

DRAFT
**ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
INTEGRATED CONTROL OF NUISANCE SPECIES
AT
GRAND FORKS AIR FORCE BASE, NORTH DAKOTA**



SEPTEMBER 2012

ACRONYMS AND ABBREVIATIONS

µg/m ³	micrograms per cubic meter	EIAP	Environmental Impact Analysis Process
2,4-D	2,4-Dichlorophenoxy-acetic acid		
319 CES	319th Civil Engineer Squadron	EIS	Environmental Impact Statement
319 ABW	319th Air Base Wing	EISA	Energy Independence and Security Act
A.I.	active ingredient	ELG	Effluent Limitations Guidelines
ACHP	Advisory Council on Historic Preservation	EO	Executive Order
AFB	Air Force Base	ESCP	Erosion and Sediment Control Plan
AFI	Air Force Instruction	FEMA	Federal Emergency Management Agency
AFPD	Air Force Policy Directive		
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health	FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
ATV	all-terrain vehicle	FIRM	Flood Insurance Rate Map
AQCR	Air Quality Control Region	FPPA	Farmland Protection Policy Act
AS	Airlift Squadron	FONPA	Finding of No Practicable Alternative
AW	Airlift Wing	FONSI	Finding of No Significant Impact
BASH	bird/wildlife aircraft strike hazard	FR	Federal Register
bgs	below ground surface	ft ²	square feet
BMP	best management practice	FY	fiscal year
Bt	<i>Bacillus thuringiensis</i>	GFMCD	City of Grand Forks Mosquito Control District
Bti	<i>Bacillus thuringiensis israelensis</i>		
C&D	construction and development	GHG	greenhouse gas
CAA	Clean Air Act	GIS	geographic information systems
CDC	Centers for Disease Control	gpm	gallons per minute
CEQ	Council on Environmental Quality	HAP	hazardous air pollutant
CFR	Code of Federal Regulations	IGR	insect growth regulator
CO	carbon monoxide	IICEP	Intergovernmental and Interagency Coordination for Environmental Planning
CO ₂	carbon dioxide	INRMP	Integrate Natural Resources Management Plan
CWA	Clean Water Act		
DHS	U.S. Department of Homeland Security	IPM	integrated pest management
DoD	Department of Defense	IPMP	Integrated Pest Management Plan
DoDI	Department of Defense Instruction	LC50	lethal concentration 50
EA	Environmental Assessment	LID	low impact development

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MCPA	2 Methyl-4-Chlorophenoxyacetic Acid	Pb	lead
MFH	military family housing	PBO	piperonyl butoxide
mg/m ³	milligrams per cubic meters	PGP	Pesticide General Permit
MMP	Mosquito Management Plan	P.L.	Public Law
MSA	Munitions Storage Area	PM ₁₀	particulate matter equal or less than 10 microns in diameter
MSDS	Material Safety Data Sheet	PM _{2.5}	particulate matter equal or less than 2.5 microns in diameter
MSL	mean sea level	ppb	parts per billion
NAAQS	National Ambient Air Quality Standards	PPE	personal protective equipment
NCOIC	Non-Commissioned Officer in Charge	ppm	parts per million
NDAAQS	North Dakota Ambient Air Quality Standards	PSD	prevention of significant deterioration
NDGFD	North Dakota Game and Fish Department	QD	quantity-distance
NDNHP	North Dakota Natural Heritage Program	ROI	region of influence
NDDH	North Dakota Department of Health	SDWA	Safe Drinking Water Act
NDDH/DWQ	North Dakota Department of Health/Division of Water Quality	SHPO	State Historic Preservation Office
NEPA	National Environmental Policy Act	SIP	State Implementation Plan
NO ₂	nitrogen dioxide	SO ₂	sulfur dioxide
NOA	Notice of Availability	SSPP	Strategic Sustainability Performance Plan
NO _x	nitrogen oxide	SWPPP	Storm Water Pollution Prevention Plan
NPDES	National Pollutant Discharge Elimination System	TMDL	total maximum daily load
NRCS	Natural Resources Conservation Service	tpy	tons per year
NWI	National Wetlands Inventory	UFC	Unified Facilities Criteria
NWR	National Wildlife Refuge	ULV	ultra-low volume
O ₃	ozone	U.S.C.	United States Code
O&M	operation and maintenance	USACE	U.S. Army Corps of Engineers
OP	organophosphate	USAF	U.S. Air Force
OSHA	Occupational Safety and Health Administration	USDA	U.S. Department of Agriculture
		USEPA	U.S. Environmental Protection Agency
		USFWS	U.S. Fish and Wildlife Service
		VOC	volatile organic compound
		WMA	Wildlife Management Area
		YARS	Youngstown Air Reserve Station

1 **COVER SHEET**

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3 **DRAFT**

4 **ENVIRONMENTAL ASSESSMENT ADDRESSING THE**
5 **INTEGRATED CONTROL OF NUISANCE SPECIES**
6 **AT GRAND FORKS AIR FORCE BASE, NORTH DAKOTA**

7 **Responsible Agencies:** U.S. Air Force (USAF), Headquarters Air Mobility Command (AMC), Scott Air
8 Force Base (AFB), Illinois; and Grand Forks AFB, North Dakota.

9 **Affected Location:** Grand Forks AFB.

10 **Proposed Action:** Implementation of integrated control of nuisance species program to eradicate
11 mosquitoes and noxious and invasive weed species.

12 **Report Designation:** Draft Environmental Assessment (EA).

13 **Abstract:** The purpose of the Proposed Action is to implement all phases of the integrated mosquito
14 management program, including the newly adopted Mosquito Management Plan (MMP) and expand
15 herbicide applications for noxious and nuisance weed control at Grand Forks AFB to enable personnel to
16 perform activities necessary to successfully meet the USAF mission.

17 Under the No Action Alternative, the MMP would not be implemented and herbicide applications for
18 noxious weeds would not be expanded. Although the plan would not be implemented, the control
19 measures currently being used on the installation would continue. There would be no change from
20 existing conditions at the installation.

21 The EA has been prepared to evaluate the Proposed Action and the No Action Alternative. Resources
22 considered in the impacts analysis include land use, air quality, geological resources, water resources,
23 biological resources, and safety. The Draft EA will be made available to the public upon completion.

24 All comments and inquiries regarding this document should be submitted in writing to the Public Affairs
25 Office, 319th Air Base Wing, 701 Eielson Street, Building 607, Room 211, Grand Forks Air Force Base,
26 North Dakota 58205. Questions regarding this document can also be directed to the Public Affairs Office
27 via telephone by calling 701-747-5023 or by email addressed to
28 PublicAffairsOfficeGrandForksAFB@us.af.mil. Copies of this document can be viewed at three local
29 libraries (Grand Forks Library at 2110 Library Circle, Grand Forks, North Dakota 58201; East Grand
30 Forks Campbell Library at 422 4th Street NW, East Grand Forks, Minnesota 56127; and Grand Forks
31 AFB Library at 511 Holzapple Street, Grand Forks AFB, North Dakota 58205) or they can be viewed at
32 the following Web site: <http://www.grandforks.af.mil/library/>. Anyone wishing to view the supporting
33 documents for this action should contact the Public Affairs Office at 701-747-5023.

34 **Privacy Advisory**

35 Your comments on this document are welcome. Letters or other written comments provided to the
36 proponent concerning this document may be published in this EA. Comments will be addressed in this
37 EA and made available to the public. Any personal information provided will be used only to identify
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39 EA or associated documents. Private addresses will be compiled to develop a mailing list for those
40 requesting copies of this EA. However, only the names of the individuals making comments and specific
41 comments will be disclosed; personal home addresses and phone numbers will not be published in this
42 EA.

DRAFT

**ENVIRONMENTAL ASSESSMENT
ADDRESSING THE
INTEGRATED CONTROL OF NUISANCE SPECIES
AT
GRAND FORKS AIR FORCE BASE, NORTH DAKOTA**

**319 CIVIL ENGINEER SQUADRON
GRAND FORKS AIR FORCE BASE
NORTH DAKOTA 58205-6434**

SEPTEMBER 2012

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Purpose of and Need for the Proposed Action

This Environmental Assessment (EA) has been prepared to describe and analyze the Grand Forks Air Force Base (AFB) Proposed Action to implement the Mosquito Management Plan (MMP) as part of the mosquito management program and to expand herbicide applications to eradicate noxious and invasive weed species.

1.1 Background

The 319th Civil Engineer Squadron (319 CES) at Grand Forks AFB proposes to complete the U.S. Air Force (USAF) Environmental Impact Analysis Process (EIAP) to determine the potential environmental impacts associated with integrated nuisance species control. For mosquitoes, proposed control includes trapping mosquitoes, aerial and ground spraying to control mosquitoes, and habitat source reduction. For noxious and invasive plant species, ground-spraying of herbicides is proposed.

Mosquitoes. Mosquito populations can cause discomfort, stress, pain, suffering, and illness from the spread of diseases, including the West Nile virus. *Culex* and *Aedes* mosquitoes transmit West Nile Virus; Grand Forks AFB has an abundance of *Aedes vexans*, a common nuisance mosquito. Aircraft maintenance personnel, security forces, fire department employees, and others who work outdoors could be adversely affected when the mosquito population is high. While each individual's predisposition to mosquito bites varies, morale and productivity are generally adversely impacted during periods of high mosquito activity. Intense mosquito activity causes a decline in installation personnel using outdoor recreation facilities such as the golf course, athletic fields, playgrounds, and picnic areas. The overall effect of this decline can result in reduced productivity and negative morale for assigned personnel and their dependents and residents of the civilian communities.

The USAF conducts aerial spraying of pesticides nationwide to control adult and larval forms of mosquitoes at military installations and their surrounding communities. These applications are performed in accordance with the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA); (Public Law [P.L.] 75-717) 7 United States Code [U.S.C.] Section 136 et seq.; the Department of Defense Instruction (DoDI) 4150.07, *DOD Pest Management Program*, May 29, 2008; and applicable state pesticide regulations. The current mosquito management program used at Grand Forks AFB incorporates aerial treatment, ground spraying, and larviciding (GFAFB 2003a). Updated National Environmental Policy Act (NEPA) analysis is required to implement an integrated mosquito control program as is discussed in the MMP.

The Pest Management Shop invests a majority of available labor resources and time to manage mosquito populations on Grand Forks AFB. Trapping is conducted on an occasional basis using mosquito magnet traps and Centers for Disease Control (CDC) light traps. Traps on Grand Forks AFB are currently regulated by the Bioenvironmental Engineering Flight.

In the spring (usually May), after post-larval dipping has been conducted to determine the need and type of larvicide measures, the shop begins larviciding with Altosid® briquettes and pellets. The briquettes are applied once per season to permanent water features and provide larvicide control for up to 150 days. If the presence of larvae is detected, Altosid® pellets are applied to intermittent water bodies including puddles or other appropriate areas after storm events. The Altosid® pellets are active for 30 days. The shop begins the adulticide control program once the mosquito trap count reaches 100 for Grand Forks AFB, or if there is clear visual evidence and field reports that indicate high mosquito activity. The traps are issued and operated by the Public Health Flight.

To apply adulticide, the Pest Management Shop fogs using Curtis Dyna Fog – Maxi-Pro 4 equipment three times a week. The synthetic pyrethroids Anvil®, Kontrol 4-4, and Duet™ are proposed for fogging efforts in the future. Fogging efforts continue until mosquito activity is reduced in the fall (i.e., October

1 or September) and below the threshold count of 100 mosquitoes per trap. If mosquito activity is
2 abnormally high in a given year, the Pest Management Shop can also treat resting areas, such as
3 shelterbelt trees. In residential areas, 10 mosquito magnets are used to attract and trap mosquitoes. The
4 primary species to be controlled are *Aedes vexans*, *Aedes dorsalis*, *Aedes spencerii*, *Ochlerotatus*
5 *flavescens*, *Culiseta inornata*, and *Culex tarsalis*. Larvicides are also applied to smaller areas on
6 installation.

7 **Noxious and Invasive Weeds.** Grand Forks AFB has conducted ground spraying of herbicides to control
8 noxious and invasive weeds and to assist in restoring native habitats. The Federal Noxious Weed Act
9 (7 U.S.C. 2814) and North Dakota Law 4.1-47-02 require the management and control of noxious weeds.
10 Grand Forks AFB has determined that the preferred method of weed control has been the use of
11 ground-based methods (i.e., manual and mechanical) to reduce potential aerial herbicide spray drift that
12 could result in damage to surrounding on- and off-installation agricultural vegetation and crops. Past
13 experience has shown that aerial spraying of herbicides can be prone to hazardous herbicide spray drift,
14 and, as such, it is not a recommended activity for Grand Forks AFB. Other methods of weed control
15 should be sought to control noxious and invasive weeds when difficult field conditions exist and include
16 efforts like bulldozing, all-terrain vehicle (ATV) mowing and spraying, burning, and revegetation.

17 1.2 Purpose of and Need for the Proposed Action

18 The purpose of the Proposed Action is to reduce mosquito and noxious plant populations through
19 compliance with the Integrated Natural Resources Management Plan (INRMP)(GFAFB 2011); MMP
20 (GFAFB 2012); Integrated Pest Management Plan (IPMP) (GFAFB 2007a); Executive Order (EO)
21 13112, *Invasive Species and the Federal Noxious Weed Act*; and Federal and state regulations by applying
22 appropriate techniques to manage and control mosquitoes and noxious and invasive weed species to
23 improve the quality of the human and natural environment at Grand Forks AFB and the surrounding area.

24 The need for the Proposed Action is to control and reduce the effects of mosquitoes on the human
25 environment. There is a need to sustain efforts to reduce the threat of mosquito-borne disease outbreaks
26 and to continue providing a functional and effective environment for outdoor activities in support of the
27 Grand Forks mission.

28 Weed control is necessary at Grand Forks AFB for overall aesthetics, safety (e.g., weeds can interfere
29 with visibility for road users and obscure traffic signs), and structural integrity (weed growth can destroy
30 paving surfaces, cause uneven slabs and broken tarmac, and crack walls, increasing maintenance costs).
31 Additionally, weed control is required to comply with the INRMP, public law, and to manage grassland
32 and wetland habitats (GFAFB 2011).

33 1.3 Location

34 Grand Forks AFB is a USAF installation under the AMC. The 319th Air Base Wing (319 ABW), which
35 serves as the host wing, provides installation operational support to wing personnel, three tenant units,
36 and nine Geographically Separated Units. Grand Forks AFB trains, deploys, and redeploys more than
37 1,300 airmen in support of the Air Expeditionary Force and combatant commander requirements. Grand
38 Forks AFB provides facilities and equipment support for the U.S. Department of Homeland Security
39 (DHS), U.S. Customs and Border Protection, and the 69th Reconnaissance Group. Grand Forks AFB also
40 provides logistical, medical, civil engineering, contracting, communications, security, and force support;
41 and houses facilities and equipment valued at \$2.2 billion and executes a budget of \$48 million. Tenants
42 on Grand Forks AFB include the Air Force Audit Agency, the U.S. Army Corps of Engineers (USACE),
43 and the DHS. The installation is in Grand Forks County near the North Dakota-Minnesota state
44 boundary, north of and adjacent to the City of Emerado, and is 15 miles west of the City of Grand Forks
45 (see **Figure 1-1**).

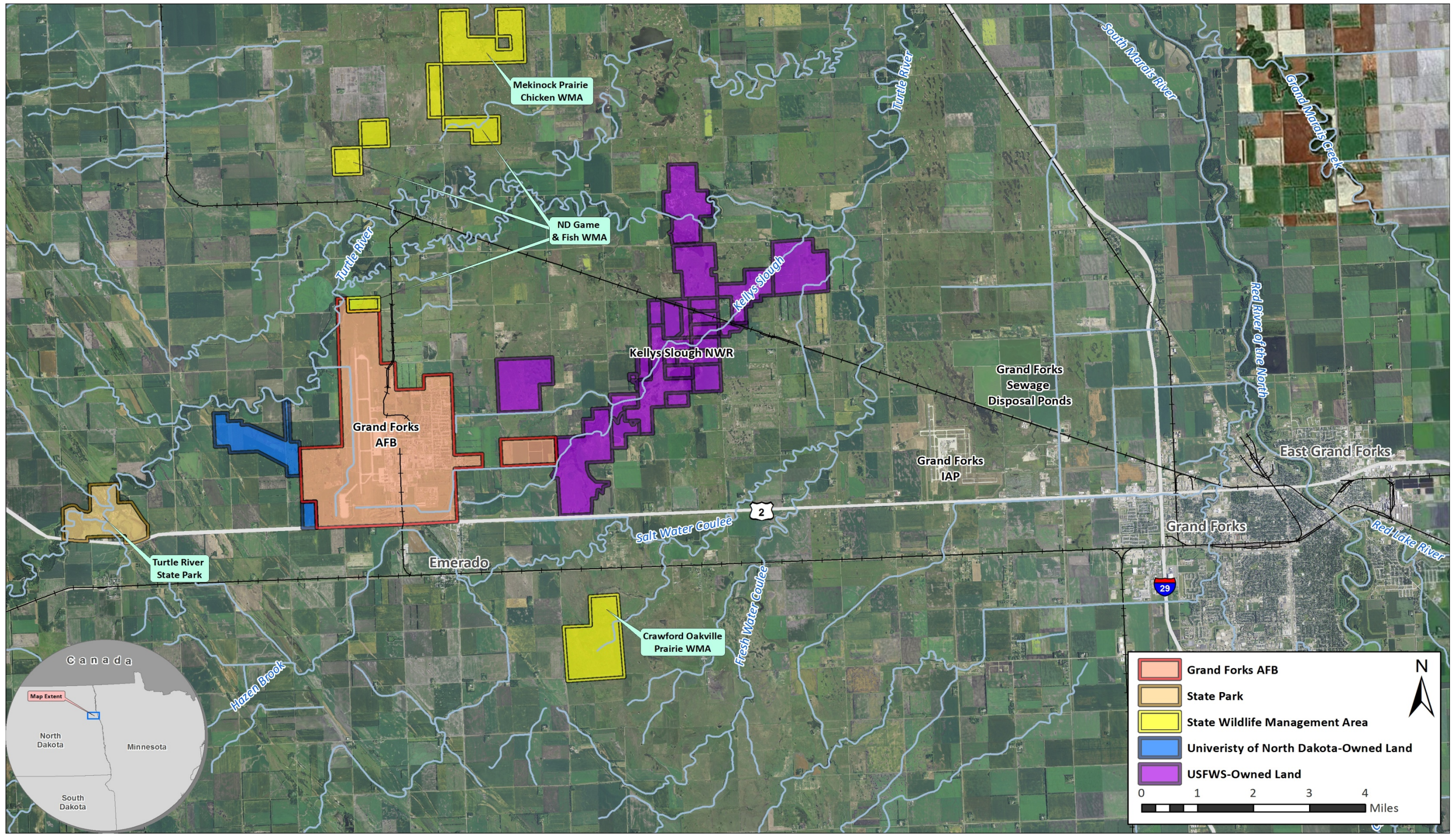


Figure 1-1. Grand Forks AFB and Surrounding Area

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1.4 Summary of Key Environmental Compliance Requirements

National Environmental Policy Act

NEPA (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 decision makers 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 decision making 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 briefly provide evidence and analysis for determining whether to prepare a Finding of No Significant Impact (FONSI) or FONSI/Finding of No Practicable Alternative (FONPA), where a FONPA is appropriate (see **Section 1.4.2**), or whether the preparation of an Environmental Impact Statement (EIS) is necessary. The EA can aid in an agency’s compliance with NEPA when an EIS is unnecessary and facilitate preparation of an EIS when one is required.

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

Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decision making 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 decision maker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated “with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively.”

1.5 Scope of the Analysis

This EA examines potential effects of the Proposed Action and alternatives on six resource areas: land use, air quality, geological resources, water resources, biological resources, and safety. These resources were identified as being potentially affected by the Proposed Action and include applicable elements of the human environment that are prompted for review by EO, regulation, or policy. While not comprehensive, a list of potentially applicable laws, regulations, policies, and planning criteria is provided in **Table 1-1**.

1

Table 1-1. Listing of Applicable Statutes and Regulations

Regulation	Source
Air Quality	
Clean Air Act of 1970 and Amendments of 1977 and 1990, including the General Conformity Rule and the Greenhouse Gas Tailoring Rule	42 U.S.C. 7401 et seq., as amended
Air Quality Compliance	Air Force Instruction (AFI) 32-7040
Federal Leadership in Environmental, Energy, and Economic Performance (5 October 2009)	EO 13514
Water Resources	
Clean Water Act of 1972	33 U.S.C. 1251 et seq., as amended
Safe Drinking Water Act of 1974	42 U.S.C. 300
Water Quality Compliance	AFI 32-7041
Protection of Wetlands (24 May 1977)	EO 11990
Floodplain Management (24 May 1977)	EO 11988
Biological Resources	
Endangered Species Act of 1973	16 U.S.C. 1531–1543
Migratory Bird Treaty Act of 1918	16 U.S.C. 703–712
Sikes Act Improvement Act of 1977	16 U.S.C. 670a–670o, 74 Stat. 1052
Bald and Golden Eagle Protection Act of 1940	16 U.S.C. 668–668c, as amended
Invasive Species (3 February 1999)	EO 13112
Protection and Enhancement of Environmental Quality (5 March 1970)	EO 11514
Federal Leadership in Environmental, Energy, and Economic Performance (5 October 2009)	EO 13514
Conservation of Migratory Birds (10 January 2001)	EO 13186
Integrated Natural Resources Management	AFI 32-7064
Safety and Occupational Health	
Air Force Occupational and Environmental Safety, Fire Protection, and Health Program	AFI 91-301
USAF Mishap Prevention Program	AFI 91-202
Protection of Children from Environmental Health and Safety Risks (23 April 1997)	EO 13045

2 **Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), Native**
3 **American Tribal Consultation, and Public Involvement**

4 ***Interagency and Intergovernmental Coordination for Environmental Planning.*** NEPA requirements
5 help ensure that environmental information is made available to the public during the decision making
6 process and prior to actions being taken. The premise of NEPA is that the quality of Federal decisions
7 will be enhanced if proponents provide information to the public and involve the public in the planning
8 process. The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal*
9 *Programs*, require Federal agencies to cooperate with and consider state and local views in implementing

1 a Federal proposal. AFI 32-7060, *Interagency and Intergovernmental Coordination for Environmental*
2 *Planning*, requires the USAF to implement the IICEP process, which is used for the purpose of agency
3 coordination and implements scoping requirements.

4 Through the IICEP process, Grand Forks AFB notifies relevant Federal, state, and local agencies of the
5 Proposed Action and alternatives and provides them sufficient time to make known their environmental
6 concerns specific to the action. The IICEP process also provides Grand Forks AFB the opportunity to
7 cooperate with and consider state and local views in implementing the Federal proposal. IICEP materials
8 related to this EA are included in **Appendix A**, and will be expanded throughout the EIAP process.

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

25 The goal of the tribal consultation process is not simply to consult on a particular undertaking but rather
26 to build constructive relationships with the appropriate Native American tribes. Consultation should lead
27 to constructive dialogs in which Native American tribes are active participants in the planning process.
28 As such, consultation regarding specific proposed projects must begin very early in the process and
29 remains outside the scope of the EA. Grand Forks AFB is in the process of developing government-to-
30 government relationships with affiliated federally recognized tribes. A letter requesting consultation was
31 sent to each affiliated tribe describing the Proposed Action on Grand Forks AFB to ask them to identify
32 any concerns they might have. The list of all Native American tribal governments with whom
33 consultation on the Proposed Action has occurred is included in **Appendix A**.

34 **Public Involvement.** Concurrent with the completion of the Draft EA, a Notice of Availability (NOA)
35 will be published in the *Grand Forks Herald* and the Draft EA will be available to the public for a 30-day
36 review period. The NOA will be issued to solicit comments on the Proposed Action and involve the local
37 community in the decision making process. Public and agency comments on the Draft EA will be
38 considered prior to a decision being made as to whether or not to sign a FONSI/FONPA.

Description of the Proposed Action and Alternatives

This section presents information on the Proposed Action related to the management of nuisance species as identified in various current natural resources management plans, including the *Pesticide Management Plan for Grand Forks Air Force Base, North Dakota* (GFAFB 2007a), the *Final Integrated Natural Resources Management Plan* (GFAFB 2011), and *Mosquito Management Plan*. **Section 2.1** describes the Proposed Action in detail at Grand Forks AFB. **Section 2.2** identifies alternatives to the Proposed Action, including the No Action Alternative. **Section 2.3** identifies the decision to be made and the Preferred Alternative.

1.6 Detailed Description of the Proposed Action

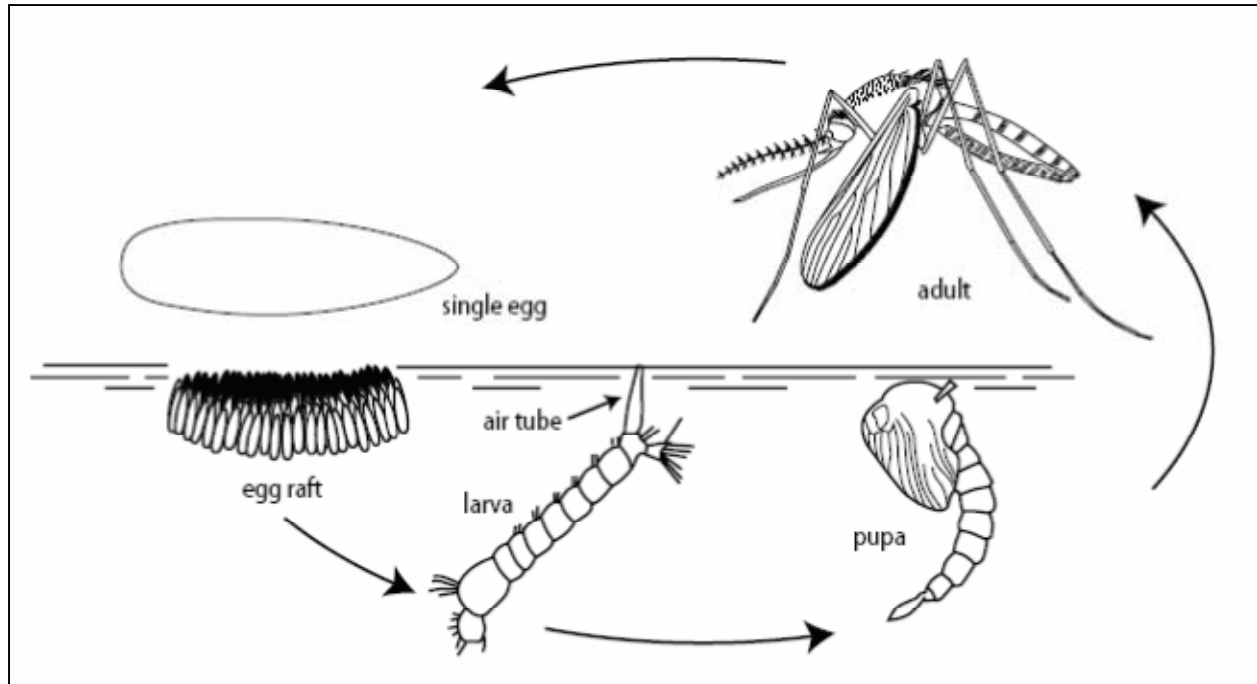
The purpose of the Proposed Action is to apply appropriate techniques to manage and control mosquitoes and noxious and invasive weed species to improve the quality of the human and natural environment at Grand Forks AFB and the surrounding area. Mosquito control is proposed to occur in an integrated manner, by setting traps, conducting aerial spraying (on and off installation) and ground spraying (on installation), reducing breeding and hatching sources (i.e., removal of standing water), and introducing predators or parasites. This EA would implement the MMP. Chemical noxious weed control is proposed to be expanded, and chemical, biological, and cultural controls are proposed. Application of herbicides would occur on the installation to control the spread of noxious weeds. The two operations associated with the Proposed Action are discussed in detail in the following paragraphs.

