Final

ENVIRONMENTAL ASSESSMENT

Addressing the Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

April 2011

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Consistent with the USAF Housing Privatization Program, the USAF proposes to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer (the Project Owner [PO]). Current housing inventories for Cavalier AFS indicate that there are 14 MFH units on the installation. The Initial Development Period (IDP) would begin upon completion of contractual matters initiating the Proposed Action (called Transaction Closing) and would be estimated to last for up to 6 years. IDP is synonymous with ?transition period? as stated throughout this document. From conveyance to end state, the number of MFH units at Cavalier AFS would remain at 14 because the Housing Requirements and Marketing Analysis determined that there is no surplus or deficit in MFH units on the installation. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained and there would never be less than 9 available units. Specific transactions that would occur between Cavalier AFS and the PO as part of the Proposed Action are as follows  Cavalier AFS would convey 14 MFH units to the PO in one neighborhood (North View). Twelve MFH units, constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units (single-family homes). The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room (i.e., a room, particularly in houses in colder regions, that is designed for the shedding of dirty or wet footwear and clothing). The remaining 2 MFH units, constructed in 2001, would require renovation with minor improvements, including finishing the basements in both units and adding a garage to one unit.  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. Desired features for Cavalier AFS could include construction of a community center with indoor playground and splash park, and provision of yard maintenance and snow removal services. For the purposes of this EA, it is assumed that construction of the community center with indoor playground and splash park would occur as part of the Proposed Action.  Cavalier AFS would grant a 50-year lease for one parcel of land totaling 25.3 acres.  The playground recreational areas, including one playground and associated equipment, one screened pavilion, and picnic areas; one housing storage shed for each MFH unit; one bus shelter backyard wood and chain-link fencing; and two common mailbox clusters would be conveyed to the PO. The existing outdoor hockey rink including associated exterior floodlights on the eastern side of Garden Road, golf driving range, and ball field to the west, north, and south of the MFH

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FINDING OF NO SIGNIFICANT IMPACT (FONSI)

Environmental Assessment
Addressing Privatization of Military Family Housing
at
Cavalier Air Force Station, North Dakota

Introduction

Federal actions that potentially involve significant impacts to the environment must be reviewed in accordance with the National Environmental Policy Act (NEPA) and all other applicable laws. The U.S. Air Force (USAF) has completed an Environmental Assessment (EA) to address the potential environmental consequences associated with conveying military family housing (MFH) units, granting a lease of land, and transferring responsibility for providing housing at Cavalier Air Force Station (AFS) to a private developer (the Project Owner [PO]). This FONSI incorporates the EA by reference.

The USAF operates and maintains approximately 104,000 MFH units at its installations throughout the United States. More than 38 percent of all such 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 units 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 104-106, codified at Title 10 of the United States Code 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, the USAF proposes to convey MFH units, grant a lease of land, and transfer responsibility for providing housing and ancillary supporting facilities at Cavalier AFS, North Dakota, to a private developer (the PO). The Proposed Action is part of the Northern Group MHPI, which includes Cavalier AFS, Grand Forks Air Force Base (AFB), and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Cavalier AFS. 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 so that they meet current USAF standards.

The goal of the Northern Group MHPI is to provide uniformed services members and their families with 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

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shortages, and reduce waiting times for adequate housing, ultimately improving morale of USAF personnel and their families.

Substantial portions of the MFH inventory at Cavalier AFS exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Cavalier AFS, out of a total of 14 MFH units, there are 12 MFH units that show signs of age and continuous use to such an extent that complete demolition of these units and replacement with 12 newly constructed MFH units is warranted. Many units are not energy-efficient. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning units are inefficient. The remaining 2 MFH units were constructed in 2001 and only require renovation with minor improvements.

Description of the Proposed Action

Under the Proposed Action, Cavalier AFS 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 Cavalier AFS, the PO would be required to prepare various detailed plans for demolition, new construction, and renovation of MFH and designated ancillary supporting facilities. These plans would be reviewed by the USAF and would become part of the Transaction Closing documents. 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. In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing.

There are 14 existing MFH units on Cavalier AFS, and the Housing Requirements and Marketing Analysis (HRMA) projection for FY 2007 identified the need for an end-state of 14 MFH units. Twelve MFH units (single-story duplexes), constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units. The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room (i.e., a room, particularly in houses in colder regions, that is designed for the shedding of dirty or wet footwear and clothing). Demolition and construction activities would be completed in phases during the 6-year transition period to ensure that at least nine MFH units are available at any given time. The remaining two MFH units (single-family units), constructed in 2001, would be renovated with minor improvements, including finishing the basements in both units and adding a garage to one unit (Unit 201). Both units would require maintenance and upgrades over the course of the 50-year lease. In addition, some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve the overall level of service and efficiency. Therefore, projects associated with the Proposed Action could include indoor and outdoor renovations and new construction activities.

Under the Proposed Action, the number of MFH units on Cavalier AFS would remain at 14 MFH units from conveyance to end state since the HRMA determined that there is no surplus or deficit in MFH units on the installation. At all times during the 6-year transition period, sufficient numbers of units for all eligible pay grades would be maintained and there would never be less than nine available units.

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

- Cavalier AFS would convey 14 MFH units to the PO in one neighborhood (North View). Twelve MFH units, constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units (single-family homes). The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room.

The remaining 2 MFH units, constructed in 2001, would require renovation with minor improvements, including finishing the basements in both units and adding a garage to one unit.

- 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. Desired features for Cavalier AFS could include construction of a community center with indoor playground and splash park, and provision of yard maintenance, and snow removal services. For the purposes of this EA, it is assumed that construction of the community center with indoor playground and splash park would occur as part of the Proposed Action.
- Cavalier AFS would grant a 50-year lease for one parcel of land totaling 25.3 acres.
- The playground recreational areas, including one playground and associated equipment, one screened pavilion, and picnic areas; one housing storage shed for each MFH unit; one bus shelter; backyard wood and chain-link fencing; and two common mailbox clusters would be conveyed to the PO. The existing outdoor hockey rink including associated exterior floodlights on the eastern side of Garden Road, golf driving range, and ball field to the west, north, and south of the MFH area, respectively, would not be conveyed to the PO. In addition, Cavalier AFS would not convey any housing maintenance facilities to the PO as current housing maintenance functions are supported from facilities that support the remainder of the installation.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Conservation Management Plan, Invasive Plant Species Control 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.

Description of 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, Cavalier AFS would not implement the Proposed Action. Cavalier AFS would continue to provide for the housing needs of military personnel and family members.

Cavalier AFS has two MFH units that have been constructed within the past 10 years. These newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs, although Unit 201 would be expected to receive a garage addition at some time. The remaining 12 MFH units would also continue to be used. These units are substantially older (constructed in 1973) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. In their existing condition, these MFH units are inadequate facilities. Under the No Action Alternative, these older MFH units would continue to be maintained and renovated, as needed. 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. The maintenance and renovation of these older MFH units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Cavalier AFS would continue to maintain and upgrade infrastructure components, as required. Some of the utilities systems and pavements in the MFH area are old and require upgrades or replacements to improve overall levels of service and efficiency.

Under the No Action Alternative, Cavalier AFS would need to provide adequate housing to military families. The No Action Alternative presumes that inadequate MFH units would require major renovation or demolition at some point in the future; those activities would require additional NEPA analyses at that time.

Summary of Anticipated Environmental Impacts

The Proposed Action and No Action Alternative have been reviewed in accordance with NEPA as implemented by the regulations of the CEQ and 32 Code of Federal Regulations (CFR) Part 989 (*Environmental Impact Analysis Process [EIAP]*). The public and regulatory agency scoping process focused the analyses on the following environmental resources: noise, land use, air quality, geological resources, water resources, biological resources, cultural resources, socioeconomics and environmental justice, infrastructure, hazardous materials and wastes, and safety. No significant impacts would be expected from the implementation of the Proposed Action and all adverse impacts would be negligible or minor. Details of the environmental consequences can be found in the EA, which is hereby incorporated by reference.

Conclusions

Public Review. Based on the description of the Proposed Action as set forth in the EA, all activities were found to comply with the criteria or standards of environmental quality and coordinated with the appropriate Federal, state, and local agencies. All Native American Tribes potentially affected by the Proposed Action were also consulted to solicit their concerns. The Draft EA and FONSI were made available to the public for a 30-day review period. No comments from the general public were received during this review period. Four comments were received from agencies (U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, State Historical Society of North Dakota, and North Dakota Department of Health) and one comment was received from a Native American tribe (Leech Lake Band of Ojibwe). Comments received during the comment period were incorporated, as applicable, into the analysis of the potential environmental impacts performed as part of the Final EA.

Finding of No Significant Impact. Based on the information and analysis presented in the EA conducted in accordance with the requirements of the National Environmental Policy Act, the Council on Environmental Quality Regulations, implementing regulations set forth in 32 CFR Part 989 (EIAP), as amended, and review of the agency comments submitted during the 30-day public comment period, I conclude that implementation of the Proposed Action would not result in significant impacts on the quality of the human or natural environment. For these reasons, this FONSI is approved and the preparation of an Environmental Impact Statement is not warranted. This decision has been made after taking into account all submitted information, and considering a full range of practical alternatives that would meet project requirements and are within the legal authority of the USAF.

JOHN R. THOMAS, Lt Col, USAF
Commander

25 APR 11
Date

ACRONYMS AND ABBREVIATIONS

µg/m^3	micrograms per cubic meter
10 SWS	10th Space Warning Squadron
319 ARW	319th Air Refueling Wing
ABM	Anti-Ballistic Missile
ACHP	Advisory Council on Historic Preservation
ACM	asbestos-containing material
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFPAM	Air Force Pamphlet
AFPD	Air Force Policy Directive
AFS	Air Force Station
AFSPC	Air Force Space Command
APE	Area of Potential Effect
AQCR	Air Quality Control Region
AST	aboveground storage tank
BAH	Basic Allowance for Housing
BASH	Bird/Wildlife Aircraft Strike Hazard
bgs	below ground surface
BMP	best management practice
CAA	Clean Air Act
CAP	central accumulation point
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CESQG	conditionally exempt small-quantity generator
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CWA	Clean Water Act
dBA	A-weighted decibel
DOD	Department of Defense
EA	Environmental Assessment
EIAP	Environmental Impact Analysis Process
EIS	Environmental Impact Statement
EISA	Energy Independence and Security Act
EO	Executive Order
ESA	Endangered Species Act
ERP	Environmental Restoration Program
ESCP	erosion-and-sediment-control plan
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
ft^2	square feet
FPPA	Farmland Protection Policy Act
FY	Fiscal Year
GHG	greenhouse gas
GOH	General Officers Home
HAP	Hazardous air pollutant
HAZMART	Hazardous Materials Pharmacy
HMMP	hazardous material management program
HRMA	Housing Requirements and Marketing Analysis
HSWA	Hazardous and Solid Waste Amendments
HVAC	heating, ventilation, and air conditioning
ICRMP	Integrated Cultural Resources Management Plan
IDP	Initial Development Period
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
IRT	Innovative Readiness Training
LBP	lead-based paint
LEED	Leadership in Energy and Environmental Design
LID	low-impact development
mg/m^3	milligrams per cubic meter
MFH	military family housing

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MHPI	Military Housing Privatization Initiative
MILCON	military construction
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NDAAQS	North Dakota Ambient Air Quality Standards
NDDH	North Dakota Department of Health
NDDH/DWQ	North Dakota Department of Health, Division of Water Quality
NDPDES	North Dakota Pollutant Discharge Elimination System
NE	Northeast
NEPA	National Environmental Policy Act
NFA	No Further Action
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
ntu	nephelometric turbidity units
NWI	National Wetlands Inventory
O_3	ozone
OSHA	Occupational Safety and Health Administration
OWS	Operation Walking Shield
P.L.	Public Law
PA	Programmatic Agreement
PAR	Perimeter Acquisition Radar
PARCS	Perimeter Acquisition Radar Attack Characterization System
Pb	lead
PCB	polychlorinated biphenyl
PEX	polyethylene
pCi/L	picoCuries per liter
$PM_{2.5}$	particulate matter equal to or less than 2.5 microns in diameter
PM_{10}	particulate matter equal to or less than 10 microns in diameter
PO	Project Owner
POD	point of demarcation
PPA	Pollution Prevention Act
ppm	parts per million
PSD	Prevention of Significant Deterioration
QD	quantity-distance
RCRA	Resource Conservation and Recovery Act
ROI	region of influence
SAP	satellite accumulation point
SDWA	Safe Drinking Water Act
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
SOQ	Senior Officers Quarters
SPCC	Spill Prevention, Control, and Countermeasures
SRMSC	Stanley R. Mickelsen Safeguard Complex
SSPP	Strategic Sustainability Performance Plan
STC	Sound Transmission Class
SWPPP	Storm Water Pollution Prevention Plan
TDS	total dissolved solids
tpy	tons per year
U.S.C.	United States Code
UFC	Unified Facilities Criteria
USACE	U.S. Army Corps of Engineers
USAF	U.S. Air Force
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
UST	underground storage tank
VOC	volatile organic compound

COVER SHEET

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT CAVALIER AIR FORCE STATION, NORTH DAKOTA

Responsible Agencies: U.S. Air Force (USAF), Headquarters Air Force Space Command, Peterson Air Force Base, Colorado; and Cavalier Air Force Station (AFS), North Dakota.

Affected Location: Cavalier AFS.

Proposed Action: Privatization of Military Family Housing (MFH) at Cavalier AFS.

Report Designation: Final Environmental Assessment (EA).

Abstract: Consistent with the USAF Housing Privatization Program, the USAF proposes to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer (the Project Owner [PO]). Current housing inventories for Cavalier AFS indicate that there are 14 MFH units on the installation. The Initial Development Period (IDP) would begin upon completion of contractual matters initiating the Proposed Action (called Transaction Closing) and would be estimated to last for up to 6 years. IDP is synonymous with "transition period" as stated throughout this document. From conveyance to end state, the number of MFH units at Cavalier AFS would remain at 14 because the Housing Requirements and Marketing Analysis determined that there is no surplus or deficit in MFH units on the installation. At all times during the transition period, sufficient numbers of units for all eligible pay grades would be maintained and there would never be less than 9 available units.

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

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- 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. Desired features for Cavalier AFS could include construction of a community center with indoor playground and splash park, and provision of yard maintenance, and snow removal services. For the purposes of this EA, it is assumed that construction of the community center with indoor playground and splash park would occur as part of the Proposed Action.
- Cavalier AFS would grant a 50-year lease for one parcel of land totaling 25.3 acres.

- The playground recreational areas, including one playground and associated equipment, one screened pavilion, and picnic areas; one housing storage shed for each MFH unit; one bus shelter; backyard wood and chain-link fencing; and two common mailbox clusters would be conveyed to the PO. The existing outdoor hockey rink including associated exterior floodlights on the eastern side of Garden Road, golf driving range, and ball field to the west, north, and south of the MFH area, respectively, would not be conveyed to the PO. In addition, Cavalier AFS would not convey any housing maintenance facilities to the PO as current housing maintenance functions are supported from facilities that support the remainder of the installation.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Conservation Management Plan, Invasive Plant Species Control 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.

This 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 can be prepared or whether an Environmental Impact Statement is needed. Resources that have been considered in the impact 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.

Written inquiries regarding this document should be directed to Mr. Robert Fors, 10 SWS/MS, 830 Patrol Road #260, Cavalier AFS, North Dakota 58220-9350. Telephone calls can be directed to 701-993-3688, and email inquiries should be directed to *robert.fors@cavalier.af.mil*.

Final

ENVIRONMENTAL ASSESSMENT

ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING AT CAVALIER AIR FORCE STATION, NORTH DAKOTA

HEADQUARTERS AIR FORCE SPACE COMMAND
150 VANDENBERG STREET, SUITE 1105
PETERSON AIR FORCE BASE, COLORADO 80914

APRIL 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 such 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 (HQ USAF 2007).

In recognition of these problems, Congress enacted Section 2801 of the National Defense Authorization Act for Fiscal Year 1996 (Public Law 104-106, codified at Title 10 of the United States Code 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, the USAF proposes to convey MFH units, grant a lease of land, and transfer responsibility for providing housing and ancillary supporting facilities at Cavalier Air Force Station (AFS), North Dakota, to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group of MHPI, which includes Cavalier AFS, Grand Forks Air Force Base (AFB), and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; 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 Cavalier AFS. 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 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.

Substantial portions of the MFH inventory at Cavalier AFS exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Cavalier AFS, out of 14 MFH units, there are 12 MFH units that show signs of age and continuous use to such an extent that complete demolition of these units and replacement with 12 newly constructed MFH units is warranted. Many units are not energy-efficient. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning units are inefficient. The remaining 2 MFH units were constructed in 2001 and only require renovation with minor improvements.

Description of the Proposed Action and No Action Alternative

Proposed Action. Consistent with the USAF Housing Privatization Program, the USAF proposes to convey 14 MFH units, lease one parcel of land (25.3 acres), and transfer responsibility for providing housing and ancillary supporting facilities at Cavalier AFS to the PO.

MFH units at Cavalier AFS are in one neighborhood called North View. North View consists of single-story, single-family and duplex homes. Each MFH unit has an attached single- or double-vehicle garage. Because of the small number of MFH units on the installation, the North View neighborhood is not compact, with open space in and around each unit. North View is at the opposite end of the installation from the industrial areas and support facilities. The east side of the MFH area borders community support facilities and the main neighborhood access. The remaining three sides of North View are open spaces with perimeter chain-link fencing and woods. There is a playground in the southeastern corner of the MFH parcel. In addition, a ball field, outdoor hockey rink, and golf driving range are available to residents; however, these facilities are not part of the MFH privatization area (CAFS 2005).

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

- Cavalier AFS would convey 14 MFH units to the PO in one neighborhood (North View). Twelve MFH units, constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units (single-family homes). The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room (i.e., a room, particularly in houses in colder regions, that is designed for the shedding of dirty or wet footwear and clothing). The remaining 2 MFH units, constructed in 2001, would require renovation with minor improvements, including finishing the basements in both units and adding a garage to one unit.
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- The playground recreational areas, including one playground and associated equipment, one screened pavilion, and picnic areas; one housing storage shed for each MFH unit; one bus shelter; backyard wood and chain-link fencing; and two common mailbox clusters would be conveyed to the PO. The existing outdoor hockey rink including associated exterior floodlights on the eastern side of Garden Road, golf driving range, and ball field to the west, north, and south of the MFH area, respectively, would not be conveyed to the PO. In addition, Cavalier AFS would not convey any housing maintenance facilities to the PO as current housing maintenance functions are supported from facilities that support the remainder of the installation.
- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's current Conservation Management Plan, Invasive Plant Species Control 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.

In addition, Cavalier AFS participates in Operation Walking Shield (OWS), a unique civilian and military collaborative program that seeks integration of combined civilian and military activities through the Innovative Readiness Training (IRT) program within the Department of Defense. 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 housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota. This has been done in collaboration with the USAF. Some of the MFH units proposed for demolition at Cavalier AFS might be desired by the OWS Program or other similar programs to be transferred to nearby localities.

No Action Alternative. Under the No Action Alternative, Cavalier AFS would not implement the Proposed Action. Cavalier AFS would continue to provide for the housing needs of military personnel and family members.

Cavalier AFS has two MFH units that have been constructed within the past 10 years. These newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs, although one unit (Unit 201) would be expected to receive a garage addition at some time. The remaining 12 MFH units would also continue to be used. These units are substantially older (constructed in 1973) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. In their existing condition, these MFH units are inadequate facilities. Under the No Action Alternative, these older MFH units would continue to be maintained and renovated, as needed. 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. The maintenance and renovation of these older MFH units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Cavalier AFS would continue to maintain and upgrade infrastructure components, as required. Some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall levels of service and efficiency.

Under the No Action Alternative, Cavalier AFS would need to provide adequate housing to military families. The No Action Alternative presumes that inadequate MFH units would require major renovation or demolition at some point in the future; those activities would require additional National Environmental Policy Act (NEPA) analyses at that time.

Summary of Environmental Effects

Noise. Demolition of 12 existing MFH units and construction of 12 new MFH units would occur in the North View neighborhood adjacent to sensitive noise receptors, including residences and outdoor recreational facilities. However, noise generation would last only for the duration of demolition and construction activities and would diminish as these activities moved farther away from the receptor. Demolition and construction of MFH units under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of demolition and construction activities. The additional traffic resulting from demolition and construction vehicles would likely cause short-term, negligible to minor increases in noise levels on noise-sensitive populations adjacent to roadways. Under the Proposed Action, the MFH units proposed for demolition would be offered to the OWS Program. Noise impacts due to the removal of MFH units under this program would be similar to those for demolition and construction activities. The Proposed Action would also include renovation of two MFH units to include minor improvements, maintenance and upgrades to ancillary facilities, and possible construction of a community center. Although the exact locations of ancillary facilities and the proposed community center are not known, short-term, minor, adverse impacts on the noise environment could

occur if construction activities required the use of heavy equipment and occurred near sensitive receptors (e.g., occupied residences and recreational facilities).

Land Use. The Proposed Action could require changes to the current and future land use designations if new MFH units are constructed outside of the existing MFH land use designation and a community center is constructed within the MFH privatization area. While the exact locations of the new MFH units and community center are not known, if these actions occur, these areas could require changing the land use designations from Open Space to MFH (for the MFH units) and from MFH, Open Space, or Outdoor Recreation to Community Activity (for the community center). Potential long-term, negligible, adverse impacts on land use from inconsistencies with land use plans and policies would be expected due to the need to change land use designations. The Proposed Action would result in short-term, negligible, adverse impacts and long-term, moderate, beneficial impacts on the viability of existing land use and continued occupation at Cavalier AFS due to noise and general disturbance resulting from demolition and construction activities, and improvement and upgrade of MFH areas, respectively. The Proposed Action would not introduce incompatible land uses at Cavalier AFS. There would be no impacts on municipal land use plans or policies, or health and safety planning criteria.

Air Quality. The Proposed Action would generate both temporary and long-term air pollutant emissions. Demolition, construction, and renovation activities would result in short-term emissions of criteria pollutants as combustion products from equipment and vehicles, evaporative emissions from architectural coatings, and asphalt paving operations. Demolition and construction would also generate particulate matter emissions as fugitive dust from ground-disturbing activities; however, appropriate fugitive dust-control measures would be employed to suppress emissions. Long-term, negligible effects would occur from stationary sources such as boilers or heaters. Emissions generated by the Proposed Action would be below *de minimis* levels and well below 10 percent of the emissions inventories for North Dakota Air Quality Control Region 172. Therefore, the Proposed Action would not have significant effects on air quality at Cavalier AFS or on regional or local air quality.

Geological Resources. 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 demolition activities when vegetation is cleared and bare soil is exposed thereby increasing the potential for soil erosion and sedimentation. Long-term, minor adverse effects on soils would be expected upon completion of all projects associated with the Proposed Action due to the increases of impervious surfaces. Effects at the site of the Proposed Action would be anticipated to be minor and adverse because the soils within the MFH area have been previously disturbed. Impacts would be reduced by implementing best management practices (BMPs), and complying with approved erosion-and-sediment-control plans (ESCPs) and storm water pollution prevention plans (SWPPPs). Long-term, negligible, adverse effects on topography and geology would be expected from the Proposed Action.

Water Resources. The Proposed Action would result in short- and long-term, negligible to minor, adverse effects on groundwater and surface water due to increased erosion, sedimentation, and storm water runoff from soil compaction and the increase of impervious surfaces. In addition, the potential for groundwater and surface water contamination would increase. Implementation of appropriate BMPs, ESCPs, and SWPPPs during demolition and construction would minimize the potential adverse effects. No floodplains or wetlands are present at Cavalier AFS, and with implementation of BMPs there would be no direct or indirect impacts on off-installation wetlands.

Biological Resources. The Proposed Action would be expected to result in short-term, negligible, adverse effects on vegetation due to temporary disturbances during demolition, construction, and renovation activities. Long-term, negligible, adverse effects on vegetation would be expected if the new MFH units and the proposed community center are constructed in undeveloped sites within the MFH area

due to direct removal of vegetation. The majority of vegetation within the site of the Proposed Action is composed of nonnative grasses, trees, and shrubs; therefore, adverse effects on native vegetation would not be expected. Short-term, negligible, adverse effects on wildlife would be expected due to disturbances (e.g., noise and motion) from demolition, construction, and renovation activities and associated heavy equipment use, which could cause wildlife to engage in escape or avoidance behaviors. There are no known federally threatened or endangered species on Cavalier AFS; therefore, no impacts on threatened or endangered species would be expected from the Proposed Action. Demolition and 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).

Cultural 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 or areas of previous disturbance including housing with low probabilities for archaeological resources. The Proposed Action would not be expected to impact National Register of Historic Places (NRHP) eligible architectural resources. The existing MFH units are not eligible for the NRHP under specified criteria, and are not located near an NRHP-eligible building. There are no known resources of significance to Native American tribes at Cavalier AFS.

Socioeconomic Resources and Environmental Justice. There would be a temporary increase in employment and construction supply purchases related to MFH demolition, construction, and renovation activities on the installation. The use of local labor and influx of revenue to local businesses would have short-term, negligible to minor, beneficial impacts on the local economy. Long-term, minor, beneficial impacts would be expected under the Proposed Action due to removal of inadequate MFH and replacement with new units that would improve the quality of life at Cavalier AFS and increase the standard of the installation's MFH. No impacts would be expected on minority or low-income populations or children.

Infrastructure. Short-term, negligible to minor, adverse effects on the Cavalier AFS transportation system would be expected from the implementation of the Proposed Action. Demolition and construction activities would result in a temporary, slight increase in the amount of traffic at the installation from equipment and supplies being delivered, debris being removed, and contractors arriving at the work sites.

In addition, short-term, minor, adverse effects on electrical supply, water supply, and storm water systems would be expected from the implementation of the Proposed Action. Short-term, negligible to minor, adverse effects on the natural gas supply, sanitary sewer and wastewater systems, and communications systems would be expected from the implementation of the Proposed Action. Temporary, minor service interruptions might be experienced when utility lines are disconnected from the 12 MFH units proposed for demolition, and connected to the new MFH units, and proposed community center, and other ancillary facilities. Short-term, minor, adverse effects on solid waste management would be expected from the implementation of the Proposed Action. The 12 MFH units proposed for demolition would first be offered for donation through OWS's Housing Relocation Program, which would reduce short-term adverse effects associated with solid waste management by substantially reducing the amount of demolition debris generated.

Long-term, negligible to minor, adverse effects on the electrical, natural gas, and water supply; sanitary sewer and wastewater, storm water, and communications systems; and solid waste management would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in small increases in the demand on electrical, natural gas, water supplies, and communications systems; and increases in the volume of wastewater and solid waste generated. Long-

term, negligible to minor, beneficial effects on the electrical supply and storm water systems would also be expected from the Proposed Action due to the removal of outdated electrical infrastructure and installation of modern, efficient infrastructure, and the upgrade of storm water control infrastructure.

Hazardous Materials and Waste. Short-term, minor, adverse impacts on hazardous materials would be expected as demolition, construction, and renovation 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 demolition, construction, and renovation activities. The MFH units proposed for demolition might have mercury-containing thermostats, ionization smoke detectors that contain Americium-241, heat pumps that contain ozone-depleting substances, polychlorinated biphenyl- (PCB) contaminated light ballasts, or asbestos-containing materials (ACM) and lead-based paint (LBP). Long-term, beneficial impacts would occur from the removal of potential hazardous materials, ACM, LBP, or PCBs, which would occur in accordance with appropriate regulations and policies. Short-term, negligible, adverse impacts due to radon could be expected if surveys reveal radon levels exceed the U.S. Environmental Protection Agency-recommended action level; passive radon elimination systems or fans to mitigate radon would be installed, as necessary, to minimize these potential impacts. No impacts would be expected from Environmental Restoration Program sites, aboveground and underground storage tanks, or pesticides.

Safety. Short-term, negligible to minor, 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 at Cavalier AFS during the normal workday as demolition and construction activity levels would increase. Short-term, negligible, adverse impacts on the safety of installation personnel, North View residents, particularly children, and the general public that has access to the MFH area could be experienced due to demolition and construction activities. However, adherence to appropriate safety precautions, including fencing work areas and posting signs, should minimize these effects. In addition, short-term, negligible to minor, adverse impacts would be expected as the MFH units proposed for demolition could require removal of ACM and LBP. However, once these materials are removed, long-term, beneficial impacts would be expected from the reduced exposure potential on military personnel and families. No impacts on explosives and munitions safety would be expected from the Proposed Action.

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 Cavalier AFS are minimal and include proposed MFH improvements as part of the *Housing Master Plan*, installationwide asphalt repairs, and tree planting in the MFH area. No anticipated adverse cumulative effects would be expected from the Proposed Action in conjunction with other projects. Anticipated beneficial cumulative effects would be expected from the proposed future improvements to MFH from the *Housing Master Plan*, installationwide asphalt repairs, and the Proposed Action due to an improvement of the quality of life on Cavalier AFS. No significant cumulative impacts on the environment would be anticipated from the Proposed Action in conjunction with other activities.

FINAL
ENVIRONMENTAL ASSESSMENT
ADDRESSING THE PRIVATIZATION OF MILITARY FAMILY HOUSING
AT CAVALIER AIR FORCE STATION, NORTH DAKOTA

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1. Purpose of and Need for the Action

This Environmental Assessment (EA) describes and analyzes the U.S. Air Force's (USAF) proposal to privatize military family housing (MFH) at Cavalier Air Force Station (AFS), North Dakota. This section presents background information, the purpose of and need for privatized MFH, the location and mission of Cavalier AFS, the scope of environmental review, and an introduction to the organization of this document.

1.1 Background

The USAF operates and maintains approximately 104,000 MFH units at its installations throughout the United States. More than 38 percent of all such 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 (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 inadequate housing before FY 2010. Inadequate housing is that which does not meet USAF housing standards as specified in Air Force Instruction (AFI) 32-6002, *Family Housing Planning, Programming, Design, and Construction* (January 15, 2008) and the Housing Requirements and Marketing Analysis (HRMA). Per Air Force Policy Directive (AFPD) 32-60, *Housing* (September 16, 2005), 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, the USAF proposes to convey MFH units, grant a lease of land, and transfer responsibility for providing housing and ancillary supporting facilities at Cavalier AFS to a private developer (the Project Owner [PO]). The Proposed Action is part of the Northern Group MHPI, which includes Cavalier AFS, Grand Forks Air Force Base (AFB), and Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico.

The purpose of the Proposed Action is to vest responsibility in a private developer for MFH at Cavalier AFS. 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 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.

Substantial portions of the MFH inventory at Cavalier AFS exhibit a principal concern facing MFH throughout the USAF: many MFH units are in poor condition. At Cavalier AFS, out of 14 MFH units, there are 12 MFH units that show signs of age and continuous use to such an extent that complete demolition of these units and replacement with 12 newly constructed MFH units is warranted. Many units are not energy-efficient. Housing interiors are inadequate by modern criteria in that bedroom closets, kitchen storage, and kitchen counter space are insufficient; and plumbing, electrical systems, and heating, ventilation, and air conditioning (HVAC) units are inefficient. The remaining 2 MFH units were constructed in 2001 and only require renovation with minor improvements.

1.3 Location and Mission

Cavalier AFS is a USAF installation under Air Force Space Command (AFSPC). The installation is in the northeastern corner of North Dakota on the western edge of Pembina County, 14 miles southwest of Cavalier, North Dakota. The installation encompasses 278 acres (see **Figure 1-1**). **Figure 1-2** shows a close-up view of Cavalier AFS and the location of the area proposed to be privatized under the Proposed Action.

The 10th Space Warning Squadron (10 SWS), which serves as the host squadron at Cavalier AFS, provides tactical warning and attack assessment of sea-launched and intercontinental ballistic missiles launched against the continental United States and southern Canada. The squadron tracks the skies using the Perimeter Acquisition Radar Attack Characterization System (PARCS), a single-faced phased array radar. Additionally, the 10 SWS provides surveillance, tracking, and space object identification support for the space surveillance network.

Cavalier AFS began as part of the Stanley R. Mickelsen Safeguard Complex (SRMSC), which was an Anti-Ballistic Missile (ABM) defense system originally developed and operated by the U.S. Army. The SRMSC consisted of six sites: the Perimeter Acquisition Radar (PAR) complex (currently Cavalier AFS), the Missile Site Radar site, and four Remote Sprint Launch sites. The SRMSC was shut down in 1976 and the PAR complex was transferred to the USAF in 1977. The USAF is the property owner for Cavalier AFS, maintaining the real property records for boundaries, utility easements, and utility supply contracts. The U.S. Army retains responsibility for the remainder of the SRMSC. Grand Forks AFB, North Dakota, provides housing asset management; administrative functions; military security forces; religious, medical, and counseling support; and other services to Cavalier AFS under the 2006 Support Agreement.

