pair (UTP) where available in the local community. The PO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568B shall apply to dedicated government cable.

Senior Officers Quarters (O-6). Any housing and associated improvements for Senior Officers (O-6) shall be designed and constructed as single-family detached units. If any new SOQs are constructed, those units shall be completed and ready for occupancy prior to the demolition of the existing SOQs. In addition to standard residential telephone service, the PO shall supply and install a minimum of two telephone lines, two CATV lines, one fiber optic line, and one UTP where available in the local community. The PO shall also supply associated terminals and distribution boxes to be designated only for government use for each unit. The location within the units shall be the same as for the regular telephone boxes. The government shall own and maintain the terminals, cable, and the distribution box after installation. Telecommunication standard 568B shall apply to dedicated government cable. The SOQ designs shall provide ample area for entertaining dignitaries and officials. Refer to **Table E-1** for the square footage requirements for SOQs.

Enlisted and Non-Senior Officer Housing (E-1 to E-8 and O-1 to O-5). Any design and construction of Enlisted and Non-Senior Officer Housing units and associated improvements shall be a mixture of multiplex and detached single-family housing. Construction shall be complete within 6 years of project closing. **Table E-2** shows the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table E-2. Enlisted and Non-Senior Officer Housing Requirements for New Construction

Requirement	Type of Unit							
	Two-bedroom Modified		Three-bedroom			Four-bedroom		
	Rank/Grade							
	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5
Minimum Gross (ft ²)	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Programming Benchmark Gross (ft ²)	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310
Maximum Gross (ft ²)	1,630	1,920	1,760	2,050	2,300	2,220	2,500	2,700

Notes: * All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units, with the following areas of exclusion: garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies, and entrance stoops. Two-car garages would be provided for detached homes and one-car garages for multiplex family units.

Two-Bedroom Modified Units. The PO shall design and construct two-bedroom modified units with an additional room between 110–120 net square feet to provide flexible living space for residents and would be designed to serve as a family room, bedroom, den, or playroom. The additional room shall include a closet. The two-bedroom modified design shall also include an additional three-quarters-size bathroom between 45 and 50 net square feet. The three-quarters-bath shall include, at a minimum, a vanity sink, toilet, and shower.

Desired New Housing Construction Features

The desired features listed below are in descending order of importance.

- Three- and four-bedroom units in lieu of two-bedroom modified units
- Two-car garages with automatic garage door openers and key pads for all 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
- New units designed and constructed such that they are capable of achieving “LEED for Homes” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or Platinum standards)
- Chain link fencing around the backyard of each unit
- 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
- Privacy fences for backyards
- Basements.

Renovation

General Requirements. General Requirements for New Construction (as mentioned above) shall be used to the extent possible in the renovation of existing units. If any Prestige, General Officer, or Senior Officer housing is to be renovated, the requirements specified in New Construction as mentioned above shall be followed. **Tables E-3 and E-4** show the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table E-3. Renovation Size Requirements – Enlisted and Non-Senior Officer Housing

Requirement	Type of Unit							
	Two Bedroom Modified		Three Bedroom			Four Bedroom		
	Rank/Grade							
	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5	E-1 to E-6	E-7 to E-8 and O-1 to O-3	E-9 and O-4 to O-5
Minimum Gross (ft ²)*	1,220	1,300	1,370	1,530	1,590	1,530	1,650	1,760
Benchmark Gross (ft ²)*	1,330	1,420	1,490	1,670	1,740	1,670	1,800	1,920
Maximum Gross (ft ²)*	1,480	1,670	1,630	1,860	2,020	1,950	2,150	2,310

Notes: * All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Two-car garages would be provided for detached homes and one-car garages for multiplex family units.

Table E-4. Renovation Size Requirements – Senior and General Officer Quarters

Requirement	Type of Unit	
	Four Bedroom	Four Bedroom
	Rank/Grade	
	O-6	O-7 to O-10
Minimum Gross Square Feet*	1,930	2,380
Benchmark Gross Square Feet*	2,110	2,600
Maximum Gross Square Feet*	2,520	3,330

Notes: * All interior spaces within the exterior faces of exterior walls and center line of party walls (in multiplex units) of housing units with the following areas of exclusion: carports and garages, exterior bulk storage (detached), trash enclosures, porches, terraces, patios, balconies and entrance stoops. Two-car garages would be provided for detached homes and one-car garages for multiplex family units.

The above rows stating “Maximum” gross square footages are furnished only as information on maximum gross square footages applicable to military construction projects, and are not to be construed as an upper limitation on unit gross square footage sizes which would be acceptable under this Solicitation. Offerors may propose units larger than these maximum gross square footage sizes so long as such room patterns and floor areas are generally comparable to similar housing units in the locality concerned.

Desired Renovation Features

Desired features listed below are in descending order of importance.

- Newly constructed units in lieu of renovated units (excluding historic 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
- Renovations designed and constructed such that they are capable of achieving “LEED for Homes” Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or Platinum standards)
- Reduced number of dwelling units per building
- Walk-in clothes closets
- Double sinks in full bathrooms in all units
- Ceiling fans with light fixtures in all bedrooms and living room in all units
- Overhead lighting in all rooms, switched at the entry door
- Programmable thermostats
- Built-in microwave ovens.