Mosquito Control

Mosquito Biology

At least 43 species of mosquitoes are known to occur in North Dakota and share one common life history trait: the mosquito life cycle requires standing water. Mosquito species are broadly separated into two groups according to where they lay eggs: floodwater mosquitoes and standing water mosquitoes. Adult female floodwater mosquitoes lay eggs on mud or previously submerged vegetation. The eggs can remain dormant for days, months, or even years until the land is flooded, at which time larvae hatch. Standing water mosquitoes lay eggs on the water surface. The eggs float on the surface for a few hours to a few days until the larvae hatch into the water. Floodwater mosquito larval development (breeding) sites include irrigated pastures, seasonally flooded duck clubs and other managed wetlands, riparian corridors, and snowmelt pools. These intermittent or seasonally flooded habitats can be among the most productive sources of mosquitoes because they are often free of natural predators. Standing water mosquito breeding sites include artificial containers, treeholes, catch basins, open ditches, retention/detention ponds, natural or constructed ponds and wetlands, storm water management devices, and along the edges of flowing streams. Sources are found everywhere from highly urban areas to natural wetlands and often produce multiple generations of mosquitoes each season.

All mosquitoes live in water continuously from the time the eggs hatch through the larval (wiggler) and pupal stages. Mosquitoes can live as larvae from a couple of days to more than a month depending on the species, water temperature, and the amount of food available. Some mosquito larvae species overwinter by burrowing in mud. Mosquitoes then go through a nonfeeding stage called a pupa. During this stage the mosquito changes into the winged adult form. The easily identified comma-shaped pupae lie parallel to the water surface and move down through the water column in a rolling or tumbling motion when disturbed. This life stage can last from 1 to 4 days, depending on the species and water temperature, with the mosquito emerging from the back of the pupal case (above the water) as a flying adult (see **Figure 2-1**).



1
2 Source: CDPH 2010

3 **Figure 2-1. Mosquito Life Cycle Consisting of Four Stages: Egg, Larva, Pupa, and Adult**

4 As the adults emerge from the pupal cases, the wings expand and after a few hours the exoskeleton
5 sufficiently hardens for flight. The female then seeks a blood meal from a human or animal to aid in egg
6 development. To take a blood meal, the female's proboscis (mouthparts) pierces the skin, injects saliva,
7 and sucks blood out. It is through the injection of saliva that a mosquito causes the typical itchy bump
8 and can infect a person or domestic animal with a disease-causing organism. Depending on an
9 individual's immune response, even a single bite can be a significant nuisance. Adult mosquitoes often
10 rest in weeds, tall grass, or other vegetation but never reproduce there. After a few days, the females
11 return to their preferred pools to deposit eggs and the cycle begins again. Multiple generations a year are
12 possible.

13 Most mosquito species survive the winter, or overwinter, in the egg stage, awaiting the spring thaw, when
14 waters warm and the eggs hatch. Only a few species can overwinter as larvae. A few species spend the
15 winter as adult, mated females, resting in protected, cool locations, such as cellars, sewers, crawl spaces,
16 and well pits. With warm spring days, these females seek a blood meal and begin the cycle again.

17 Mosquito-borne diseases, such as malaria and yellow fever, have plagued civilization for thousands of
18 years. Organized mosquito control in the United States has greatly reduced the incidence of these
19 diseases; however, there are still a few diseases that mosquitoes in North Dakota can transmit, including
20 West Nile Virus, Western Equine Encephalitis, and St. Louis Encephalitis. The frequency and extent of
21 these diseases depend on a complex series of factors.

22 Mosquito-control agencies and health departments are aware of these factors and work cooperatively to
23 reduce the chance of disease. Adult female mosquitoes transmit diseases after picking up a disease
24 organism during a blood meal.

1 Mosquito Management Program

2 Grand Forks AFB proposes to implement an integrated pest management (IPM) program for mosquito
3 control as outlined in the MMP. An IPM program for controlling undesirable species involves the use of
4 types of control other than strictly chemical means. Recommended actions in the MMP that are analyzed
5 in this EA are divided into the chemical control and physical/biological control categories:

6 Chemical Control:

- 7 • Use Vectobac® granules (granular *Bacillus thuringiensis israelensis* [*Bti*]) for larvae in wetland
8 areas.
- 9 • Use Altosid® briquettes at small breeding sites such as catch basins or puddles that continuously
10 breed mosquitoes.
- 11 • Use Altosid® liquid larvicide for ground and aerial applications.
- 12 • Use Anvil®, Kontrol 4-4, or Duet™ for adulticiding using ground applicators.
- 13 • Use barrier sprays (such as Mavrik®) in suitable locations during periods of high mosquito
14 infestations, in addition to the continued use of space sprays with ground ultra-low volume
15 (ULV) equipment.
- 16 • Use a variety of pesticides to reduce the likelihood of pest resistance (see **Table 2-1**).
- 17 • Use aerial adulticiding to treat large areas quickly when mosquito populations are very high.

18 Physical/Biological Control:

- 19 • Install additional bat boxes to introduce more mosquito predators to the area.
- 20 • Enhance freshwater areas to increase the population of invertebrates, fish, and amphibians to
21 reduce larval and adult mosquito populations.

22 The proposed MMP incorporates the elements of effective mosquito-control activities that Grand Forks
23 AFB has determined to be best suited for the conditions at the installation. The proposed plan consists of
24 adopting the following key components:

25 ***Larval Mosquito Surveillance and Chemical Control.*** Currently, larval surveillance is conducted during
26 times of peak activity (i.e., summer months) by the Public Health Flight and Pest Management Shop.
27 Larval dipping is used to determine the presence of larvae at likely developmental sites at Grand Forks
28 AFB. Likely developmental sites include wetlands and ditches on Grand Forks AFB (shown on
29 **Figure 2-2**). Larval dipping is the preferred method of surveillance with presence of larvae indicating a
30 need for control at that location. **Figure 2-2** also shows mosquito abundance based on sampling during
31 summer 2011.

32 Pesticides that control mosquito larvae are called larvicides, which include treatment of the water to kill
33 the mosquitoes prior to emergence as flying, biting adults. Larvicides would be applied by hand, from
34 hand-held or vehicle-mounted engine-driven blowers, or by aircraft, depending on the product, the
35 formulation, and the target habitat. Applicators of any of these products would be certified by the North
36 Dakota State University Extension Pesticide Certification and Training Program, or the Department of
37 Defense (DoD). The North Dakota Department of Health (NDDH) issued a public notice on 1 February
38 2011 with the intent to issue a North Dakota National Pollutant Discharge Elimination System Discharge
39 Permit to authorize pesticide applications to surface waters.

1 As of 31 October 2011, effluent discharge general permits are required for discharges of pesticides
2 (including herbicides) to state surface waters. To comply with the permit requirements, pesticide
3 applications must be made in accordance with state pesticide regulations, FIFRA, and the instructions on
4 the pesticide label. The permit includes a requirement to notify the NDDH prior to pesticide applications
5 to waters of the state for control of aquatic pests as provided in state water quality regulations (NDDH
6 2011a, NDDH 2011b). Coverage under this permit would be required prior to initiating the Proposed
7 Action.

8 Approved larvicides (i.e., insect growth regulators [IGRs], microbial larvicides, organophosphates [OPs],
9 and surface oils and films) that might be used at Grand Forks AFB and are approved by DoD and the
10 State of North Dakota appear in **Table 2-1**, and are discussed further in the following paragraphs.

11 *Insect Growth Regulators.* IGRs disrupt the physiological development of larvae, thus preventing adults
12 from emerging. The two products currently available for controlling mosquito larvae are methoprene and
13 diflubenzuron. The effective life of these products varies with the formulation. Methoprene can be
14 applied in granular, liquid, pellet, or briquette formulation. Methoprene has minimal non-target effects
15 and no use restrictions. Diflubenzuron is rarely used because it can affect growth of non-target aquatic
16 invertebrates. IGRs for mosquito control can be used in sources of water that are consumed by humans.

17 *Microbial Larvicides.* Microbial larvicides are formulated to deliver a natural toxin, in the form of
18 bacteria, to the intended target organisms. Bacteria are single-celled parasitic or saprophytic
19 microorganisms that can exhibit both plant and animal properties and range from harmless to beneficiary
20 to virulent and lethal. *Bacillus thuringiensis (Bt)* is the most widely used agricultural microbial pesticide
21 in the world, and a majority of microbial pesticides registered with the U.S. Environmental Protection
22 Agency (USEPA) are based on *Bt*. Mosquito control agents based on *Bt* are the second most widely
23 registered group of microbial pesticides. Two products that are available against mosquito larvae singly
24 or in combination are *Bt* and *Bacillus sphaericus*.

25 *Organophosphates.* The term OP refers to all pesticides containing phosphorus. OPs work after entry
26 into and distribution through the body of the target organism by modifying the normal junctions of some
27 nerve cells. In insects, OPs produce a loss of coordination leading to paralysis and, ultimately, death. A
28 common OP is temephos (Trade name: Abate), which is currently the only OP registered for larviciding
29 in North Dakota.

30 ***Adult Mosquito Surveillance and Chemical Ground Control.*** Surveillance and control of adult
31 mosquitoes would be accomplished through a network of CDC traps and mosquito annoyance reports
32 filed through the Pest Management Shop. Adult mosquito surveillance is a critical component to
33 determine where mosquitoes are originating from, the potential for disease transmission in an area, and
34 the need for adult mosquito control. Grand Forks AFB would also use adult surveillance as a feedback or
35 quality control mechanism to determine how effective the overall program would be in reducing mosquito
36 populations.

37 Trapping adult mosquitoes and submitting those mosquitoes for identification and to test for the presence
38 of arbovirus activity would occur through the use of facilities at Brooks AFB or the City of Grand Forks
39 Mosquito Control District (GFMCD). Collecting baseline data on mosquito populations and
40 mosquito-borne disease would also help target educational efforts within the Grand Forks AFB and the
41 surrounding community.

42 Grand Forks AFB would initiate adult mosquito control when action levels or thresholds were reached or
43 exceeded. The threshold for adult mosquito control is based on the 100 count trap threshold established
44 in the MMP. Threshold values are dependent on several factors including the following:

- 1 • Overall mosquito abundance
- 2 • Presence of mosquito-borne disease in the region
- 3 • Abundance of mosquito species that are vectors of disease
- 4 • Climate data
- 5 • Local acceptance of adult mosquito-control activities
- 6 • How local citizens tolerate nuisance mosquitoes by evaluating public service requests.

7 Only adult mosquitoes can be chemically controlled with adulticides. Adulticiding should be considered
8 as the last resort and conducted only when larviciding and cultural-control methods are not practical.
9 Adulticiding falls into two categories: barrier applications and ULV applications. Barrier applications
10 target resting mosquitoes by applying pesticides to vegetation and structures. Barrier applications
11 typically cover relatively small areas and are applied to alleviate specific problems rather than an
12 areawide adult mosquito problem.

13 ULV applications are used to control adult mosquitoes over large areas. A ULV (typically less than 2
14 ounces per acre [140 milliliters per hectare] total volume) of tiny oil or water droplets carrying an
15 insecticide would be emitted from specialized equipment mounted on trucks or aircraft. The droplets kill
16 adult mosquitoes on contact. ULV applications would be made just before and after sunset or before
17 sunrise to coincide with the time that mosquitoes are most active, when non-target insects are least active,
18 and when temperature inversions (an increase in temperature with altitude) are most likely to occur.
19 These applications would be employed when mosquito populations reach pre-established threshold
20 numbers through surveillance (as described in the previous paragraphs) or must be reduced immediately
21 to halt disease transmission. The Non-Commissioned Officer in Charge (NCOIC) would determine when
22 to initiate mosquito controls and what methods of treatment should be employed. Pesticides approved for
23 such use are identified in **Table 2-1**. Grand Forks AFB would operate appropriate spray equipment to
24 perform both ULV and barrier spray programs on an as-needed basis. Current DoD Pesticide Applicator
25 Certification or state pesticide applicator certification would be required for all personnel applying
26 pesticides. Supplemental training discussed in the MMP is proposed to train personnel on mosquito-
27 control measures specific to the Grand Forks area, including the effects of meteorology and timing on
28 treatment efficacy.

29 Chemicals would be handled and stored according to label requirements. Chemicals currently registered
30 for ULV applications against mosquitoes in North Dakota include OPs (e.g., naled), pyrethrins (e.g.,
31 pyrethrum), and pyrethroid (e.g., resmethrin, sumithrin, permethrin, and etofenprox). With the exception
32 of the active ingredient etofenprox, formulations of both pyrethrins and pyrethroids include the synergist
33 piperonyl butoxide (PBO), which increases their effectiveness against mosquitoes.

34 The NCOIC of Pest Management is responsible for determining when mosquito-control treatment would
35 be employed.

36 *Organophosphates.* Naled is a neurotoxin that acts by inhibiting neurologic transmission. Naled is
37 highly toxic to bees and is used to control spider mites, aphids, and other insects on many crops.
38 Coordination with local beekeepers and farmers would occur prior to spraying (see **Figure 2-3** for
39 beehive locations). Applying naled as close to sunset as possible should reduce mortality of foragers in
40 cultivated hives and wild colonies.

41 *Pyrethrins and Pyrethroids.* Pyrethrins and pyrethroids are neurotoxins that act by causing uncontrolled
42 firing of neurons. Pyrethrum is a natural insecticide derived from chrysanthemum flowers. Adult
43 mosquitoes are rapidly paralyzed and killed on contact. Pyrethrins are degraded rapidly by sunlight and
44 chemical processes. Residual pyrethrins from ULV applications typically remain less than 1 day on
45 plants, soil, and water.



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Figure 2-2. Potential Mosquito Larval Breeding Wetlands and Mosquito Abundance Based on Summer 2011 Sampling

1 **Table 2-1. Potential Pesticides for Nuisance Species Control at Grand Forks AFB**

Herbicide/ Pesticide Name	Type	USEPA Number	Active Ingredient	Application Rate	Target Species
Altosid® Liquid Larvicide ¹	IGR	2724-446	Methoprene (20%)	0.75 ounces per 5 gallons of water	Mosquito Larvae
Altosid® XR Briquettes ²	IGR	2724-421	Methoprene (2.1%)	1 briquette per 100 square feet	Mosquito Larvae
Vectobac® Granules ³	Microbial larvicide	73049-10	<i>Bacillus thuringiensis israelensis</i>	2.5 to 10 pounds per acre	Mosquito Larvae
Trumpet Liquid Adulticide ⁴	OP	300-76-5	Naled	0.6 to 1.2 fluid ounces per acre	Adult Mosquitoes
Mavrik® ⁵	Synthetic Pyrethroid	2724-478	Fluvalinate	0.75 ounces per acre	Adult Mosquitoes
Anvil® ⁶	Synthetic Pyrethroid	8329-61	Sumithrin and Piperonyl Butoxide	0.0012 to 0.0036 pounds per acre	Adult Mosquitoes
Duet™ ⁷	Synthetic Pyrethroid	8329-01	Prallethrin and Sumithrin	0.0012 to 0.0036 pounds per acre	Adult Mosquitoes
Kontrol 4-4 ⁸	Synthetic Pyrethroid	73748-4	Permethrin and Piperonyl Butoxide	0,0018 to 0.007 pounds per acre	Adult Mosquitoes

Sources: See data sheets in **Appendix B**.

Notes:

- All pesticides to be used during the Proposed Action are approved by the Armed Forces Pest Management Board and are regulated and approved by the USEPA and U.S. Department of Agriculture (USDA).
- All pesticides are DoD approved except for Duet™, which is currently in the process of being approved.
- All pesticides would be applied by certified DoD and NDDH personnel in both aquatic and public health categories.
- Pesticides used could change over time; if a new pesticide is chosen for use, Grand Forks AFB staff would ensure that impacts would be commensurate with those analyzed in this EA. If impacts would be greater than those analyzed in this EA, additional NEPA analysis would be conducted.

Key:

1. Altosid® liquid larvicide is proposed for ground and aerial application to control larvae.
2. Altosid® XR Briquettes are proposed for ground application of small water bodies (such as puddles) to control larvae.
3. *Bti* granules are proposed for treatment of larvae in large wetland areas.
4. Continued use of Trumpet is proposed for aerial application to control adult mosquitoes.
5. Mavrik® is proposed for use as a ground-based barrier spray to control adult mosquitoes.
6. Anvil® is proposed for ground application to control adult mosquitoes.
7. Duet™ is proposed for ground application to control adult mosquitoes.
8. Kontrol 4-4 is proposed for ground application to control adult mosquitoes.

- 2 Pyrethroids are manufactured pyrethrins. They have very low toxicity to birds and mammals but are toxic
- 3 to fish if misapplied. Synthetic pyrethroids are not necessarily labeled for all agricultural crops and are,
- 4 therefore, limited in their widespread use in the areas surrounding Grand Forks AFB. The pyrethroids
- 5 Anvil®, Duet™, and Kontrol 4-4 are recommended for ground applications to control adult mosquitoes.

1 Pesticides used could change over time; if a new pesticide is chosen for use, Grand Forks AFB staff
2 would ensure that impacts would be commensurate with those analyzed in this EA and that the label
3 instructions would be followed. If impacts would be greater than those analyzed in this EA, additional
4 NEPA analysis would be conducted.

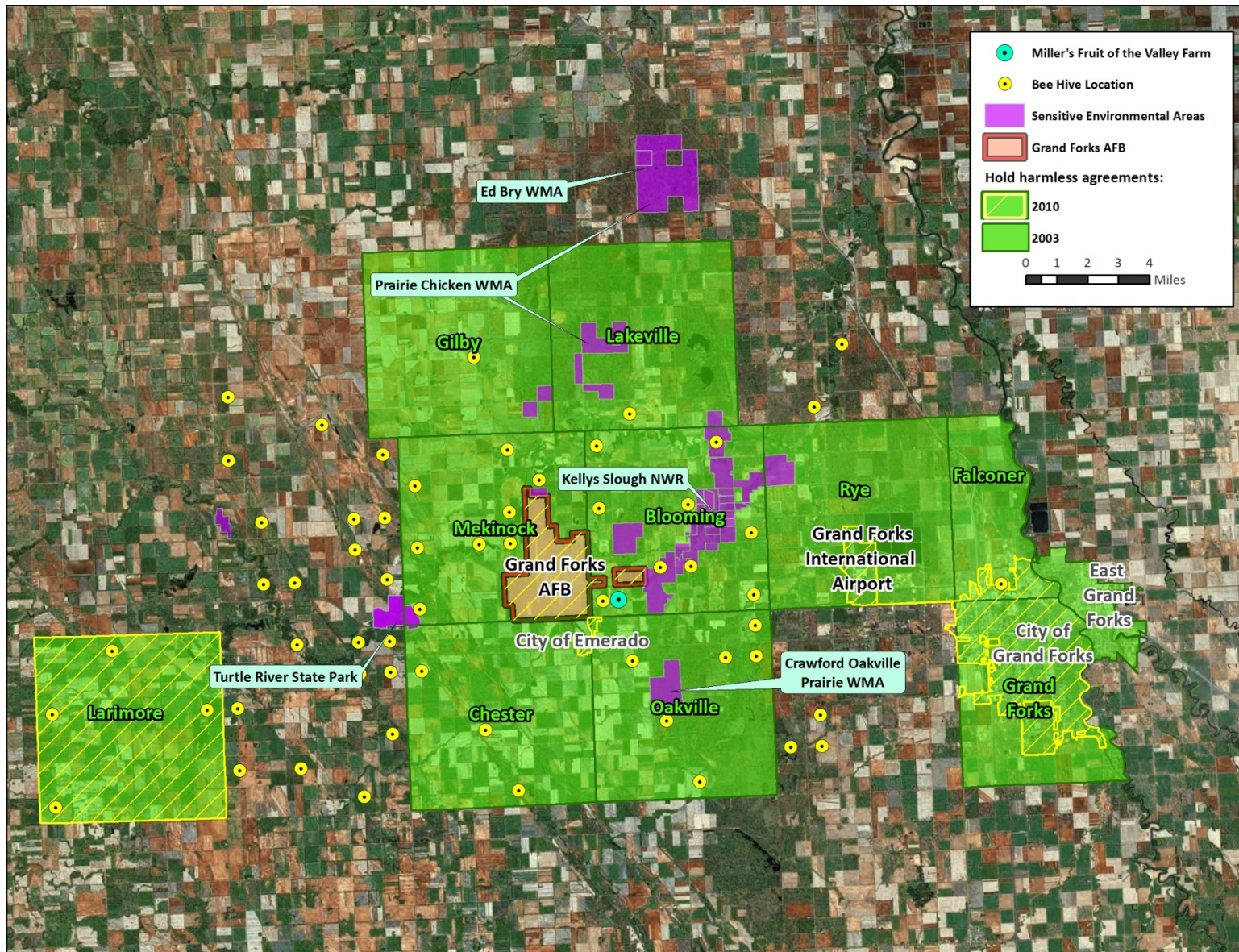
5 **Adult Mosquito Aerial Chemical Control.** In addition to ground application of pesticides, Grand Forks
6 AFB has controlled mosquito larvae and adult populations by conducting aerial spraying of pesticides
7 within and in close proximity (within a 5-mile radius) to Grand Forks AFB when necessary.

8 Historically, aerial spraying has been conducted using C-130 aircraft from the 757 Airlift Squadron (AS)
9 of the 910 Airlift Wing (AW) out of Youngstown Air Reserve Station (YARS), Ohio. Grand Forks AFB
10 plans to continue to reserve flight time with YARS. The NCOIC, in conjunction with the installation's
11 Public Health Flight, would continue to determine when to use the 757 AS. The overall mission of the
12 757 AS is to ensure the organization and individual members can perform command authority-directed
13 taskings in support of national objectives by providing mission-ready forces, airlift and aerial spray
14 operations, and base operating support. The 757 AS is able to assist the mosquito-control effort as the
15 unit uses Grand Forks AFB as a training area. Grand Forks AFB is required to pay for the chemicals used
16 during the aerial spraying effort on the installation only. Based on results from the *Environmental*
17 *Assessment for Aerial Application of Pesticide for Mosquito Control, Grand Forks Air Force Base, North*
18 *Dakota and Vicinity* (2003), aerial spraying for mosquitoes was expanded to Grand Forks County and
19 East Grand Forks, Minnesota. Kellys Slough National Wildlife Refuge (NWR) is excluded. The
20 application of microbial and chemical insecticides by aerial dispersal has proven to be a fairly effective
21 means to reduce mosquito populations of certain species.

22 In 2011, three aerial spray applications to treat mosquitoes were approved by the NDDH to be conducted:
23 23 to 27 May (larvicide application), 27 June through 1 July (adulticide application), and 8 through 12
24 August (adulticide application). Applications were permitted to occur within 2 hours of sunset, and
25 covered Grand Forks AFB and the cities of Grand Forks, Larimore, and Emerado (NDDH 2010a). This is
26 generally when mosquito activity (biting and feeding) is greatest and weather conditions (wind and
27 humidity) are most favorable for applications (GFAFB 2003a). Aerial spraying is conducted at an
28 elevation of 150 to 300 feet.

29 As with past aerial adulticide applications, the exact extent of each application would be determined in
30 coordination with communities within Grand Forks County and the City of Grand Forks. Grand Forks
31 AFB would continue to offer to treat these communities with the YARS service before Grand Forks AFB
32 finalizes a pesticide application. **Figure 2-3** shows the communities willing to participate in the aerial
33 spraying for mosquitoes. Townships adjacent to Grand Forks AFB that have not been treated in the past
34 typically have not had the funds and are not very populous. Prior to aerial spraying, communities
35 interested in participating in the aerial spray program must pay the cost of the pesticide, provide a notice
36 of intent per the North Dakota Pesticide General Permit (PGP), obtain a NPDES permit if necessary, and
37 sign a hold-harmless agreement with Grand Forks AFB.

38 If aerial spraying is contracted, a statement of need would be prepared and applications would be
39 conducted in accordance with AFI 32-1074, *Aerial Application of Pesticides*. An Aerial Spray Statement
40 of Need was issued in October 2000 authorizing aerial application of pesticides for mosquito control.
41 EAs were completed in 2001 and 2003, and a FONSI was signed (GFAFB 2001, GFAFB 2003a). The
42 Aerial Spray Coordinator responsibilities are shared between the Bioenvironmental Engineering Flight
43 and the Pest Management Shop, and must be coordinated with the NDDH. Many aspects must be
44 addressed when identifying areas to be sprayed such as the location of beehives, organic farms, and other
45 potentially sensitive areas (see **Figure 2-3**). The Bioenvironmental Engineering Flight would be notified



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Figure 2-3. Potential Areas to be Treated for Mosquitoes

1 at the beginning of each fiscal year of any proposed application of larvicides or herbicides to ditches,
2 wetlands, or lagoons (GFAFB 2010a).

3 It is estimated that aerial applications of Trumpet would occur four times a year, twice in the spring and
4 twice in the fall, and would be required each year to adequately control mosquito larvae and adult
5 populations. The frequency and elevation of flights would be similar to those used in the past; however,
6 more spray events could occur if necessary. Total areas requiring treatment would be identified by the
7 surveillance program. Potential habitats requiring treatment consist of ditches, wetlands, other waters of
8 the United States, and flooded fields.

9 **Adult Mosquito Physical and Biological Controls.** Source reduction (eliminating the places where
10 mosquito larvae hatch and develop) is the most effective method to prevent adult mosquitoes; however, it
11 could be possible to eliminate mosquito production from a source through other modifications of habitat
12 or water management. Biological control agents, including native or introduced predators, are often used
13 in combination with water management practices.