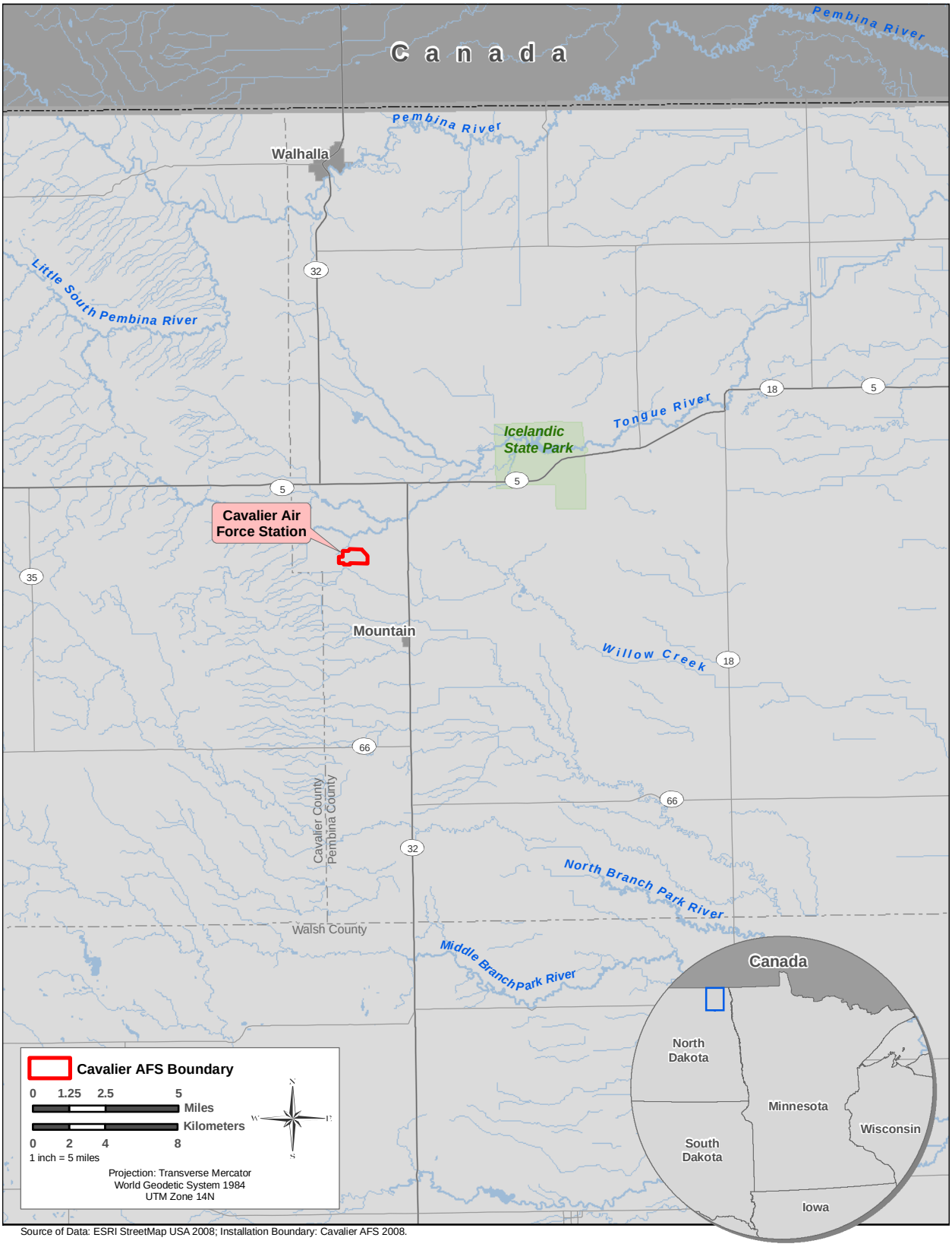
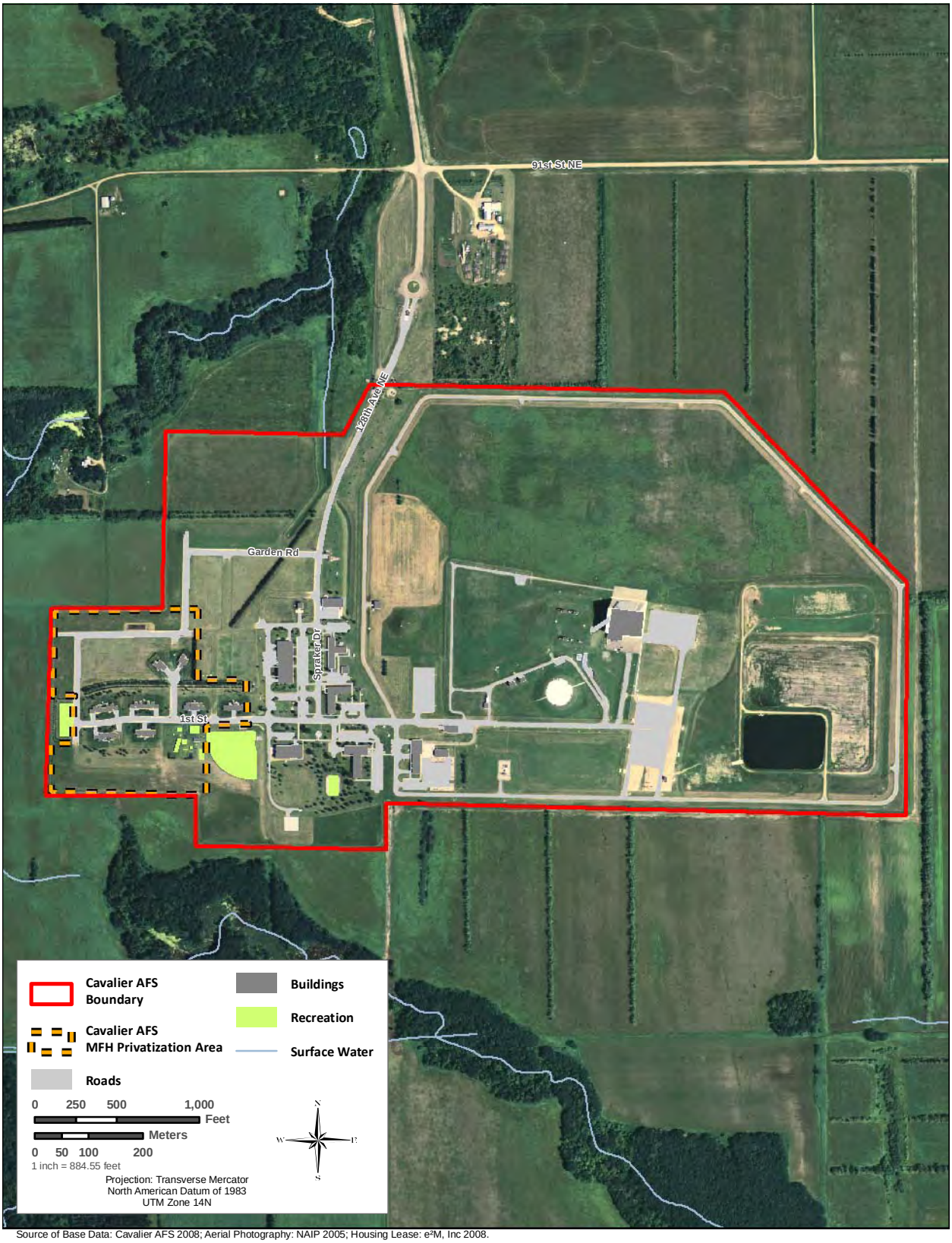


Figure 1-1. Cavalier AFS and Surrounding Area



Source of Base Data: Cavalier AFS 2008; Aerial Photography: NAIP 2005; Housing Lease: e²M, Inc 2008.

Figure 1-2. Cavalier AFS and the Proposed MFH Privatization Area

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 associated with 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 was 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 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 of the 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) 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."

This 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 could potentially be affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by Executive Order (EO), regulation, or policy.

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*. CEQ regulations direct agencies to consider the energy requirements and conservation potential of various alternatives and mitigation measures [40 CFR Part 1502.16(e)].

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** is discussed in more detail in the text of the EA.

1.4.3 Interagency Coordination 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, Cavalier AFS 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 Cavalier AFS the opportunity to cooperate with and consider state and local views in implementing the Federal proposal. IICEP materials related to this EA are included in **Appendix C**.

Comments from U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers (USACE), the State Historical Society of North Dakota, and the North Dakota Department of Health (NDDH) were received on the Draft EA and FONSI during the review period (see **Appendix C**). These comments were considered prior to a decision being made as to whether or not to sign a FONSI.

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 Cavalier AFS 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 Cavalier AFS. The timelines for tribal consultation are also distinct from those of intergovernmental consultations. The Cavalier AFS Installation Commander is the government representative point-of-contact with Native American tribes. The Cavalier AFS government representative point-of-contact for the State Historic Preservation Office (SHPO) and the Advisory Council on Historic Preservation (ACHP) is the Mission Support Officer.

A letter requesting consultation was sent to each affected tribe describing the Proposed Action on Cavalier AFS and asking for them to identify any potential concerns. 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. One comment from a Native American tribe, the Leech Lake Band of Ojibwe, was received on the Draft EA and FONSI during the review period (see **Appendix C**). This comment was considered prior to a decision being made as to whether or not to sign a FONSI.

Public Involvement. A Notice of Availability was published in the *Grand Forks Herald* and the *Walsh County Press* to solicit comments on the Proposed Action and involve the local community in the decisionmaking process. The Draft EA was available to the public for a 30-day review period. At the closing of the public review period, no comments from the general public had been received.

1.4.4 Operation Walking Shield Requirements

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. Through IRT, OWS brings military reserve units to reservations to assist with health care and infrastructure support. IRT infrastructure projects have helped develop roads, water wells, sanitary sewers, and water utility lines to improve existing infrastructure conditions on American Indian reservations. 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.

To address the chronic overcrowding and homelessness facing American Indian reservations, OWS has provided more than 1,000 housing units to more than 6,000 American Indians on numerous reservations in Montana, North Dakota, South Dakota, and Minnesota. This has been done in collaboration with the USAF. In the past, excess housing units from Grand Forks AFB, Minot AFB, and Malmstrom AFB have been donated to local American Indian reservations through OWS's Housing Relocation Program (OWS 2010).

As part of the Northern Group MHPI, the USAF would seek to collaborate with the OWS Program to the maximum extent practicable by offering to donate MFH units proposed for demolition to the OWS Program first in lieu of them being taken to a local landfill. If the OWS Program decides to accept any MFH units proposed for demolition, the OWS Program would remove and transport these MFH units to the appropriate American Indian Reservation at no cost to the USAF.

1.5 Organization of this Document

This EA is organized into six sections. **Section 1** provides the purpose of 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 and the No Action Alternative; and presents an analysis of the potential environmental consequences of implementing the Proposed Action or the No Action Alternative. **Section 4** includes an analysis of the potential cumulative impacts at Cavalier AFS. **Section 5** lists the preparers of the document. **Section 6** lists references used in the preparation of this 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 the NEPA analysis. **Appendix C** includes all IICEP, Native American Tribal consultation, and public

involvement materials. **Appendix D** contains the desired features for Cavalier AFS privatized housing units. **Appendix E** contains representative photographs of MFH units at Cavalier AFS. **Appendix F** includes air emissions calculations.

2. Description of the Proposed Action and Alternatives

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

2.1 Detailed Description of the Proposed Action

Consistent with the USAF Housing Privatization Program, the USAF proposes to convey 14 MFH units, lease one parcel of land (25.3 acres), and transfer responsibility for providing housing and ancillary supporting facilities at Cavalier AFS to the PO.

MFH units at Cavalier AFS are in one neighborhood called North View. North View consists of single-story, single-family, and duplex homes. Each MFH unit has an attached single- or double-vehicle garage. Because of the small number of MFH units on the installation, the North View neighborhood is not compact, with open space in and around each unit. North View is at the opposite end of the installation from the industrial areas and support facilities. The east side of the MFH area borders community support facilities and the main neighborhood access. The remaining three sides of North View are open spaces with perimeter chain-link fencing and woods. There is a playground in the southeastern corner of the MFH parcel. In addition, a ball field, outdoor hockey rink, and golf driving range are available to residents (CAFS 2005). **Figure 2-1** shows the location of the MFH area at the North View neighborhood (MFH privatization area). **Appendix E** shows photos of representative MFH units at Cavalier AFS.

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

Under the Proposed Action, Cavalier AFS 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 Cavalier AFS, the PO would be required to prepare various detailed plans for demolition, new construction, and renovation of MFH and designated ancillary supporting facilities. These plans would be reviewed by the USAF and would become part of the Transaction Closing documents. 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. In addition, the Ground Lease would: (a) restrict the PO from taking any action that would be inconsistent with the corresponding Conservation Management Plan, Invasive Plant Species Control Plan, 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 Conservation Management Plan. In exchange for providing housing, the PO would be entitled to rental income based on each occupant's Basic Allowance for Housing (BAH).

Source of Base Data: Cavalier AFS 2008; Aerial Photography: NAIP 2005; Housing Lease: e²M, Inc 2008.

Figure 2-1. Existing Cavalier AFS MFH Area (North View Neighborhood)

There are 14 existing MFH units on Cavalier AFS, and the HRMA[1] projection for FY 2007 identified the need for an end-state of 14 MFH units (CAFS 2003). Twelve MFH units (single-story duplexes), constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units. The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room (i.e., a room, particularly in houses in colder regions, that is designed for the shedding of dirty or wet footwear and clothing). Demolition and construction activities would be completed in phases during the 6-year transition period to ensure that at least nine MFH units are available at any given time. The remaining two MFH units (single-family units), constructed in 2001, would be renovated with minor improvements, including finishing the basements in both units and adding a garage to Unit 201. Both units would require maintenance and upgrades over the course of the 50-year lease. In addition, some of the utilities systems and pavements in the MFH parcels are old and require upgrades or replacements to improve overall level of service and efficiency (USAF 2008). Therefore, projects associated with the Proposed Action could include indoor and outdoor renovations and new construction activities.

Under the Proposed Action, the number of MFH units on Cavalier AFS would remain at 14 from conveyance to end state since the HRMA determined that there is no surplus or deficit in MFH units on the installation. At all times during the 6-year transition period, sufficient numbers of units for all eligible pay grades would be maintained and there would never be less than 9 available units.

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

- Cavalier AFS would convey 14 MFH units to the PO in one neighborhood (North View). Twelve MFH units, constructed in 1973, would be demolished and replaced with 12 newly constructed MFH units (single-family homes). The new MFH units to be constructed would consist of a mixture of three- and four-bedroom, single-family units, each with a 300-square-foot arctic room. The remaining 2 MFH units, constructed in 2001, would require renovation with minor improvements, including finishing the basements in both units and adding a garage to one unit.
- 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. Desired features for Cavalier AFS could include construction of a community center with indoor playground and splash park, and provision of yard maintenance, and snow removal services. For the purposes of this EA, it is assumed that construction of the community center with indoor playground and splash park would occur as part of the Proposed Action.
- Cavalier AFS would grant a 50-year lease for one parcel of land totaling 25.3 acres (see **Figure 2-1** for MFH privatization area boundaries).
- The playground recreational areas, including one playground and associated equipment, one screened pavilion, and picnic areas; one housing storage shed for each MFH unit; one bus shelter; backyard wood and chain-link fencing; and two common mailbox clusters would be conveyed to the PO. The existing outdoor hockey rink including associated exterior floodlights on the eastern side of Garden Road, golf driving range, and ball field to the west, north, and south of the MFH area, respectively, would not be conveyed to the PO. In addition, Cavalier AFS would not convey any housing maintenance facilities to the PO as current housing maintenance functions are supported from facilities that support the remainder of the installation.

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

- The PO would be responsible for ensuring that maintenance of conveyed areas complies with provisions in the installation's most current Conservation Management Plan, Invasive Plant Species Control Plan, 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 in **Table 2-1** represent a combination of demolition, construction, and renovation that would produce an end-state inventory of 14 MFH units.

Table 2-1. Actions Proposed for Existing Military Family Housing Units

Building	Year Constructed	Proposed Action	Proposed Lease Term
1000: Single-story duplex (includes Units 100 and 102)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
1001: Single-story duplex (includes Units 101 and 103)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
1002: Single-story duplex (includes Units 104 and 106)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
1003: Single-story duplex (includes Units 105 and 107)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
1004: Single-story duplex (includes Units 108 and 109)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
1006: Single-story duplex (includes Units 110 and 111)	1973	Would be demolished and replaced with two single-family units by the PO.	50 years
2000: Single-story home with two-vehicle garage (Unit 200)	2001	Would be renovated with minor improvements.	50 years
2001: Single-story home with one-vehicle garage (Unit 201)	2001	Would be renovated with minor improvements. Might receive garage addition.	50 years
Total Existing Units	**14**		
Total Units to Be Conveyed	**14**		
Total End-State	**14**		

Sources: HQ USAF 2010, USAF undated a

Note: There are 14 housing units in eight buildings, six duplex units and two single-family units.

The USAF would continue to maintain Cavalier AFS housing units until the privatization Transaction Closing date. The PO would be expected to complete demolition, new construction, and renovation in the first 6 years following the Transaction Closing, which is known as the Initial Development Period (IDP) or "transition period." Demolition, new construction, and renovation would be distributed evenly through the IDP to ensure a sufficient number of units are available for occupancy.

As part of the Proposed Action, the PO would be responsible for demolition of 12 MFH units. After facilities are demolished, the PO would grade the project area for proper drainage and seed all areas not proposed for future development. Some of the MFH units proposed for demolition might be desired by the OWS Program or other similar programs to be transferred to nearby localities. The responsibility to demolish or remove the identified MFH units from Cavalier AFS is the PO's and any interface with the

OWS Programs would not affect the length of the IDP. If the OWS Program requests any MFH proposed for demolition, the units would be transported off the installation using OWS Program assets. However, the PO would be responsible for demolition of foundation concrete slabs, utilities, and other items required to stabilize the project area.

The PO would remove all aboveground utilities within the leased MFH privatization area. Underground utility mains proposed for demolition may be capped at the main and abandoned in place; however, the PO would remove all laterals. In addition, the PO would remove all fences, concrete slabs, and walkways in areas proposed 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 USAF would retain ownership of the utility systems, including overhead and underground distribution lines and primary and secondary lines, from the POD onto the rest of the installation outside the housing area. Telephone, network, and cable television distribution systems would not be conveyed to the PO. The storm drainage system within the MFH privatization area would be conveyed to the PO.

Because there are no active landfills on Cavalier AFS, all debris created from demolition, construction, and renovation activities would be handled, maintained, transported, and delivered to a Government-approved landfill off the installation in accordance with applicable Federal, state, and local laws.

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 the Northern Group installations (i.e., Cavalier AFS, North Dakota; Grand Forks AFB, North Dakota; Minot AFB, North Dakota; Ellsworth AFB, South Dakota; Mountain Home AFB, Idaho; and Cannon AFB, New Mexico). These desired features are intended to result in substantial improvements in the overall quality of housing for qualified personnel. Desired features for Cavalier AFS could include construction of a community center with indoor playground and splash park, 6-foot privacy fences with gates for newly constructed and renovated units, and provision of yard maintenance and snow removal services. The required and desired features for MFH units for new housing and renovations are provided in **Appendix D**.

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 Cavalier AFS. The plan would include project development, phasing out of existing units, the means by which the PO would maintain availability of MFH units for qualifying personnel, and the methodology for providing utilities and services during and after the transition period. The IDP (transition period) would begin after the privatization Transaction Closing date initiating the Proposed Action and would last approximately 6 years. During the IDP, as demolition, construction, and renovation activities are completed, a sufficient number of housing units must remain available for occupancy.

Lease of Land. The USAF would grant the PO a lease of approximately 25.3 acres, as described in **Section 2.1**. Leasing of the housing area parcel 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, and local applicable laws, regulations, conditions, or instructions affecting its activities. The USAF would include clauses in the lease permitting the USAF to conduct 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 Cavalier AFS. 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 demolition and construction activities and subsequent housing use. Solid waste generated would be disposed of off-installation at the PO's expense.
- Prohibit the use of asbestos or asbestos-containing material (ACM) or lead-based paint (LBP) in the construction of new facilities.
- 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 any historical, archaeological, architectural, or cultural artifacts, relics, remains, or objects of antiquity. In the event such items should be 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 the spread of infectious vegetation diseases such as Dutch elm disease and the emerald ash borer within the installation. These measures would be addressed in permits (e.g., Clean Water Act [CWA] Section 404 permit), the installation's Conservation Management Plan, 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 of timber; mining operations; and the removal of sand, gravel, or like substances from the ground.

The PO shall comply with all Federal, state, and local laws; regulations; and EOs, such as the CWA; Endangered Species Act (ESA); Archaeological Resources Protection Act; EO 11988, *Floodplain Management*; and EO 11990, *Protection of Wetlands*. Potentially applicable laws, regulations, and EOs are summarized in **Appendix B**.

Conveyances. All existing MFH units on Cavalier AFS would be conveyed to the PO. The USAF would convey this property with encumbrances, notices, and requirements obligating the PO to certain actions. To support the data collection process relevant to the Proposed Action, the USAF has completed an Environmental Baseline Survey (CAFS 2009b) to determine the location and extent of possible contamination from underground storage tanks (USTs) or other sources. The USAF would identify any easements and rights-of-way that might affect the PO's use of conveyed property.

Barrier-free Design. New MFH and ancillary supporting facilities must adhere to the *Uniform Federal Accessibility Standards* and the *Americans with Disabilities Act Accessibility Guidelines* promulgated by the Access Board (formerly known as the Architectural and Transportation Barriers Compliance Board) pursuant to the Architectural Barriers Act of 1968, Rehabilitation Act of 1973, and Americans with

Disabilities Act of 1990. These standards require that at least 5 percent of new MFH units be designed and built to be accessible, or easily modifiable for access, by persons with physical disabilities.

Construction and Demolition Standards. Demolition, construction, and renovation standards reflect consideration of City of Cavalier, Pembina County, and State of North 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).

A Demolition Plan would be established and implemented as part of the overall Construction Management Plan. The Demolition Plan would provide a phased approach for the demolition of existing units, appurtenances, and infrastructure. Underground utility mains proposed for demolition could be capped at the main and abandoned in place; however, the PO would remove all laterals. The contractor would be responsible for handling any ACM and LBP in accordance with applicable laws, including removal, disposal, and abatement. An asbestos disposal plan would identify the proposed disposal site for any ACM. After demolition is complete (including facilities, utilities, and roads and fences, as appropriate), the PO would grade the land for proper drainage and seed all areas where new construction is not planned. The PO would handle, maintain, and transport all debris to a Government-approved landfill site in accordance with applicable Federal, state, and local laws. Selling or recycling demolition debris would be pursued where possible.

Operation and Maintenance. The PO would operate and maintain all existing and new MFH units and ancillary supporting facilities, including associated parking lots and sidewalks, in accordance with the quality standards established in privatization program agreements for 50 years.

Rental Rates and Payments. Unit rents would be fixed by unit type and would not exceed the BAH "with dependent" rate of the military grade for which the particular unit was designated less a utility allowance. Rent would be paid on the first day of the month to which rent applies.

Utilities. The PO would pay all utility costs until utility meters are installed on each housing unit. Until the meters are installed, 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 (electricity and natural gas) charges at the dependent rate of the military grade for whom the unit is designated, in accordance with the Project Development Demographics. The PO would

[2] The U.S. Environmental Protection Agency (USEPA) 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 HVAC equipment (e.g., programmable thermostats, boilers, furnaces, heat pumps, and central air conditioners).

pay for all electric, natural gas, water, sewer, and refuse collection services, including curbside recycling pickup, throughout the duration of the privatization agreement.

Occupancy Guarantee. The USAF does not guarantee the level of occupancy of MFH by military members in housing privatization projects. The Cavalier AFS Mission Support Housing Flight would provide "Referral Tenants." All accompanied military personnel assigned to the installation would be required to process through the Cavalier AFS Mission Support Housing Flight 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 from the government).

Jurisdiction. Legal jurisdiction of the family housing area at Cavalier AFS is under proprietary 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. Cavalier AFS would provide fire, law enforcement, and other emergency services provided 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 to the Proposed Action

The USAF has identified three alternatives to the Proposed Action, in addition to the No Action Alternative. The selection standards for each alternative include meeting applicable criteria from the HRMA (i.e., on-installation housing for key and essential personnel and maintaining a military community) and providing a quality housing choice for airmen and their families in a cost-effective and efficient manner. The alternatives are presented below.

2.2.1 Alternatives for Family Housing

2.2.1.1 The Partial Privatization Alternative

Under this alternative, Cavalier AFS 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.

Partial privatization would not meet the criteria of a reasonable alternative warranting further evaluation. There are no benefits from partial privatization and there would be significant consequences. Due to the small number of units to be conveyed at Cavalier AFS, further subdivision of housing between privatized and nonprivatized units would be inefficient and costly and would require two separate bureaucratic management and funding structures. Privatization of only a portion of Cavalier AFS's MFH inventory would have several substantial drawbacks. First, the condition of the MFH retained by the USAF would change over time, resulting in a need for its renovation or replacement. Failure to include the entire inventory of housing in the privatization transaction would only delay action to provide adequate housing for airmen and their dependents. Second, two management regimes (the USAF's and the 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, and such activities traditionally do not provide independent sources of revenue to sustain them. Together, these factors render consideration of partial privatization at Cavalier AFS not feasible and, therefore, such an alternative will not be further evaluated in detail in the EA.

2.2.1.2 The Private Sector Reliance Alternative

Under this alternative, Cavalier AFS 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 HRMA has determined that 14 housing units are needed to meet mission requirements at Cavalier AFS, with the remainder of housing requirements met from the local community. 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 that 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 peace of mind 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 Cavalier AFS MFH would prove difficult. If MFH were to be terminated over a period of years, without maintenance funding, the existing housing would become unsuitable because of age or necessity of repairs. Residents could then find themselves living in blighted and partially abandoned neighborhoods. If MFH were to be terminated at once, it is unlikely that the private sector could provide the requisite amount of affordable, quality housing units, as well as schools, shops, and other support amenities, on short notice within an acceptable distance from the installation. Cavalier AFS personnel need to be available at all times in order to perform their mission support duties, and off-installation housing would not provide the same level of access and convenience as on-installation MFH.

Termination of the on-installation housing at Cavalier AFS would fail to meet the requirements established in the HRMA of housing key and essential personnel on-installation, and providing a military sense of community. The various consequences of reliance on the private sector and the management difficulties of terminating USAF MFH would prove challenging. For these reasons, this alternative is not reasonable and will not be further evaluated in detail in the EA.

2.2.1.3 The Leasing Alternative

The selection standards for each alternative include meeting applicable criteria from the HRMA (i.e., on-installation housing for key and essential personnel and maintaining a military community) and providing a quality housing choice for USAF personnel and their families in a cost-effective and efficient manner.

Statutory authorities exist for Cavalier AFS 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 leased MFH units.
- *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 can provide that utilities, trash collection, 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 associated with 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 obligation 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 MILCON 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.

2.2.2 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, Cavalier AFS would not implement the Proposed Action. Cavalier AFS would continue to provide for the housing needs of military personnel and family members.

Cavalier AFS has two MFH units that have been constructed within the past 10 years. These newly constructed MFH units would continue to provide adequate housing for many years into the future with only minor maintenance and repairs, although Unit 201 would be expected to receive a garage addition at some time. The remaining 12 MFH units would also continue to be used. These units are substantially older (constructed in 1973) and would require more intensive maintenance and renovations to bring them up to current USAF housing standards. In their existing condition, these MFH units are inadequate facilities. Under the No Action Alternative, these older MFH units would continue to be maintained and renovated, as needed. 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. The maintenance and renovation of these older MFH units would be an unnecessary and costly burden to the USAF.

Under the No Action Alternative, Cavalier AFS would continue to maintain and upgrade infrastructure components, as required. Some of the utilities systems and pavements in the MFH area are old and require upgrades or replacements to improve overall levels of service and efficiency.

Under the No Action Alternative, Cavalier AFS would need to provide adequate housing to military families. The No Action Alternative presumes that inadequate MFH units would require major renovation or demolition at some point in the future; those activities would require additional NEPA analyses at that time.

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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 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. Cavalier AFS is not within a coastal zone and, therefore, implementation of the Proposed Action would not alter coastal zone resources. Accordingly, the USAF has omitted detailed examination of coastal zone management.

Visual/Aesthetic Resources. The Proposed Action does not involve any activities that would significantly alter the aesthetic qualities of the area or landscape. The Proposed Action would be consistent with the current characteristic features of the area and landscape. Accordingly, the USAF has omitted detailed examination of visual/aesthetic resources in this EA.

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, the USAF has omitted detailed examination of airspace management in this EA.

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 Part 1508.8.

The following discussion elaborates on the nature of 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. The context of an impact can be localized or more widespread (e.g., regional).

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 impact 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 2.2.2**).

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. A-weighted decibel (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. In clinical hearing assessments, it has been shown that the threshold of audibility falls within a range of 10 dBA 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 is 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 1981b and * HDR extrapolation

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).

Demolition and 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.

3.1.2 Existing Conditions

Cavalier AFS is in a rural area and the ambient noise environment at and in the vicinity of the installation is affected mainly by installation operations. The primary sound source at Cavalier AFS is vehicle traffic consisting of military, commercial, and privately owned vehicles. County Road 89 provides access to the installation from North Dakota Highway. While surrounding off-installation roadways, such as County Road 89 and 91st Street Northeast (NE) to the north, 90th Street NE to the south, and 127th Avenue NE to the west, likely do not experience high traffic levels, vehicle traffic on these roadways could also contribute to the ambient noise environment at Cavalier AFS. Primary roads within the site of the Proposed Action include Garden Road and First Street. Although infrequent, use of the heliport in the south-central portion of the installation also contributes to the noise environment.

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

3.1.3 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 the No Action Alternative.

3.1.3.2 Proposed Action

Demolition and construction activities under the Proposed Action could result in noise impacts on the surrounding population. The Proposed Action would consist of the demolition of 12 MFH units (in 6 duplex buildings), construction of 12 MFH units (single-family homes), minor renovation of 2 existing MFH units, maintenance and upgrades to ancillary facilities, and possible construction of desired features (e.g., community center) as discussed in **Section 2.1**. Noise from demolition and 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 activities would impact adjacent populations, noise from the probable demolition and construction activities was estimated. For example, as shown in **Table 3-2**, demolition and construction usually involves several pieces of equipment (e.g., trucks and bulldozers) that can be used simultaneously. Under the Proposed Action, the total noise from the equipment, during the busiest day, was estimated to determine the total impact of noise from demolition and construction activities at a given distance. Examples of expected cumulative demolition and construction noise during daytime hours at specified distances are shown in **Table 3-3**. These sound levels were predicted at 50, 100, 150, 200, 400, 800, and 1,200 feet from the source of the noise.

Table 3-3. Predicted Noise Levels from Demolition and Construction Activities

Distance from Noise Source	Predicted Noise Level
50 feet	92 dBA
100 feet	86 dBA
150 feet	83 dBA
200 feet	80 dBA
400 feet	74 dBA
800 feet	67 dBA
1,200 feet	64 dBA

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

Under the Proposed Action, 12 MFH units (in 6 duplex buildings) would be demolished, and 12 new single-family units would be constructed over the 6-year transition period. Demolition and construction would occur within the North View neighborhood at the southwestern portion of Cavalier AFS. Due to the small size of the installation, the MFH area is adjacent to the central portion of the installation, which includes most administrative, community, and unaccompanied housing uses, and is just over 1,100 feet from the operations support area. Because most of these uses are enclosed structures and are between 250 feet (Building 707 - Community Center) and 650 feet (Building 720 - Enlisted Men's Complex) from the closest proposed demolition or construction activities, noise generated would likely be much less than indicated in **Table 3-3** or would not be heard by those in the facilities. However, demolition and construction would also occur near several sensitive noise receptors, including other MFH units and outdoor recreational facilities.

The closest MFH units to units proposed for demolition are approximately 75 feet apart. Assuming demolition would occur 75 feet from an occupied MFH unit, residents of the occupied unit could experience intermittent noise levels between 92 dBA to 86 dBA during demolition activities. Several outdoor recreational facilities are within or adjacent to the MFH privatization area, including the golf driving range, open recreational facility (playground), skating rink, and ball field. The playground is approximately 50 feet from the closest MFH unit proposed for demolition; users of this facility could experience intermittent noise levels of 92 dBA during work. The exact location of construction of the new MFH units is not known; however, the noise experienced by surrounding receptors would be similar to those for demolition activities.