APPENDIX E

REPRESENTATIVE PHOTOS OF MFH AREAS AT ELLSWORTH AFB

Representative Photos of MFH Areas at Ellsworth AFB



Prairie View Housing Area



Rushmore Heights Housing Area



Rushmore Heights Housing Area



Rushmore Heights Housing Area

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APPENDIX F

AIR EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year for Privatization of Military Family Housing at Ellsworth Air Force Base, South Dakota
Combustion	Estimates emissions from non-road equipment exhaust.
Fugitive	Estimates particulate emissions from construction activities including earthmoving, vehicle traffic, and windblown dust.
Grading	Estimates the number of days of site preparation, to be used for estimating heavy equipment exhaust and earthmoving dust emissions.
Haul Truck On-Road	Estimates emissions from haul and water trucks delivering materials to the job site.
Construction Commuter	Estimates emissions for construction workers commuting to the site.
AQCR Tier Report	Summarizes total emissions for the Black Hills-Rapid City Intrastate Air Quality Control Region Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Privatization of Military Family Housing at Ellsworth AFB

	NO_x (ton)	VOC (ton)	CO (ton)	SO₂ (ton)	PM₁₀ (ton)	PM_{2.5} (ton)	CO₂ (ton)
Construction Combustion	5.244	0.992	2.292	0.386	0.372	0.361	597.791
Construction Fugitive Dust	-	-	-	-	27.175	1.516	-
Haul and Water Trucks	1.500	1.085	4.408	0.118	1.784	0.464	379.775
Construction Commuter	0.110	0.110	0.992	0.001	0.010	0.007	131.482
TOTAL	6.854	2.186	7.691	0.506	29.341	2.347	1,109.047

Note: Total CY2010 PM_{10/2.5} fugitive dust emissions are assuming USEPA 50% control efficiencies.

CO₂ emissions converted to metric tons = **1,005.906 metric tons**
 State of South Dakota's CO₂ emissions = **14,385,029 metric tons** (DOE/EIA 2010)
 Percent of South Dakota's CO₂ emissions = **0.007% metric tons**

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2010. State Carbon Dioxide Emissions Summary for the State of South Dakota. Released 4 February 2010. Available online: <http://www.eia.doe.gov/oiaf/1605/state/state_emissions.html>. Accessed 18 March 2010.

Since future year budgets were not readily available, actual 2002 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.

Black Hills-Rapid City Intrastate AQCR

Year	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
2002	15,082	9,923	68,289	3,295	22,883	4,248

Source: USEPA-AirData NET Tier Report (<http://www.epa.gov/air/data/geosel.html>). Site visited on 30 March 2010.

**Air Emissions from Privatization of Military Family Housing at Ellsworth AFB
 Determination Significance (Significance Threshold = 10% of regional)**

Point and Area Sources Combined						
NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)	
15,082	9,923	68,289	3,295	22,883	4,248	
6.85	2.19	7.69	0.51	29.34	2.35	
0.045%	0.022%	0.011%	0.015%	0.128%	0.055%	

Regional Emissions
 Emissions
 % of Regional

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO₂, CO, PM_{2.5}, PM₁₀, and CO₂ due to Construction

General Construction Activities

Area Disturbed

Construct Community Center	30,000 ft ²	Assume one centralized Community Center (30,000 ft ²).
Construct 214 New MFH Units	428,000 ft ²	Assume each new MFH unit is average of 2,000 ft ² .
Construct Storage Facilities for MFH Residents	50,000 ft ²	Assume one storage facility (50,000 ft ²).
Construct Housing Management Office	5,000 ft ²	Assume one Housing Management Office (5,000 ft ²).
Construct MFH Site Improvements (Drainages, etc.)	375,000 ft ²	Assume 25,000 ft long by 15 ft wide.
Install Utility Lines for new facilities (Community Center, Storage Facility, and individual meters)	30,000 ft ²	Assume 10,000 ft long by 3 ft wide.
Construct new MFH Pavements (driveways, sidewalks, vehicular parking areas, and roadways)	108,900 ft ²	Assume 2.5 acres of new pavements will be required for new planned MFH units and facilities.
Total General Construction Area:	918,000 ft ²	
	21.1 acres	
Total Demolition Area:	0 ft ²	
	0.0 acres	
Total Pavement Area:	108,900 ft ²	
	2.5 acres	
Total Disturbed Area:	1,026,900 ft ²	
	23.6 acres	
Construction Duration:	12 months	
Annual Construction Activity:	240 days/yr	Assume 12 months, 4 weeks per month, 5 days per week.

Emission Factors Used for Construction Equipment

References: Guide to Air Quality Assessment, SMAQMD, 2004; and U.S. EPA NONROAD Emissions Model, Version 2005.0.0

Emission factors are taken from the NONROAD model and were provided to e2M by Larry Landman of the Air Quality and Modeling Center (Landman.Larry@epamail.epa.gov) on 12/14/07. Factors provided are for the weighted average US fleet for CY2007.

Assumptions regarding the type and number of equipment are from SMAQMD Table 3-1 unless otherwise noted.