14 Following the results of the larval breeding survey, Grand Forks AFB would review the status of all
15 breeding sites and determine the potential for source reduction, water management opportunities, and
16 biological control measures. Current observations suggest that adopting a routine storm water drainage
17 management program throughout Grand Forks AFB would assist extensively in reducing mosquito
18 populations. Biological control could also be encouraged by installing additional bat boxes and
19 enhancing the existing habitat of predators and freshwater habitats in the area.

20 **Mosquito Education Program.** An Education Program lead by the Pest Management Office is critical to
21 the success of any mosquito-control program by achieving the support of an informed public. Many of
22 the successful strategies for control involve individuals, their families, and their neighborhoods. The
23 public also has concerns about the problems related to mosquito populations and about pesticides and
24 spraying. Development of a mosquito control program that includes public education about preventing
25 the breeding of mosquitoes, personal protection guidance, and the activities and success of the Grand
26 Forks AFB control program would be critical to its success.

27 Noxious and Invasive Weed Control

28 Controlling noxious weeds and other invasive vegetation species includes mechanical control, or the
29 physical removal of the undesired plant; biological control, or the use of other species that consume and
30 eventually kill the undesired plants; cultural control, or the use of various landscaping practices that cause
31 poor growing conditions for the undesired species, and by conducting herbicide spraying using ground-
32 control methods.

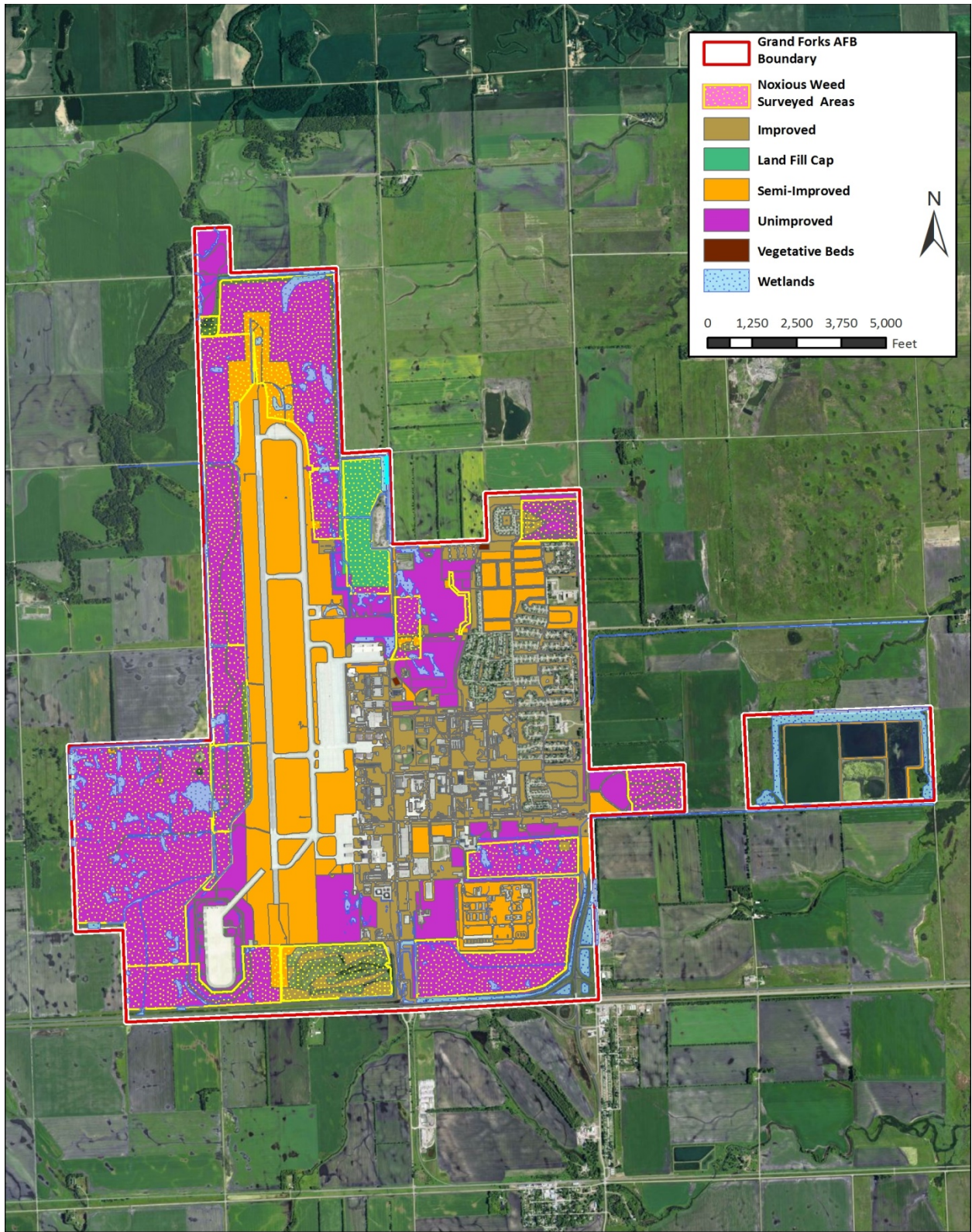
33 All installation areas are subject to DoD-approved herbicide applications. North Dakota has listed such
34 weeds as musk thistle (*Carduus nutans*), leafy spurge (*Euphorbia esula*), absinth wormwood (*Artemisia*
35 *absinthium*), field bindweed (*Convolvulus arvensis*), Canada thistle (*Cirsium arvense*), and spotted
36 knapweed (*Centaurea maculosa*) as noxious. In addition, Grand Forks County has listed kochia (*Bassia*
37 *scoparia*) as noxious. These are primarily found in semi-improved and unimproved vegetated areas of
38 Grand Forks AFB. Some improved areas are continually mowed and sprayed extensively to maintain
39 control over dandelions (*Taraxacum* sp.), thistle, and other broadleaf weeds. Areas in improved vegetated
40 areas (1,309 acres) are frequently infested by dandelions, clover, and thistles. Improved pavement areas
41 that include parking lots, roads, and sidewalks often have crack grass that requires control to maintain
42 surface pavements. The semi-improved and unimproved areas (4,464 acres) of the installation host

1 invasive and noxious weeds such as leafy spurge, Canada thistle, musk thistle, absinth wormwood, and
2 spotted knapweed. Herbicides, mechanical methods, and biological controls are all techniques that could
3 be employed on the prairies and grasslands of the semi-improved and unimproved areas. Some herbicide
4 application or mechanical control would be required along the embankments of the wastewater lagoons
5 east of the installation, and also to control infestations of weeds along ditches or within or adjacent to
6 wetlands. Weed management on Grand Forks AFB focuses on the noxious weeds that invade open,
7 undeveloped areas of the installation and other invasive or weedy species that are nuisances in the
8 landscaping and green spaces of developed areas (see **Figure 2-4**). Overgrowth of vegetation in
9 undesired areas such as fencelines, cracks and crevices of runways, sidewalks, and roads also pose a
10 problem for installation personnel and require weed management. Occupants of military family housing
11 can use self-help herbicides to control weeds. The products approved for self-help use include Roundup®
12 and Weed-B-Gone.

13 EO 13112, *Invasive Species*, requires Federal facilities to prevent the introduction of invasive species on
14 Federal lands, to control invasive populations, and to restore native vegetation in areas where infestation
15 has occurred.

16 There are four state-ranked plants on the installation: the lesser yellow lady's slipper (*Cypripedium*
17 *parviflorum* var. *parviflorum*), white lady's slipper (*Cypripedium candidum*), eastern prickly gooseberry
18 (*Ribes cynosbati*), and Dutchman's breeches (*Dicentra cucullaria*). The lesser yellow lady's slipper and
19 white lady's slipper are state-listed as imperiled or vulnerable, respectively, and are present along the
20 flightline fence in the southwestern portion of the installation. The eastern prickly gooseberry (state
21 vulnerable) and Dutchman's breeches (state critically impaired) exist in the northwestern part of the
22 installation, where Turtle Creek is present. These areas should not be sprayed for weeds without
23 coordination from the 319 CES/CEAN Environmental Management Element. In addition, a plant species
24 of concern is the yellow lady slipper, which should be avoided during noxious weed spraying for
25 bird/wildlife aircraft strike hazard (BASH) management and hay lease weed management operations
26 (GFAFB 2010a).

27 The quality assurance evaluator for the grounds maintenance contract, along with the contractor, conducts
28 weed surveillance of contract areas. The Pest Management Office, as needed, uses chemical applications
29 in the improved areas of the installation, and, at times, to semi-improved areas. The Pest Management
30 Shop controls weeds at the horse stables, recreational vehicle lot, transformer yard, and ditches. The
31 natural resources manager has developed a noxious weed control plan, which surveys for weeds across
32 the installation, monitors for weed trends, and implements a service contract to control noxious and
33 invasive weeds mostly in unimproved and semi-improved areas. The unimproved and semi-improved
34 areas generally are a mosaic of prairie grasslands and wetlands. The natural resources management
35 contract currently uses mowing, prescribed burning, vegetation restoration, and herbicide applications in
36 problematic areas to manage noxious and invasive weeds. Contractors must comply with AFI 32-1053,
37 *Integrated Pest Management Program*, use approved DoD chemicals, follow all label and manufacturer's
38 instructions, and have a North Dakota commercial herbicide applicator's license. All chemicals applied
39 on Grand Forks AFB must be approved by 319 CES and reported and recorded by the Pest Management
40 Shop to comply with the USAF Measures of Merit program.



1
2 Note: Weeds within housing areas are managed by residents.

3 **Figure 2-4. Grounds Maintenance Categories at Grand Forks AFB.**

1 Grand Forks AFB Developed and Semi-Developed Areas

2 Developed and semi-developed areas on Grand Forks AFB that host invasive weedy species include green
3 spaces, cracks and crevices in pavement, along fencelines, and within the sewage treatment lagoons to the
4 east of the installation. Green spaces within Grand Forks AFB include the golf course and other parks
5 and recreation areas, and lawns and landscaping around buildings. Maintenance of these areas would
6 include the exclusion of nuisance species broadleaf weeds and invasive annual grasses. If such species
7 are not managed and become established, they would quickly spread and cause conditions that not only
8 are aesthetically displeasing, but also damaging to horticultural plantings through competition for
9 available water, nutrients, and space.

10 The use of non-chemical means of controlling weeds in developed and semi-developed areas would be
11 the preferred control technique. The most effective method of reducing weedy species in developed areas
12 is the maximization of turf health in lawns and recreational areas. Properly timed watering cycles,
13 mowing practices, fertilizer application, and thatch removal all work to maintain a healthy stand of grass
14 that is not easily susceptible to the invasion of weeds.

15 Sparse individuals of undesirable weedy species can often be hand-pulled or otherwise mechanically
16 removed. Proper selection of herbicides is important when chemical control is necessary, including the
17 accurate identification of target weeds. The most common chemical used in lawn and landscaped areas
18 includes some formulation of 2,4-Dichlorophenoxy-acetic acid (2,4-D).

19 Cracks and crevices often appear in developed areas such as runways, roads, parking areas, and
20 sidewalks. Growth of vegetation in pavement cracks can cause major problems and should be controlled.
21 Biological, mechanical, and cultural control in these areas is often unfeasible or impossible. Chemical
22 products such as an isopropylamine salt of imazapyr, the active ingredient in Arsenal® Powerline, would
23 provide control of existing weeds and is a ground sterilizer. Control resulting from the use of this product
24 could last up to 1 year with a single application. Application of this chemical early in the growing season
25 is best; while this product will eventually kill weeds once it is taken up into the root system, it does not
26 kill weeds on contact. Therefore, if existing weeds are present, an additional application of a product
27 such as isopropylamine salt of glyphosate, the active ingredient in Roundup®, would be made to free the
28 area of weedy vegetation.

29 Vegetation must be maintained at the standard height of 2 to 4 inches under fencelines in improved grassy
30 areas. Mechanical means of vegetation control, such as mowing, are employed as necessary. If herbicide
31 use is warranted, it must be selective broad-leaf treatment to target weed species and not established
32 grasses. If the fence is over concrete, herbicides are applied as necessary by the grounds maintenance
33 contractor.

34 The sewage treatment lagoon diking system, approximately 2 miles to the east of the installation, requires
35 weed control. The grass area around the sewage lagoons is required to be maintained to a maximum
36 height of 7 inches, and grass clippings would not be blown into the lagoons. Rip-rap around the lagoons
37 would be weed-free from the water level to the grass area, which can be accomplished by mechanical or
38 chemical means (GFAFB 2007a).

39 Although trees and shrubs compose less than 5 percent of the land cover at Grand Forks AFB, woody
40 invasives, such as the Russian olive (*Elaeagnus angustifolia*) and Siberian elm (*Ulmus pumila*), do persist.
41 The woody invasives are present in the northwestern corner of the installation associated with Turtle
42 Creek, and in shelterbelts in the housing area (GFAFB 2010a). Control of woody invasives would consist
43 of mechanical means and herbicides. A frill-cut treatment could be used, where angled cuts are created at
44 the lower trunk area of a tree and then filled with herbicide.

1 Herbicide application is dependent on the target weed species life cycle and the chemical chosen to
2 control the weed. Application timeframes vary from early spring to late fall in North Dakota, and would
3 be applied in accordance with manufacturer's recommendations.

4 Grand Forks AFB Undeveloped Areas

5 Undeveloped portions of the installation support several noxious and invasive weed species. Surveys
6 conducted in 2004 and 2008 found six state-listed noxious weed species (i.e., musk thistle, Canada thistle,
7 leafy spurge, absinth wormwood, field bindweed, spotted knapweed), and one county-listed noxious weed
8 species (i.e., kochia), along with several invasive species. Canada thistle and leafy spurge were found to
9 be the most abundant noxious weed species on Grand Forks AFB. Canada thistle is a very aggressive
10 perennial weed that reproduces both from seed and vegetatively from root sections and creeping
11 rhizomes. This plant stores much of its energy in its root system, which allows it to recover from most
12 attempts at control. The most successful control strategies include combining repeated physical methods
13 (e.g., mowing) and application of chemical herbicides to stress the plant. A very effective chemical
14 control for Canada thistle is the aminopyralid found in the herbicide Milestone®. Leafy spurge is a
15 similarly aggressive, persistent perennial weed that reproduces from rootstock and from seeds that are
16 often widely dispersed by animals. Effective control strategies for this plant include the use of leafy
17 spurge flea beetles (*Aphthona flava* and *A. nigriscutis*) for large dense stands and the chemical Imazapic,
18 the active ingredient in the herbicide Plateau®. Grazing herds of goats have also been found to be an
19 effective biological control strategy as they actively seek out and graze on leafy spurge plants. **Table 2-2**
20 shows potential herbicides that could be used as part of the Proposed Action.

21 Although most of the trees and shrubs in the Turtle River stand are native, there are a few Russian olive
22 trees and buckthorn (*Rhamnus cathartica*) growing in the woodland. These species compete with native
23 trees and shrubs for water, nutrients, and sunlight. Unmanaged nonnative grasslands are usually invaded
24 by nonnative trees and shrubs such as Russian olive and Siberian elm, and by natives such as green ash
25 (*Fraxinus pennsylvanica*), cottonwood (*Populus deltoids*), and sumacs (*Rhus* spp.). Any Russian olive
26 trees and buckthorn shrubs should be removed, either mechanically or with herbicides to prevent further
27 encroachment into the woodland (GFAFB 2010a).

28 As recommended in the *Noxious Weed and Invasive Plant Control Plan for Grand Forks AFB* (GFAFB
29 2003b), a season-based schedule of herbicide application (weed- and area-specific), mowing, and other
30 management techniques such as prescribed burning would assist in reducing populations of noxious weed
31 species. Repeated mowing during the year would help limit seed production. All of the grassland areas
32 of the installation should be managed with attempts to mimic natural grazing and wild fire. Prescribed
33 burning of grasslands mimic the historic prairie fires, which removes dead vegetation that hinders plant
34 growth, releases nutrients to enrich the soil, reduces invader plants, and encourages growth of native
35 species. Prairie plants are also adapted to grazing that helps maintain a diverse prairie habitat by altering
36 the vegetation height and density. Mowing and haying simulate some features of grazing and are helpful
37 and efficient in treating large areas of woody vegetation and alien weed overgrowth. Studies suggest a
38 fire frequency of 3 to 5 years is best, with a mix of burns during spring and late summer for maintenance
39 of a healthy and diverse prairie community. All prescribed conservation burning projects are described
40 and programmed under the INRMP. In general, spring burning during late April is the preferred timing
41 for controlled burn events with burns proposed every 3 to 5 years (GFAFB 2010a).

42 In addition to prescribed burning and mowing, restoration, revegetation, and interseeding of native
43 species are employed to control these weed species. Restoration and use of native plants combat the
44 spread of noxious and invasive weeds. Exotics, such as smooth brome, planted throughout the
45 installation, are less adept at competing for resources against weed invaders like Canada thistle and leafy
46 spurge. However, natural native grass stands are better competitors against weed invaders and, as such,
47 are recommended for planting and restoration, where appropriate.

1 **Table 2-2. Potential Herbicides for Nuisance Species Control at Grand Forks AFB**

Herbicide Name	USEPA Number	Active Ingredient	Application Rate	Target Species
Rodeo®	524-343	Glyphosate (53.8%)	1 quart per 25 gallons of water	Grasses/ Aquatic Weeds
Aquamaster®	524-343	Glyphosate	0.7 to 3.5 quarts per acre	Grasses/ Aquatic Weeds
Arsenal® Powerline	241-431	Imazapyr	1.5 to 6 pints per acre	Grasses and Weeds
Milestone®	62719-519	Aminopyralid	3 to 7 fluid ounces per acre	Canada Thistle
Roundup®	524-475	Glyphosate	1 to 5 quarts per acre	Grasses/Weeds
Plateau®	241-365	Imazapic	4 to 12 ounces per acre	Leafy Spurge
Reward®	100-1091	Diquat (37.3 %)	1 gallon per 150 gallons of water	Grasses/ Aquatic Weeds
Weed-B-Gone	228-424-239	2 Methyl-4-Chlorophenoxyacetic Acid 3,5,6-Trichloro-2-Pyridinyloxyacetic Acid 3,6-Dichloro-o-Anisic Acid	Self-help product; 8 ounces concentrate per 2,000 square feet	Grasses/Weeds
Widematch®	62719-512	3,6-dichloro-2-pyridinecarboxylic acid, monoethanolamine salt, fluroxypyr 1-methylheptyl ester	10 gallons per acre	Broadleaf weeds

Sources: See data sheets in **Appendix B**.

Notes:

- The list of herbicides is anticipated to be refined during project development.
- All herbicides to be used during the Proposed Action are approved by the Armed Forces Pest Management Board and regulated and approved by the USEPA and USDA.
- All herbicides would be applied by certified DoD and NDDH personnel in both aquatic and public health categories.

2 Aerial spraying of herbicides was used once on the installation in 2005 because of the cost and large-scale
3 project desired by the Community Planning Airfield Obstructions Program. There are multiple valuable
4 crops surrounding the installation, and farmers in this area sometimes employ aerial spraying in years
5 when the ground is too wet for ground spraying. Because drift damage was evident after the installation's
6 effort in 2005, aerial spraying is not recommended in an effort to reduce drift risk and subsequently
7 ensure the least amount of environmental damage.

8 Grand Forks AFB Wetland Areas

9 Noxious weeds such as Canada thistle, phragmites, perennial sow thistle, and wavyleaf thistle invade the
10 edges of wetlands on Grand Forks AFB. Although not a noxious weed, canary reed grass is very similar
11 to phragmites in that it can influence the development of monocultures by outcompeting other forbs and
12 native grasses in wetland areas, thereby reducing biodiversity. Removal of these weeds is required by law

1 and to promote the health and maintenance of the natural functions of wetlands. Weed removal could
 2 often be directly adjacent to wetland edges in the prairie areas, or could be buffered as appropriate
 3 depending on herbicide label recommendations related to application near water bodies. An integrated
 4 approach to weed removal from these areas could be implemented by incorporating mowing and
 5 interseeding wetland vegetation; or restoration by vegetation removal and reseeding, burning, or herbicide
 6 application.

7 The herbicides Rodeo®/Diquat are NDDH-approved herbicides for use in aquatic areas to control weeds
 8 and promote wetland restoration efforts (GFAFB 2003c). Use of herbicides within wetlands, ditches, or
 9 lagoons would be coordinated with the 319 CES/CEAN Environmental Management Element.

10 Rodeo® is an herbicide approved for use in aquatic systems, with glyphosate as the active ingredient.
 11 Rodeo® is most effective on emergent plants and kills the plant roots for weed control for multiple years.
 12 Glyphosate-based herbicides degrade rapidly in the environment and are practically nontoxic to aquatic
 13 animals. Glyphosate binds tightly to soil particles and does not bioaccumulate (CDFA 2003).

14 Diquat is an herbicide that has been used extensively in the United States since the late 1950s to control
 15 both crop and aquatic weeds. Diquat is available in numerous formulations. One that is commonly used
 16 is Reward®. Diquat is removed rapidly from aquatic systems, principally by adsorption. If initially
 17 adsorbed onto weeds, biodegradation to soluble or volatile products occurs in several weeks. When
 18 adsorbed to sediment, it is likely that little or no degradation occurs. Diquat is no longer detectable within
 19 the water column within 2 to 4 weeks after treatment. In surficial water layers, Diquat photodegrades in
 20 1 to 3 or more weeks when not adsorbed to particulate matter (USEPA undated).

21 1.7 Alternatives to the Proposed Action

22 As part of the NEPA process, reasonable alternatives to the Proposed Action must be considered. The
 23 development of reasonable alternatives involved discussions with Grand Forks AFB installation personnel
 24 to identify the purpose of and need for the Proposed Action, potential alternative courses of action,
 25 designs, locations, and management practices for achieving the purpose and need. Consistent with the
 26 intent of NEPA, this screening process focused on identifying a range of reasonable operations-specific
 27 alternatives and, from that, developing a proposed action that could be implemented in the foreseeable
 28 future. The best solutions for controlling nuisance species at Grand Forks AFB are identified based on
 29 the following selection criteria:

- 30 • Fulfillment of current mission requirements
- 31 • Facility sustainability as mission evolves or changes
- 32 • Economic feasibility
- 33 • Consistency with state, regional, and local plans
- 34 • Consistency with DoD and USAF policies, guidance, and directives, including the INRMP and
 35 IPMP
- 36 • Effectiveness in protecting human health and alleviating effects on the environment
- 37 • Compatibility with local and installation flight activities, other ongoing activities, and regional
 38 pest control efforts
- 39 • Does not significantly increase the use of pesticides
- 40 • Environmental constraints (see **Section 3**).

41 Alternative 1 – Use of Chemical Controls

42 An alternative to the integrated program associated with the Proposed Action would be only to use
 43 chemical controls for treatment of mosquitoes and noxious weeds. Although chemical controls are an
 44 integral part of IPM, nonchemical controls are promoted. Nonchemical controls are nontoxic, thereby

1 reducing the potential risk of adverse effects on human health and the environment. Mosquito control
 2 would not be complete without the use of physical controls that would deplete the source of breeding
 3 sites, i.e., standing water. Without effective removal of breeding sites, mosquitoes could be introduced
 4 onto Grand Forks AFB from outside areas and repopulate the installation after pesticides have dissipated.
 5 Physical or cultural control measures are emphasized as the preferred methods and are applied first and
 6 then evaluated for effectiveness before the application of herbicides occurs. Chemicals are only used if
 7 necessary and are always minimally applied, as required, to control weeds.

8 The sole use of chemical controls would not adequately address pest management issues and this
 9 alternative does not meet the selection criteria presented in **Section 2.2**, including consistency with the
 10 INRMP and IPMP, and not significantly increasing the use of pesticides. Therefore, this alternative has
 11 been eliminated from further detailed analysis in the EA.

12 **Alternative 2 – Use of Biological and Physical Controls**

13 An alternative to the integrated program associated with the Proposed Action would be only to use
 14 biological and physical controls for treatment of mosquitoes and noxious weeds, and to eliminate the use
 15 of chemical controls. However, this approach of using biological and physical means alone is not
 16 feasible, and would not be consistent with the installation's pest management plan or INRMP. Control of
 17 nuisance species is most effective when biological, physical, and chemical controls are implemented
 18 together. In addition, physical means of broadleaf weed control on mowed areas are not feasible. For the
 19 Proposed Action, nonchemical control (manually pulling weeds) was deemed infeasible because the area
 20 needing weed control covers a large part of the installation and substantial labor hours would be required.
 21 For mosquito control, source reduction is the most effective method to prevent adult mosquitoes;
 22 however, the use of chemical controls in conjunction with biological and physical controls provides a
 23 more holistic method to control mosquito populations effectively. Because the removal of chemical
 24 controls as a nuisance species management technique would not adequately address mosquito and
 25 noxious and invasive weed management issues and would not meet the selection criteria presented in
 26 **Section 2.2**, including facility sustainability as the mission changes or evolves, economic feasibility,
 27 consistency with policies and procedures in the IPMP, and effectiveness in protecting human health and
 28 alleviating effects on the environment, this alternative has been eliminated from further detailed analysis
 29 in the EA.

30 **No Action Alternative**

31 CEQ regulations require consideration of the No Action Alternative for all proposed actions. The No
 32 Action Alternative serves as a baseline against which the impacts of the Proposed Action and other
 33 potential alternatives can be compared and consequently it is carried forward for further evaluation in the
 34 EA. The No Action Alternative would be no change from current conditions. For mosquito management,
 35 current activities include: aerial treatment, ground spraying, and larviciding; and use of CDC light traps
 36 and larval dipping. The natural resources management contract currently uses mowing, prescribed
 37 burning, vegetation restoration, and herbicide applications in problematic areas to manage noxious and
 38 invasive weeds. Current methods of controlling mosquitoes and noxious weeds would continue under the
 39 No Action Alternative.

40 **1.8 Decision to be Made and Identification of the Preferred Alternative**

41 The decision to be made by this EA is whether or not further environmental analysis must be
 42 accomplished in the form of an EIS. Implementation of the Proposed Action is the Preferred Alternative
 43 in this EA. The final decision on significance of the Preferred Alternative's impacts will be based on the
 44 discussions in **Sections 3** and **4**. In the EA, Grand Forks AFB provides an evaluation of whether the

1 Proposed Action would result in any significant impacts. Where such impacts are predicted, Grand Forks
2 AFB would provide mitigation to reduce impacts to below the level of significance, undertake the
3 preparation of an EIS addressing the Proposed Action, or abandon the Proposed Action. The EA will also
4 be used to guide Grand Forks AFB in implementing the Proposed Action in a manner consistent with
5 USAF standards for environmental stewardship.