Noise generation would last only for the duration of the demolition and construction activities and would diminish as activities moved farther away from the receptor. Because at least 9 MFH units would be available at any time, demolition and construction of all 12 MFH units would not occur simultaneously. Noise generation could be minimized by restricting demolition and 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, demolition and construction activities under the Proposed Action would result in short-term, minor, adverse impacts on the noise environment in the vicinity of the work area. 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.

As discussed in **Section 2.1**, some of the 12 MFH units proposed for demolition would be offered as excess through the OWS Program instead of being demolished. Short-term, minor, adverse impacts on the noise environment would be expected from removal of the units, transport of the units (e.g., on a flatbed truck), and associated demolition activities (e.g., the demolition of the foundation after the structure is removed). Noise impacts would be similar to those discussed for the demolition and construction activities included under the Proposed Action.

The Proposed Action would also include renovation of two MFH units to include minor improvements, maintenance and upgrades to ancillary facilities, and possible construction of a community center. The exact location of the ancillary facilities and possible community center within the North View neighborhood is not known; however, if these activities require the use of heavy equipment and occur near sensitive receptors it could result in short-term, minor, adverse impacts on the noise environment. However, 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.).

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. Construction traffic would use existing roadways as discussed in **Section 3.1.2** to access the MFH areas. Consequently, the additional traffic resulting from construction 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 demolition and construction activities would not occur, although the 12 MFH units constructed in 1973 would continue to be maintained and renovated, as needed. It would not be expected that noise generated from these maintenance and renovation activities would be significant, and therefore, the ambient noise environment would not change from existing conditions.

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 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

Surrounding Off-Installation Land Use. Cavalier AFS is in Beaulieu Township in a remote area of western Pembina County, North Dakota, approximately 2 miles south of North Dakota Highway 5 (see **Figure 1-1**). It is 14 miles southwest of Cavalier, North Dakota; 67 miles northwest of Grand Forks, North Dakota; and approximately 15 miles south of the U.S./Canada international border. Pembina County is a predominantly rural area where agriculture is the primary industry; however, there are a few incorporated, industrial, or urban areas throughout the county. The area immediately surrounding Cavalier AFS is sparsely populated consisting of pastures, wooded areas, cultivated cropland, and bodies of water. There are several outdoor recreation options in Pembina County, particularly in the winter months. Snowmobiling and cross-country skiing are common on the Northeast North Dakota Snowmobile Trail System, which passes approximately 0.5 miles south of the installation (CAFS 2006).

Pembina County and Beaulieu Township are both zoned as agricultural land (Robinson 2009). However, municipal zoning regulations do not apply to Federal property, so in practice Cavalier AFS is classified as "unplanned" at the local level.

Installation Land Use. Cavalier AFS consists of 278 acres that are primarily devoted to mission activities and structures. The installation is divided into two main areas: the controlled access area and the uncontrolled access area. The controlled access area consists of mission-related functions, including radar operations, related tactical support equipment, and most administrative offices. The non-controlled access area consists of non-mission-related, or support, functions, such as recreation areas, living quarters, law enforcement and fire department offices, facilities maintenance shop, transportation and motor pool, and the hazardous waste storage facility (CAFS 2008a).

There are three main land use types on Cavalier AFS: tactical, non-tactical support, and land available for family housing. Non-tactical support areas, which consist of facilities outside of the controlled area fence excluding the designated family housing area, make up the majority of the installation (162 acres). Tactical areas, or all areas within the controlled area fence, compose 23 acres. The remainder of the installation consists of designated family housing (38 acres) and access roads (55 acres) (CAFS 2008b).

The Cavalier AFS Comprehensive Plan emphasizes the consolidation of compatible activities and separation of incompatible activities in order to promote positive functional relationships between land uses. The goal of the Comprehensive Plan is to create a functional and efficient installation through consideration of these desirable land use patterns when planning future development projects (CAFS 2006).

The Cavalier AFS Comprehensive Plan identifies nine specific installation land use designations: Administration, Community Activity, Heliport, Industrial, MFH, Open Space, Operations Support, Outdoor Recreation, and Unaccompanied Housing (CAFS 2006). Excluding the open space that makes

up the majority of the installation, the bulk of the land use on Cavalier AFS supports the installation's missile warning and space surveillance mission and centers around the structure housing the PARCS in the east-central portion of the installation. The Operations Support land use includes the PARCS building, the electric power station, the heat sink (tank), and several smaller structures. The housing areas are generally separated from the mission-related areas. The area designated as MFH land use (the North View neighborhood) is in the southwestern portion of the installation, and is generally surrounded by Open Space, Community Activity (community activity center and fitness center), and Outdoor Recreation (recreation pavilion, playground, ball field, and golf driving range) land uses. Unaccompanied Housing, also known as bachelor housing, is east of the North View neighborhood adjacent to Community Activity and Industrial land uses. The Industrial land use includes facilities that support the mission and operation of the installation, and are generally separated from the MFH area. Areas designated as Industrial land use are in the eastern (wastewater treatment lagoons), central (industrial buildings/warehouses), and west-central (hazardous materials storage) portions of the installation (CAFS 2006). The Heliport is in southwestern portion of the installation, immediately adjacent to the southern installation fence.

The Proposed Action would occur within the MFH, Open Space, and Outdoor Recreation land use designations. **Figure 3-1** shows the existing installation land use designations at the MFH privatization area.

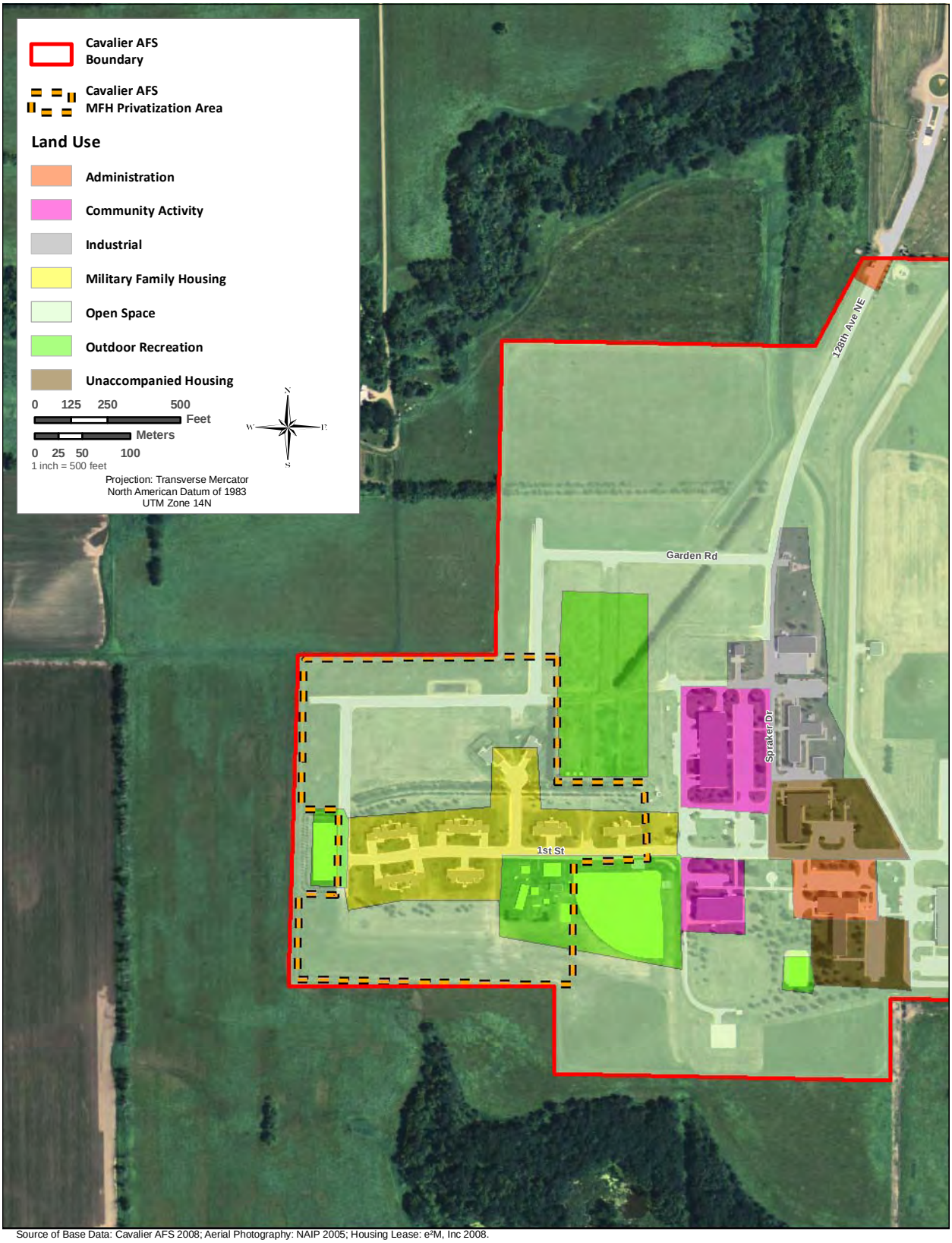
The 10 SWS operates Cavalier AFS with support from several civilian contractor organizations and the 319th Air Refueling Wing (319 ARW) at Grand Forks AFB, North Dakota. Cavalier AFS employs approximately 150 military, DOD civilian, and civilian contractor personnel to support its mission. The installation population fluctuates, but is usually approximately 190 persons with the addition of family members of personnel (CAFS 2006). Grand Forks AFB, North Dakota, provides housing asset management; administrative functions; military security forces; religious, medical, and counseling support; and other services to Cavalier AFS under the 2006 Support Agreement. Cavalier AFS has established mutual aid agreements with six neighboring communities to ensure emergency response is available for the installation (CAFS 2006).

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.



Source of Base Data: Cavalier AFS 2008; Aerial Photography: NAIP 2005; Housing Lease: e²M, Inc 2008.

Figure 3-1. Cavalier AFS Existing Land Use Designations at the MFH Privatization Area

3.2.3.2 Proposed Action

The Proposed Action would be consistent with several of the 10 SWS's goals for Cavalier AFS, including ensuring the effective use of and support for installation personnel, the highest personnel efficiency, and the most effective use of unit funds. The Proposed Action would not result in the conversion of land use designations unless the community center is constructed within the MFH privatization area in which case it could require changing the land use designation from MFH, Open Space, or Outdoor Recreation to Community Activity. Construction of the 12 new MFH units outside of the existing MFH land use designation would also require a designation change, likely from Open Space (if the units were constructed along Garden Road) to MFH. The Proposed Action would convey 14 MFH units, lease 1 parcel of land, and transfer responsibility for providing housing and ancillary support facilities at the North View neighborhood to a private developer (the PO). The Proposed Action would require demolition of 12 MFH units (in 6 duplex buildings) and replacement with 12 single-family units, renovation with minor improvements at 2 MFH units (single-family units), upgrades or replacements for some of the utilities systems and pavements, and ongoing maintenance of other ancillary facilities. Potential long-term, negligible, adverse impacts on land use from inconsistencies with land use plans and policies would be expected due to the need to change land use designations. The Proposed Action would be consistent and compliant with the Cavalier AFS Comprehensive Plan after these changes to land use designations.

The Proposed Action would not violate local zoning ordinances because municipal zoning regulations do not apply to Federal property. Therefore, the Proposed Action would not result in any impacts on municipal land use plans or policies.

The Proposed Action would not introduce incompatible land uses at Cavalier AFS. It would continue the MFH land use in the North View neighborhood where it currently exists. The demolition of the 12 MFH units constructed in 1973 and replacement with new housing; renovation of 2 MFH units with minor improvements; and continued renovation, upgrade, and maintenance of ancillary facilities would make the units more livable, thereby reinforcing the viability and continued use of the units as MFH. In addition, enhancement of the MFH area would support the continued use of the adjacent Community Activity and Outdoor Recreation land uses, which are both functionally important to the MFH land use (CAFS 2006). The noise and general disturbance resulting from activities associated with demolition, construction, renovation, and maintenance would create a temporary annoyance for the occupied MFH units. Therefore, the Proposed Action would result in short-term, negligible, adverse impacts and long-term, moderate, beneficial impacts on the viability of existing land use and continued occupation at Cavalier AFS.

The adjoining installation land uses of open space and outdoor recreation, and the adjacent off-installation land uses of rural agriculture, open space, and recreation are compatible with the MFH land use and are not sensitive to noise. Therefore, the Proposed Action would not result in any effects on the compatibility of adjacent land uses with respect to public health and safety and would not conflict with health and safety planning criteria.

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** for an undetermined period of time. The 12 MFH duplex units, which were constructed in 1973, would either continue to be maintained or renovated, which would be an unnecessary and costly burden to the USAF, and none of the additional desired features described under the Proposed Action would be constructed. These 12 MFH units would eventually require demolition because they would not meet USAF housing standards. The No Action Alternative would be inconsistent with some of the goals

identified in the Comprehensive Plan, including ensuring the effective use of and support for installation personnel, the highest personnel efficiency, and the most effective use of unit funds. The No Action Alternative would result in long-term, minor, adverse impacts on land use. At the time of its occurrence, the demolition of the 12 inadequate MFH units would require NEPA analyses.

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 ($\mu g/m^3$). The air quality in a region is a result of not only 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, the 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. The USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter [$PM_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public resources along with maintaining visibility standards. North Dakota has adopted a more stringent set of standards, termed the North Dakota Ambient Air Quality Standards (NDAAQS). **Table 3-4** presents the primary and secondary USEPA NAAQS and NDAAQS.

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

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

Table 3-4. 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}	Annual Arithmetic Mean	--	50 µg/m^3	Same as Primary
	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)	Same	Same as Primary
	8-hour [j]	0.08 ppm (1997 Standard)	--	Same as Primary
	1-hour [k]	0.12 ppm	Same	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 2010c, NDDH 1998

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 NO_2 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/m^3.
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/m^3 (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/m^3 = milligrams per cubic meter; µg/m^3 = micrograms per cubic meter

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

On September 22, 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 (CO_2) 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 CO_2 equivalent per year. The first emissions report is due in 2011 for 2010 emissions. Although GHGs are not currently regulated under the CAA, the USEPA has clearly indicated that GHG emissions and climate change are issues that need to be considered in future planning. GHGs are produced by the burning of fossil fuels and through industrial and biological processes.

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. Detailed agency implementation plans for EO 13514 were due in June 2010, when each Federal agency was to deliver an SSPP to the CEQ and the Office of Management and Budget. These implementation plans describe the specific actions agencies will take to achieve their individual GHG reduction targets, reduce long-term costs, and meet the full range of goals of the EO. The *DOD Strategic Sustainability Performance Plan* was made public on 26 August 2010, and is available at http://www.whitehouse.gov/administration/eop/ceq/sustainability/plans. DOD guidance on analyzing and reporting GHGs has not yet been made public. The first 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 a hazardous air pollutant (HAP), or 25 tpy of any combination of HAPs.

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

3.3.2 Existing Conditions

Cavalier AFS is located in Pembina County, which is within North Dakota Air Quality Control Region (AQCR) 172. AQCR 172 consists of all counties in North Dakota with the exception of Metropolitan Fargo, North Dakota. As defined in 40 CFR Part 81.335, Pembina County is designated as attainment/unclassifiable for all criteria pollutants (USEPA 2002a).

The most recent emissions inventories for Pembina County and AQCR 172 are shown in **Table 3-5**. Pembina County is considered the local area of influence, and AQCR 172 is considered the regional area of influence for the air quality analysis.

Table 3-5. 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)
Pembina County, North Dakota	1.32	1.20	4.31	0.28	4.19	0.67
AQCR 172	83.58	20.98	147.60	82.93	177.67	31.61

Source: USEPA 2002b

The U.S. Department of Energy, Energy Information Administration estimates that gross CO_2 emissions in North Dakota were 52.5 million metric tons in 2007 (DOE/EIA 2010).

The NDDH regulates air quality for the State of North Dakota. Cavalier AFS is classified as a major source of emissions and has an Air Pollution Control Title V Permit to Operate (NDDH 2007). The NDDH requires Cavalier AFS to calculate annual criteria pollutant emissions from stationary sources and provide this information to the NDDH. There are various sources on-installation that emit criteria pollutants and HAPs, including generators, boilers, engines, fuel storage tanks, 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
- Represent an increase of 10 percent or more in an affected AQCR emissions inventory
- Exceed any evaluation criteria established by an SIP or permit limitation.

3.3.3.2 Proposed Action

The Proposed Action would generate both temporary and long-term air pollutant emissions. The construction, demolition, renovation, and maintenance projects associated with the Proposed Action would generate air pollutant emissions as a result of grading, filling, compacting, trenching, demolition, and construction operations, but these emissions would be temporary and would not be expected to generate any off-site 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 evaporative emissions from architectural coatings and asphalt paving

operations. Emissions of all criteria pollutants would result from construction and demolition activities including combustion of fuels from on-road haul trucks transporting materials and construction commuter emissions.

Construction, demolition, renovation, and maintenance projects 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 and demolition activities to suppress emissions.

All emissions associated with construction and demolition activities would be temporary in nature. There would be negligible new operational emissions associated with the Proposed Action. These operational emissions would be from the combustion of natural gas in boilers or heaters used to heat the new community center and the new housing units. It is anticipated the new housing unit heaters would be of similar size and more energy efficient than the existing heaters; therefore, it is assumed there would be no net increase in emissions from housing unit heaters.

Per the North Dakota Air Pollution Control Regulations under North Dakota Administrative Code 33-15-14-02.13.b, the air construction permit threshold for stationary fuel combustion sources is 10 million British thermal units per hour. Although the size of the new boilers/heaters is unknown, it is not anticipated they would be large enough to require an air construction permit. The new boilers/heaters might not require a modification of the facility's Title V air operating permit until the next Title V permit renewal because it is anticipated they would be considered insignificant activities. According to Cavalier AFS's Title V permit, insignificant activities are not required for inclusion in the annual emissions inventory (NDDH 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 demolition and construction activities associated with the Proposed Action would contribute to or affect local or regional attainment status with the NAAQS or NDAAQS. Emissions from the Proposed Action are summarized in **Table 3-6**. Emissions estimation calculations and a summary of the methodology used are included in **Appendix F**.

Table 3-6. 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
Construction Combustion	5.720	0.634	2.481	0.396	0.401	0.389	652.026
Construction Fugitive Dust	--	--	--	--	5.953	0.463	--
Haul Truck On-Road	2.037	1.473	5.985	0.160	2.422	0.630	515.618
Construction Commuter	0.154	0.154	1.388	0.002	0.015	0.009	184.075
Total Proposed Action Emissions	**7.911**	**2.260**	**9.854**	**0.558**	**8.790**	**1.491**	**1,351.719**
Percent of AQCR 172 Inventory	0.005	0.005	0.003	0.0003	0.002	0.002	0.002*

Note: * Percent of State of North Dakota CO_2 emissions.

The Energy Information Administration estimates that in 2007, gross CO_2 emissions in North Dakota were 52.5 million metric tons (DOE/EIA 2010). If implemented, it is estimated the Proposed Action would emit approximately 1,227 metric tons (1,352 tons) of CO_2, which is less than 0.002 percent of the North Dakota statewide CO_2 emissions. Therefore, the Proposed Action would have a negligible contribution towards the North Dakota statewide GHG inventory. CO_2 emissions estimates are included in **Appendix F**.

Because Cavalier AFS is in an area classified as an attainment/unclassifiable area for all criteria pollutants, General Conformity Rule requirements are not applicable. The Proposed Action would generate emissions below *de minimis* levels. In addition, the Proposed Action would generate emissions well below 10 percent of the emissions inventories for North Dakota AQCR 172 and the emissions would be short-term. Therefore, the construction, demolition, renovation, and maintenance activities associated with the Proposed Action would not have significant effects on air quality at Cavalier AFS or on regional or local air quality. **Appendix F** includes the air emissions estimation calculations and methodology.

3.3.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. Short-term, intermittent, negligible, adverse effects on air quality would be expected from future renovation activities to MFH units. These renovations would generate emissions well below *de minimis* levels; therefore, only negligible, adverse effects on air quality would be expected.

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 is 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 (7 CFR Part 658, July 5, 1984).

3.4.2 Existing Conditions

Regional Geology. Cavalier AFS is within a region of sand and gravel deposits from nearshore and offshore environments of the former Lake Agassiz. Pleistocene-aged glacial Lake Agassiz was created during advancement of the Laurentide ice sheet, which blocked the drainage of the northern Great Plains and formed the 700-mile-long Lake Agassiz. The Pembina Escarpment, which is west of Cavalier AFS along the eastern edge of Cavalier County, marks the eastern edge of this glaciated plain. North Dakota Highway 5 traverses sand dunes, which are northeast of Cavalier AFS. These dunes were formed several thousand years ago from sandy sediments derived from the Pembina Delta, and were transported and deposited by wind energy. The delta was formed where the ancient Pembina River emptied into glacial Lake Agassiz approximately 10,000 to 9,000 years before present (NDDMR 2004).

Surficial geology in the vicinity of Cavalier AFS is glacial in origin, consisting mostly of glacial drift (silt, sand, and gravel) of the Coleharbor Group. These sediments were deposited alternately in deltaic and marine environments as sea level fluctuated during the Cretaceous and Tertiary Periods (from 144 to 1.8 million years before present) (USAF 2003). The Pleistocene glacial deposits are underlain by marine shale and sandstone bedrock, including the Pierre Shale, the calcareous Niobrara Shale, and the Dakota group (shale and sandstone) of Cretaceous age, and the Morrison and Sundance formations of Jurassic age (CAFS 1995a). The Cretaceous rocks were deposited in epicontentinal oceans that covered the area between about 90 million and 80 million years ago. The lower portion of the Pierre Formation includes Pembina and Gregory Members, which are bentonite-rich shales (NDDMR 1975). In addition to these formations, glacial erratics, which are boulders carried to the region by glaciers, are present in upland, formerly glaciated areas of Pembina County (NDDMR 2004). The fertile soils associated with the Red River Valley resulted from fine clays and silts deposited on the bottom of Lake Agassiz (University of Minnesota 1996).

Topography. Cavalier AFS is within the Western Lake Section of the Central Lowlands physiographic province and in the Red River Valley district. The Red River Valley is bordered by the Pembina Escarpment and trends north-south approximately 35 miles west of the Minnesota-North Dakota state line. The valley is a flat, nearly featureless lake plain that has experienced very little erosion. The Pembina Escarpment rises abruptly 500 to 700 feet above the valley floor forming the Pembina Mountains. Elevations on the installation range from 1,130 feet above mean sea level (msl) in the eastern portion of the installation to 1,180 feet in the western portion. The regional gradient slopes to the northeast, away from the Pembina Escarpment, which lies about 1 mile west of the installation. Cavalier AFS is situated in the eastern portion of the state where the Precambrian Basin ranges from 200 to 600 feet below msl (USAF 2003).

Soils. The majority of the site of the Proposed Action (approximately 87 percent) is mapped as Vang loam soils with 1 to 3 percent slopes. The Vang series consists of very deep, moderately well-drained and well-drained soils that formed in loam sediments overlying sand and gravel sediments that have appreciable amounts of shale. Permeability is moderate in the solum and rapid or very rapid in the substratum. The southwestern corner of the site of the Proposed Action is mostly mapped as Brantford loams, with 3 to 6 percent slopes. The Brantford series consists of very deep, well-drained soils that formed in loamy material underlain by beds of glaciofluvial sand and gravel containing appreciable amounts of shale. Permeability is moderate in the upper part and very rapid in the substratum. The extreme southwestern corner of the site of the Proposed Action is mapped as the Rolette silty clay loam, with 1 to 3 percent slopes and is moderately well drained. Also mapped in along the southern boundary for the site of the Proposed Action is the Binford sandy loam, with 1 to 3 percent slopes (NRCS 2010). All of the soils at the Proposed Action site are found on glacial outwash plains, eskers, terraces, deltas, and beaches (CAFS 1995a).

Soils mapped at the site of the Proposed Action and soil limitations are shown in **Table 3-7**. Soil limitations to construction were determined based on data available in the NRCS Web Soil Survey (NRCS 2010). Soil limitations were rated for building, construction of dwellings without basements, and potential for frost action. The Brantford loam and Binford sandy loam were rated as not limited for dwelling construction. The Rolette silty clay and Vang loam were rated very limited and somewhat limited, respectively, due to the presence of shrink-swell clays. The Vang loam was rated as having a moderate potential for frost action (NRCS 2010).

Table 3-7. Properties of Soils Mapped at the Site of the Proposed Action

Mapping Unit	Texture	Farmland Classification	Construction Limitations
Binford	Sandy loam (1 to 3 percent slopes)	Not prime farmland soil	Not limited for building construction
Brantford	Loam (3 to 6 percent slopes)	Not prime farmland soil	Not limited for building construction
Rollette	Silty clay loam (1 to 3 percent slopes)	Prime farmland soil	Very limited for building construction due to shrink-swell potential
Vang	Loam (1 to 3 percent slopes)	Prime farmland soil	Somewhat limited for building construction due to shrink-swell potential

Of the four soil units mapped within the site of the Proposed Action, two of the soil units are considered prime farmland soils, including the Vang loam and the Rolette silty clay loam (NRCS 2010). 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 (NRCS 1999). Therefore, the areas where prime farmland soils are mapped at the site of the Proposed Action would not be considered prime farmland.

3.4.3 Environmental Consequences

3.4.3.1 Evaluation Criteria

Protection of unique geological features, minimization of soil erosion, and the siting of facilities in relation to potential geologic hazards are considered when evaluating potential 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 geology and soils would be significant if they would alter the lithology, stratigraphy, and geological structures that control groundwater quality, distribution of aquifers and confining beds, and groundwater availability; or significantly change the soil composition, structure, or function (including prime farmland and other unique soils) within the environment.

3.4.3.2 Proposed Action

Topography. Long-term, negligible, adverse effects would be expected on the natural topography as a result of projects associated with the Proposed Action. Construction of new housing units, renovations to existing units, and repairs and upgrades to subsurface utilities would occur within the MFH privatization area, likely within current housing and utility footprints. Modification of existing microtopography would occur as a result of grading, excavation, and filling to accommodate demolition and 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, adverse effects on geological resources would be expected from implementation of the Proposed Action. Construction of new housing units, renovations to existing units, and repairs and upgrades to subsurface utilities would occur within the MFH privatization area, likely within current housing and utility footprints. The surficial geology at the site of the Proposed Action has been previously altered through grading and recontouring activities, and therefore impacts on previously undisturbed geologic features 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 demolition activities when vegetation is cleared and soils are exposed. Additional ground-disturbing activities could occur in association with renovation of existing housing units and construction activities. However, soils have been previously disturbed during construction and installation of existing housing units, so effects would be expected to be minor.

Long-term, minor, adverse effects on soils would be expected upon completion of all projects associated with the Proposed Action. Under the Proposed Action, impervious surfaces would increase due to an increase in square footage of MFH units and construction of desired community features such as a community center. Adverse effects would be anticipated to be minor as the most of the soils within the site of the Proposed Action have been previously disturbed. Increased impervious surfaces could increase storm water runoff velocity and volume. Best management practices (BMPs) would be implemented during and after construction activities, and approved erosion-and-sediment-control plans (ESCPs) and SWPPPs would be followed to reduce effects of increased impervious surfaces. Erosion- and sediment-control techniques could include soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and sediment basins, and would be used as appropriate. Section 438 of the Energy Independence and Security Act (EISA) would be adhered to so that pre- and post-development hydrology would be equal.

The total number of MFH units would remain unchanged from 14 units once construction and demolition activities have been completed. After facilities are demolished, the PO would seed all areas not proposed for future development. These areas would help to offset some of the impact anticipated from the increase in impervious surfaces. This would result in a localized beneficial impact on soils as vegetation reduces soil erosion and subsequent sedimentation. Areas that are revegetated would allow percolation of storm water thereby reducing storm water runoff.

Due to building construction limitations (i.e., shrink-swell and frost action potential) of soils mapped at the site of the Proposed Action, site-specific soil surveys should be conducted prior to any construction or outdoor renovation activities to determine the breadth and severity of any engineering limitations and requirements, and to determine appropriate BMPs or mitigation techniques.

ESCPs would be developed and implemented both during and following site development to control storm water runoff and soil erosion onsite, and would reduce the potential for adverse effects associated with erosion and transport of sediments in runoff. Storm water runoff would be in compliance with Section 438 of the EISA and the CWA Final Rule regarding non-numeric effluent limitations (see **Section 3.5** for more information on water resources). Short-term, adverse effects would be minimized with implementation of BMPs, including appropriate fugitive dust controls (e.g., wetting of soils). Appropriate fugitive dust-control measures would be employed during construction and demolition activities to prevent wind erosion and generation of dust (see discussion on air quality in **Section 3.3.3**).

Construction, demolition, or outdoor renovation activities that disturb 20 or more acres as of August 1, 2011, would need to comply with the maximum daily turbidity limitation of 280 nephelometric turbidity units (ntu) as outlined in the CWA Final Rule. Construction, demolition, or outdoor renovation activities that disturb 10 or more acres of land as of February 2, 2014, would need to include monitoring of discharges to ensure compliance with effluent limitations as specified by the permitting authority. Turbidity limitations and monitoring requirements could be avoided if construction, demolition, or outdoor renovation activities are phased to reduce acreages disturbed simultaneously to less than 20 and 10 acres, respectively.

3.4.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. However, the No Action Alternative includes a garage addition to Unit 201, extensive maintenance and renovations to bring existing housing units constructed in 1973 up to USAF housing standards, and repair or replacement of utility lines and roads. Therefore, effects on geology and soils would be anticipated to be similar to, but less than, effects described for the Proposed Action. No significant impacts on geology and soils would occur as a result of implementing the No Action Alternative.

Short- and long-term, minor, adverse effects on soils would be expected by implementing the No Action Alternative. Impervious surfaces would increase slightly compared to current conditions. Short-term effects would result from outdoor renovation activities and construction of the additional garage, which would expose soils to potential erosion when vegetation is cleared. However, soils have been disturbed previously during construction and installation of existing housing units, so effects would be expected to be minor. Long-term, adverse effects would occur from the slight increase in impervious surfaces. ESCPs would be developed and implemented both during and following site development to contain soil and storm water runoff onsite, and would reduce the potential for adverse effects associated with erosion and sedimentation and transport of sediments in runoff. If disturbances from future improvements are equal to or greater than 5,000 square feet of land at a time, storm water runoff would be in compliance with Section 438 of the EISA. Likewise, if disturbances from future improvements are equal to or greater than 20 acres at a time (between August 1, 2011, and February 2, 2014), or 10 acres at a time (after

February 2, 2014), storm water runoff would be in compliance with the CWA Final Rule regarding non-numeric effluent limitations (see **Section 3.5**).

3.5 Water Resources

3.5.1 Definition of the Resource

Water resources 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.

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 might 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 several different 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. The CWA (33 U.S.C. 1251 et seq., as amended) establishes Federal limits, through the National Pollutant Discharge Elimination System (NPDES), on the amounts of specific pollutants that are discharged to surface waters in order to restore and maintain the chemical, physical, and biological integrity of the water. The NPDES program regulates the discharge of point (end of pipe) and nonpoint sources (storm water) of water pollution. Section 404 of the CWA regulates the discharge of fill material into waters of the United States, which includes wetlands. Waters of the United States are defined within the CWA (33 U.S.C. 1251 et seq.), as amended, and jurisdiction is addressed by the USEPA and the USACE. 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 permits from the state and the Federal governments.

Storm water is an important component of surface water systems because of its potential to introduce sediments and other contaminates 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 issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. This Rule became effective on February 1, 2010, and will be phased in over

4 years. All new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls, including the following:

- Control storm water volume and velocity to minimize erosion
- Control storm water discharges including both peak flow rates and total storm water volume
- Provide and maintain natural buffers around surface waters, direct storm water to vegetated areas to increase sediment removal, and maximize storm water infiltration where feasible (e.g., silt fences)
- Minimize erosion at outlets and downstream channel and stream bank erosion
- Minimize soil compaction and preserve topsoil where feasible.

In addition, construction site owners and operators that disturb 1 or more acres of land are required to use BMPs to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres at one time, including noncontiguous land disturbances that take place at the same time and are part of a larger common plan of development, must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation will be 280 ntu. Effective February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

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. 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. A 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 (DOD 2010a). These regulations have been incorporated into applicable DOD United Facilities Criteria (UFC) 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, or 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 2009a).