Grading

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Bulldozer	1	13.60	95.742%	5.50	1.02	0.89	0.87	1456.90
Motor Grader	1	9.69	0.73	3.20	0.80	0.66	0.64	1141.65
Water Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	3	41.64	2.58	15.71	0.83	2.55	2.47	4941.53

Paving

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Paver	1	3.83	0.37	2.06	0.28	0.35	0.34	401.93
Roller	1	4.82	0.44	2.51	0.37	0.43	0.42	536.07
Truck	2	36.71	1.79	14.01	3.27	1.99	1.93	4685.95
Total per 10 acres of activity	4	45.37	2.61	18.58	0.91	2.78	2.69	5623.96

Demolition

Equipment	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Loader	1	13.45	0.99	5.58	0.95	0.93	0.90	1360.10
Haul Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Total per 10 acres of activity	2	31.81	1.89	12.58	0.64	1.92	1.87	3703.07

Building Construction

Equipment ^d	No. Req ^d . ^a per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c (lb/day)	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Stationary								
Generator Set	1	2.38	0.32	1.18	0.15	0.23	0.22	213.06
Industrial Saw	1	2.62	0.32	1.97	0.20	0.32	0.31	291.92
Welder	1	1.12	0.38	1.50	0.08	0.23	0.22	112.39
Mobile (non-road)								
Truck	1	18.36	0.89	7.00	1.64	1.00	0.97	2342.98
Forklift	1	5.34	0.56	3.33	0.40	0.55	0.54	572.24
Crane	1	9.57	0.66	2.39	0.65	0.50	0.49	931.93
Total per 10 acres of activity	6	39.40	3.13	17.38	3.12	2.83	2.74	4464.51

Note: Footnotes for tables are on following page

Architectural Coatings

Equipment	No. Req ^d . per 10 acres	NO _x (lb/day)	VOC ^b (lb/day)	CO (lb/day)	SO ₂ ^c	PM ₁₀ (lb/day)	PM _{2.5} (lb/day)	CO ₂ (lb/day)
Air Compressor	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77
Total per 10 acres of activity	1	3.57	0.37	1.57	0.25	0.31	0.30	359.77

- a) The SMAQMD 2004 guidance suggests a default equipment fleet for each activity, assuming 10 acres of that activity, (e.g., 10 acres of grading, 10 acres of paving, etc.). The default equipment fleet is increased for each 10 acre increment in the size of the construction project. That is, a 26 acre project would round to 30 acres and the fleet size would be three times the default fleet for a 10 acre project.
- b) The SMAQMD 2004 reference lists emission factors for reactive organic gas (ROG). For the purposes of this worksheet ROG = VOC. The NONROAD model contains emissions factors for total HC and for VOC. The factors used here are the VOC factors.
- c) The NONROAD emission factors assume that the average fuel burned in nonroad trucks is 1100 ppm sulfur. Trucks that would be used for the Proposed Actions will all be fueled by highway grade diesel fuel which cannot exceed 500 ppm sulfur. These estimates therefore over-estimate SO2 emissions by more than a factor of two.
- d) Typical equipment fleet for building construction was not itemized in SMAQMD 2004 guidance. The equipment list above was assumed based on SMAQMD 1994 guidance.

PROJECT-SPECIFIC EMISSION FACTOR SUMMARY

Source	Equipment Multiplier*	Project-Specific Emission Factors (lb/day)						
		NO _x	VOC	CO	SO ₂ **	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	2	83.282	5.154	31.420	1.666	5.091	4.938	9883.053
Paving Equipment	1	45.367	2.606	18.578	0.907	2.776	2.693	5623.957
Demolition Equipment	1	31.808	1.886	12.584	0.636	1.923	1.865	3703.074
Building Construction	1	39.396	3.130	17.382	3.116	2.829	2.744	4464.512
Air Compressor for Architectural Coating	1	3.574	0.373	1.565	0.251	0.309	0.300	359.773
Architectural Coating**			58.374					

*The equipment multiplier is an integer that represents units of 10 acres for purposes of estimating the number of equipment required for the project.

**Emission factor is from the evaporation of solvents during painting, per "Air Quality Thresholds of Significance", SMAQMD, 1994

Example: SMAQMD Emission Factor for Grading Equipment NO_x = (Total Grading NO_x per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft ²)	Total Area (acres)	Total Days	
Grading:	1,026,900	23.57	5	(from "Grading" worksheet)
Paving:	108,900	2.50	12	
Demolition:	0	0.00	0	
Building Construction:	513,000	11.78	240	
Architectural Coating	513,000	11.78	20	(per SMAQMD "Air Quality of Thresholds of Significance", 1994)

NOTE: The 'Total Days' estimate for paving is calculated by dividing the total number of acres by 0.21 acres/day, which is a factor derived from the 2005 MEANS Heavy Construction Cost Data, 19th Edition, for 'Asphaltic Concrete Pavement, Lots and Driveways - 6" stone base', which provides an estimate of square feet paved per day. There is also an estimate for 'Plain Cement Concrete Pavement', however the estimate for asphalt is used because it is more conservative. The 'Total 'Days' estimate for demolition is calculated by dividing the total number of acres by 0.02 acres/day, which is a factor also derived from the 2005 MEANS reference. This is calculated by averaging the demolition estimates from 'Building Demolition - Small Buildings, Concrete', assuming a height of 30 feet for a two-story building; from 'Building Footings and Foundations Demolition - 6" Thick, Plain Concrete'; and from 'Demolish, Remove Pavement and Curb - Concrete to 6" thick, rod reinforced'. Paving is double-weighted since projects typically involve more paving demolition. The 'Total Days' estimate for building construction is assumed to be 230 days, unless project-specific data is known.