Affected Environment and Environmental Consequences

All potentially relevant resource areas were initially considered for analysis in this EA. In compliance with NEPA, CEQ guidelines, and 32 CFR Part 989, 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. All potentially relevant resource areas were initially considered in this EA. This section includes land use, air quality, geologic resources, water resources, biological resources, and safety. Some resource areas were eliminated from detailed analysis because of their inapplicability to the Proposed Action. The following provides the basis for such exclusions.

Noise. The Proposed Action would not include any significant changes in noise-related activities that could impact the ambient noise environment. Consequently, noise is not analyzed further in this EA.

Infrastructure. The Proposed Action would not be located in any utility corridors, include ground-disturbing activities within utility corridors, or significantly change utility systems loadings. Therefore, the Proposed Action would not be expected to impact utilities or similar infrastructure. Consequently, infrastructure is not analyzed further in this EA.

Hazardous Materials and Wastes. The Proposed Action would not involve any significant changes in the volumes or types of pesticides, or the process in which pesticides are managed, at Grand Forks AFB. No Installation Restoration Program sites would be impacted. Consequently, hazardous materials and wastes are not analyzed further in this EA.

Socioeconomic Resources and Environmental Justice. The Proposed Action would not involve any activities that would contribute to changes in socioeconomic resources. There would be no significant change in the number of personnel assigned to Grand Forks AFB; therefore, there would be no significant changes in area population or associated changes in demand for housing and services. The proposed activities are relatively small and would not affect local employment rates. North Dakota was the number one producer of honey in the United States in 2012 (USDA 2012). The spraying of pesticides could kill bees directly exposed to the application area. A decrease in the number of bees in the area would decrease the production of honey. However, because applications of pesticides would occur at dusk when bees are in the hive, and the installation has a system in place to notify beeyards of spraying operations, impacts on the honey production industry would be negligible. Consequently, socioeconomic resources and environmental justice is not analyzed further in this EA.

This section presents an analysis of the potential direct and indirect impacts that each alternative considered for detailed analysis (i.e., the Proposed Action and No Action Alternative) would have on the affected environment. Each alternative was evaluated for its potential to affect physical or biological resources in accordance with CEQ guidelines at 40 CFR 1508.8.

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

- **Short-term or long-term.** These characteristics are determined on a case-by-case basis and do not refer to any rigid time period. In general, short-term impacts are those that would occur only with respect to a particular activity or for a finite period or only during the time required for construction or installation activities. Long-term impacts are those that are more likely to be persistent and chronic.
- **Direct or indirect.** A direct impact is caused by and occurs contemporaneously at or near the location of the action. An indirect impact is caused by a proposed action and might occur later in time or be farther removed in distance but still be a reasonably foreseeable outcome of the action.

1 For example, a direct impact of erosion on a stream might include sediment-laden waters in the
 2 vicinity of the action, whereas an indirect impact of the same erosion might lead to lack of
 3 spawning and result in lowered reproduction rates of indigenous fish downstream.

- 4 • **Negligible, minor, moderate, or major.** These relative terms are used to characterize the
 5 magnitude or intensity of an impact. Negligible impacts are generally those that might be
 6 perceptible but are at the lower level of detection. A minor effect is slight, but detectable. A
 7 moderate impact is readily apparent. A major impact is one that is severely adverse or
 8 exceptionally beneficial.
- 9 • **Adverse or beneficial.** An adverse impact is one having unfavorable or undesirable outcomes on
 10 the man-made or natural environment. A beneficial impact is one having positive outcomes on
 11 the man-made or natural environment. A single act might result in adverse impacts on one
 12 environmental resource and beneficial impacts on another resource.
- 13 • **Context.** The context of an impact can be localized or more widespread (e.g., regional).
- 14 • **Intensity.** The intensity of an impact is determined through consideration of several factors,
 15 including whether an alternative might have an adverse impact on the unique characteristics of an
 16 area (e.g., historical resources, ecologically critical areas), public health or safety, or endangered
 17 or threatened species or designated critical habitat. Impacts are also considered in terms of their
 18 potential for violation of Federal, state, or local environmental laws; their controversial nature;
 19 the degree of uncertainty or unknown impacts, or unique or unknown risks; if there are precedent-
 20 setting impacts; and their cumulative effects (see **Section 4**).

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

- 23 • The Proposed Action (described in **Section 2.1**)
- 24 • Alternative 1 (described in **Section 2.2**)
- 25 • Alternative 2 (described in **Section 2.3**)
- 26 • The No Action Alternative (described in **Section 2.4**).

27 Best management practices (BMPs) would be implemented to reduce impacts on the environment. Even
 28 in the absence of BMPs, no significant impacts would occur and BMPs would not be required to reduce
 29 impacts to a level of insignificance. **Sections 3.1** through **3.6** discuss potential environmental impacts on
 30 the affected environment.

31 1.9 Land Use

32 Definition of the Resource

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

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

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

15 Existing Conditions

16 Grand Forks AFB

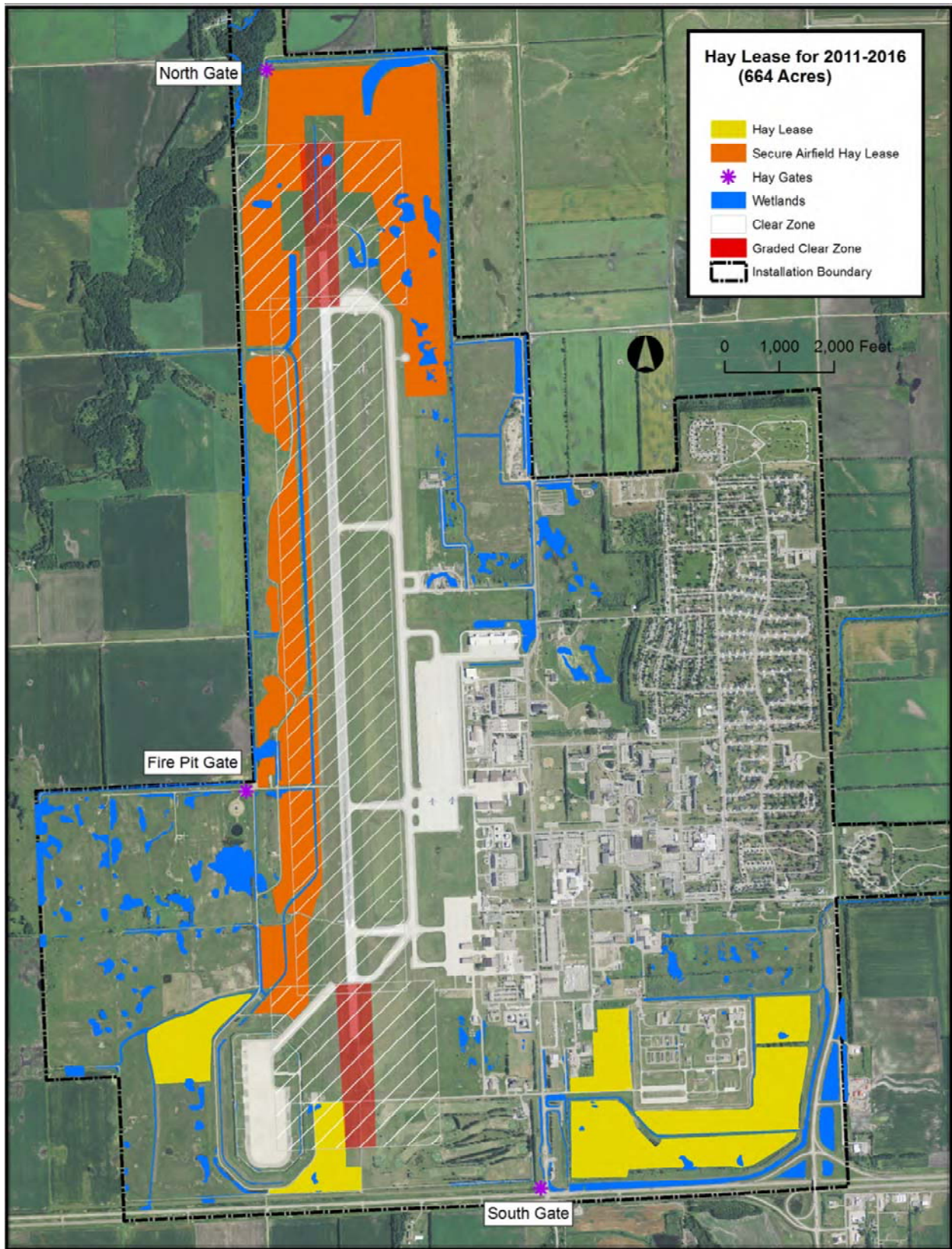
17 Grand Forks AFB consists of 5,773 acres and has an average daily population of 4,919 people with
 18 active-duty personnel consisting of approximately 1,693 military and 376 civilian employees (Vanderhoff
 19 2010). The 319 ABW, who, in addition to providing logistical, medical, civil engineer, contracting,
 20 communications, security and force support, is also the host wing of the installation providing support to
 21 other tenants, including the 373rd Training Squadron Detachment, the Air Force Audit Agency, the
 22 USACE and the DHS.

23 The Grand Forks AFB general plan identifies 10 land use categories: Administrative, Aircraft Operations
 24 and Maintenance (O&M), Airfield, Community, Housing Accompanied, Housing Unaccompanied,
 25 Industrial, Medical, Open Space, and Outdoor Recreation (USAF 2008d). **Figure 2-3** shows the grounds
 26 maintenance categories that have been defined at Grand Forks AFB. The dominant land use at Grand
 27 Forks AFB is the Airfield, which runs north-south and occupies the central portion of the installation.
 28 Due to their interdependent natures, Aircraft O&M and Industrial uses are found in close proximity to the
 29 Airfield. The main cantonment area is east of the airfield and includes all Administration, Housing
 30 (Accompanied and Unaccompanied), Medical, and Community uses; and most Outdoor Recreation uses.
 31 The primary land use west of the airfield is Open Space.

32 The proposed land use plan, as presented in the general plan, is similar to the existing land use categories;
 33 however, the proposed land use plan includes the following differences:

- 34 • Administrative uses would be consolidated in two areas along Steen Boulevard. The largest area,
 35 just west of the main entrance, would include most of the support administrative functions, while
 36 the other area would consist of the command and control functions.
- 37 • Aircraft O&M uses would be expanded to consist of one continuous band west of Eielson Street
 38 and east of the parking aprons (USAF 2006).

39 In addition to the 10 designated land uses, deer bow hunting and agricultural uses (e.g., cultivation of hay)
 40 are permitted in specific areas of Grand Forks AFB (GFAFB 2009a, GFAFB 2011). Bow hunting is
 41 permitted on the installation within the following areas: the unimproved area outside of the perimeter
 42 fence at the northwestern corner of the installation (commonly referred to as CE Park), a large area to the



1

Figure 3-1. Hay Lease Map for Grand Forks AFB, 2011 to 2016

1 southwest of the airfield inside the installation perimeter fence, in the Munitions Supply Area (MSA)
2 fields, within the Sunflake neighborhood, surrounding the sewage treatment lagoons, to the west of the
3 Holly neighborhood, and within the Prairie View shelterbelt to the north of the Prairie View Court
4 neighborhood and Prairie View Nature Preserve. Additional areas are open for bow hunting including the
5 golf course to the south of the runways, the North Horse Pasture and Trail area, and the South Trail in the
6 Holly neighborhood, depending on weather conditions. Hunting is not permitted within 200 feet of any
7 building or dwelling within the authorized hunting area and in areas where training or other activities are
8 occurring (GFAFB 2009a). CE Park is designated as Outdoor Recreation, and the area southwest of the
9 airfield is designated as Open Space. Hay cultivation is permitted on Grand Forks AFB through the
10 agricultural outlease program (see Figure 3-1). There is one hay lease consisting of 664 acres covering
11 several sites inside the airfield fence (west, north, and east of the runway) and outside of the airfield fence
12 (southwest, south, and southeast of the runway) (USAF 2007). The hay lease areas inside the airfield
13 fence are designated as Airfield land use, whereas the areas outside of the fence are Industrial, Airfield,
14 and Open Space. An additional hay lease is in progress and is scheduled to commence in spring 2010.

15 Off-Installation Properties

16 Grand Forks AFB is in Mekinock and Blooming Townships in east-central Grand Forks County, North
17 Dakota, near the North Dakota-Minnesota state boundary. It is north of and adjacent to the City of
18 Emerado and approximately 15 miles west of the City of Grand Forks (see **Figure 1-1**). Access to Grand
19 Forks AFB is provided by U.S. Highway 2 and North Dakota County Road B-3, which form the
20 installation's southern and eastern boundaries, respectively. The area surrounding the installation is rural,
21 consisting primarily of agriculture and open space (pasture, recreation, and wildlife habitat) with scattered
22 residences. The major crops include potatoes, sugar beets, soybeans, corn, barley, spring wheat,
23 sunflowers, and oats (GFAFB 2011). In addition to the urban uses in the City of Emerado, other uses
24 surrounding Grand Forks AFB include a University of North Dakota-owned biological research area
25 adjacent to the installation's western boundary, and the installation sewage treatment system on a separate
26 parcel of land east of the main installation.

27 Grand Forks AFB is surrounded by Mekinock Township to the west and north, Blooming Township to
28 the east, Oakville Township to the south-southeast, and Chester Township to the south. Grand Forks
29 County has jurisdiction over land use and zoning within Blooming and Chester Townships. The land use
30 designations within Blooming and Chester Townships primarily include Agricultural or Vacant; however,
31 there are several parcels designated Institutional or Public Land (installation family housing area and
32 wastewater treatment plant, and Kellys Slough National Wildlife Refuge and Waterfowl Production
33 Areas) east of the installation, and scattered Residential parcels. The primary future land use identified
34 east and south of the installation is Agricultural and a small area in Chester Township south of
35 Grand Forks AFB runway is designated as an Airport Protection Zone (Grand Forks County 2006a). The
36 corresponding Grand Forks County zoning designations for these areas east and south of the installation
37 include Airfield Reserve District, and Airfield Preservation District, and Floodplain Overlay District
38 (Grand Forks County 2009, Grand Forks County 2006b).

39 Mekinock and Oakville Townships and the City of Emerado enforce land use and zoning regulations
40 within their boundaries and extraterritorial areas (Grand Forks County 2006a). However, no land use or
41 zoning information was available for the Oakville Townships and City of Emerado.

42 Off-installation properties considered in this EA include Mekinock Prairie Chicken Wildlife Mangement
43 Area (WMA), North Dakota Game and Fish WMA, Crawford Oakville Prairie WMA, and Turtle River
44 State Park.

1 **Mekinock Prairie Chicken WMA.** Mekinock Prairie Chicken WMA is in Mekinock Township,
2 approximately 5 miles to the northeast of the installation. This WMA contains 3,471 acres with
3 habitat for deer, sharptails, and pinnated grouse (USGS 2006).

4 **North Dakota Game and Fish WMA.** Located in Mekinock Township, three separate areas are
5 considered to the North Dakota Game and Fish WMA, including the area within the installation boundary
6 in the northwestern corner, approximately 3 miles north of the northwestern corner, and to the south of
7 the Mekinock Prairie Chicken Preserve.

8 **Crawford Oakville Prairie WMA.** The Crawford Oakville Prairie WMA is 160 acres and is 3 miles east
9 and 2 miles south of Emerado. This WMA contains habitat for deer and sharptails (USGS 2006). This
10 rare, tallgrass prairie land was donated to the North Dakota Game and Fish Department by residents of the
11 County of Grand Forks. The WMA is managed for native prairie, wildlife, public hunting, and other
12 compatible uses (NDGFD 2007).

13 **Turtle River State Park.** Situated on the meandering Turtle River, the 784-acre Turtle River State Park is
14 in a wooded valley approximately 3 miles west of the installation. The Turtle River is stocked with
15 rainbow trout, the park offers year-round recreational activities (NDPRD undated).

16 **Kellys Slough NWR.** Covering portions of Blooming, Lakeville, and Rye townships of Grand Forks
17 County, the 1,867 acre NWR is approximately 2 miles east of the installation. An intermittent stream
18 traversing through Kellys Slough NWR flows into Turtle River.

19 Environmental Consequences

20 Evaluation Criteria

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

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

30 Proposed Action

31 Implementation of the Proposed Action would not be expected to result in adverse impacts on land use.
32 The Proposed Action would be in compliance with the 2006 *General Plan: Grand Forks Air Force Base,*
33 *ND.* Implementation of the Proposed Action would not require a change in land use or land use policies
34 at Grand Forks AFB or the surrounding areas. The Proposed Action would not preclude the viability of
35 existing adjacent land uses or future plans. Implementation of the Proposed Action would not impact any
36 established Explosives Safety Quantity-Distance (QD) arcs of aircraft accident potential zones. No
37 impacts on on- or off-installation land use would be expected from implementation of the Proposed
38 Action.

1 No Action Alternative

2 Under the No Action Alternative, existing land use conditions would remain the same as described in
3 **Section 3.2**. No impacts would be expected.

4 1.10 Air Quality

5 Definition of the Resource

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

12 The CAA directed the USEPA to develop, implement, and enforce strong environmental regulations that
13 would ensure clean and healthy ambient air quality. To protect public health and welfare, USEPA
14 developed numerical concentration-based standards, or National Ambient Air Quality Standards
15 (NAAQS), for pollutants that have been determined to impact human health and the environment.
16 USEPA established both primary and secondary NAAQS under the provisions of the CAA. NAAQS are
17 currently established for six criteria air pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide
18 (NO_2), sulfur dioxide (SO_2), respirable particulate matter (including particulate matter equal to or less
19 than 10 microns in diameter [PM_{10}] and particulate matter equal to or less than 2.5 microns in diameter
20 [$\text{PM}_{2.5}$]), and lead (Pb). The primary NAAQS represent maximum levels of background air pollution that
21 are considered safe, with an adequate margin of safety to protect public health. Secondary NAAQS
22 represent the maximum pollutant concentration necessary to protect vegetation, crops, and other public
23 resources along with maintaining visibility standards. North Dakota has adopted a more stringent set of
24 standards, termed the North Dakota Ambient Air Quality Standards (NDAAQS). **Table 3-1** presents the
25 primary and secondary USEPA NAAQS and NDAAQS.

26 Although O_3 is considered a criteria air pollutant and is measurable in the atmosphere, it is not often
27 considered a regulated air pollutant when calculating emissions because O_3 is typically not emitted
28 directly from most emissions sources. Ozone is formed in the atmosphere by photochemical reactions
29 involving sunlight and previously emitted pollutants or “ O_3 precursors.” These O_3 precursors consist
30 primarily of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) that are directly emitted from
31 a wide range of emissions sources. For this reason, regulatory agencies attempt to limit atmospheric O_3
32 concentrations by controlling VOC pollutants (also identified as reactive organic gases) and NO_2 . As
33 authorized by the CAA, USEPA has delegated responsibility for ensuring compliance with NAAQS to the
34 states and local agencies. As such, each state must develop air pollutant control programs and promulgate
35 regulations and rules that focus on meeting NAAQS and maintaining healthy ambient air quality levels.

36 These programs are detailed in State Implementation Plans (SIPs) that must be developed by each state or
37 local regulatory agency and approved by USEPA. A SIP is a compilation of regulations, strategies,
38 schedules, and enforcement actions designed to move the state into compliance with all NAAQS. Any
39 changes to the compliance schedule or plan (e.g., new regulations, emissions budgets, controls) must be
40 incorporated into the SIP and approved by USEPA.

41

1

Table 3-1. National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary Standard		Secondary Standard
		Federal	State	
CO	8-hour ⁽¹⁾	9 ppm (10 mg/m ³)	Same	None
	1-hour ⁽¹⁾	35 ppm (40 mg/m ³)	Same	None
Pb	Rolling 3-Month Average ⁽²⁾	0.15 µg/m ³ ⁽³⁾	Same	Same as Primary
NO ₂	Annual ⁽⁴⁾	53 ppb ⁽⁵⁾	Same	Same as Primary
	1-hour ⁽⁶⁾	100 ppb	--	None
PM ₁₀	24-hour ⁽⁷⁾	150 µg/m ³	Same	Same as Primary
PM _{2.5}	Annual ⁽⁸⁾	15 µg/m ³	Same	Same as Primary
	24-hour ⁽⁶⁾	35 µg/m ³	Same	Same as Primary
O ₃	8-hour ⁽⁹⁾	0.075 ppm ⁽¹⁰⁾	Same	Same as Primary
SO ₂	1-hour ⁽¹¹⁾	75 ppb ⁽¹²⁾	0.273 ppm	None
	3-hour ⁽¹⁾	--	0.5ppm	0.5 ppm

Sources: USEPA 2011, NDDH 2011c

Notes: Parenthetical values are approximate equivalent concentrations.

1. Not to be exceeded more than once per year.
2. Not to be exceeded.
3. Final rule signed October 15, 2008. The 1978 lead standard (1.5 µg/m³ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
4. Annual Mean.
5. The official level of the annual NO₂ standard is 0.053 ppm, equal to 53 ppb, which is shown here for the purpose of cleaner comparison to the 1-hour standard.
6. 98th percentile, averaged over 3 years.
7. Not to be exceeded more than once per year on average over 3 years.
8. Annual mean, averaged over 3 years.
9. Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years.
10. Final rule signed March 12, 2008. The 1997 ozone standard (0.08 ppm, annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years) and related implementation rules remain in place. In 1997, USEPA revoked the 1-hour ozone standard (0.12 ppm, not to be exceeded more than once per year) in all areas, although some areas have continued obligations under that standard ("anti-backsliding"). The 1-hour ozone standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than or equal to 1.
11. 99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
12. Final rule signed June 2, 2010. The 1971 annual (0.3 ppm) and 24-hour (0.14 ppm) SO₂ standards were revoked in that same rulemaking. However, these standards remain in effect until one year after an area is designated for the 2010 standard, except in areas designated nonattainment for the 1971 standards, where the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standard are approved.

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

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

8 On 22 September 2009, the USEPA issued a final rule for mandatory greenhouse gas (GHG) reporting
9 from large GHG emissions sources in the United States. The purpose of the rule is to collect

1 comprehensive and accurate data on carbon dioxide (CO₂) and other GHG emissions that can be used to
2 inform future policy decisions. In general, the threshold for reporting is 25,000 metric tons or more of
3 CO₂ equivalent per year. The first emissions report was due in 2011 for 2010 emissions. GHG emissions
4 will become factors in Prevention of Significant Deterioration (PSD) and Title V permitting and
5 reporting, according to a USEPA rulemaking issued on 3 June 2010 (75 Federal Register [FR] 31514).
6 GHG emissions thresholds of significance for permitting of stationary sources are 75,000 tons CO₂
7 equivalent per year and 100,000 tons CO₂ equivalent per year under these permit programs. GHGs
8 became regulated pollutants under the CAA for purposes of air permitting in January 2011. The
9 installation is not required to report GHG emissions since they emit less than 25 metric tons of CO₂ per
10 year (2008, 23 metric tons of CO₂; 2009, 17 metric tons of CO₂; and, 2010, 16 metric tons of CO₂ from
11 stationary sources).

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

29 Title V of the CAA Amendments of 1990 requires states and local agencies to permit major stationary
30 sources. A major stationary source is a facility (i.e., plant, installation, or activity) that has the potential to
31 emit more than 100 tons per year (tpy) of any one criteria air pollutant, 10 tpy of a hazardous air pollutant
32 (HAP), or 25 tpy of any combination of HAPs.

33 Federal PSD regulations apply in attainment areas to major stationary sources (e.g., sources with the
34 potential to emit 250 tpy of any criteria pollutant) and significant modifications to major stationary
35 sources (e.g., change that adds 0.6 tpy for lead, or 10 tpy to 100 tpy depending on the criteria pollutant, to
36 the facility’s potential to emit). Additional PSD permitting thresholds apply to increases in stationary
37 source GHG emissions. PSD permitting can also apply to a proposed project that is a modification with a
38 net emissions increase to an existing PSD major source and (1) the proposed project is within 10
39 kilometers of national parks or wilderness areas (i.e., Class I Areas), and (2) regulated stationary source
40 pollutant emissions would cause an increase in the 24-hour average concentration of any regulated
41 pollutant in the Class I area of 1 µg/m³ or more (40 CFR 52.21[b][23][iii]). PSD regulations also define
42 ambient air increments, limiting the allowable increases to any area’s baseline air contaminant
43 concentrations, based on the area’s class designation (40 CFR 52.21[c]) (USEPA 2009a). PSD
44 regulations do not apply to the Proposed Action and are not discussed further in this EA because Grand
45 Forks AFB is not an existing PSD major source and no Class I areas are within 10 kilometers from the
46 installation.

1 Existing Conditions

2 Grand Forks AFB and the surrounding areas proposed for control of nuisance species are in Grand Forks
3 County, which is within the North Dakota Air Quality Control Region (AQCR) 172. AQCR 172 consists
4 of all counties in North Dakota with the exception of Metropolitan Fargo, North Dakota. As defined in
5 40 CFR 81.335, Grand Forks County is designated as in attainment/unclassifiable for all criteria
6 pollutants (USEPA 2010).

7 The most recent emissions inventories for Grand Forks County and AQCR 172 are shown in **Table 3-2**.
8 Grand Forks County is considered the local area of influence, and AQCR 172 is considered the regional
9 area of influence for the air quality analysis.

10 **Table 3-2. Local and Regional Air Emissions Inventory**

	NO_x (tpy)	VOC (tpy)	CO (tpy)	SO₂ (tpy)	PM₁₀ (tpy)	PM_{2.5} (tpy)
Grand Forks County, ND	3,786	2,952	22,947	1,381	12,711	2,034
AQCR 172	36,630	16,704	118,068	5,576	145,387	23,540

Source: USEPA 2009a

11 The U.S. Department of Energy, Energy Information Administration, estimates that gross CO₂ emissions
12 in North Dakota were 53 million metric tons in 2008 (EIA 2010).

13 The NDDH regulates air quality for the State of North Dakota. Grand Forks AFB is classified as a major
14 source of emissions and has an Air Pollution Control Title V Permit to Operate (NDDH 2007). As
15 required by the NDDH, Grand Forks AFB calculates annual criteria pollutant emissions from stationary
16 sources and provides this information to the NDDH. There are various sources on-installation that emit
17 criteria pollutants and HAPs, including generators, boilers, hot water heaters, fuel storage tanks, gasoline
18 service stations, surface coatings/paint booths, and miscellaneous chemical usage.

19 Environmental Consequences

20 Evaluation Criteria

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

- 26 • Cause or contribute to a violation of any national or state ambient air quality standard
- 27 • Expose sensitive receptors to substantially increased pollutant concentrations
- 28 • Exceed any evaluation criteria established by a SIP or permit limitation
- 29 • Produce emissions representing an increase of 100 tpy for any attainment criteria pollutant
30 (i.e., NO_x, VOCs, CO, PM₁₀, PM_{2.5}, SO₂), unless the proposed activity qualifies for an exemption
31 under the Federal General Conformity Rule.