Floodplains. Floodplains are areas of low-level ground present along rivers, stream channels, or coastal waters that are subject to periodic or infrequent inundation due to rain or melting snow. Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance, groundwater recharge, nutrient cycling, water quality maintenance, and habitat for a diversity of plants and animals. Flood potential is evaluated by the Federal Emergency Management Agency (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. Risk of flooding is influenced by local topography, the frequency of precipitation events, the size of the watershed above the floodplain, and upstream development. 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 directs Federal agencies to avoid siting within floodplains unless the agency determines that there is no practicable alternative.

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 Part 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, an ephemeral drainage 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. North Dakota relies on Section 401 water quality certification as its primary form of state-level wetlands regulation. The Section 401 program is administered by the North Dakota Department of Health, Division of Water Quality (NDDH/DWQ). In making certification decisions, the NDDH/DWQ is primarily concerned with the construction and environmental disturbance requirements pertaining to soils, surface waters, and fill materials. A nonregulatory agency policy document requires that "fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land resources will be protected against compaction, vegetation loss, and unnecessary damage." If a project does not meet this and other minimum requirements of the NDDH/DWQ, the permit is denied, and necessary conditions are communicated before re-application (ELI 2008).

3.5.2 Existing Conditions

Groundwater. The regional groundwater flow direction in northeastern North Dakota is from west to east. Groundwater is present in bedrock aquifers, including the Dakota, Niobrara, and Pierre aquifers. Caviler AFS is underlain by the Dakota Aquifer, which is approximately 250 feet below ground surface (bgs) and consists of approximately 100 to 150 feet of sandstone with a groundwater gradient that decreases from west to east. In Pembina County, some wells in the Dakota aquifer are under artesian conditions and flow at the surface, while in other areas, the static water table is present at about 200 feet bgs. Water in the Dakota Aquifer in Pembina County has been characterized as a moderately to very saline sodium chloride-type, with total dissolved solids (TDS) ranging from 5,930 to 29,500 milligrams per liter. The Dakota Aquifer is not widely used in the Cavalier AFS area (CAFS 1995a).

Four major glacial drift aquifers are present in the area around Cavalier AFS in Pembina County. They are the Pembina River Aquifer, the Pembina Delta Aquifer, the Icelandic Aquifer, and the Hamilton Aquifer. The water in these aquifers tends to be hard, fresh, and of a calcium magnesium bicarbonate type; and is used in varying degrees for irrigation and domestic and public water supply uses by the local population. Recharge is almost entirely from infiltration of precipitation. These major glacial drift aquifers are not mapped as being present beneath Cavalier AFS (CAFS 1995a, USGS 2010). None of the aquifers occurring in the region of Cavalier AFS is designated as Sole Source by Region 8 of the USEPA (USEPA 2010a).

Surface Water. Cavalier AFS is on the western flank of the Red River in the North Valley drainage system, which is part of the larger Hudson Bay system. The Pembina River, Tongue River, Little South Pembina River, and branches of the Park River are the main tributaries to the Red River in the region surrounding Cavalier AFS (CAFS 1995a). Willow Creek flows east to west just south of the installation and a tributary to the Tongue River flows northeast into the Tongue River just north of the installation. There are no apparent surface waters in the project area (see **Figure 3-2**). All storm water drainage from Cavalier AFS flows north to the Tongue River or south to Willow Creek.

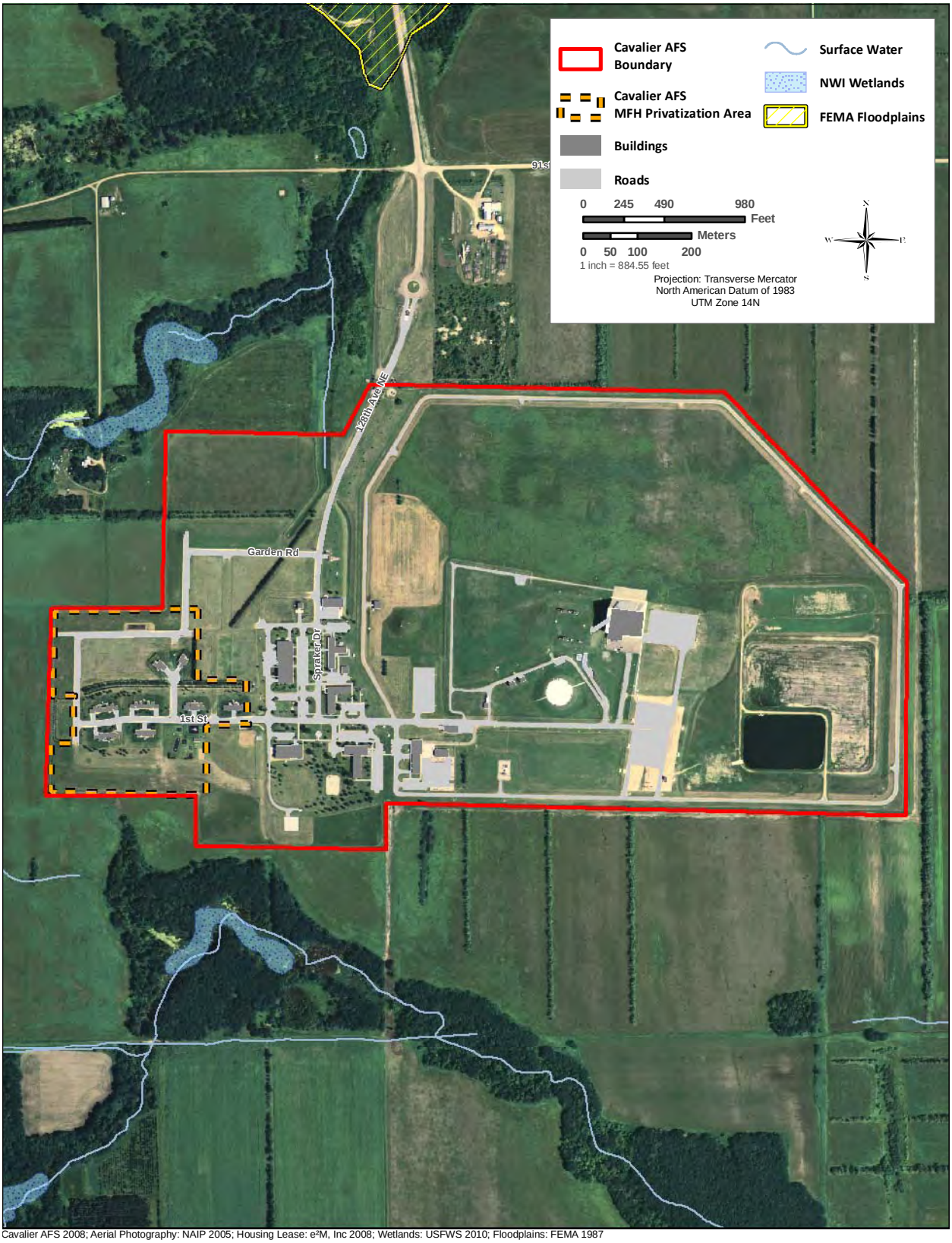
Floodplains. According to FEMA Flood Insurance Rate Map for Pembina County, North Dakota (Community Panel Number 380079 0175 A), effective date November 19, 1987, Cavalier AFS is within Zone C, an area determined to be outside of the 100- and 500-year floodplains and of minimal flood hazard (FEMA 1987).

Wetlands. There are no documented regulated wetlands present within the Cavalier AFS boundaries (CAFS 1995a, CAFS 2007a). Based on National Wetlands Inventory (NWI) data provided by the USFWS, riparian wetlands associated with the Tongue River channel are downstream of the installation, approximately 1,500 feet north of the MFH privatization area, and riparian wetlands associated with Willow Creek are upstream of the installation, approximately 1,000 feet south of the MFH privatization area (CAFS 1995a, USFWS 2010) (see **Figure 3-2**).

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:



Cavalier AFS 2008; Aerial Photography: NAIP 2005; Housing Lease: e²M, Inc 2008; Wetlands: USFWS 2010; Floodplains: FEMA 1987

Figure 3-2. Water Resources in the Vicinity of Cavalier AFS

- 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.

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

3.5.3.2 Proposed Action

Groundwater. The Proposed Action has the potential for short- and long-term impacts on groundwater. The potential for groundwater contamination would increase as various underground utilities (e.g., electric and water) are either installed or upgraded within the site of the Proposed Action. Assuming appropriate BMPs are implemented during demolition and construction activities, short-term, negligible, adverse effects on groundwater would be expected. In the event of a spill or leak of fuel or other construction-related products, there could be adverse effects on groundwater. All fuels and other potentially hazardous materials would be contained and stored appropriately. In the event of a spill, procedures outlined in Cavalier AFS's *Spill Prevention, Control, and Countermeasures (SPCC) Plan* (CAFS 2008c) would be followed to quickly contain and clean up a spill (see **Section 3.10** for a discussion on hazardous materials and wastes).

Long-term, negligible, adverse impacts on groundwater quality and recharge from the Proposed Action would be expected. It is assumed that an overall increase in impervious surfaces (e.g., replacement of existing MFH units with larger units and addition of desired community features [e.g., community center]) would slightly increase storm water runoff and decrease recharge of the aquifer system through ground percolation. Compliance with Federal, DOD, and state regulations would minimize these adverse effects.

Surface Water. The Proposed Action would result in short- and long-term, negligible to minor, adverse impacts on surface water resources. Short- and long-term, indirect, adverse impacts would result from the overall slight increase in impervious surfaces associated with the Proposed Action at Cavalier AFS. 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. Increased storm water runoff would have short- and long-term, minor, adverse effects on surface water at Cavalier AFS. This runoff could impact surface water quality of the receiving water body. 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.

Short-term, negligible to minor, adverse impacts on water resources could 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 heavy rain or snowmelt events. Short-term, negligible, indirect, adverse impacts on the storm drain easement north of the site of the Proposed Action could occur from increased sedimentation resulting from earth-moving activities. Consequently, short- and long-term, indirect, adverse impacts on the Tongue River and Willow Creek

could occur as a result of transport of sediments and other construction-related pollutants into these surface waters via storm drains.

Short-term, minor, direct, adverse effects from construction and demolition activities could result due to increased transport of contaminants via storm water runoff to surface water bodies. Surface water runoff occurring during demolition and construction activities could convey contaminants that could impact surface water quality in drainage channels. The level of impact would be related to the type of contaminant that enters the water system. Increased sediment runoff from construction and demolition activities increases surface water turbidity in receiving waters, which can raise water temperature and impede photosynthetic processes. Sediment transported by runoff into surface waters also increases the potential for contaminant (e.g., heavy metals, excess nutrient concentrations) deposition into 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 Cavalier AFS's SPCC Plan (CAFS 2008c) would be followed to quickly contain and clean up a spill (see **Section 3.10** for a discussion on hazardous materials and wastes).

The NPDES storm water program requires construction site operators engaged in soil-disturbing activities (e.g., clearing, grading, and excavating) that disturb 1 acre or more, including smaller sites in a larger common plan of development, to obtain coverage under an NPDES permit for their storm water discharges. A series of smaller sites in a larger common plan require coverage under an NPDES permit if the sites are less than 0.25 miles apart and the area between the sites is being disturbed. Therefore, the implementation of the Proposed Action would require a North Dakota Pollutant Discharge Elimination System (NDPDES) permit. Storm water discharge from construction activities is not covered under Cavalier AFS's existing NDPDES permit for discharge related to industrial activities (Industrial Storm Water Permit No. NDR05-0316) (NDDH 2005). Operators of regulated construction sites are required to develop SWPPPs and to implement sediment, erosion, and pollution prevention control measures.

As a new requirement under the CWA Final Rule, Cavalier AFS would be required to meet the non-numeric effluent limitations of the CWA for its NDPDES permit and design, install, and maintain effective erosion and sedimentation controls as described in **Section 3.5.1**. The implementation of these non-numeric effluent limitations would minimize short-term, adverse effects on surface waters from erosion, sedimentation, and pollution. It is unlikely that the Proposed Action would disturb 20 acres or more of land at one time. However, if it is determined that 20 acres or more of land would be disturbed as a result of the Proposed Action, and the Proposed Action occurs between August 1, 2011, and February 2, 2014, then Cavalier AFS would be required to monitor effluent discharges to ensure compliance with the numeric effluent limitation for turbidity (i.e., 280 ntu). If the Proposed Action occurs on or following February 2, 2014, Cavalier AFS would be more likely to be required to meet this turbidity limitation, as the requirement becomes effective for actions that disturb 10 or more acres of land at a time, which Cavalier AFS is likely to do under the Proposed Action.

Additionally, Cavalier AFS would be subject to the new storm water design requirements of Section 438 of the EISA that require Federal construction projects that disturb 5,000 square feet or more of land to maintain or restore predevelopment site hydrology to the maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow.

Overall, construction and demolition activities would have the potential to result in adverse effects on surface water quality, but the development of a site-specific SWPPP and ESCP would minimize the potential for adverse effects. Appropriate BMPs would be implemented and would follow the guidelines provided in documents such as Cavalier AFS's SWPPP (CAFS 2008d), and Federal and state permitting

processes. Assuming proper use of BMPs, impacts on water resources would be expected to be negligible.

Floodplains. Because no floodplains are present at Cavalier AFS, no direct or indirect impacts on floodplains would be expected from the Proposed Action.

Wetlands. No wetlands are present within the site of the Proposed Action or at Cavalier AFS; therefore, no direct impacts on wetlands would be expected from the Proposed Action. The closest wetlands to the site of the Proposed Action are off-installation, approximately 1,000 feet south and 1,500 feet north of the MFH privatization area. Adherence to Federal, state, and local regulations; and an ESCP and SWPPP would prevent surface water degradation of these wetlands due to increased erosion, sedimentation, and pollutants. Assuming appropriate BMPs are implemented during demolition, construction, and renovation activities, no direct or indirect impacts on surrounding off-installation wetlands would be expected from the Proposed Action. In the event of a spill or leak of fuel or other construction-related products, spill procedures outlined in Cavalier AFS's SPCC Plan would be followed to contain and clean up a spill quickly (see **Section 3.10** for a discussion on hazardous materials and wastes). All fuels and other potentially hazardous materials would be contained and stored appropriately at the work site. With implementation of SPCC Plan requirements, no impacts on surrounding off-installation wetlands would be anticipated. Please refer to **Section 3.5.1** for more discussion of erosion and sediment control and storm water management regulations.

3.5.3.3 No Action Alternative

Under the No Action Alternative, the Proposed Action would not be implemented. Because the No Action Alternative includes a garage addition to Unit 201, extensive maintenance and renovations to bring existing housing units constructed in 1973 up to USAF housing standards, and repair or replacement of utility lines and roads, intermittent and short-term, negligible, adverse effects on water resources would be expected from the No Action Alternative. ESCPs would be developed and implemented both during and following site development to contain soil and storm water runoff on site, and would reduce the potential for adverse effects associated with erosion and sedimentation and transport of sediments and contaminants in runoff. If disturbances from future improvements are equal to or greater than 5,000 square feet of land at a time, storm water runoff would be in compliance with Section 438 of the EISA. Likewise, if disturbances from future improvements are equal to or greater than 20 acres at a time (between August 1, 2011, and February 2, 2014), or 10 acres at a time (after February 2, 2014), storm water runoff would be in compliance with the CWA Final Rule regarding non-numeric effluent limitations.

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 could 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 Part 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. Cavalier AFS is in a grassland transition zone between the eastern Bluestem grassland (*Andropogon-Panicum-Sorgastrum*) and the Wheatgrass-Bluestem-Needlegrass grassland (*Agropyron-Andropogon-Stipa*) complexes (CAFS 2007a). Cavalier AFS is generally developed and dominated by mowed grass and landscaping features. The majority of unmaintained grassland on Cavalier AFS is dominated by invasive species, particularly Kentucky bluegrass (*Poa pratensis*) and smooth brome (*Bromus inermis*) (CAFS 1996). Approximately 60 species of plants, about half of which were introduced species, were identified on Cavalier AFS during the 1994–1995 biological survey (CAFS 1996). The site of the Proposed Action contains residential landscaping including regularly mowed grass and planted nonnative trees and shrubs around the MFH units (CAFS 1996). The PO would be responsible for ensuring that maintenance of conveyed area complies with provisions in the installation's current Conservation Management Plan and Invasive Plant Species Control Plan.

Wildlife. The USFWS and North Dakota Game and Fish Department have determined that Cavalier AFS is unsuitable for conserving and managing fish and wildlife due to lack of suitable habitat, and, thus, the installation is not required to implement a fish and wildlife management plan. However, Cavalier AFS is currently beginning the pursuit of developing natural resources areas, which could ultimately change this determination (CAFS 2007a). Natural resources areas are unimproved grounds normally managed by the natural resources staff in support of the USAF mission and to achieve integrated resources management goals. Unimproved grounds are managed for natural resources goals and not for appearance (CAFS 2007a).

Species observed on Cavalier AFS during the 1994–1995 biological survey are shown in **Table 3-8**. Ground-nesting birds (e.g., killdeer [*Charadrius vociferous*] and western meadowlark [*Sturnella neglecta*]) are common on Cavalier AFS (CAFS 2007a, CLO 2009a) and would be expected to use the site of the Proposed Action or nearby grassland areas. Other common avian species on Cavalier AFS that would be expected to use the site of the Proposed Action include the American robin (*Turdis migratorius*), chipping sparrow (*Spizella passerine*), mourning dove (*Zenaidura macroura*), and Brewer's blackbird (*Euphagus cyanocephalus*) (CAFS 1996). Cliff swallows (*Petrochelidon pyrrhonota*) and barn swallows (*Hirundo rustica*) frequently build nests under the eaves of several Cavalier AFS buildings

(CAFS 2007a, CAFS 1996). Raptors, such as owls and hawks, are also often observed hunting in the open grounds areas at Cavalier AFS (CAFS 2007a).

Table 3-8. Species Observed on Cavalier AFS in 1994 and 1995

Common Name	Scientific Name
Birds	
American robin	*Turdis migratorius*
Barn swallow*	*Hirundo rustica*
Cedar waxwing	*Bombycilla cedrorum*
Brewer's blackbird	*Euphagus cyanocephalus*
Chipping sparrow	*Spizella passerina*
Western meadowlark	*Sturnella neglecta*
Great blue heron	*Ardea herodias*
Horned lark	*Eremophilla alpestris*
Killdeer*	*Charadrius vociferus*
Mourning dove	*Zenaidura macroura*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Mammals	
Deer mouse	*Peromyscus maniculatus*
Meadow vole	*Microtus pennsylvanicus*
Moose	*Alces alces*
Raccoon	*Procyon lotor*
Richardson's ground squirrel	*Spermophilus richardsonii*
Thirteen-lined ground squirrel*	*Spermophilus tridecemlineatus*
Reptiles and Amphibians	
Leopard frog	*Rana pipiens*
Tiger salamander	*Ambystoma tigrinum*

Sources: CAFS 1996, CLO 2009a, CLO 2009b

Note: * Observed evidence of breeding on Cavalier AFS.

Mammals observed on Cavalier AFS during the 1994–1995 biological survey that could occur within or near the project area include the deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), raccoon (*Procyon lotor*), and thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*) (CAFS 1996).

Evidence of moose (*Alces alces*) (e.g., tracks and scat) was observed during the biological surveys conducted during 1994 to 1995 in the northwestern portion of Cavalier AFS, west of the shelterbelt and north-northeastern portion of the site of the Proposed Action (CAFS 1996). While a wandering moose could be seen in diverse habitats during its movement, a population could build up only where there is a large acreage of suitable habitat, which does not occur on Cavalier AFS. However, it is possible that wandering moose will use the installation as a pathway and thus might be seen on or near the installation

in the future. Due to potential for conflict between moose and vehicles on Cavalier AFS, the best management plan would be to continue to try to exclude them from the installation (CAFS 1996).

Protected and Sensitive Species. There are no known federally threatened or endangered species on Cavalier AFS (CAFS 1996). In 1996, a threatened and endangered species survey was conducted for the installation. No federally listed threatened or endangered species were identified. The seven federally listed species occurring within North Dakota do not have any potential habitat within Pembina County (NDDA 2009). North Dakota does not have an official list of state threatened and endangered species (CAFS 1996). The Richardson's ground squirrel (*Spermophilus richardsonii*), a North Dakota Level II Species of Conservation Priority, has been observed on Cavalier AFS. Level II Species of Conservation Priority are species having a moderate level of conservation priority or a high level of conservation priority but a substantial level of non-State Wildlife Grant funding available for their conservation, thus giving them less priority for state conservation actions than Level I species (NDGFD 2005).

Migratory birds, as listed in 50 CFR Part 10.13, are protected under 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*. Most bird species found on or passing through Cavalier AFS are migratory species. All bird species observed on Cavalier AFS during the 1994–1995 biological survey were migratory species (see **Table 3-8**).

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

3.6.3.2 Proposed Action

Vegetation. The majority of vegetation within the MFH area is modified, landscaped, and mowed regularly. Short-term, negligible, adverse effects on vegetation would be expected from the Proposed Action. Incidental damage (e.g., trampling) of adjoining vegetation could occur during demolition,

construction, and renovation activities. This vegetation would be expected to regenerate or be replanted once demolition activities have ceased. After facilities deemed inadequate are demolished, the PO would grade the site of the Proposed Action for proper drainage and seed all areas not proposed for future developments. As there have been no observations made of any unique native vegetative species occurring within the MFH privatization area, all impacts on vegetation are expected to be negligible. The majority of vegetation within the site of the Proposed Action is composed of nonnative grasses, trees, and shrubs; therefore, adverse effects on native vegetation would not be expected.

The area required for the 12 new MFH units under the Proposed Action is anticipated to be greater than existing conditions, as MFH units would have a larger square footage and be single-family homes instead of duplexes. Additionally, the proposed community center would also increase the amount of building cover within the site of the Proposed Action. Long-term, negligible, adverse effects on vegetation would be expected if the new MFH units and the proposed community center are constructed in undeveloped (e.g., grass) sites within the MFH privatization area due to direct removal of vegetation.

Construction and demolition activities create disturbances that can increase the spread of noxious weeds. The Federal Noxious Weed Act mandates control of noxious weeds by limiting possible weed seed transport from infested areas to noninfested sites. During and immediately following demolition and 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. However, once demolition has ceased, the disturbed areas would be seeded or replanted in sod and the MFH privatization area would be 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 on vegetation from noxious weeds would be expected.

Wildlife. Short-term, negligible, adverse effects on wildlife would be expected from the Proposed Action due to disturbances (e.g., noise and motion) from demolition, construction, and renovation activities and associated heavy equipment use. During demolition, construction, and renovation activities, there would be temporary increases in ambient noise levels and other disturbances from increased activity within the MFH privatization area. High noise events could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term, negligible, adverse effects. Most wildlife species within the site of the Proposed Action would be expected to be adapted to regular disturbances from residential activity. Wildlife would be expected to recover quickly (e.g., return to site) once disturbances have ceased, or habituate to the disturbances altogether; therefore, no long-term, adverse effects on wildlife would be expected as a result of temporary and intermittent demolition, construction, and renovation disturbances.

Most grassland species described in **Section 3.6.2** would be expected to be a large enough distance from the MFH units in grassland areas that they would not be disturbed from the Proposed Action. Traffic to and from the MFH units would be on an existing roadway within the MFH area, which does not directly adjoin the larger spans of grassland habitat within the MFH privatization area. Therefore, adverse impacts on wildlife on adjacent habitats from demolition and construction disturbances are anticipated to be negligible.

Protected and Sensitive Species. There are no known federally threatened or endangered species on Cavalier AFS (CAFS 1996); therefore, no impacts on threatened or endangered species would be expected from the Proposed Action.

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 Part 10.13. Demolition and construction activities 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 would be expected from noise and motion disturbances during demolition and construction activities. These impacts would most likely be in the form of escape or avoidance behaviors, and are anticipated to be temporary. Several migratory bird species have potential to nest within the site of the Proposed Action. For example, cliff swallows (*Petrochelidon pyrrhonota*) frequently build nests under the eaves of several Cavalier AFS buildings (CAFS 2007a). Barn swallows would also be expected to use installation buildings for nesting. Species such as the American robin could use trees within the MFH area for nesting. The following BMPs are recommended for reduction or avoidance of impacts on migratory birds that could occur within the site of the Proposed Action:

- Any groundbreaking construction activities should be performed before migratory birds return to Cavalier AFS or after all young have fledged to avoid incidental take.
- If demolition or construction is scheduled to start during the period in which nesting migratory bird species are present (approximately late-April through mid-August), 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 demolition or 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. Demolition or 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

Under the No Action Alternative, the Proposed Action would not occur, but the MFH units constructed in 1973 would eventually require intensive maintenance and renovations to bring them to current USAF housing standards. If renovations occur, effects on biological resources would be similar to, but less than, those described under the Proposed Action.

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 NEPA 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 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 SHPO. Federally recognized Native American tribes would be consulted with in accordance with NHPA and EO 13175, *Consultation and Coordination with Indian Tribal Governments* (November 9, 2000).

3.7.2 Existing Conditions

The origins of Cavalier AFS are found in the context of the larger SRMSC and the development of the ABM system program initiated by the United States in 1955. Between 1955 and 1969, several ABM systems were developed, and on March 14, 1969, President Richard Nixon approved the Safeguard system through the construction of 12 ABM sites. Construction on the first two ABM sites was to begin immediately at Grand Forks AFB in Grand Forks, North Dakota, and Malmstrom AFB in Great Falls, Montana. Construction began in 1970 in North Dakota, but as a result of the Strategic Arms Limitation Treaty, restrictions were placed on nuclear development and only the SRMSC would be built. The SRMSC consisted of several separate locales: the Missile Site Radar Complex, the PAR Complex (also known as Cavalier AFS), and the Remote Sprint Launchers. The SRMSC became operational on October 1, 1975, but was shut down on February 10, 1976 (CAFS 2008e).

In 1977, when the missile site was completely deactivated, the PAR complex was leased to the USAF and redesignated the Concrete Missile Early Warning Station. In 1983 it was renamed Cavalier AFS and assigned to Headquarters AFSPC's 10th Missile Warning Squadron. It underwent several changes in designation and assignment, but by 2000 the PAR complex was assigned to the 10 SWS and was designated Cavalier AFS. The remaining locations of the SRMSC, specifically the Missile Site Radar

Complex and the four Remote Sprint Launchers, are in caretaker status and receive basic maintenance. Only Cavalier AFS remains operational (CAFS 2008e).

Cultural resources investigations were not conducted prior to construction of the SRMSC, nor in association with inactivation of most of the complex in the 1970s. When SRMSC was identified as a candidate for missile defense system deployment, the U.S. Army initiated cultural resources surveys for compliance with Section 106 of the NHPA. An archaeological resource survey was conducted at Cavalier AFS in 1991 by Dr. Larry Loendorf of the University of North Dakota, under the auspices of the Oak Ridge National laboratory. No archaeological resources were found and the surveyed areas were found to have been disturbed to the extent that intact archaeological resources are unlikely to exist there. Additionally, no Traditional Cultural Properties or objects of Native American patrimony have been identified at Cavalier AFS (CAFS 2008f).

Preliminary and intensive surveys of the built environment were conducted in 1992, and on the basis of these surveys, the U.S. Army and the North Dakota SHPO agreed that the entire SRMSC, including Cavalier AFS, was eligible for listing in the NRHP under Criteria A and G. Because of the potential for re-use of the SRMSC and potential alteration or removal of elements of the complex, the Army Space and Missile Defense Command initiated Historic American Engineering Record documentation in 1992. This documentation was completed in 1996 and submitted to the Library of Congress and the SHPO (CAFS 2008f). The U.S. Army, with the participation by the USAF, entered into a Programmatic Agreement (PA) with the SHPO and ACHP in early 1997 regarding future historic preservation of the SRMSC, including the Cavalier AFS area. The PA called for the Army to prepare an ICRMP for the entire SRMSC (CAFS 2009a). In September 1998, the U.S. Army requested clarification from the Keeper of the NRHP regarding contributing or noncontributing status of buildings and structures within the Cavalier AFS portion of the SRMSC. The Keeper determined that the 279-acre PAR Site Historic District is one of six historic districts composing the SRMSC, all of which are eligible for listing in the NRHP. The ICRMP for the entire SRMSC was completed in 1999. NRHP eligibility recommendations in the ICRMP for Cavalier AFS did not entirely correspond with the Determination of Eligibility by the Keeper of the NRHP. USAF purchased the Cavalier AFS site from the U.S. Army in 2007. In 2008, to address the discrepancies and to apply the criteria for evaluation of Cold War assets (for which criteria had not been applied previously), the USAF re-evaluated the buildings and structures that had been previously addressed by the Keeper, including four specific roads that had apparently been determined eligible by the Keeper as "historic roads" (CAFS 2008f).

The 2008 reevaluation report addressed 19 of the 20 buildings and structures previously determined by the Keeper to be eligible as contributing elements of the historic district. Not addressed in the 2008 reevaluation was Building 805, a fuel oil pump station that was determined by the Keeper to be a contributing element of the historic district in 1998 and included in the 1999 ICRMP. The 2008 reevaluation concluded that only three structures constituting a much smaller historic district are NRHP eligible: Building 820 (the PAR power plant), Building 825 (the utility tunnel), and Building 830 (the perimeter acquisition radar building). These structures are considered eligible under the criteria for Cold War assets because they specifically represent the Cold War mission of the installation. In early 2009, the SHPO concurred with this reevaluation. The USAF and SHPO developed a revised PA addressing Buildings 820, 825, and 830 in 2009 (Paaverud 2009).

Under the Proposed Action, 12 MFH units (consisting of 6 single-story duplex buildings) would be demolished and replaced with 12 newly constructed single-family units. These units were constructed in 1973 at the Missile Site Radar Complex near Nekoma, North Dakota, and moved to their exiting locations at Cavalier AFS in 1987 (CAFS 2008e). In 2003, arctic rooms were added to all duplex MFH units, except Unit 110 (part of duplex Building 1006), and dining areas were added to some units (CAFS 2008b, Fors 2010). The 12 MFH units proposed for demolition are not eligible to be listed in the NRHP because

they lack site integrity and integrity of materials. Additionally, they arrived at Cavalier AFS outside the period of significance for this installation (CAFS 2008e). The remaining two single-story, single-family units constructed in 2001 would be renovated with minor improvements, and are too recent to be considered for NRHP eligibility. There are no Capehart-Wherry housing units on Cavalier AFS. Accordingly, there are no NRHP-eligible or NRHP-listed buildings in the MFH area. Furthermore, the MFH area is not near any NRHP-eligible buildings.

Cavalier AFS has no known properties of traditional cultural significance or sacred sites based on tribal coordination accomplished to date. In 2010, the USAF consulted with federally recognized tribes with interest in the area where Cavalier AFS is located. Thirteen tribes expressed interest in continuing consultation regarding Cavalier AFS. The USAF is consulting with these tribes regarding the Proposed Action. The list of these tribes can be found in **Appendix C**.

3.7.3 Environmental Consequences

3.7.3.1 Evaluation Criteria

The criteria of adverse effect outlined in 36 CFR Part 800 provides a basis for evaluating impacts on historic properties. Pertinent examples of adverse effects can include physically altering, damaging, or destroying all or part of a resource; altering characteristics of the surrounding environment that contribute to the resource's significance; introducing visual or audible elements that are out of character with the property or that alter its setting; or neglecting a resource to the extent that it deteriorates or is destroyed. Under 36 CFR Part 800, a proposed action might have no effect, no adverse effect, or an adverse effect on historic properties.

3.7.3.2 Proposed Action

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 or areas of previous disturbance, including housing areas with low probabilities for archaeological resources.

In the event of an inadvertent discovery of an archaeological resource on Cavalier AFS, 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. 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. The existing MFH units are not eligible for the NRHP under Criteria A through D or Criterion Consideration G, and are not located near a 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 Cavalier AFS; therefore, no impacts from the Proposed Action are expected. If resources of traditional, religious, or cultural significance to Native American tribes are identified within the APE of the Proposed Action, Cavalier AFS would consult with the tribes to avoid, minimize, or mitigate any impacts from the Proposed Action on those resources.

3.7.3.3 No Action Alternative

Under the No Action Alternative, the conveyance of property considered under this EA would not occur. Baseline conditions for cultural resources described in **Section 3.7.2** would remain unchanged; therefore, no impacts on cultural resources would be expected from 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 a characterization of baseline conditions in the context of regional, state, and national trends. For the purpose of the Proposed Action, this section focuses primarily on the construction industry. Socioeconomic data analyzed in this section represents the region of influence (ROI) relative to its surrounding metropolitan city, county, and state levels in order 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 industrial, commercial, and other sectors of the economy provide baseline information about the economic health of a region.