Total Project Emissions by Activity (lbs)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Grading Equipment	416.41	25.77	157.10	8.33	25.46	24.69	49,415
Paving	544.41	31.27	222.94	10.89	33.31	32.31	67,487
Demolition	-	-	-	-	-	-	0
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	1,174.94	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	10,487.42	1,983.13	4,583.10	772.16	743.93	721.61	1,195,581

Results: Total Project Annual Emission Rates

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
Total Project Emissions (lbs)	10,487.42	1,983.13	4,583.10	772.16	743.93	721.61	1,195,581
Total Project Emissions (tons)	5.24	0.99	2.29	0.39	0.37	0.36	597.79

Construction Fugitive Dust Emissions

Construction Fugitive Dust Emission Factors

	Emission Factor	Units	Source
General Construction Activities	0.19 ton PM ₁₀ /acre-month		MRI 1996; EPA 2001; EPA 2006
New Road Construction	0.42 ton PM ₁₀ /acre-month		MRI 1996; EPA 2001; EPA 2006

PM_{2.5} Emissions

PM _{2.5} Multiplier	0.10	(10% of PM ₁₀ emissions assumed to be PM _{2.5})	EPA 2001; EPA 2006
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Control Efficiency

	0.50	(assume 50% control efficiency for PM ₁₀ and PM _{2.5} emissions)	EPA 2001; EPA 2006
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Project Assumptions

New Roadway Construction (0.42 ton PM₁₀/acre-month)

Duration of Construction Project	6 months
Area	2.5 acres

General Construction Activities (0.19 ton PM₁₀/acre-month)

Duration of Construction Project	12 months
Area	21.1 acres

	Project Emissions (tons/year)			
	PM₁₀ uncontrolled	PM₁₀ controlled	PM_{2.5} uncontrolled	PM_{2.5} controlled
New Roadway Construction	6.30	3.15	0.63	0.32
General Construction Activities	48.05	24.02	2.40	1.20
Total	54.35	27.17	3.03	1.52

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM₁₀/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The area-based emission factor for construction activities is based on a study completed by the Midwest Research Institute (MRI) Improvement of Specific Emission Factors (BACM Project No. 1), March 29, 1996. The MRI study evaluated seven construction projects in Nevada and California (Las Vegas, Coachella Valley, South Coast Air Basin, and the San Joaquin Valley). The study determined an average emission factor of 0.11 ton PM₁₀/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM₁₀/acre-month was calculated for sites with active large-scale earth moving operations. The monthly emission factors are based on 168 work-hours per month (MRI 1996). A subsequent MRI Report in 1999, Estimating Particulate Matter Emissions From Construction Operations, calculated the 0.19 ton PM₁₀/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM₁₀/acre-month) and 75% of the average emission factor (0.11 ton PM₁₀/acre-month). The 0.19 ton PM₁₀/acre-month emission factor is referenced by the EPA for non-residential construction activities in recent procedures documents for the National Emission Inventory (EPA 2001; EPA 2006). The 0.19 ton PM₁₀/acre-month emission factor represents a refinement of EPA's original AP-42 area-based total suspended particulate (TSP) emission factor in Section 13.2.3 Heavy Construction Operations. In addition to the EPA, this methodology is also supported by the South Coast Air Quality Management District as well as the Western Regional Air Partnership (WRAP) which is funded by the EPA and is administered jointly by the Western Governor's Association and the National Tribal Environmental Council. The emission factor is assumed to encompass a variety of non-residential construction activities including building construction (commercial, industrial, institutional, governmental), public works, and travel on unpaved roads. The EPA National Emission Inventory documentation assumes that the emission factors are uncontrolled and recommends a control efficiency of 50% for PM₁₀ and PM_{2.5} in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM₁₀/acre-month Source: MRI 1996; EPA 2001; EPA 2006

The emission factor for new road construction is based on the worst-case conditions emission factor from the MRI 1996 study described above (0.42 tons PM₁₀/acre-month). It is assumed that road construction involves extensive earthmoving and heavy construction vehicle travel resulting in emissions that are higher than other general construction projects. The 0.42 ton PM₁₀/acre-month emission factor for road construction is referenced in recent procedures documents for the EPA National Emission Inventory (EPA 2001; EPA 2006).

PM_{2.5} Multiplier

0.10

PM_{2.5} emissions are estimated by applying a particle size multiplier of 0.10 to PM₁₀ emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM₁₀ and PM_{2.5}

0.50

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM₁₀ and PM_{2.5} in PM nonattainment areas (EPA 2006). Wetting controls will be applied during project construction.

References:

EPA 2001. *Procedures Document for National Emissions Inventory, Criteria Air Pollutants, 1985-1999*. EPA-454/R-01-006. Office of Air Quality Planning and Standards, United States Environmental Protection Agency. March 2001.