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

6 Proposed Action

7 Short- and long-term, negligible to minor, adverse impacts on air quality would be anticipated from the
8 Proposed Action. The Proposed Action would generate emissions of criteria pollutants as some of the
9 pesticides and herbicides contain VOCs. Such activities are not expected to cause adverse impacts on air
10 quality, provided they are operated and maintained in a manner consistent with good engineering
11 practices and label instructions. Operation of vehicles and equipment to remove vegetation would result
12 in short-term emissions of criteria pollutants as combustion products. Emissions of all criteria pollutants
13 would result from combustion of fuels from contractor commuter emissions. Emissions associated with
14 the Proposed Action would not be expected to result in adverse effects on air quality, as there would be no
15 violation of the CAA or the NAAQS.

16 Spray equipment would be adjusted so that the volume median diameter produced is less than 60 microns
17 and that 90 percent of the spray is contained in droplets smaller than 115 microns. On average, droplet
18 size for application of pesticides would be about 50 microns. Pesticide and herbicide application rates
19 would be followed based on the associated labels (see **Tables 2-1** and **2-2** and **Appendix B**), and a
20 current DoD Pesticide Applicator Certification or state pesticide certification would be required for all
21 personnel applying pesticides. Application of all aerial pesticides would be consistent with AFI 32-1074,
22 *Aerial Application of Pesticides*.

23 Depending on climatological conditions, droplets from aerial application would settle to the earth in a few
24 hours. There would be temporary increases in VOCs and NO_x within the proposed treatment area as a
25 result of the Proposed Action. However, this activity would not exceed local standards for air emissions
26 and would not result in nonconformance with the CAA and its amendments. It is recognized that ULV
27 sprays can be inhaled by humans and other vertebrates. Residents would be notified of spray timing to
28 minimize undue inhalation and dermal exposure. Careful attention would also be paid by the applicators
29 to avoid drift into non-target areas. In summary, the aerial spraying of pesticides would only temporarily
30 affect the local air quality. All of these materials settle to the ground, water, or vegetative substrate
31 within hours, where they begin to biodegrade and hydrolyze. Larvicides would be applied in such a
32 manner that no impacts would be anticipated on air quality because droplets are intended to be large
33 enough that they immediately fall into the water column to effect mosquito larvae in the water.

34 None of the chemical products associated with the Proposed Action would contain GHGs. A minor
35 contribution of GHGs would be anticipated through the combustion of fossil fuels associated with the use
36 of vehicles and equipment to control vegetation. This contribution would be negligible when compared to
37 the current vegetation control activities.

38 Implementation of an integrated approach to mosquito control could, in time, reduce the need for aerial
39 application of pesticides by trapping mosquitoes, removing areas of standing water where
40 mosquito-breeding activity occurs, and by applying larvicides in a manner consistent with the guidelines
41 provided in the MMP. Therefore, long-term, beneficial impacts on air quality could occur if the
42 frequency of chemical application is reduced over time. All emissions associated with the Proposed
43 Action would be temporary in nature. Therefore the Proposed Action would not have significant effects
44 on regional or local air quality.

1 No Action Alternative

2 Under the No Action Alternative, the Proposed Action would not be implemented. If source reduction of
3 mosquitoes is not a component of mosquito management, it is possible that the frequency of aerial or
4 ground application of pesticides and herbicides could increase.

5 1.11 Geological Resources

6 Definition of the Resource

7 Geology is the study of the Earth's processes and provides information on the structure and configuration
8 of surface and subsurface features. Such information derives from field analysis based on observations of
9 the surface and borings to identify subsurface composition. Geological resources consist of the Earth's
10 surface and subsurface materials. Within a given physiographic province, these resources typically are
11 described in terms of topography and physiography, geology, soils, and, where applicable, geologic
12 hazards and paleontology.

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

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

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

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

1 Existing Conditions

2 Grand Forks AFB

3 **Regional Geology.** Grand Forks AFB and the surrounding areas are in the Central Lowland
4 Physiographic Province along the flat former glacial Lake Agassiz Plain. Bedrock strata dip gently
5 towards the center of the Williston Structural Basin in the west (USAF 2006). Precambrian-aged bedrock
6 (4.5 billion to 543 million years before present) is overlain by 130 feet of glacial till and 95 feet of
7 lacustrine deposits. The glacial deposits are composed of silts and clays with occasional sand and gravel
8 lenses (CBP 2008).

9 **Topography.** Grand Forks AFB is characterized by flat to gently sloped topography, with a
10 northeastward slope of about 1.5 to 2 feet per mile on the installation (CBP 2008). Across the
11 installation, elevations range from 900 feet above mean sea level (MSL) on the western side to 880 feet
12 above MSL on the eastern side.

13 **Soils.** Grand Forks AFB is underlain by six loamy soil associations with varying amounts of sand: the
14 Antler-Gilby-Svea, the Bearden-Antler, the Glyndon-Gardena, the Delle-Cashel, the Ojata, and the
15 Wyndmere-Tiffany-Arveson (GFAFB 2003d). Soils at Grand Forks AFB are deep, fairly level, and
16 somewhat poorly to moderately well-drained with a high shrink-swell potential (CBP 2008). These soils
17 are also highly susceptible to wind erosion. Soil is loamy from 0 to 12 inches below ground surface
18 (bgs); loam, silty loam, and very fine sandy loam from 12 to 26 inches bgs; and loam to clayey loam from
19 26 to 60 inches bgs (GFAFB 2007b).

20 **Prime Farmland.** Of the six soil units mapped within Grand Forks AFB, three are considered prime
21 farmland soils (Antler-Gilby-Svea, Glyndon-Gardena, and Delle-Cashel) and one is considered prime
22 farmland soil if drained (Wyndmere-Tiffany-Arveson) (NRCS 2011).

23 Off-Installation Properties

24 **Regional Geology.** Regional geology would be similar to that described for Grand Forks AFB, with
25 Precambrian-aged bedrock overlain with glacial till.

26 **Topography.** Off-installation, topography ranges from 825 to 984 feet above msl, with elevation
27 generally increased to the west. Elevation at Kellys Slough NWR ranges from 825 to 845 feet and Prairie
28 Chicken WMA ranges from approximately 855 to 870 feet, sloping to the southwest. Elevation at Turtle
29 River State Park is approximately 984 feet, and is approximately 850 feet at Crawford Oakville Prairie
30 WMA (Anyplace America undated, Terra Server 2010).

31 **Soils.** Off-installation soils are composed primarily of loam (see **Table 3-3**). Approximately 70 percent
32 of soils mapped at Kellys Slough NWR consist of the Lallie silty clay loam, the Zell-LaDelle silt loam,
33 and the Bearden silty clay loam. Approximately 60 percent of the Crawford Oakville Prairie WMA is
34 mapped as Antler silty clay loam, and 56 percent of the Turtle River State Park is mapped as Buse-Svea
35 loam (1 to 25 percent slope) and Velva sandy loam (0 to 6 percent slope). The Bearden silty clay loam
36 composes approximately 60 percent of the Mekinock Prairie Chicken WMA. The North Dakota Game
37 and Fish WMA is primarily mapped as Bearden silty clay loam (56 percent) and Ojata silty clay loam
38 (40 percent) (NRCS 2011).

39 **Prime Farmland.** Prime farmland status for each mapped soil unit is shown in **Table 3-3**. Out of the
40 30 soil units mapped off-installation, 11 are considered to be prime farmland, 5 are farmland of statewide
41 importance, and 3 are prime farmland if drained.

1

Table 3-3. Off-Installation Soils

Soil Unit	Type	Prime Farmland Classification	Location
Antler	silty clay loam, saline	None	Crawford Oakville Prairie WMA
Antler	silt loam	Prime farmland	Turtle River State Park
Antler-Mustinka	sily clay loam, saline, 0 to 2 percent slope	Prime farmland if drained	Crawford Oakville Prairie WMA
Arveson	loam	Prime farmland if drained	Turtle River State Park
Arvilla	sandy loam, 1 to 6 percent slope	None	Turtle River State Park
Bearden	silty clay loam, saline	None	Kellys Slough NWR, Crawford Oakville Prairie WMA, Mekinock Prairie Chicken WMA, ND Game and Fish WMA
Bearden-Overly	silty clay loam, 0 to 2 percent slope	Prime farmland	Kellys Slough NWR
Buse-Svea	loam, 1 to 15 percent slope	Farmland of statewide importance	Turtle River State Park
Buse-Svea	loam, 1 to 25 percent slope	Farmland of statewide importance	Turtle River State Park
Divide	loam, 1 to 3 percent slope	Prime farmland	Turtle River State Park
Embden	fine sandy loam, 2 to 6 percent slope	Prime farmland	Turtle River State Park
Gardena	silt loam, 0 to 2 percent slope	Prime farmland	Crawford Oakville Prairie WMA, ND Game and Fish WMA
Gilby	loam	Prime farmland	Turtle River State Park
Glyndon	silt loam, 0 to 1 percent slope	Prime farmland	Mekinock Prairie Chicken WMA, ND Game and Fish WMA
Hecla-Maddock	fine sandy loam, 2 to 6 percent slope	None	Turtle River State Park
Lallie	silty clay loam, ponded	None	Kellys Slough NWR
Lamoure	silty clay loam, channeled, 0 to 6 percent slope	None	Turtle River State Park
Maddock	sandy loam, 9 to 25 percent slope	None	Turtle River State Park

Soil Unit	Type	Prime Farmland Classification	Location
Ojata	silty clay loam	None	Kellys Slough NWR, Crawford Oakville Prairie WMA, Mekinock Prairie Chicken WMA, ND Game and Fish WMA
Overly	silty clay loam, 0 to 2 percent slope	Prime farmland	Kellys Slough NWR, Turtle River State Park
Rauville	silt loam, channeled, 0 to 6 percent slope	None	Turtle River State Park
Renshaw	loam, 1 to 3 percent slope	None	Crawford Oakville Prairie WMA, Turtle River State Park
Sioux	loam, 1 to 15 percent loam	None	Turtle River State Park
Svea	loam, 0 to 3 percent slope	Prime farmland	Turtle River State Park
Towner	fine sandy loam, 1 to 3 percent	Farmland of statewide importance	Turtle River State Park
Vallers	loam	Prime farmland if drained	Turtle River State Park
Velva	sandy loam, channeled, 0 to 6 percent slope	None	Turtle River State Park, ND Game and Fish WMA
Zell-LaDelle	silt loam, 1 to 6 percent slope	Prime farmland	Kellys Slough NWR
Zell-LaDelle	silt loam, 1 to 9 percent slope	Farmland of statewide importance	Kellys Slough NWR, Turtle River State Park
Zell-LaDelle	silt loam, 1 to 15 percent slope	Farmland of statewide importance	Kellys Slough NWR

Source: NRCS 2011

1 Environmental Consequences

2 Evaluation Criteria

3 Protection of unique geological features, minimization of soil erosion, and the siting of facilities in
4 relation to potential geologic hazards are considered when evaluating potential effects of a proposed
5 action on geological resources. Generally, adverse effects can be avoided or minimized if proper
6 construction techniques, erosion-control measures, and structural engineering design are incorporated into
7 project development. A proposed action could have a significant effect with respect to geological
8 resources if any the following were to occur:

- 9 • Alteration of the lithology, stratigraphy, and geological structure that control groundwater quality,
10 distribution of aquifers and confining beds, and groundwater availability

- Changes to the soil composition, structure, or function within the environment.

Minimization of soil erosion is considered when evaluating potential effects of a proposed action on soil 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 soils (including prime farmland soils) would be significant if they would alter the soil composition, structure, or function within the environment.

Proposed Action

Grand Forks AFB

It is anticipated that short-term, negligible to minor, and long-term, negligible, adverse impacts on soil would occur from the Proposed Action. Short-term, negligible to minor, adverse impacts would be anticipated from chemical applications (e.g., insecticides and herbicides), as some chemicals adsorb strongly to soil, and soil chemistry could be altered temporarily until the chemicals have adequately degraded from microbial action.

Long-term, negligible impacts would be expected from compaction of soils under the weight of vehicles and other equipment during vegetation-removal activities, such as to clear drainage ditches. Compaction of soils would result in a disturbance to and modification of soil structure. Soil productivity, which is the capacity of the soil to produce vegetative biomass, would decline in disturbed areas. Loss of soil structure due to compaction from foot and vehicle traffic could result in changes in drainage patterns. However, many of the areas where drainage ditches are located are disturbed, and therefore little impact would occur under the Proposed Action due to soil compaction or changes in drainage patterns.

Although soils mapped on the installation are considered to be prime farmland soils, implementation of the Proposed Action would not be expected to preclude these soils from current or future agricultural production. No prime farmland soils would be removed or converted as a result of the Proposed Action. Therefore, no impacts would be anticipated on prime farmland soils. No impacts on geology or topography would be anticipated.

BMPs, including installation of silt fencing and hay bales, in addition to implementation of erosion-and-sediment-control plans, would reduce the impact of the Proposed Action on geological resources to negligible.

Larval Mosquito Chemical Control. Impacts on soil would be short-term, negligible, and adverse. No long-term impacts on soils would be anticipated. Altosid® (active ingredient [A.I.] methoprene) in liquid or briquette form rapidly degrades due to exposure to sunlight or through microbial action. Methoprene rapidly binds to soil particles and does not leach into deeper soil horizons or groundwater (Cornell University 1995). When Altosid® was applied at an extremely high application rate of 1 pound per acre, its half-life was less than 10 days. *Bti*, the active ingredient in Vectobac® granules, is a naturally occurring bacterium found in soils.

Adult Mosquito Chemical Ground Control. Mavrik® (A.I. fluvalinate) degrades quickly in soils, with a typical half-life of 4 to 8 days under aerobic conditions in loams and clays. However, it has a strong tendency to bind to soil particles (Cornell University 1996). Anvil® Kontrol 4-4, and Duet™ are synthetic pyrethroids. Pyrethroids readily bind to soil particles and therefore do not contaminate groundwater (NYCHMH 2012). They are eventually broken down by microorganisms in soil and water (ATSDR 2003).

1 Use of the chemical controls associated with the Proposed Action for adult mosquitoes would result in
2 short-term, negligible to minor, adverse impacts on soil as the chemicals bind to soil particles.
3 Long-term, beneficial impacts could occur from increased soil productivity as the microbial food web is
4 expanded.

5 **Noxious and Invasive Weed Control.** Short-term, negligible impacts could occur after weedy vegetation
6 has died but before other vegetation has become established, as soil could be more susceptible to erosion
7 and sedimentation before vegetation is reestablished. Long-term, beneficial impacts on soil productivity
8 could occur in areas where pesticides are broken down by microbial action, thereby providing additional
9 sources to the microbial soil food web.

10 Off-Installation Properties

11 Impacts on off-installation properties would be similar to those described for Grand Forks AFB and
12 would be short-term, minor, and adverse from the aerial application of Altosid® liquid larvicide and
13 continued use of Trumpet liquid adulticide.

14 No Action Alternative

15 Under the No Action Alternative, there would be no change from existing conditions at the installation, as
16 described in **Section 3.3.2**. No impacts on geology or soil resources would be anticipated.

17 1.12 Water Resources

18 Definition of the Resource

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

28 Wetlands are important natural systems and habitats because of the diverse biological and hydrologic
29 functions they perform. These functions include water quality improvement, groundwater recharge and
30 discharge, pollution mitigation, nutrient cycling, unique plant and wildlife habitat provision, storm water
31 attenuation and storage, sediment detention, and erosion protection. Wetlands are protected as a subset of
32 the waters of the United States under Section 404 of the CWA. The term "waters of the United States"
33 has a broad meaning under the CWA and incorporates deepwater aquatic habitats and special aquatic
34 habitats (including wetlands). The USACE defines wetlands as "those areas that are inundated or
35 saturated with ground or surface water at a frequency and duration to support, and that under normal
36 circumstances do support, a prevalence of vegetation typically adapted to life in saturated conditions.
37 Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR Part 329). Wetland
38 habitat is discussed in **Section 3.5.1**, Biological Resources.

39 North Dakota relies on CWA Section 401 water quality certification as its primary form of state-level
40 wetlands regulation. The Section 401 program is administered by the NDDH/DWQ. In making
41 certification decisions, the NDDH/DWQ is primarily concerned with the construction and environmental

1 disturbance requirements pertaining to soils, surface waters, and fill materials. A nonregulatory agency
2 policy document requires that “fragile and sensitive areas such as wetlands, riparian zones, delicate flora,
3 or land resources will be protected against compaction, vegetation loss, and unnecessary damage.” If a
4 project does not meet this and other minimum requirements of the NDDH/DWQ, the permit is denied,
5 and necessary conditions are communicated before re-application (ELI 2008).

6 **Groundwater.** Groundwater is water that exists in the saturated zone beneath the earth’s surface in pore
7 spaces and fractures, and includes aquifers. Groundwater is recharged through percolation of water on
8 the ground’s surface (e.g., precipitation and surface water bodies) and upward movement of water in
9 lower aquifers through capillary movement. Groundwater is an essential resource that can be used for
10 drinking, irrigation, and industrial processes. Groundwater typically can be described in terms of depth
11 from the surface, aquifer or well capacity, water quality, recharge rate, and surrounding geologic
12 formations. The interface between the groundwater potentiometric surface (i.e., depth to groundwater
13 below ground surface) and surface topography often results in streams, rivers, and lakes.

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

18 **Surface Water.** Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface
19 water is important for its contribution to the economic, ecological, recreational, and human health of a
20 community or locale. Waters of the United States are defined within the Clean Water Act (CWA), as
21 amended, and jurisdiction is addressed by the USEPA and the USACE. These agencies assert jurisdiction
22 over (1) traditional navigable waters, (2) wetlands adjacent to navigable waters, (3) nonnavigable
23 tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow
24 year-round or have continuous flow at least seasonally (e.g., typically 3 months), and (4) wetlands that
25 directly abut such tributaries. Section 404 of the CWA authorizes the Secretary of the Army, acting
26 through the Chief of Engineers, to issue permits for the discharge of dredge or fill into waters of the
27 United States including wetlands. Encroachment into waters of the United States and wetlands requires
28 permits from the state and the Federal government. Wetland hydrology is discussed within this section.
29 **Section 3.5.2** provides a discussion of wetland habitat occurring within the action areas and adjacent
30 wetlands that might be affected by the actions being considered.

31 Per Section 401 of the CWA, any applicant for a Federal license or permit to conduct any activity
32 including the construction or operation of facilities, which could result in any discharge into the navigable
33 waters, shall provide the licensing or permitting agency a certification from the state in which the
34 discharge originates or will originate. North Dakota relies on Section 401 water quality certification as its
35 primary form of state-level wetlands regulation. The Section 401 program is administered by the North
36 Dakota Department of Health/Division of Water Quality (NDDH/DWQ). In making certification
37 decisions, the NDDH/DWQ is primarily concerned with the construction and environmental disturbance
38 requirements pertaining to soils, surface waters, and fill materials. A nonregulatory agency policy
39 document requires that “fragile and sensitive areas such as wetlands, riparian zones, delicate flora, or land
40 resources will be protected against compaction, vegetation loss, and unnecessary damage.” If a project
41 does not meet this and other minimum requirements of the NDDH/DWQ, the permit is denied, and
42 necessary conditions are communicated before reapplication (ELI 2008).

43 On 31 October 2011, the USEPA issued a final National Pollutant Discharge Elimination System
44 (NPDES) PGP for point-source discharges from the application of pesticides to waters of the United
45 States. As a result of the court’s decision, NPDES permits are generally required for these types of
46 discharges as of 31 October 2011. The PGP covers operators that apply pesticides that result in

1 discharges from the following use patterns: (1) mosquito and other flying insect pest control; (2) weed
2 and algae control; (3) animal pest control; and (4) forest canopy pest control. The permit requires
3 permittees to minimize pesticide discharges through the use of pest management measures, and to
4 monitor for and report any adverse incidents (USEPA 2012).

5 A water body can be deemed impaired if water quality analyses conclude that exceedances of the water
6 quality standards established by the CWA occur. The CWA requires that states establish a Section 303(d)
7 list to identify impaired waters and establish Total Maximum Daily Loads (TMDLs) for the source(s)
8 causing the impairment. A TMDL is the maximum amount of a substance that can be assimilated by a
9 water body without causing impairment. The CWA also mandated the NPDES program, which regulates
10 the discharge of point (end of pipe) and nonpoint (storm water) sources of water pollution and requires a
11 permit for any discharge of pollutants into waters of the United States.

12 Storm water (water from precipitation events) is an important component of surface water systems
13 because of its potential to introduce sediments and other contaminants that could degrade surface waters.
14 Proper storm water flow management, which can be intensified by high proportions of impervious
15 surfaces associated with buildings, roads, and parking lots, is important to the management of surface
16 water quality and natural flow characteristics. Prolonged increases in storm water volume and velocity
17 associated with development and increased impervious surfaces has potential to impact adjacent streams
18 as a result of stream bank erosion and channel widening or down cutting associated with the adjustment
19 of the stream to the change in flow characteristics. Storm water management systems are typically
20 designed to contain runoff on site during construction, and to maintain predevelopment storm water flow
21 characteristics following development through either the application of infiltration or retention practices.
22 Failure to size storm water systems appropriately to hold or delay conveyance of the largest predicted
23 precipitation event often leads to downstream flooding and the environmental and economic damages
24 associated with flooding.

25 The USEPA published the technology-based Final Effluent Limitations Guidelines (ELGs) and New
26 Performance Standards for the Construction and Development point sources, known as the “Construction
27 and Development (C&D) Rule,” on 1 December 2009, to control the discharge of pollutants from
28 construction sites. The C&D Rule became effective on 1 February 2010, and requires construction site
29 operators to meet restrictions on erosion and sediment control, pollution prevention, and stabilization.
30 The C&D Rule also included a numeric turbidity limit for certain larger construction sites, but effective 4
31 January 2011, the USEPA has suspended the numeric limitation for further evaluation. Therefore, the
32 numeric turbidity limitation and monitoring requirements do not currently have to be incorporated into
33 construction permits. The USEPA currently regulates large and small (greater than 1 acre) construction
34 activities through the final 2012 CGP (16 February 2012), which recently replaced the 2008 CGP. The
35 2012 CGP includes a number of modifications to the 2008 CGP, many of which are necessary to
36 implement the new ELGs and New Source Performance Standards for C&D point sources. Permittees
37 must select, install, and maintain effective erosion-and-sedimentation-control measures as identified and
38 as necessary to comply with the 2012 CGP, including the following:

- 39 • Minimize exposure of soils and control discharges from stockpiled sediment or soil.
- 40 • Design storm water controls according to the amount, frequency, intensity, and duration of
41 precipitation; the nature of storm water runoff and run-on at the site; and the range of soil particle
42 sizes expected to be present on the site.
- 43 • Direct discharges from storm water controls to vegetated areas to increase sediment removal and
44 maximize storm water infiltration.

- 1 • Complete installation of storm water controls by the time each phase of earth-disturbance has
2 begun, unless infeasible.
- 3 • Install sediment controls (e.g., sediment basins, sediment traps, silt fences, and vegetative buffer
4 strips) along the perimeter of the construction site.
- 5 • Regularly inspect and maintain all erosion and sediment controls.
- 6 • Prevent discharges of petroleum products; soaps, solvents or detergents used in equipment
7 washing; or other toxic or hazardous substances from a spill or other release.
- 8 • Minimize sediment track-out and implement dust controls.
- 9 • Minimize disturbance of steep slopes.
- 10 • Preserve topsoil.
- 11 • Minimize soil compaction.
- 12 • Design storm water conveyance channels to avoid unstabilized areas on the site and to reduce
13 erosion; minimize erosion of channels and their embankments, outlets, and downstream waters.

14 Construction activities, such as clearing, grading, trenching, and excavating, disturb soils and sediment.
15 If not managed properly, disturbed soils and sediments can easily be washed into nearby water bodies
16 during storm events, where water quality is reduced. Section 438 of the Energy Independence and
17 Security Act (EISA) (42 U.S.C. 17094) establishes into law new storm water design requirements for
18 Federal construction projects that disturb a footprint of greater than 5,000 square feet (ft²) of land. EISA
19 Section 438 requirements are independent of storm water requirements under the CWA. The project
20 footprint consists of all horizontal hard surface and disturbed areas associated with project development.
21 Under these requirements, predevelopment site hydrology must be maintained or restored to the
22 maximum extent technically feasible with respect to temperature, rate, volume, and duration of flow.
23 Predevelopment hydrology shall be modeled or calculated using recognized tools and must include site-
24 specific factors such as soil type, ground cover, and ground slope. Site design shall incorporate storm
25 water retention and reuse technologies such as bioretention areas, permeable pavements,
26 cisterns/recycling, and green roofs to the maximum extent technically feasible. Post-construction
27 analyses would be conducted to evaluate the effectiveness of the as-built storm water reduction features
28 (DoD 2010a). These regulations have been incorporated into applicable DoD Unified Facilities Criteria
29 (UFC) in April 2010, which stated that low-impact development (LID) features would need to be
30 incorporated into new construction activities to comply with the restrictions on storm water management
31 promulgated by EISA Section 438. LID is a storm water management strategy designed to maintain site
32 hydrology and mitigate the adverse impacts of storm water runoff and nonpoint source pollution. LID
33 features can manage the increase in runoff between pre- and post-development conditions on the project
34 site through interception, infiltration, storage, or evapotranspiration processes before the runoff is
35 conveyed to receiving waters. Examples of the methods include bioretention, permeable pavements,
36 cisterns/recycling, and green roofs (DoD 2010b). Additional guidance is provided in the USEPA's
37 *Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under*
38 *Section 438 of the Energy Independence and Security Act* (USEPA 2009b).

39 **Floodplains.** Floodplains are areas of low-level ground present along rivers, stream channels, or coastal
40 waters. The living and nonliving parts of natural floodplains interact with each other to create dynamic
41 systems in which each component helps to maintain the characteristics of the environment that support it.
42 Floodplain ecosystem functions include natural moderation of floods, flood storage and conveyance,
43 groundwater recharge, nutrient cycling, water quality maintenance, and diversification of plants and
44 animals. Floodplains provide a broad area to spread out and temporarily store floodwaters. This reduces

1 flood peaks and velocities and the potential for erosion. In their natural vegetated state, floodplains slow
2 the rate at which the incoming overland flow reaches the main water body (FEMA 1986).