Environmental Justice. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), 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. In addition, 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

Demographics. For the Proposed Action, the socioeconomic baseline conditions are presented using four spatial levels: (1) the ROI, defined as census tracts around Cavalier AFS (census tracts 9503 and 9504), (2) the City of Cavalier, (3) Pembina County, and (4) the State of North Dakota. The ROI is included to illustrate economic effects from the Proposed Action that might occur in the immediate area around Cavalier AFS. Pembina County is included in the analysis as Cavalier AFS is located within the county. The City of Cavalier is included because it is the largest city within Pembina County. The State of North Dakota is included to provide a broader level of comparison. Subsequently, the population within the ROI and other major residential and commercial areas around the Proposed Action are captured.

Based on 2000 U.S. Census data, the population in the ROI was 3,313 persons, of which 10.8 percent were children under the age of 10. Population growth within the ROI decreased by 5 percent from 1990 to 2000. Population data from 2000 to 2008 were not available for the ROI as population estimates for census tract level data are not completed. The population of the City of Cavalier grew 1.9 percent during the decade ending in 2000, but declined 14 percent from 2000 to 2008. The Pembina County population decreased 7.1 percent from 1990 to 2000 and an additional 13.6 percent from 2000 to 2008 (U.S. Census Bureau 1990, U.S. Census Bureau 2000a, U.S. Census Bureau 2008). **Table 3-9** shows the population and growth rates for the ROI, the City of Cavalier, Pembina County, and the State of North Dakota.

Table 3-9. Population and Growth Rates from 1990 to 2008

Location	Population			Growth Rate	
	1990	2000	2008 (Estimate)	1990 to 2000	2000 to 2008
ROI	3,488	3,313	N/A*	(5.0%)	N/A
City of Cavalier	1,508	1,537	1,322	1.9%	(14.0%)
Pembina County	9,238	8,585	7,419	(7.1%)	(13.6%)
State of North Dakota	638,800	642,200	641,481	0.5%	(0.1%)

Sources: U.S. Census Bureau 1990, U.S. Census Bureau 2000a, U.S. Census Bureau 2008

Note: * Population estimates are not available for census tracts.

Regional Employment. Based on 2000 U.S. Census Bureau data, approximately 1.1 percent of the population in the ROI is employed by the Armed Forces as compared to 0.3 percent of the Pembina County population. The largest employment type within the ROI, the City of Cavalier, Pembina County, and the State of North Dakota was educational, health, and social services, representing 22.3 percent, 22.9 percent, 18.5 percent, and 24.2 percent of the populations, respectively. Within the ROI, agriculture, forestry, fishing and hunting, and mining was the second largest employment type employing 14.1 percent of the population, and retail trade was the third largest industry employing 12.5 percent of the population (U.S. Census Bureau 2000b). **Table 3-10** illustrates employment by industry for the ROI, the City of Cavalier, Pembina County, and the State of North Dakota.

Table 3-10. Employment by Industry, 2000

Employment Type	ROI	City of Cavalier	Pembina County	State of North Dakota
Population 16 years and over in Labor Force	1,668	770	4,231	338,982
Percentage in Armed Forces	1.1%	0.0%	0.5%	2.1%
Percentage of Civilian Employed Persons in:				
Agriculture, forestry, fishing and hunting, and mining	14.1%	10.0%	15.9%	8.2%
Construction	7.1%	8.4%	5.8%	6.2%
Manufacturing	11.0%	12.9%	15.8%	7.1%
Wholesale trade	4.9%	3.2%	3.7%	3.7%
Retail trade	12.5%	14.8%	11.9%	12.7%
Transportation and warehousing, and utilities	4.6%	3.4%	6.0%	5.7%
Information	1.3%	2.2%	0.8%	2.3%
Finance, insurance, real estate, and rental and leasing	4.8%	4.9%	4.0%	5.9%
Professional, scientific, management, administrative, and waste management services	3.6%	3.7%	4.0%	6.0%
Educational, health, and social services	22.3%	22.9%	18.5%	24.2%
Arts, entertainment, recreation, accommodation, and food services	4.1%	3.4%	4.5%	8.2%
Other services (except public administration)	2.9%	2.1%	3.5%	4.9%
Public administration	6.7%	8.1%	5.6%	4.8%

Source: U.S Census Bureau 2000b

Cavalier AFS employs approximately 150 military, DOD civilian, and civilian contractor personnel (CAFS 2008a). The annual payroll contributes to the local economy through utilities and service contracts with regional companies, and purchase orders for administrative and operational services and supplies. Based on the Cavalier AFS Comprehensive Plan, the installation's annual payroll is approximately $7.1 million and approximately $5.7 million was spent on contracts and purchase orders (CAFS 2006).

Housing. **Table 3-11** shows the housing characteristics, including the number of occupied and vacant units, in the ROI, the City of Cavalier, Pembina County, and the State of North Dakota. Fourteen MFH units are required to meet the HRMA requirements for Cavalier AFS, which are based on the housing market area, housing supply, and military housing demand (CAFS 2003). The number of people residing in housing on Cavalier AFS varies based on the mix of single, accompanied, and unaccompanied military members assigned to the installation; however, it is usually approximately 150 people (CAFS 2008a).

Table 3-11. Housing Characteristics, 2000

Location	Total Number of Units	Occupied Units		Vacant Units	Percent Vacant
		Owner Occupied	Renter Occupied		
ROI	1,566	1,044	323	199	12.7
City of Cavalier	750	453	226	71	9.5
Pembina County	4,115	2,771	764	580	14.1
State of North Dakota	289,677	171,299	85,853	32,525	11.2

Source: U.S Census Bureau 2000a

Cavalier AFS participates in the OWS Program, which has provided more than 1,000 excess housing units to American Indian reservations in Montana, North Dakota, South Dakota, and Minnesota. The units anticipated for demolition under the Proposed Action might be desirable for the OWS Program.

Environmental Justice. Minority and low-income populations within the ROI, the City of Cavalier, Pembina County, and the State of North Dakota were analyzed to establish a baseline for environmental justice. The ROI was analyzed for a disproportionately low-income or minority population compared to the City of Cavalier, Pembina County, and the State of North Dakota. Minority populations within the ROI are not significantly different from the other three census groups. In 2000, 4.4 percent of the population within the ROI was within a racial minority (race other than white) and 2.7 percent were of Hispanic or Latino origin. When compared to the City of Cavalier and Pembina County, the ROI had lower percentages of residents of a racial minority and of Hispanic or Latino origin. The ROI had a slightly lower percent of residents within a racial minority when compared to the State of North Dakota, but a slightly higher percent of Hispanic or Latino residents (U.S. Census Bureau 2000). **Table 3-12** presents the demographic profile for the ROI, the City of Cavalier, Pembina County, and the State of North Dakota.

The median household income within the ROI is $35,554, which is comparable to the City of Cavalier at $35,667, and slightly less than Pembina County at $36,430 (see **Table 3-12**). The State of North Dakota median household income is only slightly higher at $34,604. The poverty level of families living within the ROI (6.7 percent) is less than that of the City of Cavalier (7.8 percent), Pembina County (7.4 percent), and the State of North Dakota (8.3 percent).

3.8.3 Environmental Consequences

3.8.3.1 Evaluation Criteria

Socioeconomics. 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.

Table 3-12. Minority and Low Income, and Poverty Status for 2000

Demographic	ROI	City of Cavalier	Pembina County	State of North Dakota
Total Population	**3,313**	**1,537**	**8,585**	**642,200**
Male	49.5%	47.0%	50.1%	49.9%
Female	50.5%	53.0%	49.9%	50.1%
Under 5 Years	5.0%	4.6%	5.0%	6.1%
Over 65 Years	20.5%	24.8%	19.5%	14.7
White	95.6%	94.3%	95.5%	92.4%
Black or African American	0.3%	0.5%	0.2%	0.6%
American Indian and Alaska Native	1.0%	1.0%	1.4%	4.9%
Asian	0.4%	0.5%	0.2%	0.6%
Native Hawaiian and Other Pacific Islander	0.0%	0.0%	0.0%	0.0%
Some Other Race	1.7%	2.1%	1.3%	0.4%
Two or More Races	1.0%	1.6%	1.4%	1.2%
Hispanic or Latino [a]	2.7%	4.3%	3.1%	1.2%
Families below poverty [b]	6.7%	7.8%	7.4%	8.3%
Median Household Income [c]	$35,554	$35,667	$36,430	$34,604

Sources: U.S. Census Bureau 2000a, U.S. Census Bureau 2000b

Notes:

a. Persons of Hispanic or Latino origin can be of any race, and thus are also included in applicable race categories.

b. Based on 1999 poverty thresholds.

c. Median Household Income for the ROI consists of the average of the census tracts included in the ROI.

Environmental Justice. Ethnicity and poverty data are examined for the ROI and compared to city, county, and state statistics to determine if a low-income or minority population could be disproportionately affected by the Proposed Action. This section also evaluates impacts from the Proposed Action on children's environmental health and safety risks.

3.8.3.2 Proposed Action

Demographics. No short- or long-term increases in population would be expected under the Proposed Action; therefore, no effects on demographics would be expected. Census data for 2000 identify a local workforce of 400 people in the construction industry within Pembina County. The number of construction workers required for the proposed demolition, construction, and renovation projects would be relatively small compared to the available construction work force in the county, and should be adequate without impacting local employment. Therefore, short-term population increases in the ROI or the county during demolition and construction would not be expected because construction workers would likely be existing local residents. In addition, the number of personnel employed at Cavalier AFS

would not change as a result of the Proposed Action, and, thus, no long-term local population increases would be expected.

Employment Characteristics. Short-term, negligible to minor, beneficial impacts on the local economy would be expected due to increased employment and purchase of materials. Demolition, construction, and renovation activities under the Proposed Action would produce beneficial economic impacts for the local economy. Local labor, equipment, and supplies would be needed to complete demolition of existing MFH units and construction of the new MFH units and ancillary facilities, thereby generating revenue for the local economy.

Housing. Long-term, minor beneficial impacts would be expected under the Proposed Action. Demolition of inadequate MFH units and replacement with modern homes, and renovation and timely maintenance of the existing MFH units would increase the quality of life at Cavalier AFS and increase the standard of Cavalier AFS's MFH.

Environmental Justice. The ROI does not have a disproportionate percentage of minority or low-income populations; therefore, the Proposed Action would not result in any impacts on environmental justice. Demolition and construction associated with the Proposed Action would occur entirely on Cavalier AFS, and would be in accordance with OSHA regulations, ensuring that the safety of children would not be impacted. During demolition, construction, and renovation activities, all units would be surveyed for ACM and LBP and remediated, as appropriate. Therefore, negligible impacts on children's health and safety risks would be expected as a result of the Proposed Action.

3.8.3.3 No Action Alternative

Under the No Action Alternative, the existing MFH units at Cavalier AFS would continue to provide housing to military personnel and their family members. Minor maintenance and repairs on exiting MFH units, and addition of a garage to Unit 201 would be expected to occur under the No Action Alternative. Therefore, short-term, negligible, beneficial impacts would be expected on the local economy due to increases in employment and local business volume during maintenance and repairs. Similar to the Proposed Action, no impacts on environmental justice would be expected to occur.

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, 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. Regional access to Cavalier AFS is provided by 91st Street NE and County Road 89. Ninety-first Street NE is an east-west directional roadway that provides access to the installation from the east and west; County Road 89 is a north-south directional roadway that provides access to the installation from the north. The entrance to Cavalier AFS is just south of the intersection of 91st Street NE and County Road 89. 128th Avenue extends from the intersection of 91st Street NE and County Road 89 and is the access road to the installation. Garden Road and Spraker Drive branch off from 128th Avenue as secondary roads (see **Figure 1-2**).

The MFH area is on the western side of the installation and includes portions of Garden Road, Spraker Drive, and 1st Street. Meadowlark Court is a small residential street in the east-central portion of the MFH area (see **Figure 2-1**). Roadways at the MFH area are capable of supporting current traffic volumes (CAFS 2005).

Electrical Supply. Nodak Electronic Cooperative supplies electrical power to Cavalier AFS via a 13.8-kilovolt buried cable. Electrical power is delivered to the installation's primary switch station, which is a 12-megavolt ampere transformer that is approximately 40 years old. A 7.2-kilovolt circuit delivers electrical power from the primary switch station to the various buildings, including the MFH units, at the installation. The electrical cables that serve the MFH area use an underground ducted concrete distribution system. A 2005 Housing Community Profile evaluated the electrical system at the MFH area as in good condition (CAFS 2005); however, an August 2008 AFSPC assessment of Cavalier AFS's overall electrical distribution system rated the electrical system as being in degraded condition. Electrical power is also supplied to critical facilities on the installation by generators supporting the mission, and, if necessary, the installation generators can back-feed the MFH area (USAF 2010).

Natural Gas Supply. The natural gas system at Cavalier AFS consists of distribution mains, valves, valve boxes, service lines, regulators, cathodic protection system components (i.e., anodes and test stations), service lines, and a meter. Montana Dakota Utilities supplies natural gas and owns and maintains the natural gas lines supplying Cavalier AFS. The Government owns the secondary natural gas lines that run from the metering station to the various buildings, including the MFH units, at the installation (USAF undated c). The 2005 Housing Community Profile evaluated the 40-year-old natural gas system at the MFH area as being in good condition (USAF 2010).

Water Supply. Cavalier AFS receives all water from the North Valley Water Association, Inc. The North Valley Water Association uses 51 wells scattered throughout seven sections of land west of the City of Cavalier, North Dakota, to draw from the Icelandic Aquifer (USAF 2007). Cavalier AFS is capable of receiving up to 0.29 million gallons of water per day (USAF 2003). The installation stores water in a 9-million-gallon open reservoir and in a 400,000-gallon closed underground concrete reservoir. Water supply piping at the installation is composed of cement, cast iron, polyvinyl chloride, and galvanized iron. All water supply piping connected to the MFH units is composed of polyvinyl chloride. The 2005 Housing Community Profile evaluated the water supply system at the MFH area as in good condition. The August 2008 AFSPC assessment of the overall installation water system evaluated the 40-year-old system as in good condition (USAF 2010).

Sanitary Sewer and Wastewater System. The sanitary sewer system at Cavalier AFS includes 1.1 miles of 6- and 8-inch cast-iron collection piping, which is used to transport wastewater to two treatment lagoons that have a combined capacity of approximately 22 million gallons. The first lagoon has a capacity of approximately 6.1 million gallons and is fully used; and the second lagoon has a capacity of 15.7 million gallons and is used for overflow only. An oil/water separator system removes oil and other contaminants from the industrial wastewater before it enters the wastewater treatment lagoons. Treatment

of sanitary sewage at the lagoons is accomplished by biological destruction of organics. This microbial action, coupled with the removal of liquid through evaporation, produces no discharge from the lagoons. The sanitary sewer system was designed to support a significantly larger population than that currently at the installation. As such, there is sufficient capacity for current and future installation development (CAFS undated, CAFS 2008g). The 2005 Housing and Community Profile evaluated the sanitary sewer and wastewater system at the MFH area as in good condition. The August 2008 AFSPC assessment of the overall installation sanitary sewer and wastewater system rated the system as in adequate condition (USAF 2010).

Cavalier AFS previously had one permitted NPDES outfall for its wastewater treatment lagoons. However, in 1996, the installation requested to terminate its NPDES discharge permit because there had been no discharge from the lagoons in more than 20 years. Cancellation notification was received on August 12, 1996 (CAFS 2008g).

Storm Water Drainage. Cavalier AFS's storm water system consists predominantly of open channels and ditches but also includes some buried concrete pipes and culverts. Storm water culverts are well-maintained and drainage channels are properly graded. However, ponding on impervious surfaces is present in some areas of the installation. The 2005 Housing and Community Profile evaluated the storm water system at the MFH area as in good condition. The August 2008 AFSPC assessment of the overall installation storm water system rated the system as in adequate condition (USAF 2010). Storm water from most of Cavalier AFS, including the MFH area, flows south into Willow Creek, which is a tributary of the Park River, and eventually the Red River. Other portions of the installation drain into ephemeral streams that flow north into the Tongue River (USAF 2001).

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. Cavalier AFS currently operates under an NDPDES Industrial Storm Water Permit (Permit No. NDR05-0316). 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 (NDDH 2005). See **Section 3.5** for more information on NPDES permits.

Communications Systems. Cavalier AFS uses both fiber optic and copper cable to support telephone, video, and computer conductivity at the installation. Most communication cables on the installation are buried, including all within the MFH area (USAF undated c). All Cavalier AFS MFH units are supplied with telephone and cable television service, and two of these MFH units are supplied with secured Government telephone and computer network service. The 2005 Housing Community Profile evaluated the telephone system of the MFH area as in fair condition with cables deteriorating and spares inadequate (USAF 2010).

Solid Waste Management. Cavalier AFS maintains a *Solid Waste Management Plan* in accordance with AFI 32-7042, *Solid and Hazardous Waste Compliance*. The Cavalier AFS *Solid Waste Management Plan* defines the solid waste streams, disposal methods, and diversion goals and means. There are no on-installation landfills at Cavalier AFS. Solid wastes are collected at receptacles throughout the installation and transported on a weekly basis by a licensed refuse contractor to the Grand Forks County Landfill, the nearest licensed landfill to the installation (CAFS 2008h). This landfill has permitted capacity until 2014 and is able to receive up to 350 tons of municipal waste per day (NDDH 2009a). The installation landfills approximately 4 tons of solid waste per month (CAFS 2008h). The Grand Forks landfill has sufficient available capacity for future regional waste disposal needs.

Cavalier AFS reduces solid waste at the installation by recycling aluminum, cardboard, mixed paper, glass, certain plastics, ferrous scrap, copper scrap, nonferrous segregated scrap metals, tires, spent

florescent tubes, used oils, used oil filters, used anti-freeze, batteries, and toner ink cartridges. Recyclables from the MFH area are dropped off at the centralized recyclable collection area in the 400-car parking lot (CAFS 2008h). Additional recycling efforts are often 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 transportation resources, energy (electric and natural gas), 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 Cavalier AFS transportation system would be expected from implementation of Proposed Action. The demolition of 12 existing MFH units; the construction of 12 new MFH units, a community center, and other ancillary facilities; and the renovation of 2 existing MFH units would result in a slight increase in the amount of traffic at the installation from equipment and supplies being delivered, debris being removed, and contractors arriving at the work sites. However, traffic associated with demolition, construction, and renovation activities would compose a small percentage of the total existing traffic on the installation. Many of the heavy demolition, construction, and renovation vehicles would be driven to the work sites and kept on site for the duration of work activities, resulting in relatively few additional trips. The proposed demolition, construction, and renovation activities would be spread over a period of 6 years, which would further reduce effects on installation traffic. Any potential increases in traffic volume associated with the Proposed Action would be temporary.

No long-term effects on the Cavalier AFS transportation system would be expected from the Proposed Action. The Proposed Action would not change the number of MFH units or personnel at the installation, and it would not alter traffic circulation patterns.

***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 disconnected from the 12 MFH units proposed for demolition and connected to the 12 MFH units, the community center, and other ancillary facilities proposed for construction. Electrical service lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any underground electric utility mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. The building demolition, construction, and renovation processes would result in a slight increase in the demand for electricity; however, because demolition, construction, and renovation activities would be staggered over a 6-year period of time, the increase in electrical demand at any one time would be minimal.

Long-term, negligible to minor, beneficial and adverse effects on the electrical supply would be expected from the Proposed Action. The removal of older, outdated electrical infrastructure from the 12 MFH units proposed for demolition and the installation of modern, efficient electrical infrastructure at the 12 MFH units proposed for construction would be a long-term, negligible to minor, beneficial effect on the installation. However, a long-term, negligible to minor, adverse effect on the installation would result from a small increase in electrical demand from the use of the proposed community center and other ancillary facilities. No changes to electrical demand would be expected from the proposed demolition and construction of the MFH units because any long-term electrical demand changes would offset one another. 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 is anticipated to be the line side of the electrical meter to be installed on each MFH unit (USAF 2010). Therefore, the PO would be responsible for all long-term electrical system maintenance from the electrical meter to be installed on each MFH unit to the MFH units and within the MFH units, while the USAF would continue long-term electrical system maintenance up to the electrical meter to be installed on each MFH unit. For street/area lighting feeders, the POD would be the MFH privatization area, including the secondary side of transformers or other point of connection (USAF 2010).

Natural Gas Supply. Short-term, negligible to minor, adverse effects on natural gas supply would be expected from implementation of the Proposed Action. Temporary, minor natural gas service interruptions might be experienced when natural gas service is disconnected from the 12 MFH units proposed for demolition and connected to the 12 MFH units, the community center, and other ancillary facilities proposed for construction. Natural gas service lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any natural gas mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

Long-term, negligible to minor, adverse effects on natural gas supply would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in a small increase in the demand for natural gas. No changes to natural gas demand would be expected from the proposed demolition and construction of the MFH units because any long-term natural gas demand changes would offset one another. 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 is anticipated to be the upstream side of the natural gas meter to be installed on each MFH unit (USAF 2010). Therefore, the PO would be responsible for all long-term natural gas system maintenance from the natural gas meter to be installed on each MFH unit to the MFH units and within the MFH units, while the USAF would continue long-term natural gas system maintenance up to the meter to be installed on each MFH unit.

Water Supply. Short-term, minor, adverse effects on water supply would be expected from implementation of the Proposed Action. Temporary, minor water service interruptions might be experienced when water service is disconnected from the 12 MFH units proposed for demolition and connected to the 12 MFH units, the community center, and other ancillary facilities proposed for construction. Water supply lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any water supply mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed. Demolition, construction, and renovation activities would require minimal amounts of water, mostly for dust suppression purposes. This water would be obtained from the Cavalier AFS water supply system. Because demolition, construction, and renovation activities would be staggered over a 6-year period of time, the increase in water demand at any one time would be minimal.

Long-term, negligible to minor, adverse effects on water supply would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in a small

increase in the demand for water. No changes to water demand would be expected from the proposed demolition and construction of the MFH units because any long-term water demand changes would offset one another. The Proposed Action would convey all water supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for water systems is anticipated to be the curbside shutoff valve or other agreed to locations; however, its exact location has not yet been determined (USAF 2010). Therefore, the PO would be responsible for all long-term water system maintenance from the proposed water meter to the MFH units and within the MFH units, while the USAF would continue long-term water system maintenance up to the proposed water meter.

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 disconnected from the 12 MFH units proposed for demolition and connected to the 12 MFH units, the community center, and other ancillary facilities proposed for construction. Sanitary sewer and wastewater lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any sanitary sewer mains proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

Long-term, negligible to minor, adverse effects on sanitary sewer and wastewater systems would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in a small increase in the volume of wastewater generated. No changes to wastewater generation volumes would be expected from the proposed demolition and construction of the MFH units because any long-term wastewater generation volume changes would offset one another. The Proposed Action would convey all wastewater supply infrastructure between a predetermined POD and the MFH units to the PO. The POD for wastewater systems is anticipated to the cleanouts closest to the MFH units (USAF 2010). Therefore, the PO would be responsible for all long-term water system maintenance from the cleanouts closest to the MFH units to the MFH units and within the MFH units, while the USAF would continue long-term water system maintenance up to the cleanouts.

Storm Water Systems. Short-term, minor, adverse effects on storm water drainage would be expected from the implementation of the Proposed Action. The proposed demolition of the 12 MFH units and the proposed construction of 12 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 demolition and construction activities. Demolition and 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 demolition and construction activities would be staggered over a 6-year period of time, the disruption to storm water systems would be minimized at any one time.

Long-term, negligible to minor, adverse and beneficial effects on storm water systems would be expected from the Proposed Action. The construction of the 12 new single-family units, which would likely encompass a larger footprint than the existing 12 units within six duplex buildings, and the proposed community center and other ancillary facilities would result in a small increase in the amount of impervious surface at the installation. Additional 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. The Proposed Action would convey ownership of the storm drainage system within the MFH privatization area to the PO. Long-term storm water control infrastructure, including culverts, ditches, and detention basins, would remain at the MFH privatization area and would be maintained and upgraded, as needed, by

the PO. This would control any additional amounts of storm water runoff and result in a long-term, minor, beneficial effect on the installation.

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 disconnected from the 12 MFH units proposed for demolition and connected to the 12 MFH units, the community center, and other ancillary facilities proposed for construction. Communications lines to the MFH units proposed for demolition would be disconnected prior to the start of demolition activities. Any underground communications lines proposed for demolition would be capped at the main and abandoned in place; however, all laterals would be removed.

Long-term, negligible to minor, adverse effects on communications systems would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in a small increase in the demand for communications services. No changes in communications demand would be expected from the proposed demolition and construction of the MFH units because any long-term communications demand changes would offset one another. The Proposed Action would not convey any communications infrastructure to the PO; therefore, installation personnel and local communications service provider would remain responsible for long-term communications system maintenance. However, the PO would be responsible for maintenance of the telecommunications system from the pedestals into each MFH unit, including the wiring within each unit (USAF 2010).

Solid Waste Management. Short-term, minor, adverse effects on solid waste management would be expected from the implementation of the Proposed Action. The 12 MFH units proposed for demolition would first be offered for donation through OWS's Housing Relocation Program, which would reduce short-term, adverse effects associated with solid waste management by substantially reducing the amount of demolition debris generated. If these MFH units cannot be reused through OWS, the proposed demolition of the 12 MFH units, including garages and storage units, would generate approximately 1,794 tons of demolition waste (USEPA 2009b). Additional quantities of solid waste would also be generated from the demolition of driveways, pavements surrounding the MFH units, and utility mains; and the construction of a community center and other ancillary facilities. Total solid waste anticipated to be generated from implementation of the Proposed Action is approximately 2,305 tons (USEPA 2009b, SI Metric 2009). **Table 3-13** summarizes the amounts of solid waste anticipated to be generated from the various aspects of the Proposed Action using estimated areas of structures proposed to be demolished and constructed. The solid wastes generated from implementation of the Proposed Action would consist mainly of building materials such as concrete, metals (e.g., conduit, piping, and wiring), and lumber; and soil piles and yard debris, such as trees and shrubs.

Contractors would be required to recycle demolition debris to the greatest extent possible, thereby diverting it from landfills. Site-generated scrap metals, wiring, clean ductwork, and structural 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 greatest extent possible for grading and contouring.

Long-term, negligible to minor, adverse effects on solid waste management would be expected from the Proposed Action. The use of the proposed community center and other ancillary facilities would result in a small increase in the amount of solid waste generated at the installation; however, this increase would represent a small percentage of the total solid waste generated on the installation. No long-term changes to the amount of solid waste generated would be expected from the proposed demolition and construction of MFH units because any long-term solid waste generation amount changes would offset one another.

Table 3-13. Quantities of Demolition and Construction Debris Generated from the Proposed Action

Project	Estimated Total Square Footage	Multiplier (pounds/square foot)	Debris Generated	
			(pounds)	(tons)
Demolition of 12 MFH Units (including garages and storage units)	28,250	127 [a]	3,587,750	1,794
Demolition of Driveways and Pavements	10,943	69.9 [b]	764,916	382
Construction of 12 MFH Units	33,900	4.34 [a]	147,126	74
Construction of One-Car Garage Addition at 1 MFH Unit (Unit 201)	250	4.34 [a]	1,085	0.5
Construction of Community Center	25,000	4.34 [a]	108,500	54
		TOTAL	**4,609,377**	**2,304.5**

Sources:

a. USEPA 2009b

b. Calculated assuming concrete asphalt density of 139.8 pounds/cubic foot (SI Metric 2009) and pavement thickness of 6 inches.

3.9.3.3 No Action Alternative

The No Action Alternative would result in 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 Part 171.8 as "hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (49 CFR Part 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; 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, 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.

Cavalier AFS maintains a *Hazardous Materials Plan* that provides policies and procedures for handling and storing hazardous materials at the installation (CAFS 2008i). An integral part of the plan is the Hazardous Materials Pharmacy (HAZMART) Program. The HAZMART is the single point of control and accountability over the requisitioning, receipt, distribution, issue, and reissue of hazardous materials. It covers all personnel including military and civilian; permanent parties or transients; and any agencies under a host tenant agreement that handle, use, or transport hazardous materials at Cavalier AFS (CAFS 2007b). Cavalier AFS also maintains a *Spill Prevention, Control, and Countermeasures Plan* (CAFS 2008c), *Pollution Prevention Management Plan* (CAFS 2008j), and *Toxic Substances Compliance Action Plan* (CAFS 2008k) to address the management, spill containment, and cleanup of hazardous material and petroleum products.

Hazardous materials used, stored, and handled at Cavalier AFS include sulfuric acid, nonrestricted use pesticides, bulk fuels, and engine lubrication oil. Minimal amounts of paints and other coatings are also used at the installation. Sulfuric acid is stored and used in the power plant (Building 820) at Cavalier AFS; however, the power plant is on the eastern side of the installation and approximately 2,500 feet from the site of the Proposed Action (CAFS 2009b).

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 regulations (40 CFR Parts 260–270), which are administered by the USEPA. Cavalier AFS maintains a *Hazardous Waste Management Plan* that prescribes the roles and responsibilities of all members of Cavalier AFS with respect to the waste stream inventory, waste analysis plan, hazardous waste management procedures, training, emergency response, and pollution prevention. The plan establishes

the procedures to comply with applicable Federal, state, and local standards for hazardous waste management (CAFS 2008l). Cavalier AFS also maintains a *Hazardous Waste Compliance Action Plan* that was developed to help the Environmental Administrator at Cavalier AFS comply with Federal RCRA regulatory requirements, state regulations, and USAF directives governing hazardous waste (CAFS 2008m).

Cavalier AFS is classified as a conditionally exempt small-quantity generator (CESQG) of hazardous waste (Handler Identification ND9210022779). Facilities that are classified as a CESQG generate up to 100 kilograms of hazardous waste per calendar month and store no more than 1,000 kilograms indefinitely. These facilities have reduced requirements related to compliance (i.e., storage limits, workers training, manifesting, reporting, planning, and land disposal restrictions). Hazardous wastes generated at Cavalier AFS include ignitable hazardous wastes, corrosive hazardous waste, chromium, lead, benzene, and tetrachloroethylene (CAFS 2009b).

Wastes (e.g., used oil, solvent wipes, used solvent, paint wastes, batteries) are stored at three satellite accumulation points (SAPs), including the Technical Maintenance Repair Center (Building 830), Power Plant (Building 820), and Industrial Building (Building 730); and one 180-day central accumulation point (CAP) (Building 700) at Cavalier AFS. The Technical Maintenance Repair Center SAP is on the central portion of the installation, approximately 0.5 miles northeast of the site of the Proposed Action. The Power Plant SAP is on the eastern portion of the installation, approximately 0.47 miles northeast of the site of the Proposed Action. The Industrial Building SAP is on the south-central portion of the installation, approximately 0.2 miles east from the proposed project area. The CAP is on the west-northwestern portion of the installation, approximately 0.1 mile northeast of the proposed project area (CAFS 2008l). 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 or 180-day accumulation site within 72 hours for a maximum of 90 or 180 days, respectively. Accumulation sites where hazardous materials are stored for 90 or 180 days are designated areas at or near the worksite where hazardous waste accumulates before being transported off-installation for ultimate disposal.

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 waste. 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 North Dakota, universal wastes include the following (NDDH 2009b):

- Batteries, including nickel-cadmium batteries, lithium- or mercury-containing batteries, and lead-acid 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, neon mercury vapor, high-pressure sodium, and metal halide lamps.

All hazardous waste is disposed of off-installation at a licensed facility. Cavalier AFS has no landfills and performs no RCRA-type waste treatment activities. Universal wastes and other materials, including used lube oil, oil filters, and antifreeze (i.e., ethylene glycol and propylene glycol), are collected and recycled or disposed of off-installation by the Defense Reutilization and Management Office (CAFS 2008d).

Environmental Restoration Program. The DOD's Environmental Restoration Program (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.

ERP activities at Cavalier AFS are managed by the 21 CES/CEV personnel at Peterson AFB, Colorado. There are five ERP sites (FT-01, FT-02, SS-03, SS-04, and SS-05) at Cavalier AFS (CAFS 1995b). ERP site FT-01 is within the MFH privatization area. All of the ERP sites are within 0.5 miles of the site of the Proposed Action (see **Figure 3-3**). ERP sites FT-02, SS-03, SS-04, and SS-05 were closed by the NDDH in 1996, and ERP site FT-01 was closed by the NDDH in 2001 (see **Table 3-14**) (USAF 2001).

Aboveground and Underground Storage Tanks. AFI 32-7044, *Storage Tank Compliance*, implements AFPD 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 Part 280 (CAFS 2009b).