EPA 2006. *Documentation for the Final 2002 Nonpoint Sector (Feb 06 version) National Emission Inventory for Criteria and Hazardous Air Pollutants*. Prepared for: Emissions Inventory and Analysis Group (C339-02) Air Quality Assessment Division Office of Air Quality Planning and Standards, United States Environmental Protection Agency. July 2006.

MRI 1996. *Improvement of Specific Emission Factors (BACM Project No. 1)*. Midwest Research Institute (MRI). Prepared for the California South Coast Air Quality Management District, March 29, 1996.

Grading Schedule

Estimate of time required to grade a specified area.

Input Parameters

Construction area: 23.6 acres/yr (from Combustion Worksheet)
 Qty Equipment: 8.0 (calculated based on 3 pieces of equipment for every 10 acres)

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, 19th Ed., R. S. Means, 2005.

Means Line No.	Operation	Description	Output	Units	Acres per equip-day)	equip-days per acre	Acres/yr (project- specific)	Equip-days per year
2230 200 0550	Site Clearing	Dozer & rake, medium brush	8	acre/day	8	0.13	23.57	2.95
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	23.57	11.53
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	11.79	11.89
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	11.79	4.88
2315 310 5020	Compaction	Vibrating roller, 6" lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	23.57	8.27
TOTAL								39.50

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 39.50
 Qty Equipment: 8.00
 Grading days/yr: 4.94

Haul and Water Truck Emissions

Emissions from hauling the raw materials for concrete and fill are estimated in this spreadsheet.

Emission Estimation Method: United States Air Force (USAF) Institute for Environment, Safety and Occupational Health Risk Analysis (IERA) Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations (Revised December 2003).

Raw Material Assumptions:

Haul trucks carry 20 cubic yards of material per trip.

The distance from the borrow pit is 5 miles, therefore the haul truck will travel 10 miles roundrip.

Estimated number of trips required by haul trucks = total amount of material to be brought on installation/20 cubic yards per truck

Total amount of imported materials = 409,128 cubic yards
 Number of trucks required = 20,456 heavy duty diesel haul trucks
 Miles per trip = 10 miles

Water Transportation Assumptions:

Water trucks carry 4,000 gallons per truckload.

Approximately 19,203,030 gallons of water will be required during construction.

Approximately 1/8 inch of water would be applied to project area once per day.

The distance from the nearest water source is 0.5 miles, therefore the water truck will travel 1 mile roundrip.

Estimated number of trips required by water trucks = total gallons of water to be brought to project site/4,000 gallons per truck

Total amount of water needed for construction = 19,203,030 gallons
 Number of trucks required = 4,801 heavy duty diesel haul trucks
 Miles per trip = 1 miles

Heavy Duty Diesel Vehicle (HDDV) Average Emission Factors (grams/mile)

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
HDDV	6.500	4.7000	19.10	0.512	7.7	2.01	1646

Notes:

Emission factors for all pollutants except CO₂ are from USAF IERA 2003.

Emission factors for PM, PM₁₀, SO_x are from HDDV in Table 4-50 (USAF IERA 2003).

Emission factors for VOC, CO, and NO_x are from Tables 4-41 through 4-43 for the 2010 calendar year, 2000 model year (USAF IERA 2003).

Diesel fuel produces 22.384 pounds of CO₂ per gallon.

It is assumed that the average HDDV has a fuel economy of 6.17 miles per gallon, Table 4-51 (USAF IERA 2003)

CO₂ emission factor = 22.384 lbs CO₂/gallon diesel * gallon diesel/6.17 miles * 453.6 g/lb

HDDV Haul and Water Truck Emissions From Construction Activities

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	3000.15	2169.34	8815.84	236.32	3567.88	927.74	759549.15
tons	1.500	1.085	4.408	0.118	1.784	0.464	379.775

Example Calculation: NO_x emissions (lbs) = miles per trip * number of trips * NO_x emission factor (g/mile) * lb/453.6 g

Construction Commuter Emissions

Emissions from construction workers commuting to the job site are estimated in this spreadsheet.

Emission Estimation Method: Emission factors from the South Coast Air Quality Management District (SCAQMD) EMFAC 2007 (v 2.3) Model (on-road) were used. These emission factors are available online at <http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>.

Assumptions:

Passenger vehicle emission factors for scenario year 2010 are used

The average roundtrip commute for a construction worker = 40 miles
 Number of construction days = 240 days
 Number of construction workers (daily) = 25 people

Passenger Vehicle Emission Factors for Year 2010 (lbs/mile)

NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
0.00091814	0.00091399	0.00826276	0.00001077	0.00008698	0.00005478	1.09568235

Source: South Coast Air Quality Management District. EMFAC 2007 (ver 2.3) On-Road Emissions Factors. Last updated April 24, 2008. Available online: <<http://www.aqmd.gov/ceqa/handbook/onroad/onroad.html>>. Accessed 27 May 2009.