3 Floodplains are subject to periodic or infrequent inundation due to rain or melting snow. Risk of flooding
4 typically hinges on local topography, the frequency of precipitation events, the size of the watershed
5 above the floodplain, and upstream development. Flood potential is evaluated by the Federal Emergency
6 Management Agency (FEMA), which defines the 100-year floodplain as an area within which there is a
7 1 percent chance of inundation by a flood event in a given year. Certain facilities inherently pose too
8 great a risk to be in either the 100- or 500-year floodplain, such as hospitals, schools, or storage buildings
9 for irreplaceable records. Federal, state, and local regulations often limit floodplain development to
10 passive uses, such as recreational and preservation activities, to reduce the risks to human health and
11 safety.

12 EO 11988, *Floodplain Management*, requires Federal agencies to determine whether a proposed action
13 would occur within a 100-year floodplain. This determination typically involves consultation of FEMA
14 Flood Insurance Rate Maps (FIRMs), which contain enough general information to determine the
15 relationship of the project area to nearby floodplains. EO 11988 directs Federal agencies to avoid
16 floodplains to the maximum extent possible wherever there is a practicable alternative. In accomplishing
17 this objective, “each agency shall provide leadership and shall take action to reduce the risk of flood loss,
18 to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the
19 natural and beneficial values served by flood plains in carrying out its responsibilities” for the following
20 actions:

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

25 ***Wetlands and other Waters of the United States.*** The USACE defines wetlands as “those areas that are
26 inundated or saturated with ground or surface water at a frequency and duration to support, and that under
27 normal circumstances do support, a prevalence of vegetation typically adapted to life in saturated
28 conditions. Wetlands generally include swamps, marshes, bogs, and similar areas” (33 CFR Part 329).
29 Wetlands perform several hydrologic functions including water quality improvement, groundwater
30 recharge and discharge, pollution mitigation, nutrient cycling, storm water attenuation and storage,
31 sediment detention, and erosion protection. Wetlands are protected as a subset of the waters of the United
32 States under Section 404 of the CWA. The term “waters of the United States” has a broad meaning under
33 the CWA and incorporates deepwater aquatic habitats and special aquatic habitats (including wetlands).

34 EO 11990, *Protection of Wetlands* (24 May 1977), directs agencies to consider alternatives to avoid
35 adverse effects and incompatible development in jurisdictional or nonjurisdictional wetlands. Federal
36 agencies are to avoid new construction in wetlands, unless the agency finds there is no practicable
37 alternative to construction in the wetland and the proposed construction incorporates all possible
38 measures to limit harm to the wetland. Agencies should use economic and environmental data, agency
39 mission statements, and any other pertinent information when deciding whether or not to build in
40 wetlands. EO 11990 directs each agency to provide for early public review of plans for construction in
41 wetlands. In accordance with 32 CFR Part 989.14, a FONPA must accompany the FONSI when the
42 alternative selected could be in wetlands or floodplains, and must discuss why no other practicable
43 alternative exists to avoid impacts.

1 Section 404 of the CWA establishes a Federal program to regulate the discharge of dredge and fill
2 material into jurisdictional waters of the United States. Section 404 permits are issued by the USACE.
3 Waters of the United States include jurisdictional interstate and intrastate lakes, rivers, streams, and
4 wetlands that are used for commerce, recreation, industry, sources of fish, and other purposes. Each
5 agency should consider the impact on water quality from actions such as the discharge of dredge or fill
6 material into U.S. waters from construction, or the discharge of pollutants as a result of facility
7 occupation.

8 Existing Conditions

9 Grand Forks AFB

10 **Groundwater.** Groundwater within Grand Forks County is found in bedrock and overlying
11 unconsolidated glacial drift deposits. Bedrock aquifers include rocks from the Dakota Group from the
12 Ordovician Period (approximately 490 to 445 million years ago), and the overlying Pierre Formation from
13 the Cretaceous Period (approximately 145 to 65 million years ago). Grand Forks County is part of a large
14 artesian discharge area and groundwater primarily flows from west to east (GFAFB 2011, NDGS 1970).

15 The Ordovician Red River Formation is the deepest aquifer in Grand Forks County. Water yield varies
16 depending on joints, fractures, and solution cavities within the formation, and the groundwater is
17 generally very saline. Above the Red River Formation aquifer is the Dakota Group aquifer, which is the
18 principal groundwater aquifer among the Great Plains states. Groundwater is present within the Dakota
19 Group at about 100 to 200 feet bgs. This aquifer is confined and under pressure, delivering groundwater
20 to wells at rates ranging from 2 to 50 gallons per minute (gpm). Water in the Dakota Group aquifer is
21 primarily used for livestock because it is considered unsuitable for domestic consumption or industrial
22 use due to its high salinity. The water level within the aquifer has dropped nearly 20 feet in the past
23 several years due to an increase in aquifer use for agricultural purposes (GFAFB 2011).

24 The Emerado Aquifer is the uppermost aquifer at 50 to 75 feet bgs. Groundwater is confined under an
25 artesian head, and well yields can vary from rates of 50 to 500 gpm. Water quality within the aquifer is
26 poor, with high levels of dissolved solids and high salinity, which potentially attribute to upward seepage
27 of groundwater from bedrock aquifers (GFAFB 2011). Potable water for the installation is obtained from
28 surface water sources including the Red River and Red Lake River through the City of Grand Forks
29 (GFAFB 2011).

30 **Surface Water.** Surface water surrounding Grand Forks AFB includes rivers, streams, and numerous
31 wetlands (see **Figure 3-2**). Grand Forks AFB is within the Red River Basin, which drains 48,490 square
32 miles of land. Glacial lakes occupied the Red River Basin until the end of glaciation in North Dakota
33 about 12,000 years ago, with Lake Agassiz as the last glacial lake present in the basin. Tributaries within
34 the Red River Basin typically have relatively steep upper reaches that spill into the flat valley floor in the
35 former lakebed of Lake Agassiz (USACE 2011).

36 The Turtle River is the only primary body of water present on Grand Forks AFB; however, Kellys
37 Slough, within the Kellys Slough NWR, is approximately 2 miles east of the installation. Just beyond the
38 southern boundary of the installation is Hazen Brook, which flows to the east along the southern side of
39 U.S. Highway 2. Turtle River and Kellys Slough are jurisdictional water of the United States; the
40 jurisdictional status of Hazen Brook is unknown.

41 The Turtle River flows through the northwestern corner of the installation boundary, meandering in a
42 northeasterly direction. It eventually empties into Lake Winnipeg in Canada via the Red River within the
43 Red River Drainage Basin. Turtle River is part of the 685-square-mile Turtle River Watershed in
44 northeastern North Dakota (GFCSCD 2011). Within the boundaries of Grand Forks AFB, Turtle River

1 flows for approximately 3,666 feet (RRRC 2006). Peak flows occur in April, consistent with spring thaw,
2 and minimum flows occur in January and February. Flows are managed in this river by the flood-control
3 structure in Larimore, North Dakota.

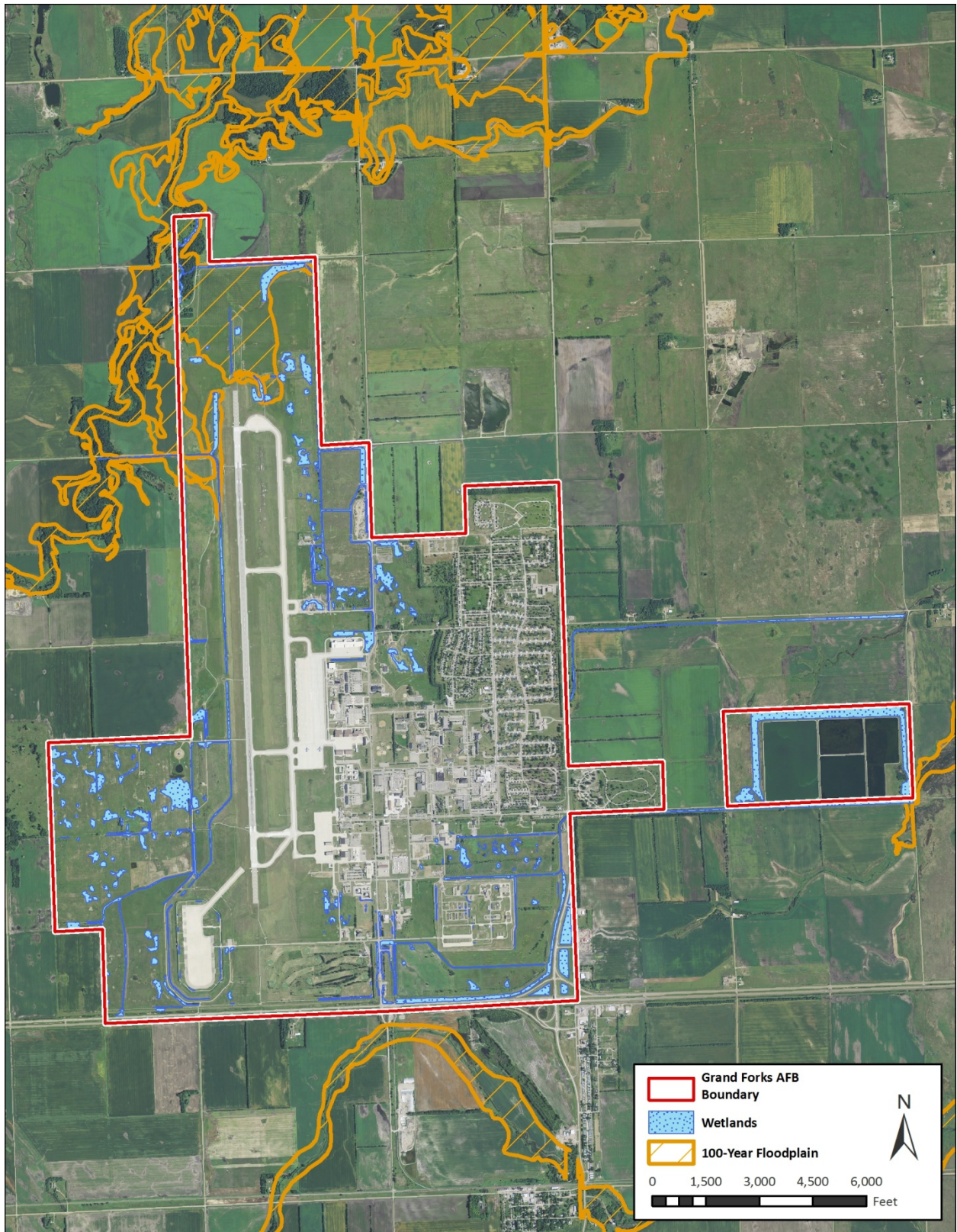
4 Turtle River has been classified as a Class 2 stream by the NDDH, with water quality sufficient to sustain
5 fish populations and is suitable for irrigation and recreational purposes (GFAFB 2007c). However, the
6 river has been placed on North Dakota's 2010 Section 303(d) priority waterbody list due to elevated
7 cadmium, selenium, and sediment/siltation (NDDH 2010b). TMDLs have not yet been determined for
8 these constituents. Most of the impairments to Turtle River are caused or influenced by streambank and
9 channel erosion and can be improved through the establishment of a proper functioning riparian corridor
10 (RRRC 2006). However, because of these impairments, the river has been deemed fully supporting, but
11 threatened, with respect to fish and other aquatic biota, municipal and domestic uses, and recreation
12 (NDDH 2010b). Trash and large woody debris are also present throughout this reach of the river.

13 During a 2006 streambank morphology study of Turtle River conducted by the Red River Regional
14 Council (RRRC), it was determined that high flood flow intensified erosion by removing streambank
15 sediment. Over time, as the climate has become wetter, the Turtle River channel has widened and cut
16 down into the streambed. The river is entrenched for short lengths within the Grand Forks AFB
17 boundaries, with some of these sections possibly attenuating back to natural conditions with more stable
18 banks. Severe erosion was found outside of meanders, especially where vegetation was sparse. The
19 study also identified deep scour holes, riffles, and pools, with depths of at least 3 feet. The average water
20 depth ranges from 1 to 3 feet during summer months when water levels are low. Bankfull depths
21 typically correspond to a depth where the channel fills to the point at which it would spill onto the
22 floodplain. Within the stretch of Turtle River that flows through the installation, bankfull depths ranged
23 from 2 to 4 feet (RRRC 2006).

24 The other prominent nearby surface water feature, Kellys Slough, is within a wide, marshy floodplain.
25 Surface water runoff is received from the eastern half of Grand Forks AFB and effluent is received from
26 water treatment lagoons maintained by Grand Forks AFB to the east of the installation. Drainage from
27 Kellys Slough flows to the northeast into the Turtle River and eventually into the Red River. The Red
28 River is approximately 15 miles from Grand Forks AFB and runs beyond the eastern portion of the
29 installation. The Red Lake River supplies a portion of the drinking water supply to Grand Forks AFB.

30 Storm water drainage at Grand Forks AFB occurs through four drainage ditches (southeast, northeast,
31 northwest, and west) and nine outfalls. The outfalls carry drainage into Kellys Slough and eventually into
32 Turtle River. Facilities on Grand Forks AFB discharge sanitary wastewater to sewage treatment lagoons
33 to the east of the main installation. The sewage treatment lagoons, classified as lakes according to the
34 National Wetlands Inventory (NWI), are approximately 320 acres and discharge into Kellys Slough to the
35 east (GFAFB 2009b).

36 **Floodplains.** The Red River Basin is subject to frequent floods that affect urban and rural infrastructure
37 and agricultural production (USACE 2011). Turtle River is the only river to cross the Grand Forks AFB
38 boundary; therefore, a portion of the 100-year floodplain for the Turtle River is present in the
39 northwesternmost corner of the installation. Flooding is estimated to occur along Turtle River every
40 0.8 to 1.5 years (RRRC 2006). According to the FEMA FIRM Panel No. 38035C0525E (effective
41 17 December 2010), the 100-year floodplain associated with Turtle River extends along the northwestern
42 panhandle of the installation boundary, adjacent to 22nd Avenue (see **Figure 3-2**) (FEMA 2010). This
43 area is classified as Zone A, indicating it is within the 100-year floodplain. Areas within the floodplain
44 are required to comply with National Flood Insurance Program floodplain management requirements,
45 such as constructing buildings above base flood level and obtaining flood insurance coverage. There are
46 also 100-year floodplains along the southeastern boundary of the sewage treatment lagoons associated
47 with Kellys Slough.



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2
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Figure 3-2. Water Resources at Grand Forks AFB

1 **Wetland Hydrology.** Wetlands at Grand Forks AFB are classified as prairie potholes, meaning that they
 2 were formed from glacial activity. Prairie potholes are also called sloughs, and maintain wetland
 3 hydrology through inflow from surface water runoff, direct precipitation, and groundwater inflow
 4 entering the wetland (Stewart and Kantrud 1972). Prairie potholes experience extreme yearly and
 5 seasonal fluctuations in water depth. Variations in water depth often result in corresponding changes in
 6 salinity, with decreased salinity occurring when more water is present for dilution. Spring runoff from
 7 snowmelt provides a major source of water (GFAFB 2010b). Most outflows occur through seepage, and
 8 are attributable to the wetland depressions occurring in permeable glacial till. The presence of surface
 9 water is a controlling factor of the establishment and maintenance of marsh and aquatic vegetation and
 10 habitat (Stewart and Kantrud 1972). Wetland habitat and biota are discussed in **Section 3.5.2.**

11 Off-Installation Properties

12 Off-installation properties considered in this EA include Mekinock Prairie Chicken WMA, North Dakota
 13 Game and Fish WMA, Crawford Oakville Prairie WMA, and Turtle River State Park. Kellys Slough
 14 NWR is in the vicinity of Grand Forks AFB, but it would be excluded from the mosquito control.
 15 **Figure 3-3** provides the location of the off-installation properties and the water resources associated with
 16 them.

17 **Groundwater.** For all off-installation properties, groundwater would be similar to that described for
 18 Grand Forks AFB, with the Dakota Group aquifer as the principal groundwater aquifer.

19 **Surface Water.** All off-installation properties are in the Red River Basin. The Turtle River flows south
 20 of the Mekinock Prairie Chicken Preserve and adjacent North Dakota Game and Fish WMA, to the west
 21 of the North Dakota Game and Fish WMA adjacent to Grand Forks AFB, and through the Turtle River
 22 State Park.

23 **Floodplains.** The off-installation properties mapped within the 100-year floodplain are the Turtle River
 24 State Park and Kellys Slough NWR. The floodplain within the Turtle River State Park is mapped from
 25 the northeastern corner, through the center of the park, and exits the park in the southwestern corner. The
 26 floodplain mapped in Kellys Slough NWR is in two locations, following the channels of Kellys Slough
 27 from the northeastern corner to the southwestern corner and the Turtle River in the northern portion of the
 28 NWR. Most of Kellys Slough NWR is contained within the mapped 100-year floodplain.

29 **Wetland Hydrology.** Wetland hydrology for all off-installation properties would be similar to that
 30 described for Grand Forks AFB.

31 Environmental Consequences

32 Evaluation Criteria

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

- 36 • Substantially reduce water availability or supply to existing users
- 37 • Overdraft groundwater basins
- 38 • Exceed safe annual yield of water supply sources
- 39 • Substantially affect water quality adversely
- 40 • Endanger public health by creating or worsening health hazard conditions
- 41 • Threaten or damage unique hydrologic characteristics
- 42 • Violate established laws or regulations adopted to protect water resources.

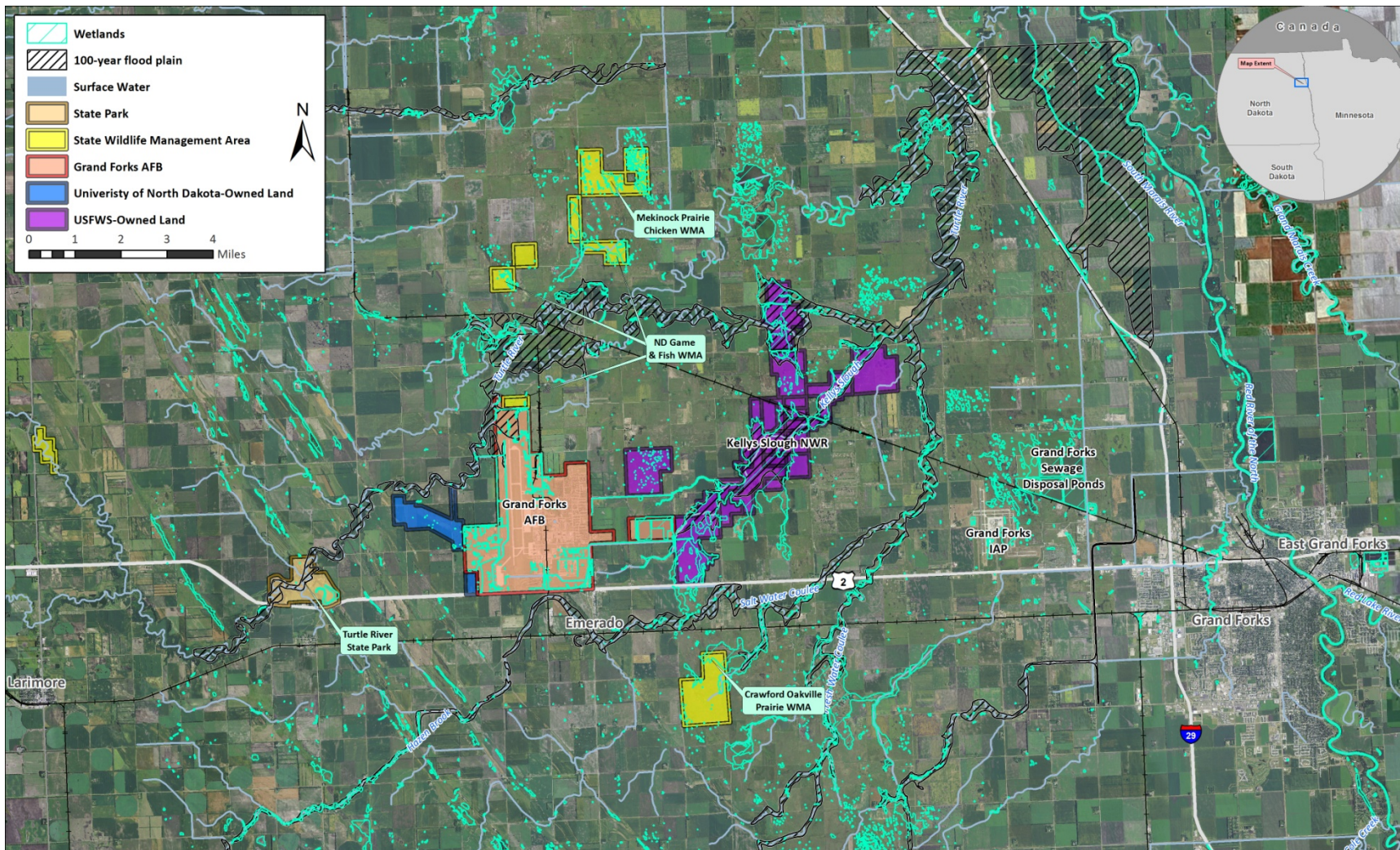


Figure 3-3. Water Resources for Off-Installation Sites

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

3 **Proposed Action**

4 **Grand Forks AFB**

5 Under the Proposed Action, pesticide application rates would be followed based on the pesticide labels
6 (see **Table 2-1** and **Appendix B**) and a current DoD Pesticide Applicator Certification or state pesticide
7 certification would be required for all personnel applying pesticides. Application of all aerial pesticides
8 would be consistent with Air Force Instruction (AFI) 32-1074, *Aerial Application of Pesticides*. A PGP
9 would be obtained for pesticide application within Turtle River, which is a jurisdictional water of the
10 United States. If an accidental spill were to occur on the installation, the applicator would collect the
11 material and dispose of it in accordance with manufacturer's specifications and the SPCC Plan.

12 **Larval Mosquito Chemical Control**

13 The impacts on water resources from the application of the three products most likely to be used for larval
14 mosquito control, including Altosid® liquid larvicide, Altosid® XR briquettes, and Vectobac® granules
15 are discussed in the following paragraphs.

16 **Altosid® Liquid Larvicide and Altosid® XR Briquettes.** No effects on groundwater would be expected
17 from the use of Altosid® in either liquid or briquette form. The active ingredient in Altosid® liquid
18 larvicide and briquettes is Methoprene. Grand Forks AFB has applied Altosid® to the installation and
19 surrounding areas via aerial applications, and Altosid® for mosquito control can be used in water that is
20 consumed by humans. Methoprene is not persistent in soils and is unlikely to contaminate groundwater.
21 Methoprene is not likely to leach into groundwater because it rapidly adsorbs to soil particles and,
22 therefore, it is unlikely to percolate deeper into soil layers to penetrate into groundwater. Short-term,
23 negligible impacts on water resources would be expected from the use of Altosid®, as methoprene
24 degrades rapidly in water by microorganisms (Cornell University 1995). A PGP would be required for
25 applications within the Turtle River.

26 **Vectobac® Granules.** No effects on water resources would be expected from the application of
27 Vectobac® granules. *Bti* is the active ingredient in Vectobac® granules and is stable in water for 24 to 48
28 hours. This product is safe enough to be used in water that is consumed by humans. Label instructions
29 would be strictly adhered to for the application of this product.

30 **Ground Application of Adult Mosquito Chemical Control**

31 The impacts on water resources from the three products most likely to be used for adult mosquito control,
32 including Mavrik®, Anvil®, Kontrol 4-4, and Duet™, would be short- to long-term, negligible to minor,
33 and adverse. Effects for each pesticide are discussed in the following paragraphs.

34 **Mavrik®.** Use of Mavrik® as a barrier spray would result in short- to long-term, negligible to minor,
35 adverse effects on water resources due to potential groundwater leaching. Fluvalinate is nearly insoluble
36 in water, and, therefore, is unlikely to contaminate groundwater. However, leaching of fluvalinate
37 metabolites could occur. Exposure to sunlight causes fluvalinate to degrade and typically has a half-life
38 of up to 1 day when in the water column. Microbes also degrade fluvalinate, and it is strongly adsorbed
39 to soil particles (Cornell University 1996).

1 **Anvil® Kontrol 4-4, and Duet™.** Minimal risks to human health and the environment are anticipated
2 when Anvil® is used according to label directions (CMMCP undated). Pyrethroids break down quickly
3 in sunlight and readily bind to soils and, therefore, are not expected to contaminate groundwater
4 (NYCHMH 2012). Anvil® is additionally broken down by microbes in surface waters exposed to
5 sunlight. Pyrethroids are toxic to bees, fish, and other aquatic life forms and would not be applied to
6 bodies of water (MOHHS 2010).

7 **Trumpet Liquid Adulticide.** The active ingredient in Trumpet Liquid Adulticide is naled. Short-term,
8 negligible impacts on groundwater would be expected from naled. Naled is adsorbed weakly by soil
9 particles, and is not persistent in soil as it is broken down by microorganisms. Although naled is nearly
10 insoluble in water, it is rapidly broken down if wet and it is moderately volatile (Cornell University
11 1995).

12 In the proposed concentration for use at Grand Forks AFB and the surrounding area, naled would have no
13 impact on the surface water, floodplains, or wetland hydrology of the treated areas. Hydrolysis of the
14 compound is initiated immediately upon contact with moisture, and the breakdown is proportional to the
15 temperature and pH of the water. That is, at 25 °C (approximately 78 °F), the half-life of naled in water
16 with a pH of 7 is about 15 hours. Naled half-life in soil is less than 8 hours and is undetectable after 1 day
17 under either aerobic or anaerobic conditions. Under normal circumstances, most of the applied naled (and
18 its major decomposition products) would be degraded within 24 hours of application. The material is
19 applied by ULV at a rate less than 1 ounce per acre, thereby eliminating the possibility of runoff onto
20 non-target areas due to application procedures. Limited data indicate that the rapid dissipation and
21 relatively low mobility of naled and intermediate mobility of dichlorvos (a degradate of naled) in soil
22 would mitigate contamination of groundwater (GFAFB 2003e). Label instructions would be strictly
23 adhered for the application of this product.

24 **Adult Mosquito Physical and Biological Controls**

25 Biological control agents, including native or introduced predators, are often used in combination with
26 water management practices to manage mosquitoes. At Grand Forks AFB, this is currently accomplished
27 through the use of bat boxes, which provide habitat for bats. Brown bats can eat 500 to 1,000 mosquitoes
28 per hour and are great natural pest predators (NWF 2012).

29 The adoption of a routine storm water drainage management program throughout Grand Forks AFB
30 would include the regular maintenance of drainage ditches. The ditches are currently overgrown with
31 vegetation and are producing standing water that provides breeding locations for mosquitoes. As part of
32 regular maintenance, the ditches would be cleared of vegetation using mechanical methods.

33 No impacts on groundwater would be anticipated from drainage ditch maintenance as the most surficial
34 aquifer is confined and no groundwater would be used. Long-term, beneficial impacts on floodplains
35 would be anticipated from regular maintenance and vegetation clearing of drainage ditches so that water
36 flow can occur more efficiently and flooding potential would decrease. Long-term, beneficial impacts on
37 wetland hydrology would be expected as the natural flow of water would be restored to the ditches.