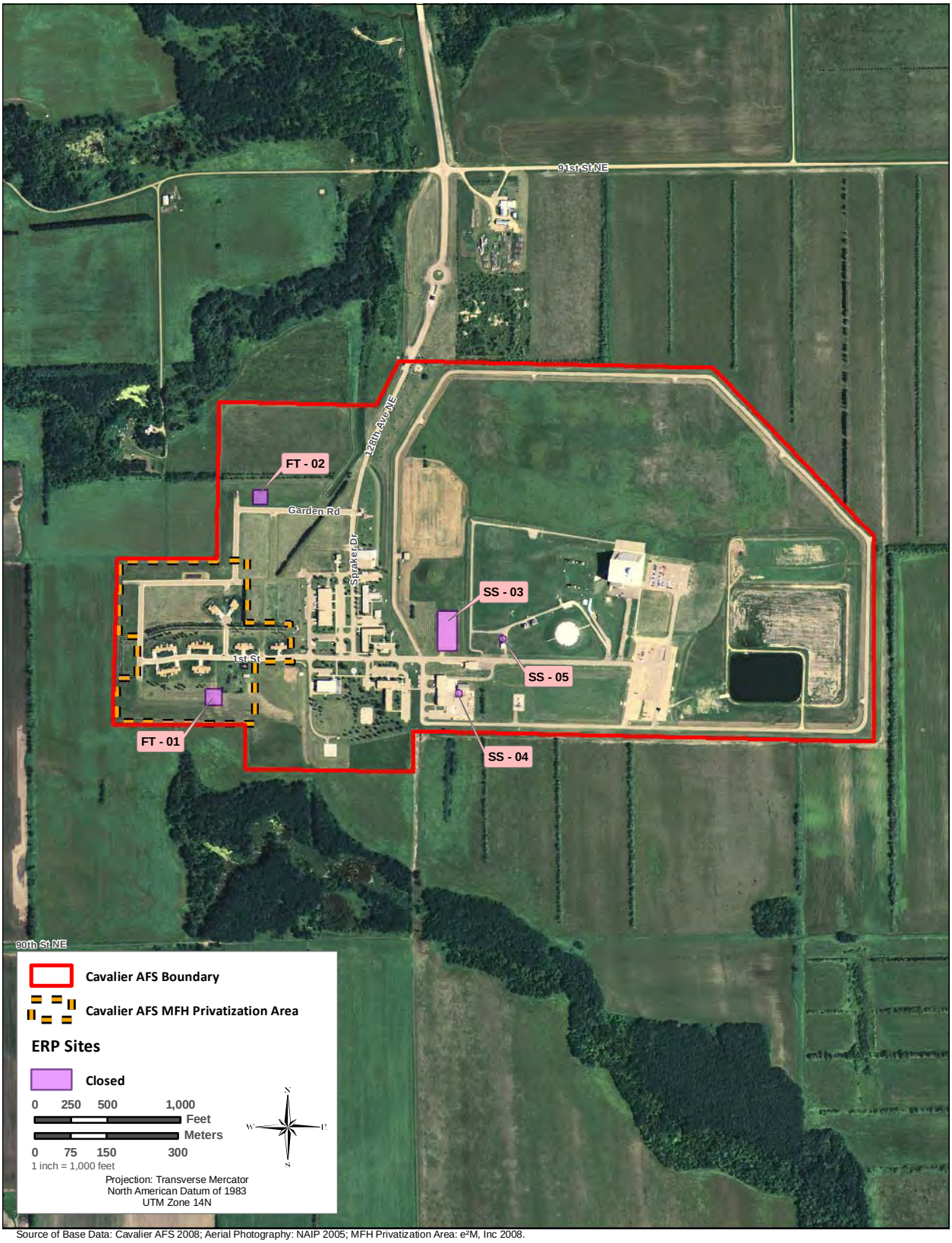
Cavalier AFS maintains a *Storage Tank Compliance Action Plan* that assists in implementing a program to manage and plan for activities associated with USTs and ASTs. The plan provides guidance for management of USTs and ASTs in accordance with Federal, state, and local regulations. The installation utilizes USTs and ASTs for bulk storage of diesel fuel, gasoline, and engine and vehicle lubrication oils (CAFS 2008n).

There are 29 ASTs at Cavalier AFS, none of which are within the site of the Proposed Action (CAFS 2008n). **Table 3-15** presents a summary of the ASTs at Cavalier AFS, including the location, distance from the proposed project area, contents, and capacity.

In the early 1980s, a diesel AST was present within the boundaries of the site of the Proposed Action. The AST supplied diesel fuel to the fire-training burn pit in the southwestern portion of the site of the Proposed Action. The AST was situated on a concrete pad north of the burn pit. The AST and associated piping were removed in 1984. There were no reported spills from the AST (CAFS 2009b).

Policies for managing USTs are outlined in AFI 32-7044 and in the USAF Memorandum regarding UST management strategies, dated May 30, 1990. UST policies include the following:

- Eliminate USTs whenever possible and replace with ASTs
- Use secondary containment for new USTs
- Remove closed USTs
- Maintain UST inventories
- Bring existing USTs into compliance by upgrading based on Federal, state, and local regulations
- Ensure that newly installed tanks are in compliance with Federal, state, and local regulations (CAFS 2008c).



Source of Base Data: Cavalier AFS 2008; Aerial Photography: NAIP 2005; MFH Privatization Area: e²M, Inc 2008.

Figure 3-3. ERP Sites at Cavalier AFS

Table 3-14. Summary of ERP Sites at Cavalier AFS

ERP Site ID	ERP Site Name	Description	Status
FT-01	Burn Pit 1	An approximately 100-foot-by-100-foot bermed area where fire-training exercises were conducted from 1973 to 1984. Waste oil (potentially containing polychlorinated biphenyls [PCBs]) and diesel fuel were the primary fuels burned. Fire-training activities impacted the groundwater; however, the area of contamination was fairly limited in extent. The soils were not impacted to any significant degree. No remedial action was warranted.	Closed 11 July 2001
FT-02	Burn Pit 2	An approximately 100-foot-by-100-foot bermed area where fire-training exercises were conducted from 1984 to 1989. Diesel fuel was the only type of fuel burned. Based on sampling conducted in 1994, petroleum hydrocarbons do not appear to have impacted the subsurface soils or groundwater. No remedial action was warranted.	Closed 8 August 1996
SS-03	Sally Port Parking Area	A relatively flat, 125-foot-by-275-foot, asphalt-paved area that was formerly used in the mid 1970s to 1991 as a storage area for hazardous waste (i.e., leaking transformers containing PCBs). A release of PCB-containing material occurred in the parking area in the early 1990s. No Further Action (NFA) was recommended for the subsurface soils, as the PCB levels were less than 1 ppm. Further action was deemed necessary for the sediments in the northern drainage ditch, which included excavating and disposing of sediments with PCB concentrations of 10 ppm or more.	Closed 28 March 1996
SS-04	Industrial Building Storage Area	An asphalt-paved area where drums of hazardous waste were stored from 1991 to 1992. No contaminants were detected above screening levels; therefore NFA was recommended.	Closed 8 August 1996
SS-05	Acid Storage Tank	A sulfuric acid spill site at Building 815. From 1980 to 1983, approximately 750 to 1,000 gallons of sulfuric acid leaked out of a 4,000-gallon sulfuric acid aboveground storage tank (AST) enclosed in Building 815. In 1990, the underground piping leaked an unknown quantity of sulfuric acid to the subsurface. NFA was recommended for soil and groundwater because the AST and associated piping are no longer in use, acid releases have been neutralized, there is no concern for underground structures, and the qualitative risk is limited.	Closed 8 August 1996

Sources: CAFS 1995b, USAF 1999, CAFS 2006, CAFS 1995a

Table 3-15. ASTs at Cavalier AFS

Location	Distance From Site of the Proposed Action (miles)	Contents	Capacity (gallons)
Building 730	0.2	Unleaded Gasoline	2,000
		Low Sulfur Diesel Fuel	2,000
		Used Lube Oil	285
Building 820	0.47	Fuel Oil	90 (5 ASTs)
		High Speed Diesel 2 Fuel Oil	900 (5 ASTs)
		Lube Oil	560 (5 ASTs)
		Used Lubricating Oil	265
		Used Lubricating Oil	500
		Fuel Oil	25
		Air Compressor Fuel Oil	25
		Used Oil Transfer Tanks	30 (5 ASTs)
Building 841	0.38	Lubricating Oil	5,000
		Used Lubricating Oil	5,000

Source: CAFS 2008n

In 1993, nine USTs were removed from an area between Building 820 and Building 730 after leaks were detected. Remediation actions to remove petroleum-contaminated soil (approximately 6,500 cubic yards) were completed and the NDDH concurred that clean-up actions were complete in 2000 (CAFS 2008n). These USTs were more than 0.25 miles east and downgradient from the site of the Proposed Action (CAFS 2009b).

Currently, there are two USTs in service at Cavalier AFS, both of which are at Building 840, more than 0.25 miles east and downgradient from the site of the Proposed Action. The USTs were installed in 1974, contain No. 2 diesel fuel, and have a capacity of approximately 22,450 gallons each (CAFS 2008d). The USTs and related piping are constructed of cathodically protected, asphalt-coated steel and are equipped with automatic overfill protection shutoff valves and with spill and overfill protection. Leak testing is conducted in accordance with 40 CFR Part 280 and records are maintained in the Cavalier AFS Environmental Administrator's office (CAFS 2008c).

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 Parts 669 et seq., 29 CFR Part 1910.1025, 29 CFR Part 1926.58, 40 CFR Part 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 for the purpose of maintaining 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 the USEPA under the CAA; Toxic Substances Control Act; CERCLA; North Dakota Administrative Code 33-15-13, *Emission Standards for Hazardous Air Pollutants*; and Century

Code 23, *Health and Safety Chapter 25 Air Pollution Control*, with the authority promulgated under the 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. North Dakota has its own program and guidelines to manage ACM. The NDDH is responsible for overseeing compliance with the requirements of the ACM program.

Cavalier AFS maintains an *Asbestos Management Plan* that addresses the asbestos-management requirements stated in AFI 32-1052 and establishes the procedures by which the installation's asbestos-related actions are carried out in compliance with Federal and state regulations (CAFS 2007c). Cavalier AFS also maintains an *Asbestos Operating Plan* that describes how the installation complies with AFPD 32-70, *Environmental Quality* and AFI 91-301, *USAF Occupational Safety, Fire Prevention, and Health Program*. The plan also describes how the installation carries out asbestos-related projects, assigns responsibilities, establishes inspection and repair capabilities, provides repair procedures, and provides personnel protection instructions (CAFS 2007d).

At Cavalier AFS, asbestos is a known and documented component of thermal system insulation, floor tiles, floor tile mastic, baseboards, insulation board, HVAC system-related insulation, latex paint on thermal system insulation, wallboard, wall insulation, fireproofing, gaskets, and boiler jackets (CAFS 2009b). An asbestos survey was conducted in 1989 at Cavalier AFS. MFH Unit 108 (duplex Building 1004) was inspected and sampled. The remaining MFH units were not sampled; however, they were assumed to be of similar construction materials. Asbestos was not detected in the floor tile, but was detected in the tile bitumen; therefore, the entire housing floor tile was considered to be ACM. A fireproofing wallboard in the furnace closet was also found to contain asbestos (CAFS 1989). A supplemental asbestos survey conducted in 1998 also found ACM (chrysotile) in the bitumen in the living room and furnace room and in the wallboard of the furnace room (CAFS 2007c).

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 constructed 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 (CAFS 2009b).

USAF policy and guidance establishes LBP management at USAF facilities. The policy incorporates by reference the requirements of 29 CFR Part 1910.120, 29 CFR Part 1926, 40 CFR Part 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. The State of North Dakota regulates LBP under State Rule 33-15-24,

Standards for Lead-Based Paint Activities. NDDH is responsible for overseeing compliance with the requirements of the LBP program. Cavalier AFS maintains a *Lead Based Paint Management Plan* that describes the installation's compliance with AFI 32-7080 with respect to LBP, outlines a plan for carrying out LBP management objectives, and provides an overview of ongoing LBP conditions. This plan is directive on all agencies at Cavalier AFS (CAFS 2007e).

In 1995, an LBP survey was conducted for all interior and exterior components of the MFH units. Results of the survey indicated that no LBP greater than 1.0 milligram per cubic centimeter was detected in the MFH units (CAFS 2007e).

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.

Until September 1998, Cavalier AFS used a variety of electronic and communications equipment that contained PCBs. Most of these items were in the PARCS facility. All large transformers, capacitors, and other PCB-containing units were replaced or retro-filled with PCB-free insulating oil. Fluorescent light ballasts that contain PCBs are currently used at the installation. When these lights fail they are disposed of at the SAP in Building 730 and replaced with PCB-free ballasts (CAFS 2008l).

Radon. Cavalier AFS is in Federal USEPA Radon Zone 1, or the highest priority zone, where the predicted average indoor radon screening level is more than 4 picoCuries per liter (pCi/L) (USEPA 2010b). In March 1996, radon was tested in MFH Units 108 and 109 (duplex Building 1004), and Unit 110 (duplex Building 1006). Test results indicated that radon levels were between 0.5 and 1.9 pCi/L, which is below the USEPA-recommended action level of 4 pCi/L (MVTL 1996).

Pesticides. Pest management practices and application of pesticides at Cavalier AFS are covered in its *Pest Management Plan* (CAFS 2008o) and *Storm Water Pollution Prevention Plan* (CAFS 2008d). The *Pest Management Plan* is based on AFI 32-1053, *Pest Management Program*, and DOD Instruction 4150.07, *DOD Pest Management Program*. Cavalier AFS is currently using an integrated pest management approach for pest control to minimize the types and quantities of pesticides used at the installation. Least-toxic chemical controls are used when nonpesticide measures are inadequate (CAFS 2008o).

Nonrestricted pesticides are used at Cavalier AFS to control significant pest infestations. Integrated pest management practices are followed and, when appropriate, limited amounts of pesticides, herbicides, and insecticides are used. Small amounts of pesticides are applied within the site of the Proposed Action by MFH occupants through the self-help program. Occasionally, larger amounts of pesticides are applied within the proposed project area by certified applicators when significant pest infestations occur. With the exception of self-help products issued to residents of MFH units, insecticides are not purchased by or stored at Cavalier AFS. Nonrestricted herbicides are used at Cavalier AFS to control herbaceous weeds in turf, pavement cracks, and fence lines; and to control noxious weeds that legally require control (e.g., Canada thistle, leafy spurge, musk thistle, field bindweed, and absinth wormwood). There is a designated Pesticide Storage room in Building 730 on the south-central portion of the installation, approximately 0.2 miles east of the site of the Proposed Action. There are no known pesticide spills or contamination at Cavalier AFS (CAFS 2008o).

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 Cavalier AFS 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 from the Proposed Action. Construction, demolition, and renovation 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, USAF, and state regulations. No long-term, direct or indirect, adverse impacts would be expected.

Hazardous Wastes. Short-term, minor, adverse impacts would be expected from the Proposed Action. The quantity of hazardous wastes generated from proposed construction, demolition, and renovation activities would be minor and would not be expected to exceed the capacities of existing hazardous waste disposal facilities. It is assumed that hazardous wastes would be handled under the existing DOD RCRA-compliant waste management programs and thus would not be expected to increase the risks of exposure to workers and installation personnel. Prior to commencement of construction, demolition, and renovation activities, the contractor would be required to obtain the necessary permits. Some of the MFH units could have mercury-containing thermostats, ionization smoke detectors that contain Americium-241, or heat pumps that contain ozone-depleting substances. Mercury-containing thermostats are treated as universal waste in the State of North Dakota; therefore, if they are encountered during demolition or renovation, they would be removed and disposed of as universal waste in accordance with Federal, state, and local regulations. If ionization smoke detectors that contain Americium-241 or heat pumps that contain ozone-depleting substances are encountered during demolition or renovation, they would be removed and disposed of as hazardous waste in accordance with Federal, state, and local regulations and the *Hazardous Waste Management Plan*. No long-term, direct or indirect, adverse impacts would be expected.

Environmental Restoration Program. No impacts would be expected from the Proposed Action. All five ERP sites (FT-02, SS-03, SS-04, SS-05, and FT-01) are closed. However, if contaminated groundwater or soil is inadvertently discovered during construction or demolition activities, the handling, storage, transportation, and disposal of hazardous substances would be conducted in accordance with applicable Federal, state, and local regulations; USAF regulations; and Cavalier AFS management procedures.

Aboveground and Underground Storage Tanks. No impacts would be expected from the Proposed Action. Currently, there are no ASTs within the site of the Proposed Action, and there are no known spills from an AST that was previously stored in the southwestern portion of the site of the Proposed Action. Former USTs and current USTs at Cavalier AFS are downgradient from, and not within the vicinity of, the site of the Proposed Action.

Asbestos-Containing Material. Short-term, minor, adverse, and long-term, beneficial impacts would be expected from the Proposed Action. The 12 MFH units proposed for demolition likely contain ACM and, therefore, would need to be surveyed for asbestos by a state-certified inspector prior to commencement of demolition activities. Demolition plans would be reviewed by Cavalier AFS civil engineering personnel to ensure appropriate measures were taken to reduce potential exposure to, and release of, asbestos. All ACM discovered would be removed by state-certified individuals prior to demolition and disposed of at a USEPA-approved landfill. Contractors would be required to adhere to all Federal, state, and local regulations in addition to the Asbestos Management Plan. A Notification of Demolition form would be submitted to the NDDH 10 days prior to the commencement of demolition activities if more than 160 square feet of ACM or more than 260 linear feet of asbestos-containing thermal system insulation would be disturbed (NDDH 2009c). The removal of ACM during demolition activities would result in long-term, beneficial impacts by reducing potential exposure to personnel.

Lead-Based Paint. Long-term, beneficial impacts would be expected from the Proposed Action. There is no LBP greater than 1.0 milligram per cubic centimeter (400 ppm) in the MFH units. Specifications for the proposed renovation activities and USAF regulations prohibit the use of LBP for new construction. Therefore, some building materials with LBP might be replaced with new materials not covered with LBP. The new materials without LBP would provide long-term, beneficial impacts of less LBP in MFH areas.

Polychlorinated Biphenyls. Short-term, minor, adverse impacts could be expected from the Proposed Action. Some of the MFH units proposed for demolition or renovation could contain PCB-contaminated light ballasts. If light ballasts that do not have a PCB-free label are encountered during demolition or renovation, the ballasts would be removed and handled in accordance with Federal and DOD regulations and the *Hazardous Waste Management Plan*. No long-term, direct or indirect, adverse impacts would be expected.

Radon. Short-term, negligible, adverse impacts could be expected. Previous radon surveys conducted at the MFH units in 1992 indicated that radon levels were below the USEPA-recommended action level of 4 pCi/L. However, since the last radon survey was conducted in 1992 (almost 18 years ago) all newly constructed and existing MFH units should be tested and retested for radon, respectively. If results reveal radon levels exceed the USEPA-recommended action level, passive radon elimination systems or fans to mitigate radon would be installed, as necessary, to minimize impacts from radon. No long-term, direct or indirect, adverse impacts would be expected.

Pesticides. No impacts would be expected from the Proposed Action. 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 Cavalier AFS *Pest Management Plan*, the least toxic method for controlling pests encountered within the proposed project area would continue to be used. In addition, future pesticide and herbicide applications within the site of the Proposed Action would be conducted according to Federal, state, and local regulations and the *Pest Management Plan*.

3.10.3.3 No Action Alternative

Under the No Action Alternative, Cavalier AFS would not implement the Proposed Action and would continue to provide for the housing needs of military personnel and family members. No demolition of MFH units would occur under the Proposed Action. There would be no change in or impacts on hazardous materials, hazardous wastes, the ERP, ASTs, USTs, LBP, PCBs, radon, and pesticides. Impacts from other hazardous materials and waste categories are identified below.

Asbestos-Containing Material. Long-term, negligible to minor, adverse impacts would be expected from the continued use and potential renovation of existing MFH units. The older existing MFH units likely contain ACM; therefore, residents and maintenance personnel would potentially be at risk from potential exposure to, and release of, asbestos. Additionally, if ACM is discovered during future renovation activities, short-term, minor, adverse effects on ACM management would be expected. ACM would be handled and disposed of according to Federal, state, and local regulations in addition to the *Asbestos Management Plan*.

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 and construction activities, public safety during demolition and construction activities, and public safety during subsequent operations of those facilities.

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, administrative controls, engineering controls, and permissible exposure limits for workplace stressors.

Various stressors in the environment can adversely affect human health and safety. Identification and control or elimination of these stressors can reduce risks to health and safety to acceptable levels.

- ***Physical stressors.*** Physical hazards in the environment can cause injury, temporary or permanent disability, disease, or death. These stressors encompass a wide range of factors, such as dust, humidity, temperature, noise, and radiation.
- ***Behavioral stressors.*** Behavioral stressors include the effects of military activities on (1) psychological characteristics such as emotion, motivation, the learning process, and general behavior; and (2) psychological needs such as freedom, space, privacy, and societal acceptance. Behavioral stressors can cause mental effects ranging from direct physical damage to the brain tissue to temporary irritability.
- ***Psychological stressors.*** Some chemical and physical elements and situations can cause mental tension and strain. These psychological stressors are closely related to behavioral stressors. Psychological stressors can be physical in nature, such as traffic congestion, excessive noise, air pollution, or inadequate working and living facilities, or they can be emotional in nature, such as the effects of discrimination or sexual harassment.
- ***Chemical stressors.*** Several chemical substances have the potential to produce undesired or toxic health effects. Some chemicals act locally and some act systemically (requiring absorption into the blood stream). Chemical stressors can also be transmitted by air; by groundwater or surface water used for drinking, irrigation, or recreation; or by direct contact.
- ***Endocrine disrupters.*** A relatively new but increasingly important health concern is "endocrine disrupters." Endocrine disrupters are generally caused by synthetic chemicals (e.g., pesticides),

which, when absorbed into the body, can cause hormonal disruption. Therefore, limiting the presence of endocrine disrupters should be included in planning for facilities, systems, and equipment associated with the transforming force.

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 AFPD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program. The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and health requirements. This instruction applies to all USAF activities.

3.11.2 Existing Conditions

Cavalier AFS is a secure military installation. Access is limited to military personnel, civilian employees, and military families. Cavalier AFS provides emergency services (i.e., fire, law enforcement, and other emergency services) to the MFH area, which 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 personal protective equipment, and availability of Material Safety Data Sheets. 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.

LBP surveys conducted in 1995 and 1998 documented LBP hazards at Cavalier AFS. All areas at the site of the Proposed Action are below the regulated level of 1.0 milligram per cubic centimeter or exceeding the Federal action level of 0.5 percent by weight (CAFS 2007e, USAF 1995). Although it is likely that LBP has been removed through previous projects, it is possible that LBP remains in the 12 MFH units that were constructed in 1973 (USAF undated b). Prior to demolition of the MFH units, LBP sampling in

building materials and soils should be conducted. If found, LBP would be disposed of in accordance with the installation's *LBP Management Plan* (CAFS 2007e).

During a 1989 survey, ACM was found in the 12 MFH units constructed in 1973 at Cavalier AFS (CAFS 1989, CAFS 2007c, CAFS 2007d). Much of the ACM was likely removed through abatement projects (CAFS 2007c, CAFS 2007d). If encountered, ACM should be disposed of in a licensed landfill and in accordance with the installation's *Asbestos Management Plan* (CAFS 2007c).

The five ERP sites identified at Cavalier AFS (CAFS 1995a) have been officially closed by the NDDH, and it is assumed they do not post an inherent safety risk (CAFS 2006). One ERP site (FT-01) is within site of the Proposed Action, and another ERP site (FT-02) is approximately 450 feet north of the site of the Proposed Action. Since these ERP sites have received State Closure status, these sites present little risk to the site of the Proposed Action. **Figure 3-3** shows the location of the ERP sites on Cavalier AFS.

Explosives and Munitions Safety. There are no QD arcs, electromagnetic radiation safety zones, or explosive safety QD clear zones within the site of the Proposed Action or at the installation.

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 any of 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, negligible to minor, direct, adverse effects could occur from implementation of the Proposed Action. The short-term risk for construction contractors would slightly increase at Cavalier AFS 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; therefore, the Proposed Action would result in minor, adverse effects on contractor safety. Specific work areas surrounding demolition and construction activities would be fenced and appropriate signs posted to further reduce safety risks to installation personnel, residents of the North View neighborhood, particularly children, and other members of the general public that have access to the MFH area. Short-term, negligible, adverse impacts on the safety of installation personnel, North View residents, and the general public and could be experienced, but adherence to appropriate safety precautions should minimize these effects. No long-term, adverse effects on safety would be expected.

Construction workers could encounter contamination as a result of an ERP site, or from contact with ACM and LBP. However, because all ERP sites at Cavalier AFS have been closed, no short- or long-term impacts on safety from ERP sites would be expected from implementation of the Proposed Action.

Short-term, negligible to minor, direct, adverse impacts would be expected from implementation of the Proposed Action. Because of their ages, the MFH units proposed for demolition should be assumed to contain ACM and LBP. These materials require appropriate removal, handling, and disposal during renovation and demolition activities by qualified personnel. If LBP or ACM are encountered, they would be handled, stored, transported, and disposed of in accordance with applicable regulations (CAFS 2007c, CAFS 2007e). Short-term, direct, adverse impacts could be experienced, but adherence to all Federal, state, and local regulations and Cavalier AFS management plans would result in negligible effects on safety during demolition, construction, and other infrastructure activities. Long-term, direct, beneficial impacts would be expected from the removal of any LBP and ACM materials that might be present within the MFH units proposed for demolition, thus reducing exposure to military personnel and families.

Explosives and Munitions Safety. Because there are no munitions stored or handled at Cavalier AFS, no adverse impacts on explosives and munitions safety would be anticipated.

3.11.3.3 No Action Alternative

Under the No Action Alternative, Cavalier AFS would not implement the Proposed Action which would result in the continuation of existing conditions as described in **Section 3.11.2**. However, 12 of 14 MFH units within Cavalier AFS are inadequate and could present safety risks (e.g., LBP and ACM) to residents if they are not properly maintained and renovated to meet safe living conditions, which would result in long-term, adverse effects on safety.

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4. Cumulative and Adverse Impacts

4.1 Definition of Cumulative Effects

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

Impacts subject to cumulative effects analysis are identified by reference to the temporal span and spatial area in which the Proposed Action would cause effects.

4.2 Projects Identified With the Potential for Cumulative Effects

Cavalier AFS identified three past, present, and reasonably foreseeable future projects that have the potential for cumulative effects. These projects include the following.

- ***MFH Improvement Project.*** As a part of the *Housing Master Plan*, a bus stop was constructed 2 to 3 years ago. Other housing improvements to each MFH unit, such as improvements to upgrade the family housing community to UFC 4-010-01 requirements, were put on hold pending privatization.
- ***Installation Asphalt Repairs.*** Asphalt repairs to roadways installationwide are planned. These repairs are awaiting funding.
- ***Tree Planting in MFH Area.*** Tree planting is planned for the MFH area and is to be completed on Arbor Day (30 April 2010).

Minimal projects have been completed in recent years at Cavalier AFS, and, except for the Proposed Action, the only known reasonably foreseeable future projects are asphalt repairs throughout the installation and tree planting in the MFH area. If completed, repairs to asphalt surfaces throughout the installation could result in temporary, negligible, adverse effects on air quality and noise due to operation of construction equipment and vehicles. Therefore, the Proposed Action could result in cumulative effects on air quality and noise; however, the effects would be short-term and less than significant. Long-term, beneficial cumulative effects would be expected from the proposed future improvements to MFH from the *Housing Master Plan*, installationwide asphalt repairs, and the Proposed Action due to an improvement of the quality of life on Cavalier AFS.

4.3 Reasonable and Prudent Measures and Best Management Practices

The Proposed Action would not result in significant adverse effects on the land or the surrounding area. However, BMPs and other minimization measures would be implemented to eliminate or reduce the impacts of adverse effects.

General BMPs that might be included as parts of the Proposed Action are summarized as follows:

- Clearing and grubbing would be timed with construction to minimize the exposure of cleared surfaces. Such activities would not be conducted during periods of wet weather. Construction activities would be staged to allow for the stabilization of disturbed soils.

- Fugitive dust-control techniques such as soil watering and soil stockpiling would be used to minimize adverse effects. All such techniques would conform to applicable regulations.
- Soil erosion-control measures, such as soil erosion-control mats, silt fences, straw bales, diversion ditches, riprap channels, water bars, water spreaders, and hardened stream crossings, would be used as appropriate.
- Disturbance of environmental resources and topography would be minimized by integrating existing vegetation, trees, and topography into site design.
- Where feasible, areas of impervious surface would be minimized through shared parking, increased building height, or other measures as appropriate.
- Provisions would be taken to prevent pollutants from reaching the soil, groundwater, or surface water. During project activities, contractors would be required to perform daily inspections of equipment, maintain appropriate spill-containment materials on site, and store all fuels and other materials in appropriate containers. Equipment maintenance activities would not be conducted on the construction site.
- Physical barriers and "no trespassing" signs would be placed around the demolition and construction sites to deter children and unauthorized personnel. All construction vehicles and equipment would be locked or otherwise secured when not in use.
- Construction equipment would be used only as necessary during the daylight hours and would be maintained to the manufacturer's specifications to minimize noise impacts.

Demolition and construction impacts are short-term environmental effects resulting from the process of demolishing and building facilities under the Proposed Action. These impacts might involve temporary changes in noise levels, air quality, water quality, land use, and community access.

4.4 Unavoidable Adverse Impacts

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

Geological Resources. Under the Proposed Action, demolition and 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. Although unavoidable, impacts on soils at the installation are not considered significant.

Hazardous Wastes and Materials. Products containing hazardous materials would be used and hazardous wastes would be generated during the proposed demolition and 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 handling and disposal of hazardous wastes in accordance with Federal and state laws and regulations, as well as the *Hazardous Waste Management Plan*. The potential for accidents or spills during fuel and other hazardous material handling are unavoidable risks associated with the Proposed Action.

Energy Resources. The Proposed Action would require the use of fossil fuels for demolition and construction activities, a nonrenewable natural resource. The use of nonrenewable resources in

demolition and construction activities would be unavoidable. Relatively small amounts of energy resources would be committed to the Proposed Action and are not considered significant.

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

The Proposed Action would not introduce incompatible land uses at Cavalier AFS and would be consistent with several of the 10 SWS's goals for the installation, including ensuring the effective use of and support for installation personnel, the highest personnel efficiency, and the most effective use of unit funds. Impacts as a result of the Proposed Action would occur within the boundaries of the installation and would not conflict with any applicable off-installation land use zoning ordinances. Therefore, no impacts on land use plans, policies, and controls resulting from incompatibility would be expected.

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

Short-term uses of the biophysical components of the human environment include direct impacts, usually related to construction activities that occur over a period of less than 5 years. Long-term uses of the human environment include those impacts that occur over a period of more than 5 years, including permanent resource loss. Several types 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.

This EA identifies potential short-term adverse effects on the natural and human environment as a result of demolition and construction activities. These potential adverse effects include increased noise levels; air emissions; soil erosion from ground disturbances; temporary increases in infrastructure use, particularly roadways and water supply; and increased contractor safety risk. However, no short-term uses of resources from demolition and construction activities would be expected to result in long-term loss of productivity. The new MFH units would be anticipated to be more energy efficient, resulting in long-term, beneficial effects from a reduction in energy use and costs. The Proposed Action would provide quality housing to military families that is consistent with USAF standards, ultimately improving morale of USAF personnel and their families.

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 and construction of MFH units 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.

Energy Resources. Energy resources used for the Proposed Action would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel) and electricity. During demolition and construction, gasoline and diesel fuel would be used for the operation of construction vehicles. Consumption of these energy resources would not place a significant demand on their availability in the region. Therefore, no significant impacts would be expected.

Landfill Space. The generation of demolition debris and subsequent disposal of that debris in a landfill would be an irretrievable adverse impact. Construction contractors would be expected to recycle debris to the maximum extent practicable. If a greater percentage is recycled, then irretrievable impacts on landfills would be reduced. Furthermore, if houses are donated to OWS, minimal waste would be generated as the MFH units would not be demolished. Any waste that is generated by the Proposed Action that is disposed of in a landfill would be considered an irretrievable loss of that landfill space.

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

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APPENDIX A

MILITARY HOUSING PRIVATIZATION INITIATIVE

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.

(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

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 Informational 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 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 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 form 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] Part 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.

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.

U.S. Army regulations in AR 385-10, *Army Safety Program,* prescribe policy, responsibilities, and procedures to protect and preserve U.S. Army personnel and property from accidental loss or injury. AR 40-5, *Preventive Medicine,* provides for the promotion of health and the prevention of disease and injury.