Notes:

The SMAQMD 2007 reference lists emission factors for reactive organic gas (ROG). For purposes of this worksheet ROG = VOC

Construction Commuter Emissions

	NO _x	VOC	CO	SO ₂	PM ₁₀	PM _{2.5}	CO ₂
lbs	220.354	219.357	1983.062	2.586	20.875	13.148	262963.764
tons	0.110	0.110	0.992	0.0013	0.0104	0.0066	131.482

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

Black Hills-Rapid City Intrastate Air Quality Control Region

Row #	State	County	Point Source Emissions (tpy)					Area Source Emissions (Non-Point and Mobile Sources) (tpy)						
			CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC	CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
1	SD	Butte Co	0	0	0	0	0	0	2,685	435	1,924	335	67.8	418
2	SD	Custer Co	0	0	0	0	0	0	3,905	1,186	2,219	388	83.1	628
3	SD	Fall River Co	0	0	0	0	0	0	1,941	1,157	1,582	295	90.6	350
4	SD	Lawrence Co	765	39.2	79.1	41.4	4.23	70	8,880	1,160	3,601	600	175	1,298
5	SD	Meade Co	0	0	0	0	0	0	9,680	1,546	5,069	787	136	1,360
6	SD	Pennington Co	2,947	4,960	445	187	1,556	187	37,486	4,599	7,964	1,615	1,182	5,612
Grand Total			3,712	4,999	524	228	1,560	257	64,577	10,083	22,359	4,020	1,735	9,666

SOURCE:

<http://www.epa.gov/air/data/geosel.html>

USEPA - AirData NET Tier Report

*Net Air pollution sources (area and point) in tons per year (2002)

Site visited on 30 March 2010.

Black Hills-Rapid City Intrastate Air Quality Control Region 4 (40 CFR 81.342)

APPENDIX G
MITIGATION PLAN

**MITIGATION PLAN
SUPPORTING AN
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF
MILITARY FAMILY HOUSING
AT
ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA**



HEADQUARTERS AIR COMBAT COMMAND

JUNE 2011

**MITIGATION PLAN
SUPPORTING AN
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT ELLSWORTH AIR FORCE BASE, SOUTH DAKOTA**

Purpose and Objectives

Consistent with the U.S. Air Force (USAF) Housing Privatization Program, the Air Combat Command (ACC) proposes to convey its military family housing (MFH) units, grant leases of land, and transfer responsibility for providing housing at Ellsworth Air Force Base (AFB) to a private developer (the Project Owner [PO]). ACC prepared an Environmental Assessment (EA) evaluating the potential environmental consequences of this Proposed Action and the No Action Alternative. Signature of the Finding of No Significant Impact/Finding of No Practicable Alternative (FONSI/FONPA) is expected in June 2011.

The purpose of this Mitigation Plan is to ensure that all mitigation measures and best management practices (BMPs) committed to in the FONSI/FONPA are identified and addressed. Mitigation measures consist of actions that avoid, minimize, rectify, reduce, or compensate for effects caused by a proposed action and reasonable alternatives. To comply with direction given in the “Mitigation” subsection of *Environmental Impact Analysis Process* (32 Code of Federal Regulations 989.22), this plan identifies specific mitigation measures and BMPs, discusses how ACC will execute them, and identifies who will fund and implement these activities.

Selected Mitigation Measures and BMPs

The following presents selected mitigation measures and BMPs addressing specific resource areas and the procedures for implementing the activities as presented in the EA and committed to in the FONSI/FONPA. These activities were identified in the FONSI/FONPA as practicable means to avoid, minimize, rectify, reduce, or compensate potential adverse environmental impacts associated with the Proposed Action.

Noise and Land Use (NLU)

Adverse Environmental Impacts. The EA found that moderate adverse effects from the Proposed Action will occur from constructing MFH units inside the 65+ A-weighted decibel (dBA) Day-Night Average Sound Level (DNL) noise contours around the installation’s airfield. Although housing development is discouraged in 65-75 dBA DNL noise zones, the EA found that no other viable alternative exists. In

addition, construction activities and traffic will result in short-term, minor, adverse impacts on the noise environment in the vicinity of construction activities.

Mitigation Measures and BMPs. Impacts from noise and noise impacts on land use will be addressed through the following:

- *NLU1.* Noise level reduction (NLR) measures will be incorporated into design and construction of new housing units and renovation of existing units that exceed 50 percent of replacement value to achieve an outdoor to indoor NLR of at least 25 dBA in the 65-69 dBA DNL noise zone and a 30 dBA NLR in the 70-74 dBA DNL noise zone. No new housing may be constructed in the 75+ dBA DNL noise zone. The PO must provide the 28th Bombardment Wing Civil Engineer Squadron Asset Management Flight Environmental Planning Function (28 CES/CEAON) with details on how the NLR will be achieved.
- *NLU2.* Site planning will be conducted and structures will be positioned to minimize encroachment in high noise zones. Berms, barriers, and vegetative buffers will be designed and used to reduce noise, as necessary.
- *NLU3.* Outdoor activity areas such as playgrounds will be strategically positioned to minimize high-level noise zones.
- *NLU4.* High noise-generating construction activities will be restricted to normal working hours (i.e., between 7:00 a.m. and 5:00 p.m.) and noise-control measures such as equipment exhaust mufflers will be used.

Air Quality (AQ)

Adverse Environmental Impacts. The Proposed Action will result in increased air pollutant emissions associated with construction activities. The EA determined that these emissions will be temporary in nature and will not have a significant impact on local and regional air quality. However, BMPs will be used during construction activities to reduce fugitive dust and construction vehicle emissions.