38 Long-term, beneficial impacts on surface water would be expected due to a decrease in stagnant water
39 and associated bacteria and parasites on the installation once drainage ditches are regularly maintained.
40 Removal of vegetation from the ditches would result in short- and long-term, beneficial impacts on flow
41 and water quality. Compliance with EISA Section 438, and adherence to an erosion-and-sediment-
42 control plan (ESCP) and storm water pollution prevention plan (SWPPP), should prevent surface water
43 degradation. Proper implementation of appropriate BMPs would be implemented to minimize the
44 potential for adverse effects on waters of the United States.

1 Impacts on floodplains would be short-term, negligible, and adverse due to due to temporary increases in
2 soil erosion and sedimentation during drainage ditch maintenance activities. However, BMPs would be
3 implemented to ensure that erosion and sedimentation does not occur.

4 All activities would be coordinated through the USACE Omaha District in Bismarck, North Dakota. The
5 North Dakota Office of the State Engineer handles permits for projects than involve the drainage of more
6 than 80 acres of wetlands. Some drainage ditches could be considered wetlands by the USACE if they
7 have not been regularly maintained to preserve drainage ditch features. General maintenance activities
8 like mowing and raking do not require a permit or coordination.

9 Grand Forks AFB would be required to obtain a permit under Section 404 of the CWA for actions
10 determined to adversely impact jurisdictional waters of the United States on the installation through ditch
11 maintenance. If it is determined that discharge into waters of the United States from ditch maintenance
12 would occur, Grand Forks AFB would be required to undergo Section 401 water quality certification and
13 obtain an NPDES permit prior to conducting maintenance activities.

14 **Noxious and Invasive Weed Control**

15 Noxious and invasive weed control is conducted using a variety of methods on Grand Forks AFB.
16 Herbicides are one method for the control of weeds in an integrated approach. Rodeo® is used for weeds
17 in aquatic systems. Milestone® is frequently used on the installation for the control of thistles.
18 Weed-Be-Gone is another chemical that is frequently used in the self-help program. In general, impacts
19 on water resources from the use of the herbicides discussed in the following paragraphs would be
20 short-term, negligible to minor, and adverse on surface water by contaminating storm water runoff or
21 entering waterways through drift. No impacts on groundwater would be anticipated.

22 **Rodeo®.** Rodeo® is an herbicide approved for use in aquatic systems, with glyphosate as the active
23 ingredient. Rodeo® is most effective on emergent plants and kills the plant roots, resulting in weed
24 control for several years. Use of herbicides within wetlands, ditches, or lagoons would be coordinated
25 with the Environmental Management Office, and a PGP would be required if applications were to occur
26 within the Turtle River.

27 No impacts on groundwater would be expected from the use of Rodeo®. The glyphosate in Rodeo® is
28 strongly adsorbed onto soil particles, with low potential to move through soil to contaminate
29 groundwater. Microbes in the soil readily and completely degrade it even under low-temperature
30 conditions.

31 The proper application of Rodeo® would have short-term, negligible, adverse impacts on surface water
32 quality with the use of proper application practices. When released into water, glyphosate tends to adhere
33 to sediments and is readily degraded by microbial action into natural substances such as carbon dioxide.
34 These natural substances are not anticipated to be in large enough quantities to result in negative impacts
35 on water quality. Once in contact with surface water, glyphosate is removed by binding to sediment and
36 is then degraded by microbes. Glyphosate has a half-life of less than 7 days in water and no significant
37 bioaccumulation would be expected. No impacts on floodplains or wetland hydrology would be expected
38 from the application of Rodeo®.

39 **Milestone®.** The active ingredient in Milestone® is Aminopyralid. Aminopyralid is a Reduced Risk
40 herbicide that provides reliable control of a broad spectrum of difficult-to-control noxious weeds and
41 invasive plants on rangeland and pastures, rights-of-way, and wildlife habitat areas. Reduced-risk is an
42 USEPA designated registration status that accelerates the process for registration of certain new plant
43 protection products. It is usually granted to products that have low use rates and low toxicity.

1 Aminopyralid can also provide residual weed control activity by suppressing reinfestations and reducing
2 the need for retreatment, depending on the application rate and the target weeds (USEPA 2005).

3 No effects on groundwater would be expected from the use of Milestone®. Aminopyralid is weakly
4 adsorbed to soil. Two field dissipation studies performed in California and Mississippi indicated that
5 aminopyralid is likely to be non-persistent and relatively immobile. Half-lives of 32 and 20 days were
6 determined, with minimal leaching below the 6- to 12-inch horizon depth (USEPA 2005).

7 The proper application of Milestone® would have a short-term, negligible, adverse impact on surface
8 water quality with the use of proper application practices. In aquatic systems, the primary cause of
9 degradation is photolysis, the decomposition of a compound by light, where a laboratory experiment
10 yielded a half-life of 0.6 days (corrected for natural sunlight conditions) (USEPA 2005). Milestone® can
11 enter surface water through three routes: direct application to aquatic vegetation, binding to soil that
12 washes off treated terrestrial sites, or through drift from treated areas near water.

13 Through terrestrial applications of Milestone®, it is expected that a small amount of the applied herbicide
14 might enter surface waters indirectly through storm water runoff or soil particles that wash off treated
15 areas. When Milestone® applications occur near water, it is possible that a small percentage of sprayed
16 material could reach the water during application. Milestone® would not be applied directly to water
17 features. The use of buffers around surface water bodies would further reduce the possibility of
18 movement of herbicides into water resources from storm water runoff or drift.

19 Milestone® application would occur only at designated areas on the installation using BMPs to lower the
20 potential for runoff of herbicide residue into surface water bodies. If an accidental spill occurs on the
21 installation, the applicator would collect the material and dispose of it in accordance with manufacturer's
22 specifications and the SPCC Plan. Proper application methods, correct weather conditions, and time of
23 the day are other important criteria to consider for reduction of surface water contamination. No impacts
24 on floodplains or wetland hydrology would be expected from the application of Milestone®.

25 **Weed-B-Gone.** The active ingredient in Weed-B-Gone is 2 Methyl-4-Chlorophenoxyacetic Acid
26 (MCPA). No effects on groundwater would be expected from the use of Weed-B-Gone. In general,
27 MCPA is insoluble in water and exists naturally as a solid. MCPA does not hydrolyze. MCPA
28 photodegrades very slowly when applied to soil surfaces and irradiated with natural sunlight, with a
29 half-life of 67 days. In an aerobic soil metabolism study, MCPA degraded with a half-life of 24 days.
30 Under aerobic aquatic conditions, MCPA degrades with a half-life of greater than 30 days in water-sandy
31 clay loam sediment systems (USEPA 2004).

32 The proper application of Weed-B-Gone would have a short-term, minor, adverse impact on surface water
33 quality with the use of proper application practices. The Weed-B-Gone label states that this product
34 should not be applied to water. Weed-B-Gone can enter surface water through three routes: direct
35 application to aquatic vegetation, binding to soil that washes off treated terrestrial sites, or through drift
36 from treated areas near water. Through terrestrial applications of Weed-B-Gone, it is expected that a
37 small amount of the applied herbicide might enter surface waters indirectly through storm water runoff or
38 soil particles that wash off treated fields. When Weed-B-Gone applications occur near water, it is
39 possible that a small percentage of sprayed material could reach the water during application. The use of
40 buffers around surface water bodies would further reduce the possibility of movement of herbicides into
41 water resources from storm water runoff or drift.

42 Weed-B-Gone application would occur only at designated areas on the installation through the self-help
43 program using BMPs to lower the potential for runoff of herbicide residue into surface water bodies. If
44 an accidental spill occurs on the installation, the applicator would collect the material and dispose of it in

1 accordance with manufacturer's specifications and the SPCC Plan. Application methods, weather
2 conditions, and timing are other important criteria to consider for reduction of surface water
3 contamination. No impacts on floodplains or wetland hydrology would be expected from the application
4 of Weed-B-Gone.

5 Off-Installation Properties

6 Impacts on off-installation properties for larval and adult mosquito control would be similar to those
7 described for Grand Forks AFB for chemicals that can be applied using an aerial application, and would
8 be short-term and negligible.

9 Adult mosquito physical and biological controls and noxious and invasive weed control would only occur
10 on Grand Forks AFB; therefore, no impacts on off-installation properties would be expected.

11 No Action Alternative

12 Under the No Action Alternative, there would be no change from existing conditions at the installation, as
13 described in **Section 3.4.2**. Negligible to minor impacts on water resources would be anticipated from the
14 continuation of improper management of the ditches. As the amount of vegetation that is present in the
15 ditches increases, the threat of flooding, erosion, and sedimentation increases.

16 1.13 Biological Resources

17 Definition of the Resource

18 Biological resources include native or naturalized plants and animals and the habitats (e.g., wetlands,
19 forests, and grasslands) in which they exist. Protected and sensitive biological resources include federally
20 listed (endangered or threatened), proposed, and candidate species designated by the USFWS along with
21 any species identified by the North Dakota Game and Fish Department (NDGFD) as Species of
22 Conservation Priority and species listed by the North Dakota Natural Heritage Program (NDNHP).
23 Sensitive habitats include those areas designated by the USFWS as critical habitat protected by the ESA
24 and sensitive ecological areas as designated by state or Federal rulings. Sensitive habitats also include
25 wetlands, plant communities that are unusual or of limited distribution, and important seasonal use areas
26 for wildlife (e.g., migration routes, breeding areas, crucial summer and winter habitats).

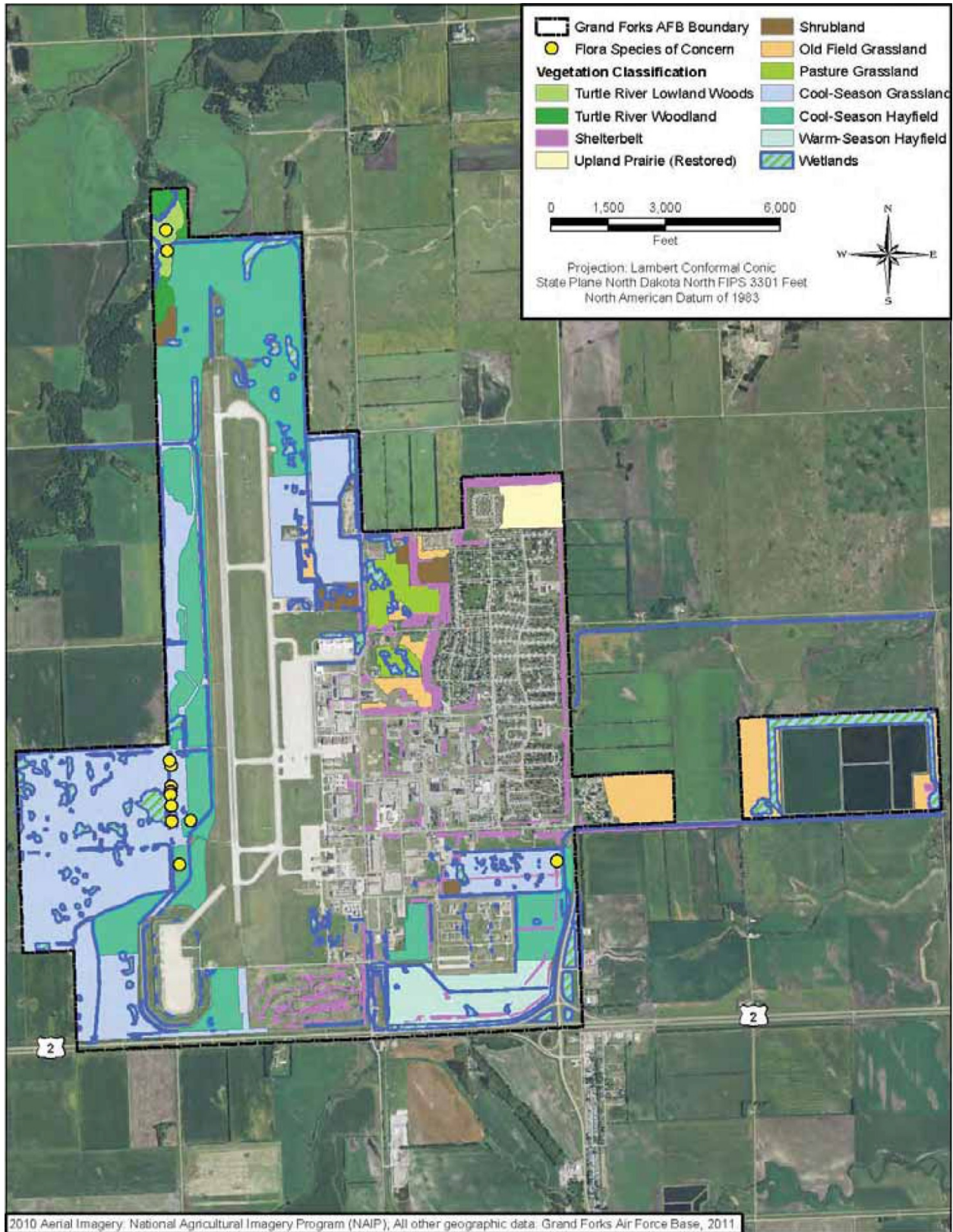
27 This biological resources section includes a discussion on wetlands habitat, whereas wetland hydrology is
28 discussed in **Section 3.4.1**, Water Resources.

29 Existing Conditions

30 Grand Forks AFB

31 **Vegetation.** The general vegetation cover types on Grand Forks AFB consist of mixed grasses, prairie
32 grasses, planted trees, wet meadow vegetation, and woodland (shown in **Figure 3-4**). When the initial
33 construction of Grand Forks AFB was completed in the mid-1950s, most of the installation was planted
34 with a standard mixture of grasses established by the DoD, which included two introduced grass species,
35 smooth bromegrass (*Bromus inermis*) and Kentucky blue grass (*Poa pratensis*). These two introduced
36 grasses are still predominant throughout the installation. Large portions of the unimproved areas on
37 Grand Forks AFB support the active cultivation of hay. In addition, 165 acres have been restored to
38 native grasses and are used for the cultivation of hay. Trees planted in housing areas are primarily blue

39



1
2
3

Figure 3-4. Grand Forks AFB Vegetation Distribution Map

1 spruce (*Picea pungens*), green ash (*Fraxinus pennsylvanica*), and Lombardy poplar (*Populus nigra*).
 2 There are no known prairie remnants on Grand Forks AFB; however, some prairie index species, such as
 3 coneflowers (Asteraceae), are found in the unimproved and semi-improved areas mixed in with
 4 brome grass and various herbaceous annuals such as goldenrod (*Solidago* spp.) (GFAFB 2011). Grand
 5 Forks AFB is restoring portions of prairie areas on the installation including the Prairie View Nature
 6 Preserve east of the Prairie View Court Military Family Housing (MFH) area and a 160-acre hay land
 7 area restored to native grasses around the MSA.

8 Grass heights within semi-improved areas, including airfield areas within 300 feet of the runway
 9 centerline, are maintained between 7 and 14 inches. Beyond the 300-foot border surrounding the runway,
 10 hay cutting dictates the height of the vegetation. Some former landfill areas have been seeded with native
 11 grasses (e.g., western wheatgrass [*Agropyron smithii*], thickspike wheatgrass [*A. dasystachum*], and
 12 slender wheatgrass [*A. trachycaulum*]) and sweet clover (*Melilotus species*) (GFAFB 2011).

13 One natural community, the wooded riparian corridor of the Turtle River, is represented within the
 14 installation boundaries. Dominant trees in this community are elm (*Ulmus* spp.), cottonwood (*Populus*
 15 *deltoids*), and green ash. However, Dutch elm disease has killed many of the elms. European buckthorn
 16 (*Rhamnus frangula*) (a highly invasive exotic species), chokecherry (*Prunus virginiana*), and wood rose
 17 (*Rosa woodsii*) are common understory species. Wood nettle (*Laportea canadensis*), stinging nettle
 18 (*Urtica dioica*), beggars-ticks (*Bidens frondosa*), and waterleaf (*Hydrophyllum virginianum*) are typical
 19 forbs (GFAFB 2011).

20 Turfgrass and landscaped areas dominate the cantonment area and MFH areas. Improved turfgrass areas
 21 on Grand Forks AFB are dominated by red fescue (*Festuca rubra*) and Kentucky bluegrass. Shelterbelts,
 22 composed mostly of American elm (*Ulmus Americana*), green ash, Russian olive (*Elaeagnus*
 23 *angustifolia*), and cottonwoods, were planted in a number of locations to help protect housing and other
 24 cantonment areas from wind, cold, and snow. The use of Russian olives at Grand Forks AFB has been
 25 eliminated due to their massive seed production and ability to rapidly overrun an area to the detriment of
 26 native species (GFAFB 2011).

27 **Noxious and Invasive Species.** Noxious weeds have been an increasing issue at Grand Forks AFB.
 28 Weed growth has expanded to all areas of the installation. Construction and demolition activities create
 29 disturbances that can increase the spread of noxious weeds. P.L. 93-629, *Federal Noxious Weed Act*,
 30 mandates control of noxious weeds by limiting possible weed seed transport from infested areas to
 31 noninfested sites. The spread of noxious weeds is controlled by avoiding activities in or adjacent to
 32 heavily infested areas, removing seed sources and propagules from the site prior to conducting activities,
 33 or limiting operations to nonseed-producing seasons. Following activities that expose the soil, mitigation
 34 can be achieved by covering the area with weed-seed free mulch or seeding the area with native species.
 35 Covering the soil reduces the germination of weed seeds, maintains soil moisture, and minimizes erosion.

36 The current list of noxious weeds on Grand Forks AFB includes absinth wormwood (*Artemisia*
 37 *absinthium*), Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*), field bindweed
 38 (*Convolvulus arvensis*), leafy spurge (*Euphorbia esula*), musk thistle (*Carduus nutans*), spotted
 39 knapweed (*Centaurea maculosa*), and perennial sowthistle (*Sonchus arvensis*). Additional invasive
 40 species at the installation include bull thistle (*Cirsium vulgare*) and wavyleaf thistle (*Cirsium undulatum*).
 41 Invasive populations are greatest in areas that have been disturbed but are not mowed regularly.
 42 Compliance with Federal and state law requires the development of an installationwide noxious weed
 43 control and monitoring program (GFAFB 2011).

44 **Wildlife.** The installation supports a remarkable diversity of wildlife given its size and location within an
 45 agricultural matrix. The Turtle River riparian corridor, Prairie View Nature Preserve, grassland areas on

1 the western side of the installation, and the lagoons to the east of the installation all provide important
2 habitat for native plant and wildlife species (GFAFB 2004).

3 Common mammals on the installation include white-tailed deer (*Odocoileus virginianus*), eastern
4 cottontail (*Silvilagus floridanus*), white-tailed jackrabbit (*Lepus townsendii*), coyote (*Canis latrans*), red
5 fox (*Vulpes vulpes*), beaver (*Castor canadensis*), raccoon (*Procyon lotor*), striped skunk (*Mephitis*
6 *mephitis*), badger (*Taxidea taxus*), plains pocket gopher (*Geomys bursarius*), northern pocket gopher
7 (*Thomomys talpoides*), muskrat (*Ondatra zibethica*), squirrels (*Sciurus* spp. and *Spermophilus* spp.),
8 meadow vole (*Microtus pennsylvanicus*), shrews (*Sorex* spp.), white footed mouse (*Peromyscus*
9 *leucopus*), deer mouse (*P. maniculatus*), meadow jumping mouse (*Zapus hudsonius*), silver-haired bat
10 (*Lasionycteris noctivagans*), and red bat (*Lasiurus borealis*) (GFAFB 2011, GFAFB 2004). An active
11 beaver dam was observed along Turtle River during the fall 2009 biological survey (GFAFB 2010b).

12 A total of 218 bird species have been recorded at Grand Forks AFB (GFAFB 2004). Common bird
13 species include brown-headed cowbird (*Molothrus ater*), clay-colored sparrow (*Spizella pallida*), western
14 meadowlark (*Sturnella neglecta*), American goldfinch (*Spinus tristis*), red-winged blackbird (*Agelaius*
15 *phoeniceus*), mourning dove (*Zenaida macroura*), cliff swallow (*Petrochelidon pyrrhonota*), and
16 common grackle (*Quiscalus quiscula*) (USAF 2008).

17 Migration and breeding bird surveys conducted in 2007 determined that the habitat types with the most
18 bird species observed during the migration period (May) included the lagoons east of the main installation
19 (46 species), shallow marsh (33 species), open field (32 species), and riparian woodland (31 species).
20 The habitat types with the most bird species observed during the breeding season (June) included the
21 lagoons east of the main installation (41 species), open field (35 species), and the shallow marsh (35
22 species) (USAF 2008).

23 Common reptiles and amphibians occurring on Grand Forks AFB include the western painted turtle
24 (*Chrysemys picta belli*), common garter snake (*Thamnophis sirtalis*), tiger salamander (*Ambystoma*
25 *tigrinum*), and wood frog (*Rana sylvatica*) (GFAFB 2010a).

26 Minnows and carp have been identified on Grand Forks AFB (GFAFB 2011, GFAFB 2007c). In
27 addition, some game fish species occur in portions of the Turtle River, which crosses the northernmost
28 portion of Grand Forks AFB, including northern pike (*Esox lucius*), white sucker (*Catostomus*
29 *commersonii*), rock bass (*Ambloplites rupestris*), black bullhead (*Ameiurus melas*), and channel catfish
30 (*Ictalurus punctatus*). The State of North Dakota stocks the Turtle River upstream of Grand Forks AFB
31 with brown trout (*Salmo trutta*) and rainbow trout (*Oncorhynchus mykiss*) each spring near Turtle River
32 State Park (GFAFB 2011). There are also a multitude of terrestrial and aquatic invertebrates and
33 crustacean that can be found on the installation.

34 **Protected and Sensitive Species.** No federally listed threatened or endangered species are known to occur
35 on Grand Forks AFB (GFAFB 2010b). There is no critical or significant habitat present on Grand Forks
36 AFB. Species listed by the U.S. Fish and Wildlife Service (USFWS) as having the potential to reside in
37 the vicinity include the gray wolf (*Canis lupus*) and whooping crane (*Grus americana*). The gray wolf,
38 federally listed as endangered, is infrequently observed in North Dakota and no records of its presence on
39 Grand Forks AFB exists (GFAFB 2006). If gray wolves did occur on Grand Forks AFB, they would
40 most likely occur in the northwesternmost portion of the installation in the Turtle River wooded riparian
41 corridor. Any wolves occurring in the Turtle River corridor would likely be transient since the habitat
42 does not appear to be large enough to support a breeding population (USFWS 2010). The whooping
43 crane, federally listed as endangered, could use the wetlands in the vicinity of Grand Forks AFB as
44 stopover feeding habitat during migration. Stopover feeding habitats of whooping cranes often include
45 wetlands that are less than 6 acres in size (Austin and Richert 2001), which do occur on the installation.
46 Whooping cranes would not use Grand Forks AFB as migration stopover roosting habitat, as they only

1 use large wetlands (e.g., 100 acres or greater of contiguous wetlands) for this purpose (Austin and Richert
2 2001). The primary migration route of whooping cranes is through the center and northwestern portions
3 of North Dakota, rather than the eastern portion of North Dakota where Grand Forks AFB occurs (Austin
4 and Richert 2001). However, whooping cranes have been observed on various roosting and feeding areas
5 throughout the migration path, which extends through North and South Dakota, Nebraska, Kansas,
6 Oklahoma, and Texas. Sitings of whooping cranes during fall migration have also been made in
7 Minnesota, east of Grand Forks AFB (Austin and Richert 2001). Additionally, the Western prairie
8 fringed orchid (*Platanthera praeclara*), federally listed as threatened, and the Dakota skipper (*Hesperia*
9 *dacotae*), a federal candidate species, are present in Polk County, Minnesota, and may be present in East
10 Grand Forks, MN (USFWS 2012).

11 The North Dakota Natural Heritage Program compiled the State Threatened and Endangered List. Five
12 major criteria are considered in evaluating a species: (1) occurrence, (2) vulnerability, (3) type(s) of
13 threat, (4) degree of protection, and (5) taxonomy. A species is considered critically endangered if it
14 received a state rank of S1 (critically imperiled), endangered if it received a state rank of S2 (imperiled),
15 or threatened if it received a state rank of S3 (vulnerable).

16 Two avian species found on the installation during the 2007 field season are considered to be state-listed
17 as endangered. These include the bald eagle (*Haliaeetus leucocephalus*) with a state rank of S1 (critically
18 imperiled) and the merlin (*Falco columbarius*) with a state rank of S2 (imperiled).

19 The northern leopard frog (*Rana pipiens*), a state-ranked S1 (critically imperiled) species, was
20 documented within the project area during the spring 2009 survey (GFAFB 2010b). The western United
21 States population of the northern leopard frog is currently under review by the USFWS for listing as a
22 federally threatened species (USFWS 2009, GFAFB 2010b). Northern leopard frogs use wetlands and
23 shallow ponds as breeding and tadpole habitat (Smith and Keinath 2007). Following reproduction, adult
24 northern leopard frogs move into upland habitats (primarily meadows and grasslands) in which they
25 might feed for the summer (Smith and Keinath 2007). The northern leopard frog is one of the more
26 terrestrial of the frogs in the Ranidae family, using a considerable amount of upland habitat around
27 breeding ponds (Smith and Keinath 2007). In the fall, subadult and adult frogs migrate to overwintering
28 sites. Leopard frogs likely overwinter in the bottoms of flowing streams, such as the Turtle River, and
29 ponds that are large enough that they do not freeze solid in winter (Smith and Keinath 2007). Streams are
30 important migration and dispersal corridors for adult and young frogs (Smith and Keinath 2007).
31 Leopard frogs were observed within the riparian forest along the northern border of the installation during
32 an October 2010 biological resources reconnaissance survey (HDR 2010). These frogs were potentially
33 migrating through the riparian forest to the Turtle River to overwinter.

34 Seven species found on the installation during the 2007 field season have a state rank of S3 (vulnerable)
35 and are considered threatened in North Dakota. These include the chestnut-sided warbler (*Dendroica*
36 *pennsylvanica*), common goldeneye (*Bucephala clangula*), green heron (*Butorides virescens*), hooded
37 merganser (*Lophodytes cucullatus*), Philadelphia vireo (*Vireo philadelphicus*), swamp sparrow
38 (*Melospiza georgiana*), and white-throated sparrow (*Zonotrichia albicollis*) (USAF 2008). The bald
39 eagle, common goldeneye, green heron, and hooded merganser were detected near the open-water
40 lagoons to the east of the main installation. The Philadelphia vireo was using a shelterbelt on the
41 installation. The chestnut-sided warbler and the white-throated sparrow were observed in the riparian
42 woodland, and the swamp sparrow was observed in a shallow marsh. A merlin was observed in a
43 neighborhood. Several merlin nests have been observed in previous years at Grand Forks AFB and the
44 surrounding area (USAF 2008).