Geological Resources

Recognizing that millions of acres per year of prime farmland are lost to development, Congress passed the Farmland Protection Policy Act 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 Farmland Protection Policy Act, agencies are encouraged to conserve prime or unique farmlands when alternatives are practicable. Some activities that are not subject to the Farmland Protection Policy Act 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 issued a Final Rule for the CWA concerning technology-based Effluent Limitations Guidelines and New Source Performance Standards for the Construction and Development point source category. All NPDES storm water permits issued by the USEPA or states must incorporate requirements established in the Final Rule. As of February 1, 2010, all new construction sites are required to meet the non-numeric effluent limitations and design, install, and maintain effective erosion and sedimentation controls. In addition, construction site owners and operators that disturb 1 or more acres of land are required to use best management practices (BMPs) to ensure that soil disturbed during construction activities does not pollute nearby water bodies. Effective August 1, 2011, construction activities disturbing 20 or more acres must comply with the numeric effluent limitation for turbidity in addition to the non-numeric effluent limitations. The maximum daily turbidity limitation is 280 nephelometric turbidity units (ntu). On February 2, 2014, construction site owners and operators that disturb 10 or more acres of land are required to monitor discharges to ensure compliance with effluent limitations as specified by the permitting authority. Construction site owners are encouraged to phase ground-disturbing activities to limit the applicability of the monitoring requirements and the turbidity limitation. The USEPA's limitations are based on its assessment of what specific technologies can reliably achieve. Permittees can select management practices or technologies that are best suited for site-specific conditions.

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*.

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, 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 (Public Law 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.

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. The Federal Noxious Weed Act (Public Law 93-629) of 1975, as amended in 1990, established a Federal program to control the spread of noxious weeds. The Secretary of Agriculture was given the authority to designate plants as noxious weeds by regulation and the movement of such weeds in interstate or foreign commerce was prohibited except under permit. The Secretary was also given authority to inspect, seize, and destroy products and quarantine areas, if necessary, to prevent the spread of such weeds. The Secretary was also authorized to cooperate with Federal, state, and local agencies; farmer associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of noxious weeds. This law also requires that any environmental assessments or impact statements that are required to implement plant control agreements must be completed within 1 year of the time the need for the document is established.

EO 13112, *Invasive Species* (February 3, 1999), provides direction to use relevant programs and authorities to prevent introduction of invasive species, detect and respond rapidly to control populations of invasive species, monitor invasive species populations, provide restoration of native species and habitat

conditions in ecosystems that have been invaded, conduct research on invasive species and develop technologies to prevent introduction and provide for environmentally sound control of invasive species, and promote public education on invasive species with means to address them. EO 13112 was created to minimize the economic, ecological, and human health impacts that invasive species cause.

Cultural Resources

The American Indian Religious Freedom Act of 1978 and Amendments of 1994 recognize that freedom of religion for all people is an inherent right, and traditional American Indian religions are an indispensable and irreplaceable part of Indian life. It also recognized the lack of Federal policy on this issue and made it the policy of the United States to protect and preserve the inherent right of religious freedom for Native Americans. The 1994 Amendments provide clear legal protection for the religious use of peyote cactus as a religious sacrament. Federal agencies are responsible for evaluating their actions and policies to determine if changes should be made to protect and preserve the religious cultural rights and practices of Native Americans. These evaluations must be made in consultation with native traditional religious leaders.

The Archaeological Resource Protection Act (ARPA) of 1979 protects archaeological resources on public and American Indian lands. It provides felony-level penalties for the unauthorized excavation, removal, damage, alteration, or defacement of any archaeological resource, defined as material remains of past human life or activities which are at least 100 years old. Before archaeological resources are excavated or removed from public lands, the Federal land manager must issue a permit detailing the time, scope, location, and specific purpose of the proposed work. ARPA also fosters the exchange of information about archaeological resources between governmental agencies, the professional archaeological community, and private individuals. ARPA is implemented by regulations found in 43 CFR Part 7.

The National Historic Preservation Act (NHPA) of 1966 sets forth national policy to identify and preserve properties of state, local, and national significance. The NHPA establishes the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and the National Register of Historic Places (NRHP). 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.

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 amendments strengthen control of both hazardous and nonhazardous waste and emphasize the prevention of pollution of groundwater.

The Superfund Amendments and Reauthorization Act (SARA) of 1986 mandates strong 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

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 Executive Order 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.

APPENDIX C

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

Interagency and Intergovernmental Coordination for Environmental Planning Distribution List

The Draft EA and FONSI were made available to the agencies listed below for a 30-day review period. A copy of the IICEP letter and comments received are included below.

North Dakota State Water Commission
900 East Boulevard Avenue, Dept 770
Bismarck, ND 58505-0850

Mr. Jeff Towner
U.S. Fish and Wildlife Service
North Dakota Field Office
3425 Miriam Avenue
Bismarck, ND 58501-7926

U.S. Fish and Wildlife Service
Migratory Bird Office
P.O. Box 25486 DFC
Denver, CO 80225

Mr. Terry Steinwand, Commissioner
North Dakota Game and Fish
100 North Bismarck Expressway
Bismarck, ND 58505-5095

Ms. Susan Quinnell
Review and Compliance Coordinator
State Historical Society of North Dakota
612 East Boulevard Avenue
Bismarck, ND 58505-0830

Mr. Dennis Fewless
North Dakota Department of Health
Environmental Health Section
918 East Divide Avenue
Bismarck, ND 58501-1947

Mr. Terry O'Clair
North Dakota Department of Health
Environmental Health Section
918 East Divide Avenue
Bismarck, ND 58501-1947

Tribal Historic Preservation Officer
Indian Affairs Commission
600 East Boulevard Avenue
Bismarck, ND 58505-0300

Bismarck Regulatory Office
U.S. Army Corps of Engineers
1513 South 12th Street
Bismarck, ND 58504

Ms. Caroline D. Hall
Advisory Council on Historic Preservation
1100 Pennsylvania Avenue NW, Suite 803
Washington, DC 20004

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DEPARTMENT OF THE AIR FORCE
21ST SPACE WING (AFSPC)

2 March 2011

MEMORANDUM FOR DISTRIBUTION

FROM: 10 SWS/CC
830 Patrol Road #260
Cavalier Air Force Station, North Dakota 58220

SUBJECT: Draft Environmental Assessment Addressing the Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

1. The Air Force Space Command is preparing an Environmental Assessment (EA) Addressing the Privatization of Military Family Housing at Cavalier Air Force Station AFS). The Proposed Action is to convey military family housing units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that the end-state total would be 14 housing units. The Draft EA is included with this correspondence.

2. The environmental impact analysis process for the Proposed Action and alternatives is being conducted by the Air Force Space Command in accordance with the Council on Environmental Quality guidelines pursuant to the requirements of the National Environmental Policy Act of 1969. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation by reviewing the attached Draft EA and solicit your comments concerning the proposal and any potential environmental consequences. Also enclosed is the distribution list of those Federal, state, and local agencies that have been contacted. If there are any additional agencies that you feel should review and comment on the proposal, please include them in your distribution of this letter and the attached materials.

3. Please provide, directly to Mr. Robert Fors, 10 SWS/MS, 830Patrol Road #260, Cavalier AFS, North Dakota 58220, any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter.

4. If members of your staff have any questions, please contact Mr. Robert Fors, 10SWS/MS, via 24 telephone at (701) 993-3687, or via email at *robert.fors@cavalier.af.mil.*

JOHN R. THOMAS, Lt Col, USAF
Commander

2 Attachments:
1. Draft Environmental Assessment
2. Distribution List

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING (AFSPC)

2 March 2011

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U.S. FISH AND WILDLIFE SERVICE

ECOLOGICAL SERVICES
ND FIELD OFFICE

Project as described will have no significant impact on fish and wildlife resources. No endangered or threatened species are known to occupy the project area. IF PROJECT DESIGN CHANGES ARE MADE, PLEASE SUBMIT PLANS FOR REVIEW.

3-4-11 Jeffrey K. Towner
STRENGTH AND PREPAREDNESS
Date Jeffrey K. Towner
Field Supervisor

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
NORTH DAKOTA REGULATORY OFFICE
1513 SOUTH 12TH STREET
BISMARCK ND 58504-6640

March 4, 2011

REPLY TO
ATTENTION OF
North Dakota Regulatory Office

10 SWS/MS
ATTN: Robert Fors
830 Patrol Road #260
Cavalier AFS, North Dakota 58220

Dear Mr. Fors:

This is in response to a letter received March 2, 2011, on behalf of Air Force Space Command requesting Department of the Army, U.S. Army Corps of Engineers (Corps) comments regarding the proposed construction of **military family housing units** (MFHU) covering approximately 25.3 acres of land at the Cavalier Air Force Station, North Dakota. The proposed project could also include upgrades to some of the utilities and pavements within the MFHU area.

Corps Regulatory Offices administer Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. **Section 10 of the Rivers and Harbors Act** regulates work in or affecting navigable waters. This would include work over, through, or under Section 10 water. Section 10 waters in North Dakota include the Missouri River (including Lake Sakakawea and Lake Oahe), Yellowstone River, James River south of Jamestown, North Dakota, Bois de Sioux River, Red River of the North, and the Upper Des Lacs Lake. **Section 404 of the Clean Water Act** regulates the discharge of dredge or fill material (temporarily or permanently) in waters of the United States. Waters of the United States may include, but are not limited to, rivers, streams, ditches, coulees, lakes, ponds, and their adjacent wetlands. Fill material includes, but is not limited to, rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mines or other excavation activities and materials used to create any structure or infrastructure in waters of the United States.

Enclosed for your information is the fact sheet for Nationwide Permit 12, Utility Line Activities. Electric, sewer and water pipeline projects are already authorized by Nationwide Permit 12 **provided the utility line can be placed without any change to pre-construction contours and all other proposed construction activities and facilities are in compliance with the Nationwide's permit conditions and 401 Water Quality Certification is obtained.** Please note the pre-construction notification requirements on page 2 of the fact sheet. **If a project involves any one of the seven notification requirements, the project proponent must submit a DA application.** Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 12 and 13 of the fact sheet.

With respect to road construction and/or upgrades, find enclosed for your information is the fact sheet for Nationwide Permit 14, Linear Transportation Projects. Road crossings are already authorized by Nationwide Permit 14 **provided the discharge does not cause the loss of greater than ½ acre of waters of the United States per crossing and all other proposed construction activities are in compliance with the Nationwide's permit conditions.** Please note the pre-construction notification requirements on the front page of the fact sheet. **If a project involves (1) the loss of waters of the United States exceeding 1/10 acre per crossing; or (2) there is a discharge in a special aquatic site, including wetlands, the project proponent must submit a DA application prior to the start of construction.** Please reference General Condition 27, Pre Construction Notification on page 8 of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet; General Conditions for all Nationwide Permits and specific conditions for Nationwide Permit 14.

In conjunction with the construction of single residence, multiple unit residential development or a residential subdivision, find enclosed is the fact sheet for Nationwide Permit 29, Residential Development.

Residential developments are already authorized by Nationwide Permit 29 **provided the discharge does not cause the loss of greater than ½ acre of water of the United States, including the loss of no more than 300 linear feet of stream bed and all other proposed construction activities are in compliance with the Nationwide's permit conditions.** Please not the pre-construction notification requirements on the front page of the fact sheet. Furthermore, a project must also be in compliance with the "Regional Conditions for Nationwide Permits within the State of North Dakota", found on pages 11 and 12 of the fact sheet.

In the event your project requires approval from the U.S. Army Corps of Engineers and cannot be authorized by Nationwide Permit(s), a Standard or Individual Permit will be required. A project that requires a Standard or Individual Permit is intensely reviewed and will require the issuance of a public notice. A Standard or Individual Permit generally requires a minimum of 120 days for processing but based on the project impacts and comments received through the public notice may extend beyond 120 days.

This correspondence letter is neither authorization for the proposed construction nor confirmation that the proposed project complies with the Nationwide Permit(s).

If any of these projects require a Section 10 and/or Section 404 permit, please complete and submit the enclosed Department of the Army permit application (ENG Form 4345) to the U.S. Army Corps of Engineers, North Dakota Regulatory Office, 1513 South 12th Street, Bismarck, North Dakota 58504. If you are unsure if a permit is required, you may submit an application; include a project location map, description of work, and construction methodology.

If we can be of further assistance or should you have any questions regarding our program, please do not hesitate to contact this office by letter of phone at (701) 255-0015.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosures
ENG Form 4345
Fact Sheets: NWP 12, 14 and 29

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT *(33 CFR 325)*	OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012

Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate; Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers, Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
First - Middle - Last – Company – E-mail Address –	First - Middle - Last – Company – E-mail Address –
6. APPLICANT'S ADDRESS: Address – City – State – Zip – Country –	9. AGENT'S ADDRESS Address – City – State – Zip – Country –
7. APPLICANT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax	10. AGENT'S PHONE NOs. W/AREA CODE a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable) Address City - State – Zip -
15. LOCATION OF PROJECT Latitude: °N Longitude: °W	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)
State Tax Parcel ID Municipality
Section – Township – Range –

17. DIRECTIONS TO THE SITE

ENG FORM 4345, SEPT 2009 EDITION OF OCT 2004 IS OBSOLETE Proponent: CECW-OR

18. Nature of Activity (Description of project, include all features)

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

Or

Liner Feet

23. Description of Avoidance, Minimization, and Compensation (see instructions)

24. Is Any Portion of the Work Already Complete? Yes ☐ No ☐ IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Address –

City – State – Zip –

26. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

ENG FORM 4345, SEPT 2009

Instructions for Preparing a
Department of the Army Permit Application

Blocks 1 through 4. To be completed by Corps of Engineers.

Block 5. Applicant's Name. Enter the name and the E-mail address of the responsible party or parties. If the responsible party is an agency, company, corporation, or other organization, indicate the name of the organization and responsible officer and title. If more than one party is associated with the application, please attach a sheet with the necessary information marked Block 5.

Block 6. Address of Applicant. Please provide the full address of the party or parties responsible for the application. If more space is needed, attach an extra sheet of paper marked Block 6.

Block 7. Applicant Telephone Number(s). Please provide the number where you can usually be reached during normal business hours.

Blocks 8 through 11. To be completed, if you choose to have an agent.

Block 8. Authorized Agent's Name and Title. Indicate name of individual or agency, designated by you, to represent you in this process. An agent can be an attorney, builder, contractor, engineer, or any other person or organization. Note: An agent is not required.

Blocks 9 and 10. Agent's Address and Telephone Number. Please provide the complete mailing address of the agent, along with the telephone number where he / she can be reached during normal business hours.

Block 11. Statement of Authorization. To be completed by applicant, if an agent is to be employed.

Block 12. Proposed Project Name or Title. Please provide name identifying the proposed project, e.g., Landmark Plaza, Burned Hills Subdivision, or Edsall Commercial Center.

Block 13. Name of Waterbody. Please provide the name of any stream, lake, marsh, or other waterway to be directly impacted by the activity. If it is a minor (no name) stream, identify the waterbody the minor stream enters.

Block 14. Proposed Project Street Address. If the proposed project is located at a site having a street address (not a box number), please enter it here.

Block 15. Location of Proposed Project. Enter the latitude and longitude of where the proposed project is located. If more space is required, please attach a sheet with the necessary information marked Block 15.

Block 16. Other Location Descriptions. If available, provide the Tax Parcel Identification number of the site, Section, Township, and Range of the site (if known), and / or local Municipality that the site is located in.

Block 17. Directions to the Site. Provide directions to the site from a known location or landmark. Include highway and street numbers as well as names. Also provide distances from known locations and any other information that would assist in locating the site. You may also provide description of the proposed project location, such as lot numbers, tract numbers, or you may choose to locate the proposed project site from a known point (such as the right descending bank of Smith Creek, one mile downstream from the Highway 14 bridge). If a large river or stream, include the river mile of the proposed project site if known

Block 18. Nature of Activity. Describe the overall activity or project. Give appropriate dimensions of structures such as wing walls, dikes (identify the materials to be used in construction, as well as the methods by which the work is to be done), or excavations (length, width, and height). Indicate whether discharge of dredged or fill material is involved. Also, identify any structure to be constructed on a fill, piles, or float-supported platforms.

The written descriptions and illustrations are an important part of the application. Please describe, in detail, what you wish to do. If more space is needed, attach an extra sheet of paper marked Block 18.

Block 19. Proposed Project Purpose. Describe the purpose and need for the proposed project. What will it be used for and why? Also include a brief description of any related activities to be developed as the result of the proposed project. Give the approximate dates you plan to both begin and complete all work.

Block 20. Reasons for Discharge. If the activity involves the discharge of dredged and/or fill material into a wetland or other waterbody, including the temporary placement of material, explain the specific purpose of the placement of the material (such as erosion control).

Block 21. Types of Material Being Discharged and the Amount of Each Type in Cubic Yards. Describe the material to be discharged and amount of each material to be discharged within Corps jurisdiction. Please be sure this description will agree with your illustrations. Discharge material includes: rock, sand, clay, concrete, etc.

Block 22. Surface Areas of Wetlands or Other Waters Filled. Describe the area to be filled at each location. Specifically identify the surface areas, or part thereof, to be filled. Also include the means by which the discharge is to be done (backhoe, dragline, etc.). If dredged material is to be discharged on an upland site, identify the site and the steps to be taken (if necessary) to prevent runoff from the dredged material back into a waterbody. If more space is needed, attach an extra sheet of paper marked Block 22.

Block 23. Description of Avoidance, Minimization, and Compensation. Provide a brief explanation describing how impacts to waters of the United States are being avoided and minimized on the project site. Also provide a brief description of how impacts to waters of the United States will be compensated for, or a brief statement explaining why compensatory mitigation should not be required for those impacts.

Block 24. Is Any Portion of the Work Already Complete? Provide any background on any part of the proposed project already completed. Describe the area already developed, structures completed, any dredged or fill material already discharged, the type of material, volume in cubic yards, acres filled, if a wetland or other waterbody (in acres or square feet). If the work was done under an existing Corps permit, identity the authorization, if possible.

Block 25. Names and Addresses of Adjoining Property Owners, Lessees, etc., Whose Property Adjoins the Project Site. List complete names and full mailing addresses of the adjacent property owners (public and private) lessees, etc., whose property adjoins the waterbody or aquatic site where the work is being proposed so that they may be notified of the proposed activity (usually by public notice). If more space is needed, attach an extra sheet of paper marked Block 24.

Information regarding adjacent landowners is usually available through the office of the tax assessor in the county or counties where the project is to be developed.

Block 26. Information about Approvals or Denials by Other Agencies. You may need the approval of other federal, state, or local agencies for your project. Identify any applications you have submitted and the status, if any (approved or denied) of each application. You need not have obtained all other permits before applying for a Corps permit.

Block 27. Signature of Applicant or Agent. The application must be signed by the owner or other authorized party (agent). This signature shall be an affirmation that the party applying for the permit possesses the requisite property rights to undertake the activity applied for (including compliance with special conditions, mitigation, etc.).

DRAWINGS AND ILLUSTRATIONS

General Information.

Three types of illustrations are needed to properly depict the work to be undertaken. These illustrations or drawings are identified as a Vicinity Map, a Plan View or a Typical Cross-Section Map. Identify each illustration with a figure or attachment number.

Please submit one original, or good quality copy, of all drawings on 8½ x11 inch plain white paper (electronic media may be substituted). Use the fewest number of sheets necessary for your drawings or illustrations.

Each illustration should identify the project, the applicant, and the type of illustration (vicinity map, plan view, or cross-section). **While illustrations need not be professional (many small, private project illustrations are prepared by hand), they should be clear, accurate, and contain all necessary information.**

STATE HISTORICAL SOCIETY OF NORTH DAKOTA

April 1, 2011

John R Thomas, Lt Col USAF
10 SWS
830 Patrol Road #260
Cavalier AFS ND 58220-9322

ND SHPO 11-0846: Cavalier Air Force Station Military Family Housing Cavalier Air Force Station in portions of [T161N R56W Section 32 SE ¼] Pembina County, North Dakota

Dear Lt Col Thomas,

We received ND SHPO 11-0846: Cavalier Air Force Station Military Family Housing Cavalier Air Force Station in portions of [T161N R56W Section 32 SE ¼] Pembina County, North Dakota and an old archaeological survey entitled "Cultural Resources Survey of the Cavalier Air Force Station (AFS) Cavalier, North Dakota." The mapping was so poorly done, even for the standards of the early 1990s that our GIS specialist never included it in our manuscript database. Hence I overlooked it. We can concur with a "No Historic Properties Affected" determination, provided the project goes forward as described in the draft Environmental Assessment "Addressing the Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota, March 2011."

If you have any questions please contact Susan Quinnell, Review and Compliance Coordinator at (701) 328-3576, squinnell@nd.gov.

Sincerely,

Merlan E. Paaverud, Jr.
State Historic Preservation Officer (North Dakota)

C: Mr. Robert Fors

North Dakota Heritage Center • 612 East Boulevard Avenue, Bismarck, ND 58505-0830 • Phone 701-328-2666 • Fax: 701-328-3710
Email: histsoc@nd.gov • Web site: http://history.nd.gov • TTY: 1-800-366-6888

NORTH DAKOTA
DEPARTMENT of HEALTH

ENVIRONMENTAL HEALTH SECTION
Gold Seal Center, 918 E. Divide Ave.
Bismarck, ND 58501-1947
701.328.5200 (fax)
www.ndhealth.gov

March 17, 2011

Mr. Robert Fors
10WS/MS
830 Patrol Road #260
Cavalier AFS, ND 58220

Re: Draft EA Addressing the Privatization of Military Family Housing at Cavalier AFS
Pembina County

Dear Mr. Fors:

This department has reviewed the information concerning the above-referenced project submitted under date of March 2, 2011, with respect to possible environmental impacts.

This department believes that environmental impacts from the proposed construction will be minor and can be controlled by proper construction methods. With respect to construction, we have the following comments:

1. All necessary measures must be taken to minimize fugitive dust emissions created during construction activities. Any complaints that may arise are to be dealt with in an efficient and effective manner.

2. All necessary measures must be taken to minimize the disturbance of any asbestos-containing material and to prevent any asbestos fiber release episodes. Any facility that is to be renovated or demolished must be inspected for asbestos. Notification of the Department's Division of Air Quality (701-328-5188) is required before any demolition. Removal of any friable asbestos-containing material must be accomplished in accordance with section 33-15-13-02 of the North Dakota air pollution control rules.

3. Radon - You may want to consider adding radon measurement and control as part of this project. Initial screening tests for radon are relatively inexpensive and usually can be obtained in a couple days. Buildings with radon test results above 4 picocuries of radon per liter of air (pCi/l) should be mitigated to reduce radon levels.

4. Noise from construction activities may have adverse effects on persons who live near the construction area. Noise levels can be minimized by ensuring that construction equipment is equipped with a recommended muffler in good working order. Noise effects can also be minimized by ensuring that construction activities are not conducted during early morning or late evening hours.

5. Many buildings constructed before 1978 have interior and exterior surfaces coated with lead-based paint (LBP). The U.S. EPA, U.S. Housing and Urban Development and ND air pollution control rules have implemented requirements to reduce exposure to lead from lead-based paint hazards. Homes or buildings that are being demolished must have a lead-based paint clearance inspection conducted by a state certified LBP risk assessor once the house is demolished and debris is removed from the site. Abatement of the LBP containing material is not required before the building or house is demolished. Also, notification to the Department's Division of Air Quality (701-328-5188) is required 10 working days before demolition (form attached).

6. All solid waste materials must be managed and transported in accordance with the state's solid and hazardous waste rules. Appropriate efforts to reduce, reuse and/or recycle waste materials are strongly encouraged. As appropriate, segregation of inert waste from non-inert waste can generally reduce the cost of waste management. Further information on waste management and recycling is available from the Department's Division of Waste Management at (701) 328-5166.

The department owns no land in or adjacent to the proposed improvements, nor does it have any projects scheduled in the area. In addition, we believe the proposed activities are consistent with the State Implementation Plan for the Control of Air Pollution for the State of North Dakota.

If you have any questions regarding our comments, please feel free to contact this office.

Sincerely,

L. David Glatt, P.E., Chief
Environmental Health Section

LDG:cc
Attach.

LEAD-BASED PAINT NOTIFICATION OF ABATEMENT AND DEMOLITION CLEARANCE

North Dakota Department of Health
Division of Air Quality
SFN 53479 (06/09)

I. Type of Notification **THIS NOTICE MUST BE SUBMITTED 10 DAYS BEFORE BEGINNING THE ACTIVITY**

☐ Original ☐ Revised ☐ Cancelled	Date:

II. Type of Operation

☐ Abatement of child-occupied facility ☐ Abatement of Residential Home
☐ Demolition of pre-1978 Residential House

III. Is Lead-based Paint Present?

☐ Yes ☐ No
☐ If No, List Inspection Date
(/ /)

IV. Dates of Lead-based Paint Removal (MM-DD-YY)	**V. Dates of Demolition or Renovation (MM-DD-YY)**
Start: Stop:	Start: Stop:

VI. Facility Information (identify owner and operator, if applicable)

Owner Name			
Owner Address	City	State	Zip Code
Contact Person		Telephone Number	
Operator (if different than owner)			
Operator Address	City	State	Zip Code
Contact Person		Telephone Number	

VII. Facility Description (includes building name, number and floor or room number)

Building Name				
Building Address	City	State	Zip Code	County
Site Location (floor or room number(s))				
Building Size (Sq. Ft.)	Number of Floors			Age of Building/Year Built
Present Use	Prior Use			

VIII. Lead-based Paint Abatement or Building Demolition Contractor

Contractor Name			ND License Number
Contractor Address	City	State	Zip Code
Contact Person		Telephone Number	

IX. Project Monitoring Firm or Risk Assessor/Inspector Firm (if applicable)

Firm Name			ND License Number
Firm Address	City	State	Zip Code
Name of Risk Assessor/ Inspector		Telephone Number	

X. Approximate Amount of Lead-based Paint/ Demolition Debris:

	Approximate Amount of Lead-based Paint to be Removed	Lead-based Paint Containing Material to be Removed
Surface Area (Sq. Ft.)		
Soil Area (Sq Ft or Ton)		

XI. Testing Procedure for Determining Lead-based Paint Material:

☐ XRF ☐ Lab Analysis ☐ Other
☐ Paint Chip Sample ☐ Assumed Lead-based paint

XII. Description of LBP Work Practices and Engineering Controls to Prevent Lead-based Paint Emissions (check all that apply)

☐ Adequately Wet Materials ☐ ☐ Seal in Leak Tight Containers ☐ Encapsulate ☐ Work area delineated

☐ Negative Air Containment ☐ Seal in Leaktight Wrapping ☐ Mini-enclosure ☐ Visual Clearance ☐ Dust-wipe Clearance

☐ Other: _____

XIII. Description of Planned Demolition or Renovation Work (backhoe, bulldozer, hand removal, etc.)

	Will the Facility or Facility Debris be Burned? ☐ Yes ☐ No If yes, you must contact your local Health Unit or the Air Quality Division at 701.328.5188, to complete an open burn variance Application: **SFN 8509.**

XIV. Waste Transporter

Name			
Address	City	State	Zip Code
Contact Person		Telephone Number	

XV. Waste Disposal Site ☐ **Building** ☐ **Lead Debris**

Name	Permit Number	Telephone Number	
Address	City	State	Zip Code

XVI. If Demolition or Abatement was Ordered by Government Agency, Identify the Agency and Attach a Copy of the Order

Name	Title	Telephone Number
Authority/Agency	Date of Order (MM/DD/YY)	

XVII. General Comments

XX. I certify to the best of my knowledge that the above information is true and correct. I further certify that all lead-based paint abatement work on this project will be performed by individuals certified in accordance with the North Dakota Air Pollution Control Rules 33-15-24

Signature of Owner/Operator **Date**

Return form to: **North Dakota Department of Health**
Division of Air Quality, 2nd Floor
918 East Divide Avenue
Bismarck, ND 58501-1947

Telephone: **701.328.5188**
Fax: **701.328.5185 (If faxing, original copy must be mailed)**

Additional information can be found on the website at: http://www.ndhealth.gov/AQ/IAQ/LBP/

From: Dave_Olson@fws.gov [mailto:Dave_Olson@fws.gov]
Sent: Friday, April 15, 2011 1:27 PM
To: Fors, Robert CIV USAF AFSPC 10 SWS/MS
Subject: Draft EA Military Housing at Cavalier AFS ND

Dear Mr Fors,

First of all I apologize for getting this to you late since I did not recieve your document until April 8 although it arrived in the permit office on March 2. I felt I owed you some correspondence to you Draft EA on the Addressing the Privatization of Military Family Housing at Cavalier Air Force Stations, ND. In short there are no migratory bird issues regarding this project.

If you require something in writing on official stationary please let me know if not good luck with the housing project.

Sincerely

Dave Olson

Dave Olson
Assistant Migratory Game Bird Coordinator
Mountain-Prairie Region
MBSP
P.O. Box 25486-DFC
Denver, CO 80225-0486
tel:303-236-6284
fax:303-236-8680
dave_olson@fws.gov
****
"There are 2 spiritual dangers in not owning a farm,
One is the danger of supposing breakfast comes
from the grocery store, and the other that heat
comes from a furnace"
Aldo Leopold, "Sand County Almanac"

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Native American Tribal Consultation Distribution List

The Draft EA and FONSI were made available to the Native American tribes listed below for a 30-day review period. A copy of the consultation letters and comment received are included below.

Ms. Karen Little Coyote, Cheyenne
Coordinator
Cheyenne and Arapaho Tribes of Oklahoma
Culture & Heritage Program
P.O. Box 38
Concho, OK 73022

Mr. Dale Hamilton, Arapaho Coordinator
Cheyenne and Arapaho Tribes of Oklahoma
Culture & Heritage Program
P.O. Box 38
Concho, OK 73022

Mr. Steve Vance, THPO
Cultural Preservation Office
Cheyenne River Sioux Tribe
P.O. Box 590
Eagle Butte, SD 57625

Mr. Dale Old Horn, THPO
Tribal Historic Preservation Office
The Crow Tribe of Indians
P.O. Box 159
Crow Agency, MT 59022

Mr. Curley Youpee, THPO
Tribal Historic Preservation Office
Fort Peck Assiniboine Sioux Tribe
P.O. Box 1027
Fort Peck Agency
Poplar, MT 59255

Ms. Gina Lemon, THPO
Tribal Historic Preservation Office
Leech Lake Chippewa Tribe
115 6th Street, NW, Suite E
Cass Lake, MN 56633

Mr. Conrad Fisher, THPO
Tribal Historic Preservation Office
Northern Cheyenne Tribe
P.O. Box 128
Lame Deer, MT 59043

Ms. Dianne Desrosiers, THPO
Tribal Historic Preservation Office
Sisseton-Wahpeton Oyate
P.O. Box 907
Sisseton, SD 57262

The Honorable Phillip Longie
Spirit Lake Sioux Tribe
P.O. Box 359
Fort Totten, ND 58335

Ms. Waste'Win Young, THPO
Tribal Historic Preservation Office
Standing Rock Sioux Tribe
P.O. Box D
Fort Yates, ND 58538

Mr. Perry Brady, THPO
Tribal Historic Preservation Office
Three Affiliated Tribes
404 Frontage Road
New Town, ND 58763

Mr. Kade Ferris, THPO
Tribal Historic Preservation Office
Turtle Mountain Band of Chippewa Indians
P.O. Box 900
Belcourt, ND 58316

Mr. Tom McCauley, THPO
Tribal Historic Preservation Office
White Earth Band of Minnesota Chippewa
P.O. Box 418
White Earth, MN 56591

Ms. Lana Gravatt, THPO
Tribal Historic Preservation Office
Yankton Sioux Tribe
P.O. Box 248
Marty, SD 57361

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DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Karen Little Coyote, Cheyenne Coordinator
Cheyenne and Arapaho Tribes of Oklahoma
Culture & Heritage Program
P.O. Box 38
Concho, OK 73022

Dear Ms. Coyote:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with Cheyenne and Arapaho Tribes of Oklahoma.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

cc: Dale Hamilton, Arapaho Coordinator

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Dale Hamilton, Arapaho Coordinator
Cheyenne and Arapaho Tribes of Oklahoma
Culture & Heritage Program
P.O. Box 38
Concho, OK 73022

Dear Mr. Hamilton:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with Cheyenne and Arapaho Tribes of Oklahoma.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

cc: Karen Little Coyote, Cheyenne Coordinator

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Mr. Steve Vance, THPO
Cultural Preservation Office
Cheyenne River Sioux Tribe
PO Box 590
Eagle Butte, SD 57625

Dear Mr. Vance:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with Cheyenne River Sioux Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Dale Old Horn, THPO
Tribal Historic Preservation Office
The Crow Tribe of Indians
PO Box 159
Crow Agency, MT 59022

Dear Mr. Old Horn:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Crow Tribe of Indians.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Curley Youpee, THPO
Tribal Historic Preservation Office
Fort Peck Assiniboine Sioux tribe
PO Box 1027
Fort Peck Agency
Poplar, MT 59255

Dear Mr. Youpee:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Fort Peck Assiniboine Sioux tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Gina Lemon, THPO
Tribal Historic Preservation Office
Leech Lake Chippewa Tribe
115 6th Street, NW
Suite E
Cass Lake, MN 56633

Dear Ms. Lemon:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Leech Lake Chippewa Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Conrad Fisher, THPO
Tribal Historic Preservation Office
Northern Cheyenne Tribe
PO Box 128
Lame Deer, MT 59043

Dear Mr. Fisher:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Northern Cheyenne Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Dianne Desrosiers, THPO
Tribal Historic Preservation Office
Sisseton-Wahpeton Oyate
PO Box 907
Sisseton, SD 57262

Dear Ms. Desrosiers:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Sisseton-Wahpeton Sioux Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

The Honorable Phillip Longie
Spirit Lake Sioux Tribe
P.O. Box 359
Fort Totten, ND 58335

Dear Chairman Longie:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Spirit Lake Sioux Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Waste'Win Young, THPO
Tribal Historic Preservation Office
Standing Rock Sioux Tribe
PO Box D
Fort Yates, ND 58538

Dear Ms. Young:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Standing Rock Sioux Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Perry Brady, THPO
Tribal Historic Preservation Office
Three Affiliated Tribes
404 Frontage Road
New Town ND 58763

Dear Mr. Brady:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Three Affiliated Tribes of Mandan, Hidatsa & Arikara.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Kade Ferris, THPO
Tribal Historic Preservation Office
Turtle Mountain Band of Chippewa Indians
PO Box 900 Belcourt, ND 58316

Dear Mr. Ferris:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Turtle Mountain Band of Chippewa Indians.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Tom McCauley, THPO
Tribal Historic Preservation Office
White Earth Band of Minnesota Chippewa
PO Box 418
White Earth, MN 56591

Dear Mr. McCauley:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

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I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the White Earth Band of Minnesota Chippewa.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

DEPARTMENT OF THE AIR FORCE
21ST SPACE WING

2 March 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning Squadron
830 Patrol Rd PO Box 260
Cavalier AFS, ND 58220

Lana Gravatt, THPO
Tribal Historic Preservation Office
Yankton Sioux Tribe
PO Box 248
Marty, SD 57361

Dear Ms. Gravatt:

Cavalier AFS is preparing an EA Addressing Privatization of MFH at Cavalier AFS. In particular, the Proposed Action is to convey MFH units, grant a lease of land, and transfer responsibility for providing housing at Cavalier AFS to a private developer so that through construction, demolition, and renovation, the end-status total would be 14 MFH units. The Draft EA is included with this correspondence as an attachment.

In accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments* Cavalier AFS is required 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 these legal mandates, federally recognized and state recognized tribes that are affiliated historically with the geographic region within which Cavalier AFS occurs must be allowed to consult on all proposed undertakings that have a potential to affect properties of cultural, historical, or religious significance to the tribes. Please accept this letter to initiate consultation with your tribe regarding this action.

I 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. Please contact me at (701) 993-3297 if you would like to discuss this action further or schedule a meeting in person. Please provide any written comments or information regarding the action at your earliest convenience but no later than 30 days from the receipt of this letter. Thank you for your participation. We appreciate this opportunity to continue our working relationship with the Yankton Sioux Tribe.

Sincerely,

JOHN R. THOMAS, Lt Col, USAF
Commander

Attachment:
Draft Environmental Assessment Addressing Privatization of Military Family Housing at Cavalier Air Force Station, North Dakota

Leech Lake Band of Ojibwe

March 25, 2011

Lieutenant Colonel John R. Thomas
Commander, 10th Space Warning System
830 Patrol Road
P. O. Box 260
Cavaleir AFS, ND 58220

RE: **Proposed Privatization of Military Family Housing**
Cavalier AFS, Pembina County, North Dakota
LL-THPO Number: 11-051-NCRI

Dear Lt. Col. Thomas:

Thank you for the opportunity to comment on the above-referenced projects. They have been reviewed pursuant to the responsibilities given the Tribal Historic Preservation Officer (THPO) by the National Historic Preservation Act of 1966, as amended in 1992 and the Procedures of the Advisory Council on Historic Preservation (38CFR800).

I have reviewed the documentation; after careful consideration of our records, I have determined that the Leech Lake Band of Ojibwe does not have any known recorded sites of religious or cultural importance in these areas.

Should any human remains or suspected human remains be encountered, all work shall cease and the following personnel should be notified immediately in this order: County Sheriff's Office and Office of the State Archaeologist. If any human remains or culturally affiliated objects are inadvertently discovered this will prompt the process to which the Band will become informed.

Please note: The above determination does not "exempt" future projects from Section 106 review. In the event of any other tribe notifying us of concerns for a specific project, we may re-enter into the consultation process.

You may contact me at (218) 335-2940 if you have questions regarding our review of these projects. Please refer to the LL-THPO Number as stated above in all correspondence with this project.

Respectfully submitted,

Gina M. Lemon
Tribal Historic Preservation Officer

Leech Lake Tribal Historic Preservation Office * Established in 1996
An office within the Division of Resource Management
115 Sixth Street NW, Suite E * Cass Lake, Minnesota 56633
(218) 335-2940 * FAX (218) 335-2974
glemon@live.com or www.nathpo.org (Active Members since 1998)

Notice of Availability

The Draft EA and FONSI were made available to the general public for a 30-day review period. The Notice of Availability (NOA) was published on 2 March 2011 in the *Grand Forks Herald* and the *Walsh County Press*. Copies of the NOAs are included below. The Draft EA and FONSI were also made available to the general public at three local libraries (Cavalier County Library, Cavalier Public Library, and Walhalla Public Library). No comments from the general public were received.

AFFIDAVIT OF PUBLICATION

STATE of NORTH DAKOTA
County of Walsh

PUBLIC NOTICE
United States Air Force

Notice of Availability
Draft Environmental Assessment (EA) of Privatization of Military Family Housing (MFH) at Cavalier Air Force Station (AFS), North Dakota

Headquarters Air Force Space Command, in conjunction with Cavalier AFS, has completed a Draft EA that evaluates the potential effects of conveying MFH units, granting a lease of land, and transferring responsibility for providing housing at Cavalier AFS to a private developer (the Project Owner [PO]). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. From conveyance to end state, the number of MFH units would remain at 14 units, but at no time during the transition period would there be fewer than 9 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

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 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 libraries:

Cavalier County Library
600 5th Avenue
Langdon, ND 58249
701-256-5353

Cavalier Public Library
106 West 2nd Avenue South
Cavalier, ND 58220
701-265-4746

Walhalla Public Library
1010 Central Avenue
Walhalla, ND 58282
701-549-3794

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

Mr. Robert Fors
10 SWS/MS
830 Patrol Road #260
Cavalier AFS, North Dakota 58220-9350
Email: robert.fors@cavalier.af.mil
Telephone: 701-993-3688

I, Allison Olimb, of said State and County, being first duly sworn on oath, do say: That I am the Editor of The Walsh County Press, a weekly newspaper of general circulation, printed and published in the City of Park River, in the said County and State, and have been during the time hereinafter mentioned; and that the

HDR One Company
Notice of Availability

a printed copy of which is hereunto annexed, was published in the regular and entire issue of said newspaper during the period and time of publication hereinafter mentioned; and that the notice was published in the newspaper proper and not in supplement, to-wit:

March 2, 2011 _____, 20___

_____, 20___ _____, 20___

_____, 20___ _____, 20___

Subscribed and sworn to before me this 2nd day of March, A.D., 2011.

Audrey J. Blair
Notary Public, North Dakota

Publication Fee $ 89.12
($7.59 per line)
@ 5.57 per Column inch

AUDREY J. BLAIR
Notary Public
State of North Dakota
My Commission Expires Apr. 1, 2012

Affidavit of Publication
State of North Dakota
County of Grand Forks

Jennifer Ekberg of said State and County being first duly sworn, on the oath says that she is an advertising executive of the Grand Forks Herald, Inc. publisher of the Grand Forks Herald, Morning Edition, a daily newspaper of general circulation, printed and published in the City of Grand Forks, in said County and State and has been during the time hereinafter mentioned, and that the advertisement of **Grand Forks County** was printed and published in every copy of following issue of said newspaper to wit:

R001559655	03-02-2011	HDR	$498.24

And that the full amount of the fee for publication of the annexed notice inures solely to the benefit of the publishers of said newspaper; that no agreement or understanding for a division thereof has been made with any person and that no part thereof has been agreed to be paid to any person whomsoever and the amount of said fee is $498.24

That said newspaper was, at the time of the aforesaid publication, the duly elected and qualified Official Newspaper within said County, and qualified in accordance with the law of the State of North Dakota to do legal printing in said County and State

Jennifer Ekberg

Subscribed and sworn to before me this 12th day of April A.D. 2011

Notary Public, Grand Forks, ND

JAY EKREN
NOTARY PUBLIC
State of North Dakota
My Commission Expires December 20, 2016

PUBLIC NOTICE

United States Air Force

Notice of Availability

Draft Environmental Assessment (EA) of Privatization of Military Family Housing (MFH) at Cavalier Air Force Station (AFS), North Dakota

Headquarters Air Force Space Command, in conjunction with Cavalier AFS, has completed a Draft EA that evaluates the potential effects of conveying MFH units, granting a lease of land, and transferring responsibility for providing housing at Cavalier AFS to a private developer (the Project Owner [PO]). The transition period would begin upon completion of contractual matters initiating the Proposed Action and would last for up to 6 years. From conveyance to end state, the number of MFH units would remain at 14 units, but at no time during the transition period would there be fewer than 9 units available. At all times during the transition period, sufficient numbers of MFH units for all eligible pay grades would be maintained.

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 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 libraries:

Cavalier County Library
600 5th Avenue
Langdon, ND 58249
701-256-5353

Cavalier Public Library
106 West 2nd Avenue South
Cavalier, ND 58220
701-265-4746

Walhalla Public Library
1010 Central Avenue
Walhalla, ND 58282
701-549-3794

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

Mr. Robert Fors
10 SWS/MS
830 Patrol Road #260
Cavalier AFS, North Dakota 58220-9350
Email: robert.fors@cavalier.af.mil
Telephone: 701-993-3688

APPENDIX D

REQUIRED AND DESIRED FEATURES FOR PRIVATIZED CAVALIER AFS MFH UNITS

Required and Desired Features for Privatized Cavalier AFS 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, meaning either handicap accessible, or "readily adaptable" to be accessible, including, but not limited to, 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 and community use facilities 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 dealing with accessibility. In complying with said authorities, the private developer (the Highest Ranked Offeror [HRO]) shall abide by those provisions that are the most stringent. Should the HRO choose to make the premises "readily adaptable" then the HRO shall bear the cost of making the housing units accessible at its sole expense. In complying with said authorities, the HRO 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.

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, but are not limited to, 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.

Arctic Space in Housing. Any new units at Cavalier AFS shall have an additional 300 gross square feet arctic space for a front door arctic entryway and as a separate recreation room above the benchmark gross square feet.

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 are site dependent and include copper potable water plumbing or polyethylene (PEX), 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.

Parking and Roads. All units shall have provisions for parking two vehicles off-street. Additional parking spaces shall be provided throughout the neighborhood for guest parking at a rate of one parking space for every two units except for General Officers Home (GOH), Senior Officers Quarters (SOQ), and Prestige units which shall have nearby guest parking available for at least two visitors for each GOH, SOQ and Prestige unit and three visitors for the Wing Commander(s) and the Command Chief Master Sergeant(s) per unit. 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. Curbs and gutters shall be provided on all new streets with curb depressions at handicap accessible ramps, as required by applicable code.

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 HRO 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 with ice and water dispenser option on front (minimum 21 cubic feet for 3-and 4-bedroom units)
- Built-in two-level dishwasher
- Four-burner gas stove with self-cleaning oven, view window, and vent hood
- Built-in microwave oven
- Garbage disposal
- Smoke and carbon monoxide (as applicable) detector/alarms should be hardwired in sleeping and hallway areas
- Interior (conditioned) floor space and connections shall be provided for a full size washer and dryer (electric and natural gas connections)
- Interior (conditioned) floor space and connections for a full-size freezer.

Equipment. All units shall be provided with high-energy efficient heating, ventilation, and central air conditioning systems. 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 HRO shall provide cluster mailboxes for all units in accordance with U.S. Postal Service regulations. Single mailboxes for the GOH, SOQ, and Prestige Family Housing units shall be provided.

Utilities. All new utility systems shall be designed and constructed by the HRO to the local codes and standards or the Government standards, whichever are more stringent. The HRO shall coordinate all tie-in locations with the Government. The HRO shall provide for the installation of all utility meters including master and individual meters. All newly constructed units must have individual electric, natural gas, and water meters. New utility systems installed by the HRO shall be conveyed to the Government by the end of the Initial Development Period (IDP) to own, operate and maintain along with standard warranties. The HRO will ensure proper back flow protection is in place for water systems.

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 65 and 74 dB, such construction and/or renovation must exhibit appropriate noise attenuation measures to achieve a minimum of 25 dB of sound attenuation.

Specific Requirements

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

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 single-family housing. Construction of the development shall be complete within 6 years of project closing. All three- and four-bedroom units shall have at least two full bathrooms. **Table D-1** shows the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table D-1. Enlisted and Non-Senior Officer Housing Requirements for New Construction

Requirement	Type of Unit					
	Three-bedroom			Four-bedroom		
	Rank Grade					
	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)*	1,490	1,670	1,740	1,670	1,800	1,920
Programming Benchmark Gross (ft^2)*	1,630	1,860	2,020	1,950	2,150	2,310
Maximum Gross (ft^2)*	1,760	2,050	2,300	2,220	2,500	2,700

Note:

* All interior spaces within the exterior faces of exterior walls 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 single-family units.

Desired New Housing Construction Features

Desired new construction features include the following:

- 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
- All single-family units in lieu of multiplex units
- New units designed and constructed such that they are capable of achieving "Leadership in Energy and Environmental Design (LEED) for Homes" Silver certification (additional evaluation credit will be given to Offerors who propose building to LEED Gold or Platinum standards)
- Walk-in clothes closets in master bedrooms in all units
- Double sinks in full bathrooms
- 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.

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. Two-car garages would be provided for all single-family units; therefore, the single-family unit at Cavalier AFS that currently has a one-car garage (Unit 201) shall have a second garage added. Renovated units at Cavalier AFS shall have an additional 300 gross square feet of arctic space added to the areas in **Table D-2** for resident's use. **Tables D-2** and **D-3** show the type units per grade, broken down by square footage according to the minimum, programming benchmark, and maximum size.

Table D-2. Renovation Size Requirements – Enlisted and Non-Senior Officer Housing

Requirement	Type of Unit					
	Three Bedroom			Four Bedroom		
	Rank/Grade					
	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)*	1,370	1,530	1,590	1,530	1,650	1,760
Benchmark Gross (ft^2)*	1,490	1,670	1,740	1,670	1,800	1,920
Maximum Gross (ft^2)*	1,630	1,860	2,020	1,950	2,150	2,310

Note: * 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.

Table D-3. 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

Note: * All interior spaces within the exterior faces of exterior walls and center line of party 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.

In **Tables D-2** and **D-3**, the row 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. 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.

All renovated units shall be provided with high-energy efficient heating, ventilation and central air conditioning systems. These systems for renovated units shall be new and from an established manufacturer.

Desired Renovation Features

Desired renovation features include the following:

- Newly constructed units in lieu of renovated units
- Additional square footage above the programming benchmark
- Access to front and rear of unit through house and garage
- All 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)
- Walk-in clothes closets in master bedrooms in all units
- 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
- Second garage for existing one-car garage home
- Finish basements in Units 200 and 201.

Desired Community Features

Below are some desired community features of MFH neighborhoods:

- Covered bus shelters
- Communitywide and neighborhoodwide recreational facilities (except additional playgrounds) in the interior of family housing areas, including items such as group picnic areas with amenities such as pavilions, tables, grills, etc.
- 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
- Road and trail connectivity among all housing areas where possible
- Community center with indoor playground and splash park.

APPENDIX E

REPRESENTATIVE PHOTOS OF MFH AREAS AT CAVALIER AFS

Representative Photos of MFH Areas at Cavalier AFS

Building 1000 – Front View

Building 1001 – Front View

Building 1002 – Front View

Building 1003 – Front View

Building 1004 – Front View

Building 1006 – Back View

	
Building 2000 – Front View	**Building 2001 – Front View**
	
North View Playground	**Housing Unit Storage Shed**

APPENDIX F

AIR EMISSIONS CALCULATIONS

Summary	Summarizes total emissions by calendar year for Privatization of Military Family Housing at Cavalier Air Force Station (AFS), North 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 State of North Dakota Air Quality Control Region 172 Tier report for 2002, to be used to compare the project to regional emissions.

Air Quality Emissions from Privatization of Military Family Housing at Cavalier AFS

	NO_x (ton)	VOC (ton)	CO (ton)	SO_2 (ton)	PM_{10} (ton)	$PM_{2.5}$ (ton)	CO_2 (ton)
Construction Combustion	5.720	0.634	2.481	0.396	0.401	0.389	652.026
Construction Fugitive Dust	-	-	-	-	5.953	0.463	-
Haul and Water Trucks	2.037	1.473	5.985	0.160	2.422	0.630	515.618
Construction Commuter	0.154	0.154	1.388	0.002	0.015	0.009	184.075
TOTAL	***7.911***	***2.260***	***9.854***	***0.558***	***8.790***	***1.491***	***1,351.719***

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

CO_2 emissions converted to metric tons =	***1,226.009***	***metric tons***	
State of North Dakota's CO_2 emissions =	***52,511,913***	***metric tons***	*(DOE/EIA 2005)*
Percent of North Dakota's CO_2 emissions =	***0.002%***	***metric tons***	

Source: U.S. Department of Energy (DOE)/Energy Information Administration (EIA). 2007. State Carbon Dioxide Emissions Summary for the State of North Dakota. 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.

State of North Dakota Air Quality Control Region 172

	Point and Area Sources Combined					
Year	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
2002	167,162	41,961	295,198	165,860	355,336	63,216

Source: USEPA-AirData NET Tier Report (http://www.epa.gov/air/data/geosel.html). Site visited on 18 March 2010.

Air Emissions from Privatization of Military Family Housing at Cavalier AFS
Determination Significance (Significance Threshold = 10% of regional)

	Point and Area Sources Combined					
	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO_2 (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
Regional Emissions	167,162	41,961	295,198	165,860	355,336	63,216
Emissions	7.91	2.26	9.85	0.56	8.79	1.49
% of Regional	**0.005%**	**0.005%**	**0.003%**	**0.0003%**	**0.002%**	**0.002%**

Combustion Emissions

Combustion Emissions of VOC, NO_x, SO_2, CO, $PM_{2.5}$, $PM_{10,}$ and CO_2 due to Construction

General Construction Activities	Area Disturbed		Backup/Assumptions
Construct Community Center/Clubhouse/Splash Park	25,000	ft^2	Assume one centralized Community Center/Clubhouse with indoor playground and splash park (25,000 ft^2).
Install Utility Lines for new facilities (Community Center/Storage and individual meters)	1,500	ft^2	Assume 500 ft long by 3 ft wide.
Construct 12 MFH Units	33,900	ft^2	Assume 20% larger than demolished units; 12 single-family units consisting of 4, 3-bedroom units (2=1,930 ft^2 and 2=2,160 ft^2) and 8, 4-bedroom units (3=2,250 ft^2 and 5=2,450 ft^2).
Construct Garage Addition on Unit 201	264	ft^2	Assume 22 ft. long by 12 ft. wide
Construct Driveways and Walkways for 12 new MFH units.	13,679	ft^2	Assume identical to old Driveway/Slabs + 25% increase.
Construct Pavements for New Community Center (driveways, sidewalks, vehicular parking areas, and roadways)	43,560	ft^2	Assume 1 acre of pavement for Community Center.
Demolish Driveways and Walkways for 12 MFH Units.	10,943	ft^2	Calculated via GIS analysis of DOPPA Figures. Assumed Driveways = 10,097 ft^2 and Slabs (walkways) = 846 ft^2.
Demolish 12 MFH Units (6 Duplexes and storage sheds), including utility areas	29,330	ft^2	Calculated via GIS analysis of DOPPA Figures. Assume 30 ft. by 3 ft. area per housing unit disturbed for demolishing utilities.
Total MFH Grading Area	158,176	ft^2	

Total General Construction Area:	60,664	ft^2	
	1.4	acres	
Total Demolition Area:	40,273	ft^2	
	0.9	acres	
Total Pavement Area:	57,239	ft^2	
	1.3	acres	
Total Disturbed Area:	158,176	ft^2	
	3.6	acres	
Construction Duration:	12	months	
Annual Construction Activity:	240	days/yr	Conservatively assume work occurs over 12 months at 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. Reqd.[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. Reqd.[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. Reqd.[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. Reqd.[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. Reqd.[a] 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	1	41.641	2.577	15.710	0.833	2.546	2.469	4941.526
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**			19.824					

*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 NOx = (Total Grading NOx per 10 acre)*(Equipment Multiplier)

Summary of Input Parameters

	Total Area (ft^2)	Total Area (acres)	Total Days	
Grading:	158,176	3.63	3	(from "Grading" worksheet)
Paving:	57,239	1.31	7	
Demolition:	40,273	0.92	46	
Building Construction:	59,164	1.36	240	
Architectural Coating	59,164	1.36	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 240 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	124.92	7.73	47.13	2.50	7.64	7.41	14,825
Paving	317.57	18.24	130.05	6.35	19.43	18.85	39,368
Demolition	1,470.37	87.16	581.71	29.41	88.90	86.24	171,182
Building Construction	9,455.12	751.15	4,171.75	747.92	678.97	658.60	1,071,483
Architectural Coatings	71.48	403.94	31.31	5.02	6.19	6.00	7,195
Total Emissions (lbs):	**11,439.46**	**1,268.23**	**4,961.95**	**791.20**	**801.13**	**777.10**	**1,304,053**

Results: Total Project Annual Emission Rates

	NO_x	VOC	CO	SO_2	PM_{10}	$PM_{2.5}$	CO_2
Total Project Emissions (lbs)	11,439.46	1,268.23	4,961.95	791.20	801.13	777.10	1,304,053
Total Project Emissions (tons)	5.72	0.63	2.48	0.40	0.40	0.39	652.03

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/Pavement 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
Control Efficiency	0.50	(assume 50% control efficiency for PM_{10} and $PM_{2.5}$ emissions)	EPA 2001; EPA 2006

Project Assumptions

New Roadway/Pavement Construction (0.42 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	1.3	acres

General Construction Activities (0.19 ton PM_{10}/acre-month)

Duration of Construction Project	12	months
Area	2.3	acres

	Project Emissions (tons/year)			
	PM_{10} uncontrolled	**PM_{10} controlled**	**$PM_{2.5}$ uncontrolled**	**$PM_{2.5}$ controlled**
New Roadway Construction	6.62	3.31	0.66	0.33
General Construction Activities	5.28	2.64	0.26	0.13
Total	**11.91**	**5.95**	**0.93**	**0.46**

Construction Fugitive Dust Emission Factors

General Construction Activities Emission Factor

0.19 ton PM_{10}/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 PM_{10}/acre-month for sites without large-scale cut/fill operations. A worst-case emission factor of 0.42 ton PM_{10}/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 PM_{10}/acre-month emission factor by applying 25% of the large-scale earthmoving emission factor (0.42 ton PM_{10}/acre-month) and 75% of the average emission factor (0.11 ton PM_{10}/acre-month). The 0.19 ton PM_{10}/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 PM_{10}/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 PM_{10} and $PM_{2.5}$ in PM nonattainment areas.

New Road Construction Emission Factor

0.42 ton PM_{10}/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 PM_{10}/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 PM_{10} emissions. This methodology is consistent with the procedures documents for the National Emission Inventory (EPA 2006).

Control Efficiency for PM_{10} and $PM_{2.5}$ **0.50**

The EPA National Emission Inventory documentation recommends a control efficiency of 50% for PM_{10} 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: 3.6 acres/yr (from Combustion Worksheet)
Qty Equipment: 3.0 (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	3.63	0.45
2230 500 0300	Stripping	Topsoil & stockpiling, adverse soil	1,650	cu. yd/day	2.05	0.49	3.63	1.78
2315 432 5220	Excavation	Bulk, open site, common earth, 150' haul	800	cu. yd/day	0.99	1.01	1.82	1.83
2315 120 5220	Backfill	Structural, common earth, 150' haul	1,950	cu. yd/day	2.42	0.41	1.82	0.75
2315 310 5020	Compaction	Vibrating roller, 6 " lifts, 3 passes	2,300	cu. yd/day	2.85	0.35	3.63	1.27
TOTAL								6.08

Calculation of days required for the indicated pieces of equipment to grade the designated acreage.

(Equip)(day)/yr: 6.08
Qty Equipment: 3.00
Grading days/yr: 2.03

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.

Assume the distance for hauling materials is 70 miles roundtrip; almost to City of Grand Forks, ND.

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/exported materials =	81,004	cubic yards
Number of trucks required =	4,050	heavy duty diesel haul trucks
Miles per trip =	70	miles

Water Transportation Assumptions:

Water trucks carry 4,000 gallons per truckload.

Approximately 2,969,111 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 roundtrip.

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 =	2,957,891	gallons
Number of trucks required =	739	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 CO_2 are from USAF IERA 2003.

Emission factors for PM, PM_{10}, 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 CO_2 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)

CO_2 emission factor = 22.384 lbs CO_2/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	**4073.30**	**2945.31**	**11969.22**	**320.85**	**4844.09**	**1259.59**	**1031236.35**
tons	**2.037**	**1.473**	**5.985**	**0.160**	**2.422**	**0.630**	**515.618**

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) =	35	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	**308.495**	**307.100**	**2776.286**	**3.620**	**29.225**	**18.407**	**368149.269**
tons	**0.154**	**0.154**	**1.388**	**0.0018**	**0.0146**	**0.0092**	**184.075**

Example Calculation: NO_x emissions (lbs) = 60 miles/day * NO_x emission factor (lb/mile) * number of construction days * number of workers

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			Point Source Emissions						Area Source Emissions (Non-Point and Mobile Sources)					
Row #	State	County	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	VOC	CO	NOx	PM_{10}	$PM_{2.5}$	SO_2	VOC
1	ND	Adams Co	0	0	0	0	0	0	1,799	533	4,911	763	57.3	308
2	ND	Barnes Co	0	0	0	0	0	0	7,832	3,740	9,687	1,605	355	949
3	ND	Benson Co	0	0	0	0	0	0	4,941	1,130	7,364	1,173	145	700
4	ND	Billings Co	34.9	41.7	3.11	3.11	283	3.5	2,588	1,365	1,421	276	89.9	430
5	ND	Bottineau Co	0	0	0	0	0	0	5,583	1,559	7,809	1,315	179	723
6	ND	Bowman Co	0	0	0	0	0	0	2,250	738	2,716	447	73	390
7	ND	Burke Co	57.3	181	0.71	0.6	426	5.2	2,375	885	5,894	960	97.3	386
8	ND	Burleigh Co	0	0	0	0	0	0	22,345	4,560	10,005	1,495	713	3,001
9	ND	Cavalier Co	0	0	0	0	0	0	4,094	1,489	11,343	1,810	166	547
10	ND	Dickey Co	0	0	0	0	0	0	4,045	940	7,102	1,117	120	607
11	ND	Divide Co	0	0	0	0	0	0	2,457	888	5,056	844	104	394
12	ND	Dunn Co	96.8	100	0.84	0.51	5.3	13	2,845	737	4,129	676	93.7	438
13	ND	Eddy Co	0	0	0	0	0	0	2,038	1,125	3,357	558	91.7	328
14	ND	Emmons Co	0	0	0	0	0	0	2,911	652	5,232	822	84.8	414
15	ND	Foster Co	0	0	0	0	0	0	2,738	1,417	5,335	859	119	394
16	ND	Golden Valley Co	0	0	0	0	0	0	2,762	2,067	2,572	470	152	392
17	ND	Grand Forks Co	144	229	26.3	3.74	641	1.4	22,803	3,557	12,685	2,030	740	2,951
18	ND	Grant Co	0	0	0	0	0	0	2,188	550	5,993	946	59.6	380
19	ND	Griggs Co	0	0	0	0	0	0	2,210	1,263	4,956	805	128	369
20	ND	Hettinger Co	0	0	0	0	0	0	2,321	798	4,880	801	81.6	335
21	ND	Kidder Co	0	0	0	0	0	0	4,762	2,178	4,930	824	153	672
22	ND	LaMoure Co	0	0	0	0	0	0	3,540	1,113	7,937	1,269	146	498
23	ND	Logan Co	0	0	0	0	0	0	1,833	451	3,177	520	57.4	300
24	ND	McHenry Co	0.9	47	54.6	23.7	0.2	107	4,474	2,296	6,810	1,123	214	668
25	ND	McIntosh Co	95.9	105	0.9	0.55	6	12.8	2,497	598	4,067	647	86.4	355
26	ND	McKenzie Co	205	578	3.49	3.31	213	13	4,474	964	6,060	961	103	688
27	ND	McLean Co	1,908	10,357	2,911	2,349	24,428	153	7,588	1,734	11,053	1,748	179	1,206
28	ND	Mercer Co	3,974	45,350	3,334	2,904	91,617	588	5,111	768	3,341	576	96.4	1,085
29	ND	Morton Co	752	1,883	882	826	6,833	182	13,145	3,141	8,295	1,305	339	1,463
30	ND	Mountrail Co	0	0	0	0	0	0	5,348	1,897	6,831	1,113	195	803
31	ND	Nelson Co	0	0	0	0	0	0	2,670	752	6,055	949	89.6	381
32	ND	Oliver Co	1,100	22,845	1,390	1,256	28,565	241	1,717	374	2,573	425	46.1	271
33	ND	Pembina Co	568	758	193	78.7	730	145	8,051	1,889	8,196	1,264	275	817
34	ND	Pierce Co	0	0	0	0	0	0	2,344	1,110	5,630	924	138	570
35	ND	Ramsey Co	0	0	0	0	0	0	5,281	1,248	7,615	1,223	170	823
36	ND	Ransom Co	106	69	56.1	35.4	1.5	298	2,798	894	5,598	895	140	409
37	ND	Renville Co	0	0	0	0	0	0	2,627	992	5,270	875	102	390
38	ND	Richland Co	703	390	55.5	20.2	149	3	11,983	3,239	11,698	1,906	573	1,563
39	ND	Rolette Co	0	0	0	0	0	0	7,942	1,194	7,948	1,179	182	953
40	ND	Sargent Co	0	0	0	0	0	0	3,262	981	7,487	1,190	287	493
41	ND	Sheridan Co	0	0	0	0	0	0	1,893	626	3,952	655	69.2	386
42	ND	Sioux Co	0	0	0	0	0	0	2,362	355	2,875	362	55.5	328
43	ND	Slope Co	0	0	0	0	0	0	1,314	633	1,944	352	55.2	351
44	ND	Stark Co	60.5	180	0	0	0.3	17.5	11,710	3,396	6,239	1,019	399	1,471
45	ND	Steele Co	0	0	0	0	0	0	2,078	1,005	5,764	942	107	332
46	ND	Stutsman Co	0	0	0	0	0	185	12,048	4,131	11,090	1,852	380	1,679
47	ND	Towner Co	0	0	0	0	0	0	2,607	826	7,985	1,273	115	378
48	ND	Traill Co	684	446	126	53.1	479	15.5	7,800	1,855	10,296	1,603	167	845
49	ND	Walsh Co	0	0	0	0	0	0	8,114	1,892	9,819	1,555	291	1,006
50	ND	Ward Co	0	0	0	0	0	0	17,079	4,279	14,872	2,366	561	2,399
51	ND	Wells Co	0	0	0	0	0	0	3,959	1,943	9,669	1,546	187	549
52	ND	Williams Co	527	2,313	25.1	25.1	1,605	45.4	8,645	2,542	8,750	1,420	269	1,364
Grand Total			11,017	85,873	9,063	7,583	155,982	2,029	284,181	81,289	346,273	55,633	9,878	39,932

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 18 March 2010.

State of North Dakota Air Quality Control Region 172 (40 CFR 81.335)