Mitigation Measures and BMPs. The following BMPs will be used during construction activities to reduce the amount of fugitive dust and construction vehicle emissions:

- *AQ1.* Fugitive dust-control measures (e.g., windbreaks and barriers, control of vehicle access, frequent watering of exposed surfaces, use of soil additives where required, covering of soil piles, use of gravel at site exit points, washing of equipment at the end of each work day and prior to site removal) will be implemented.

- *AQ2.* Ground-disturbing activities will be delayed during high wind conditions. Vehicular and pedestrian traffic and grading or digging in the project area will be prohibited during periods of high wind conditions (in excess of 25 knots [29 miles per hour]).
- *AQ3.* Soil-stabilizing measures, such as replacing ground cover in disturbed areas as soon as possible following excavation, watering exposed surfaces at least two times daily, and controlling equipment loading/unloading procedures, will be utilized.
- *AQ4.* Off-road travel by project-related vehicles and construction equipment outside designated work areas will be prohibited. The limits of construction disturbance areas will be clearly marked.
- *AQ5.* Construction and demolition equipment will be tuned and maintained prior to and during construction and demolition activities.

Natural Resources (NR)

Adverse Environmental Impacts. Construction activities will result in soil disturbance, leading to potentially increased sediment loads in runoff. In addition, the Proposed Action could result in the construction of structures or infrastructure in a 100-year floodplain associated with the Coolidge Floodway on the installation. Therefore, minor to moderate adverse effects on geological resources and water resources would be expected. However, the EA determined that the potential effects will not be significant.

Mitigation Measures and BMPs. The following will occur prior to construction activities to control soil erosion and sedimentation and minimize potential impacts on floodplains:

- *NR1.* A site-specific erosion-and-sediment-control plan (ESCP) and storm water pollution prevention plan (SWPPP) will be prepared that include specific BMPs to prevent soil disturbance, capture and contain loose soil, slow the movement of storm water during heavy rains, and minimize the introduction of pollutants to surface waters. The ESCP will include standard erosion-control measures such as silt fencing, sediment traps, storm water retention ponds, applications sprays, and revegetation at disturbed areas so that pre- and post-development hydrology would be similar. All storm water retention ponds will be lined to ensure no surface water infiltration to groundwater. The SWPPP will ensure proper housekeeping, retention of debris, construction equipment maintenance, petroleum and hazardous material storage, and adherence to the installation's Spill Prevention, Control, and Countermeasures Plan in the event of a spill.

- *NR2.* If it is determined that construction of MFH units in the 100-year floodplain cannot be avoided as site planning matures, any structures built within the 100-year floodplain boundary will be constructed at least 1 foot above the base flood elevation level to elevate the structure above the base flood elevation within the floodway. Construction of other infrastructure inside the floodplain boundary will be kept to a minimum where possible. The Coolidge Floodway itself will not be changed or adversely impacted by the Proposed Action. The PO will obtain the City of Box Elder's floodplain surveyor certification for structures built in or close to the 100-year floodplain.
- *NR3.* If burrowing owl nests are discovered within or adjacent to the former Black Hills Estates housing area on the installation, the following BMPs for migratory birds will be implemented:
 - Any groundbreaking construction activities will be performed before migratory birds return to Ellsworth AFB or after all young have fledged to avoid incidental take.
 - If construction is scheduled to start during the period in which migratory bird species are present, steps will be taken to prevent migratory birds from establishing nests in the potential impact area. These steps include covering equipment and structures and use of various excluders (e.g., noise). Birds can be harassed to prevent them from nesting within the project area. If a nest is established, they will not be harassed until all young have fledged and are capable of leaving the nest site.
 - If construction is scheduled to start during the period when migratory birds are present, a site-specific survey for nesting migratory birds will be performed starting at least 2 weeks prior to site clearing. If nesting birds are found during the survey, buffer areas will be established around nests. Construction will be deferred in buffer areas until all birds have left the nest. Confirmation that all young have fledged will be made by the installation's natural resources manager.

Cultural Resources (CR)

Adverse Environmental Impacts. There are no known prehistoric or historic sites in the areas planned for construction. However, unknown cultural resources could be discovered during ground-breaking activities.

Mitigation Measures and BMPs. If any previously unknown historic resources are discovered during construction, the following mitigation measures will reduce the potential for adverse effects on cultural resources:

- *CR1.* All work in the immediate vicinity of the discovery will be halted until the resources are identified and documented and an appropriate mitigation strategy is developed in consultation with the South Dakota State Historic Preservation Office (SHPO) and other consulting parties.
- *CR2.* In compliance with the Native American Graves Protection and Repatriation Act, Ellsworth AFB will notify and consult with concerned tribal representatives about the proper treatment of human remains, funerary objects, and sacred objects should these be discovered during the course of implementing the Proposed Action.

Hazardous Materials and Wastes (HMW)

Adverse Environmental Impacts. Moderate adverse effects will be expected from the potential of encountering asbestos-containing transite water piping in the former Black Hills Estates housing area and from a potential for vapor intrusion from radon and trichloroethylene (TCE) contamination in groundwater below the housing areas.

Mitigation Measures and BMPs. The following will occur to minimize the potential for adverse effects from encountering transite piping or radon or TCE vapor intrusion:

- *HMW1.* Transite piping encountered during construction will be removed by certified individuals and disposed of at a U.S. Environmental Protection Agency (USEPA)-approved landfill.
- *HMW2.* All new MFH units will have a passive or mechanical system installed to dissipate radon intrusion. Mitigation systems will be installed in MFH units, as necessary, to address potential TCE vapor intrusion. The PO will incorporate functional, effective construction techniques such as Radon Reduction New Construction (RRNC) techniques and/or mechanical extraction systems in their unit designs to minimize the intrusion into and accumulation in indoor air of radon gas and TCE vapor in newly constructed facilities. A single, functional, effective construction technique or mechanical extraction system will be proposed to address both radon gas and TCE vapor intrusion. Techniques or systems will be considered functional and effective if radon gas levels are maintained below the current action level of 4 picoCuries per liter (pCi/L) and TCE vapor levels below 0.78 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) in indoor air. The PO will annually verify that all vapor extraction systems are operational. The results of this annual inspection will be submitted to 28 CES/CEAON within 14 days of inspection. If a vapor extraction system is found to be not operational, that unit will immediately be sampled for radon and TCE vapors, and the results of that sampling will be reported to 28 CES/CEAON. The PO will also sample a minimum of 20 percent of all housing units each year for radon and TCE vapors. Each housing unit will be sampled at least once every 5 years. Sampling results exceeding 4 pCi/L for radon or

0.78 µg/m³ for TCE will be resampled within 48 hours from receipt of sampling results and the occupants notified. The results of this yearly sampling must be reported to 28 CES/CEAON within 14 days of receipt of the sampling results, and within 1 day of a result exceeding the established levels. In addition, if the action levels for radon or TCE change, the PO will be notified and the acceptable levels will be adjusted accordingly.

- *HMW3*. A Land Use Control (LUC) is currently in place that will continue to restrict installation of new groundwater wells in the vicinity of OU-11 in the former Black Hills Estates area.

Monitoring and Enforcement of Mitigation Measures and BMPs

Table 1 details the parties responsible for implementing and enforcing the specific mitigation measures and BMPs and the time during which these activities will be followed. Follow-on documentation and reports are not anticipated. However, should cultural artifacts be found and activities *CR1* or *CR2* be implemented, a report will be prepared documenting the specific archaeological finds and how the finds were handled.

Table 1. Implementation and Enforcement of Mitigation Measures and BMPs

Mitigation Measure	Party Implementing Mitigation Measure	Enforcement and Oversight of Mitigation Measures	Timeline
NLU1	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012. Implemented during active construction period – anticipated from 2012 to 2013.
NLU2	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012. Implemented during active construction period – anticipated from 2012 to 2013.
NLU3	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012.
NLU4	PO	28 CES/CEA	Required during active construction period – anticipated from 2012 to 2013.
AQ1	PO	28 CES/CEA	Required during active ground excavation activities – anticipated in 2012.
AQ2	PO	28 CES/CEA	Required during active ground excavation activities – anticipated in 2012.
AQ3	PO	28 CES/CEA	Required during active ground excavation activities – anticipated in 2012.
AQ4	PO	28 CES/CEA	Required during active construction period – anticipated from 2012 to 2013.

Mitigation Measure	Party Implementing Mitigation Measure	Enforcement and Oversight of Mitigation Measures	Timeline
AQ5	PO	28 CES/CEA	Required during active construction period – anticipated from 2012 to 2013.
NR1	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012. Implemented during active construction period – anticipated from 2012 to 2013.
NR2	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012. Implemented during active construction period – anticipated from 2012 to 2013.
NR3	PO and 28 CES/CEA	AFCEE/HP, HQ ACC/A7AB	Required during active construction period – anticipated from 2012 to 2013.
CR1	PO and 28 CES/CEA	AFCEE/HP, HQ ACC/A7AB	During active ground excavation activities – anticipated in 2012.
CR2	PO and 28 CES/CEA	AFCEE/HP, HQ ACC/A7AB	During active ground excavation activities – anticipated in 2012.
HMW1	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	During active ground excavation activities – anticipated in 2012.
HMW2	PO	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	Developed and approved during design phase of project in 2011 and 2012. Implemented during active construction period – anticipated from 2012 to 2013 and maintained over the life of the project as necessary.
HMW3	28 CES/CEA	28 CES/CEA, AFCEE/HP, HQ ACC/A7AB	In place during active construction period – anticipated from 2012 to 2013 and maintained over the life of the project as necessary.

Notes:

Active ground excavation activities include initial site preparation, grading, excavating, or any activity where the ground is being disturbed.

Active construction period activities include ground excavation and structure and infrastructure construction.

Key:

NLU = Noise and Land Use

AQ = Air Quality

NR = Natural Resources

CR = Cultural Resources

HMW = Hazardous Materials and Wastes

28 CES/CEA = 28th Bombardment Wing Civil Engineer Squadron Asset Management Flight

HQ ACC/A7AB = Headquarters Air Combat Command Build Infrastructure Branch

AFCEE/HP = Air Force Center for Engineering and the Environment Housing Privatization Office

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