45 The North Dakota Game and Fish Department has identified 100 species as Species of Conservation
46 Priority as part of its *Comprehensive Wildlife Conservation Strategy* (Hagen et al. 2005). There are

1 22 bird species and 2 mammal species that have been observed on Grand Forks AFB that are included in
 2 North Dakota's 100 Species of Conservation Priority (see **Table 3-4**). Level I species are those having a
 3 high level of conservation priority because of declining status in North Dakota or across their range; or
 4 have a high rate of occurrence in North Dakota, constituting the core of the species breeding range, but
 5 might be at risk rangewide. Level II species are those having a moderate level of conservation priority.
 6 Level III species are those having a moderate level of conservation priority but are believed to be
 7 peripheral or non-breeding in North Dakota. Eleven conservation priority species on Grand Forks AFB
 8 are classified as Level I species, 12 species are classified as Level II, and 1 species is classified as
 9 Level III.

10 **Table 3-4. Species of Conservation Priority Observed on Grand Forks AFB**

Common Name	Scientific Name	Level I, II, or III
Birds		
Baird's sparrow	<i>Ammodramus bairdii</i>	I
Black tern	<i>Chlidonias niger</i>	I
Chestnut-collared longspur	<i>Calcarius ornatus</i>	I
Ferruginous hawk	<i>Buteo regalis</i>	I
Franklin's gull	<i>Larus pipixcan</i>	I
Grasshopper sparrow	<i>Ammodramus savannarum</i>	I
Horned grebe	<i>Podiceps auritus</i>	I
Swainson's hawk	<i>Buteo swainsoni</i>	I
Upland sandpiper	<i>Bartramia longicauda</i>	I
Willet	<i>Catoptrophorus semipalmatus</i>	I
Wilson's phalarope	<i>Phalaropus tricolor</i>	I
American avocet	<i>Recurvirostra americana</i>	II
Bald eagle	<i>Haliaeetus leucocephalus</i>	II
Bobolink	<i>Dolichonyx oryzivorus</i>	II
Canvasback	<i>Aythya valisineria</i>	II
Le Conte's sparrow	<i>Ammodramus leconteii</i>	II
Loggerhead shrike	<i>Lanius ludovicianus</i>	II
Northern harrier	<i>Circus cyaneus</i>	II
Northern pintail	<i>Anas acuta</i>	II
Redhead	<i>Aythya americana</i>	II
Sedge wren	<i>Cistothorus platensis</i>	II
Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	II
Amphibians		
Canada (Dakota) toad	<i>Bufo hemiophys</i>	I
Mammals		
Richardson's ground squirrel	<i>Spermophilus richardsonii</i>	II
Arctic shrew	<i>Sorex arcticus</i>	III

Source: Hagen et al. 2005

11 Migratory birds are protected under the Migratory Bird Treaty Act of 1918 and EO 13186,
 12 *Responsibilities of Federal Agencies to Protect Migratory Birds*. The vast majority of birds occurring on
 13 Grand Forks AFB are migratory birds. Eighty-six species of neotropical migratory birds have been
 14 observed on the installation. Neotropical migratory birds are those species that spend approximately

1 8 months of the year wintering in Central and South America and the remaining months on their breeding
2 grounds in North America's temperate latitudes. Numerous neotropical migrant species use the various
3 habitats on the installation, either as a migratory stopover habitat or for breeding (USAF 2008).

4 Although bald eagles were recently delisted from the ESA, they are still protected under the Bald and
5 Golden Eagle Protection Act of 1984. Bald eagles are also listed by the NDNHP as S1-Critically
6 imperiled and as endangered by the North Dakota Chapter of the Wildlife Society. The bald eagle is also
7 classified as having a moderate level of conservation priority (Level II) by the NDGFD in its 100 species
8 of conservation priority. Bald eagles migrate throughout North Dakota during the spring and fall, but
9 generally follow the major river systems of the state. Bald eagles observed at Grand Forks AFB have
10 been documented harassing waterfowl near the sewage lagoons, occasionally seen feeding on road kill in
11 the area, and observed hunting in the Turtle River riparian area. The closest documented bald eagle nest
12 to Grand Forks AFB is approximately 2 miles east of the installation on the west side of Kellys Slough
13 NWR, which may be within the spray drift zone. Golden eagles (*Aquila chrysaetos*), also protected under
14 the Bald and Golden Eagle Protection Act and listed as a Level II species of conservation priority by
15 NDGFD, were also observed migrating through the area near the lagoons during the spring months of
16 2009 and 2010 (GFAFB 2011, NDGFD 2004).

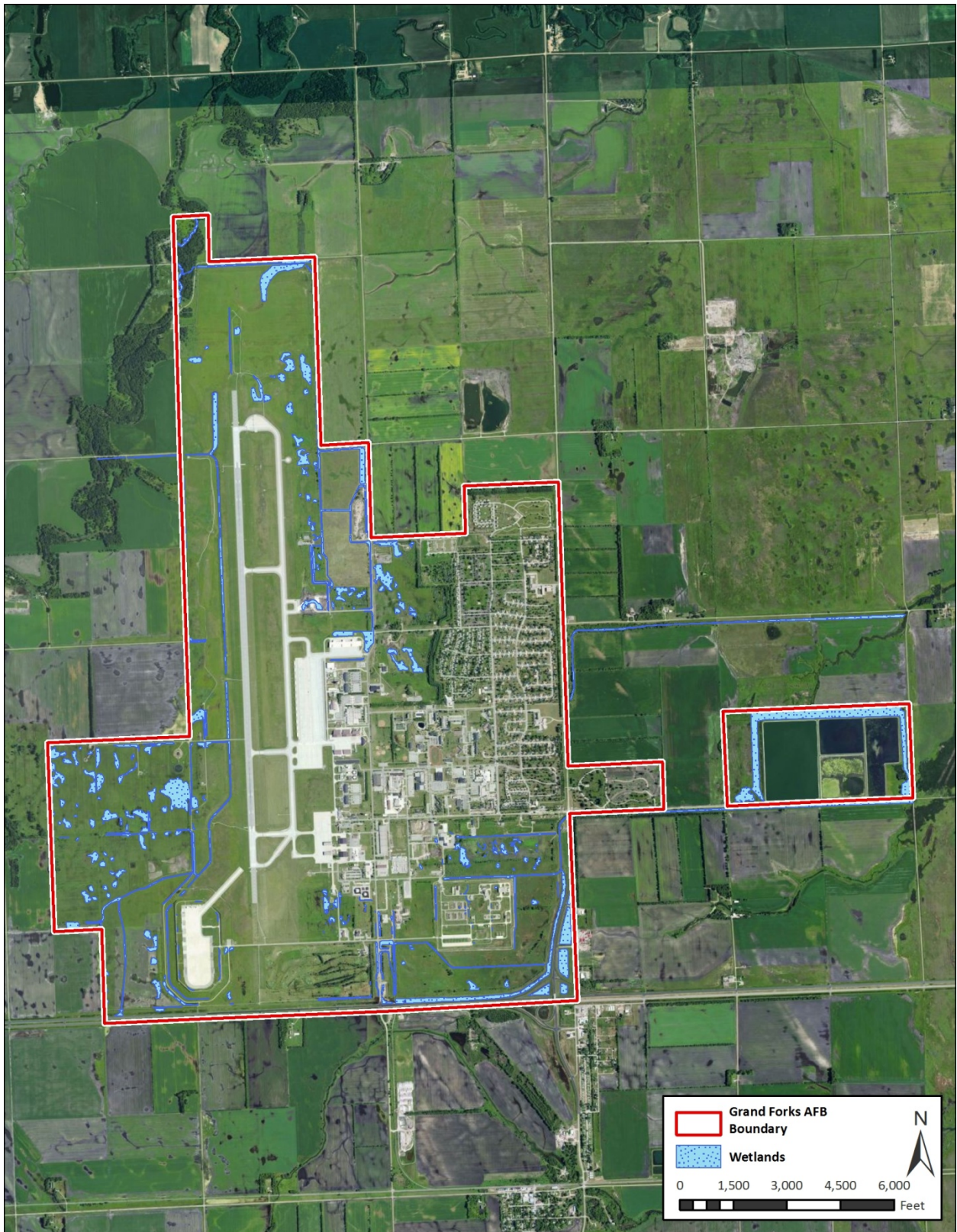
17 There are four state-ranked plants on the installation: the lesser yellow lady's slipper (*Cypripedium*
18 *parviflorum* var. *parviflorum*), white lady's slipper (*Cypripedium candidum*), eastern prickly gooseberry
19 (*Ribes cynosbati*), and Dutchman's breeches (*Dicentra cucullaria*). The lesser yellow lady's slipper and
20 white lady's slipper are state-listed as imperiled or vulnerable, respectively, and are present along the
21 flightline fence in the southwestern portion of the installation. The eastern prickly gooseberry (state
22 vulnerable) and Dutchman's breeches (state critically impaired) exist in the northwestern part of the
23 installation, where Turtle Creek is present (GFAFB 2010b). No federally threatened or endangered plant
24 species have been identified on Grand Forks AFB.

25 **Wetland Habitat.** The Red River Basin contains thousands of natural wetlands and prairie potholes.
26 These wetlands have a profound effect on the hydrologic flow regime of streams and the residence time
27 of water within the basin. These wetland areas generally occur in areas of poorly drained soils in shallow
28 depressions formed on glacial and lacustrine plains. Wetlands on Grand Forks AFB occur frequently in
29 drainageways, low-lying depressions, and potholes (see **Figures 3-2** and **3-5**).

30 The current total acreages of wetlands that were calculated using geographic information system (GIS)
31 data indicate that Grand Forks AFB has 284 wetlands composing 308 acres. Jurisdictional determinations
32 from the USACE expire after 5 years. Most of the installation's jurisdictional determinations are beyond
33 the 5-year lifespan and have expired. It is likely that those wetlands with expired jurisdictional
34 determinations would be determined jurisdictional by the USACE if surveyed again. There are 30
35 wetlands with current jurisdictional determinations composing approximately 23 acres.

36 Of the installation's wetlands inventory, palustrine wetlands predominate at 305 acres (99 percent of the
37 inventory). Palustrine wetlands include all nontidal wetlands dominated by trees, shrubs, emergents,
38 mosses, or lichen. In addition to the 308-acre inventory, there is a 47-acre palustrine emergent/lacustrine
39 wetland north of the installation sewage lagoons. Lacustrine wetlands are situated in a topographic
40 depression or a dammed river channel and lacks trees, shrubs, persistent emergents, emergent mosses, or
41 lichen.

42 The remaining 3 acres consist of riverine wetland present in the northwestern corner of the installation
43 along the Turtle River. Riverine wetlands are those that occur within the river channel and are dominated
44 by emergent vegetation. When inundated, riverine wetlands provide habitat for water-tolerant plants such
45 as willows, and aquatic animals such as tadpoles and immature fish.



1

2

Figure 3-5. Wetlands Mapped on Grand Forks AFB

1 Drainageways and low-lying depressions on Grand Forks AFB have limited and localized wetland
 2 habitat. Species most commonly associated with these wetland areas are hairyfruit sedge
 3 (*Carex trichocarpa*), needle spike-rush (*Eleocharis acicularis*), flat-stem spike-rush (*E. compressa*), pale
 4 spike-rush (*E. palustris*), Baltic rush (*Juncus balticus*), grass-leaf rush (*J. marginatus*), knotted rush
 5 (*J. nodosus*), poverty rush (*J. tenuis*), Torrey's rush (*J. torreyi*), and chairmaker's bulrush
 6 (*Scirpus americanus*). Noxious weeds, such as Canada thistle, phragmites, perennial sow thistle, and
 7 wavyleaf thistle, invade the edges of wetlands on Grand Forks AFB (GFAFB 2011).

8 Off-Installation Properties

9 Mekinock Prairie Chicken WMA

10 **Vegetation.** According to the North Dakota Comprehensive Wildlife Conservation Strategy, predominant
 11 natural vegetation in this area can include grasses such as big bluestem (*Andropogon gerardii*), little
 12 bluestem (*Schizachyrium scoparium*), switchgrass (*Panicum virgatum*), Indiangrass (*Sorghastrum*
 13 *nutans*), prairie dropseed (*Sporobolus heterolepis*), slender wheatgrass (*Elymus trachycaulus*), mat muhly
 14 (*Muhlenbergia richardsonis*), fescue sedge (*Carex festucacea*), and meadow sedge (*Carex granularis*)
 15 (Hagen et al. 2005).

16 Forbs can include meadow anemone (*Anemone canadensis*), prairie cinquefoil (*Potentilla arguta*), wild
 17 licorice (*Glycyrrhiza lepidota*), prairie blazing star (*Liatris pycnostachya*), tall goldenrod (*Solidago*
 18 *canadensis*), black-eyed susan (*Rudbeckia fulgida*), and white sage (*Salvia apiana*) (Hagen et al. 2005).
 19 Invasive and noxious species would be similar to that described for Grand Forks AFB.

20 **Wildlife.** The purpose of the WMA is for the reestablishment of prairie chickens in the area (GFAFB
 21 2011). Species of birds that can be found in this area include the sharp-tailed grouse (*Tympanuchus*
 22 *phasianellus*), mallard (*Anas platyrhynchos*), blue-winged teal (*Anas discors*), red-tailed hawk (*Buteo*
 23 *jamaicensis*), American kestrel (*Falco sparverius*), ring-necked pheasant (*Phasianus colchicus*), killdeer
 24 (*Charadrius vociferous*), eastern kingbird (*Tyrannus tyrannus*), western kingbird (*Tyrannus verticalis*),
 25 common yellowthroat (*Geothlypis trichas*), clay-colored sparrow, vesper sparrow (*Pooecetes gramineus*),
 26 savannah sparrow (*Passerculus sandwichensis*), and western meadowlark (Hagen et al. 2005).

27 Species of mammals can include the northern short-tailed shrew (*Blarina brevicauda*), white-tailed
 28 jackrabbit (*Lepus townsendii*), snowshoe hare (*Lepus americanus*), Franklin's ground squirrel
 29 (*Spermophilus franklinii*), thirteen-lined ground squirrel (*Spermophilus tridecemlineatus*), northern
 30 pocket gopher, plains pocket gopher, deer mouse (*Peromyscus maniculatus*), northern grasshopper mouse
 31 (*Onychomys leucogaster*), prairie vole (*Microtus ochrogaster*), meadow jumping mouse, coyote, red fox,
 32 raccoon, badger, striped skunk, white-tailed deer, and moose (*Alces alces*) (Hagen et al. 2005).

33 Species of reptiles and amphibians can include the American toad (*Bufo americanus*), Great Plains toad
 34 (*Bufo cognatus*), northern leopard frog, tiger salamander, plains garter snake (*Thamnophis radix*), and
 35 common garter snake (Hagen et al. 2005).

36 There are also a multitude of terrestrial and aquatic invertebrates and crustacean that can be found on this
 37 site.

38 **Protected and Sensitive Species.** Since this WMA is in Grand Forks County, federally threatened and
 39 endangered, state-listed, and species of conservation priority would be similar to those described for
 40 Grand Forks AFB.

1 **Wetland Habitat.** Figure 3-5 provides a map of the wetlands on the Mekinock Prairie Chicken WMA.
 2 The NWI database estimates 726.7 acres of wetlands occur on this site.

3 **North Dakota Game and Fish WMA**

4 Vegetation, wildlife, protected and sensitive species, and wetland habitat would be similar to that
 5 described for the Mekinock Prairie Chicken WMA. The NWI database estimates 40.3 acres of wetlands
 6 occur on this site.

7 **Crawford Oakville Prairie WMA**

8 Vegetation, wildlife, protected and sensitive species, and wetland habitat would be similar to that
 9 described for the Mekinock Prairie Chicken WMA. Additionally, the Sprague's pipit (*Anthus spragueii*),
 10 a federal candidate species, was identified in the Crawford Oakville Prairie WMA in July of 2012
 11 (Lambeth 2012). The NWI database estimates 154.7 acres of wetlands occur on this site.

12 **Turtle River State Park**

13 **Vegetation.** Turtle River State Park is on the Turtle River and contains diverse habitats including upland
 14 hardwoods, wetlands, and prairie remnants. Much of the area is wooded with mixed hardwood stands,
 15 timbered hills, and lush river bottoms. Woody species that can be found here include American elm,
 16 green ash, cottonwood, choke cherry (*Prunus virginiana*), and boxelder (*Acer negundo*) (NDPRD
 17 undated). Other vegetation found in the park would be similar to that described for the Mekinock Prairie
 18 Chicken WMA.

19 **Wildlife.** The wooded areas of the park are full of small mammals including squirrels, woodchucks
 20 (*Marmota monax*), skunks, weasels (*Mustela* spp.), beaver, and raccoon. Larger mammals found in the
 21 park can include deer and moose. American bitterns (*Botaurus lentiginosus*), black terns, and great blue
 22 herons (*Ardea herodias*) are common along the river. In spring and autumn, thousands of migratory
 23 waterfowl pass over and through the park (NDPRD undated).

24 Game fish species that occur in portions of the Turtle River include northern pike, white sucker, rock
 25 bass, black bullhead, brown trout, rainbow trout, and channel catfish (GFAFB 2011).

26 Additional wildlife in the park would be similar to that described for the Mekinock Prairie Chicken
 27 WMA.

28 **Protected and Sensitive Species.** Since this park is in Grand Forks County, federally threatened and
 29 endangered, state-listed, and species of conservation priority would be similar to those described for
 30 Grand Forks AFB.

31 **Wetland Habitat.** Figure 3-5 provides a map of the wetlands located on the Turtle River State Park. The
 32 NWI database estimates 72.3 acres of wetlands occur on this site.

33 **Kellys Slough NWR**

34 Vegetation, wildlife, protected and sensitive species, and wetland habitat would be similar to that
 35 described for the Mekinock Prairie Chicken WMA. Additionally, the nearest Bald eagle nest site to
 36 Grand Forks AFB is on the west side of Kellys Slough NWR (GFAFB 2011).

37

1 **East Grand Forks, Minnesota**

2 Vegetation, wildlife, protected and sensitive species, and wetland habitat would be similar to that
3 described for the Mekinock Prairie Chicken WMA. Additionally, Sprague’s pipit, the Dakota skipper,
4 and the Western prairie fringed orchid are known to be present in Polk County and may be found within
5 East Grand Forks.

6 **Larimore, Emerado, the City of Grand Forks**

7 Vegetation, wildlife, protected and sensitive species, and wetland habitat would be similar to that
8 described for the Mekinock Prairie Chicken WMA.

9 **Environmental Consequences**

10 **Evaluation Criteria**

11 The significance of effects on biological resources is based on the following:

- 12 • The importance (i.e., legal, commercial, recreational, ecological, or scientific) of the resource
- 13 • The proportion of the resource that would be affected relative to its occurrence in the region
- 14 • The sensitivity of the resource to proposed activities
- 15 • The duration of ecological ramifications
- 16 • The “taking” of threatened or endangered species
- 17 • Jeopardizing threatened or endangered species or their habitat.

18 Effects on biological resources would be significant if species or habitats of high concern are adversely
19 affected over relatively large areas. Effects would also be considered significant if disturbances cause
20 reductions in population size or distribution of a species of high concern.

21 Ground disturbance and noise associated with construction can directly or indirectly cause adverse effects
22 on biological resources. Direct effects from ground disturbance are evaluated by identifying the types and
23 locations of potential ground-disturbing activities in correlation to important biological resources. Habitat
24 removal and damage or degradation of habitats might be adverse effects associated with
25 ground-disturbing activities.

26 **Proposed Action**

27 **Grand Forks AFB**

28 Pesticide application rates would be followed based on the pesticide labels (see **Table 2-1** and
29 **Appendix B**), and a current DoD Pesticide Applicator Certification or state pesticide certification would
30 be required for all personnel applying pesticides. Application of all aerial pesticides would be consistent
31 with AFI 32-1074, *Aerial Application of Pesticides*. If an accidental spill occurs on the installation, the
32 applicator would collect the material and dispose of it in accordance with manufacturer’s specifications
33 and the SPCC Plan.

34 No federally listed threatened or endangered species are known to occur on the installation. Therefore, no
35 impacts on federally listed threatened or endangered species would be expected from the Proposed
36 Action. The USFWS has identified the gray wolf and the whooping crane as having the potential of
37 occurring within the installation. No impacts on gray wolves or whooping cranes are anticipated from the

1 Proposed Action. Any wolves that might occur on the installation would be transient and the Proposed
 2 Action would not remove any potential wolf habitat and would only cause temporary noise disturbance.
 3 It is highly unlikely that the wolf would be in the area during the application of the products listed in
 4 **Table 2-1**. The wolf typically hunts animals such as moose, deer, and beaver; therefore, the use of
 5 pesticides should not have an impact on wolf food supply. No impact on the whooping crane would be
 6 anticipated as there is no suitable stopover feeding or roosting habitat for the whooping crane within the
 7 installation.

8 A reduction in adult mosquito numbers due to treatment would have a negligible impact on migratory
 9 bird species in the proposed treatment area due to the type, diversity, and availability of organisms that
 10 they are known to feed upon.

11 **Larval Mosquito Chemical Control**

12 **Altosid® Liquid Larvicide and Altosid® XR Briquettes**

13 **Vegetation.** Methoprene is biodegradable and nonpersistent, even in plants treated at very high rates
 14 (Cornell University 1995). At the proposed rate of application, no evidence exists that suggests that
 15 Altosid® would harm vegetation, and no phytotoxic activity would be anticipated (GFAFB 2003e).
 16 Therefore, no impacts on vegetation would be expected from the use of Altosid®.

17 **Wildlife.** Altosid® is considered an insect-growth regulator, which acts by inducing morphological
 18 changes that interfere with normal development. The result is the failure of the adult to emerge from the
 19 pupae stage. Altosid® is considered an exceptionally safe chemical for non-target species when a low
 20 application rate is used (GFAFB 2003e and Cornell University 1995). Therefore, short-term, direct,
 21 negligible impacts are expected to occur on non-target insects.

22 Short-term, direct, negligible impacts would be expected to occur on fish and amphibian species from the
 23 application of Altosid®. Altosid® can be toxic to these species if a high application rate is used. Care
 24 should be exercised in the mixing and application to ensure minimal risk to these species (GFAFB 2003e,
 25 Cornell University 1995). Long-term, minor, adverse impacts on fish that consume mosquito larvae
 26 would occur as the mosquito population dwindles as a result of the appropriate use of Altosid®.

27 No impacts are expected to occur on other mammals, birds, and bees from the application of Altosid®, as
 28 Altosid® poses essentially no risk to other mammals, birds, or bees. A reduction in adult mosquito
 29 numbers due to treatment would have negligible impacts on bird and bat species in the proposed treatment
 30 area due to the type, diversity, and availability of organisms that they are known to feed upon (GFAFB
 31 2003e).

32 At the recommended application rate, it would not harm pets or livestock. Altosid® can be applied to
 33 irrigated croplands and pastures without the removal of grazing livestock. Wild or cultivated bee colonies
 34 would not be affected and notification of beekeepers would not be required (GFAFB 2003e).

35 The aerial application of this chemical would have short-term, negligible to minor, direct, adverse impacts
 36 on wildlife due to noise disturbances as a result of low-flying aircraft. High noise events could cause
 37 wildlife to engage in escape or avoidance behaviors, resulting in short-term, minor, adverse effects. Most
 38 wildlife species in the project area would be expected to quickly recover once the maintenance activities
 39 have ceased for the day and after the project is complete.

40 **Sensitive and Protected Species.** No federally listed threatened or endangered species are known to occur
 41 on the installation. Therefore, no impacts on federally listed threatened or endangered species would be

1 expected. A reduction in adult mosquito numbers due to treatment would have negligible impact on
 2 migratory bird species in the proposed treatment area due to the type, diversity, and availability of
 3 organisms that they are known to feed upon. Short-term, direct, negligible impacts could occur on the
 4 northern leopard frog from the application of Altosid®. Altosid® can be toxic to frogs if a high
 5 application rate is used. Care should be exercised in the mixing and application to ensure minimal risk to
 6 this species (GFAFB 2003e and Cornell University 1995).

7 **Wetland Habitat.** No impacts on wetland vegetation would be expected from the use of Altosid®.
 8 Short-term, negligible to minor, direct, adverse impacts are expected to occur on wetland fauna as a result
 9 of the application of Altosid®, as discussed in the previous *Wildlife* section.

10 **Vectobac® Granules**

11 **Vegetation.** At the proposed rate of application, no evidence exists that suggests that *Bti* would harm
 12 vegetation, or that phytotoxic activity would occur (GFAFB 2003e). Therefore, no impacts on vegetation
 13 would be expected from the use of *Bti*.

14 **Wildlife.** Short-term, direct, negligible, adverse impacts on wildlife could occur as a result of the
 15 application of *Bti*. *Bti* would not significantly impact wildlife and nontarget organisms due to this
 16 product's target specificity, mode of action, low persistence, rapid biodegradability, and limited numbers
 17 of applications. Vectobac® is harmless to mammals (NYCHMH 2012b).

18 The persistence of *Bti* activity is usually no more than 2 days under typical mosquito abatement use
 19 conditions, so the effect on nontarget midge populations would be temporary. Some other non-culicid
 20 Diptera (true flies, midges) with aquatic life forms would likely be affected by ingestion of the *Bti*
 21 larvicide (GFAFB 2003e). A summary of safety tests on vertebrate and invertebrate non-target organisms
 22 compiled by one *Bti* manufacturer (Biochem Products) showed that, other than producing mortality in
 23 some species of flies and midges, no ill effects were detected in almost 100 different non-target
 24 invertebrates (GFAFB 2003e). A study examining the non-target effects of *Bti* on stream invertebrate
 25 communities and fish (Lacy and Merritt undated) found no significant effects. A point to consider when
 26 weighing the effects of reducing mosquito numbers in a marsh ecosystem is that competing non-target
 27 "nonpest" organisms can be expected to fill the ecological niche normally occupied by "pest" mosquito
 28 larvae and could, in some cases, benefit ecologically from intervention (GFAFB 2003e).

29 Based on its evaluation of *Bti*, the USEPA determined that toxicity and infectivity risks to nontarget
 30 avian, freshwater fish, freshwater aquatic invertebrates, estuarine and marine animals, arthropod
 31 predators/parasites, honey bees, annelids, and mammalian wildlife would be minimal to nonexistent at the
 32 label use rates of the registered active ingredient (USEPA 1998).

33 **Sensitive and Protected Species.** Certain endangered lepidopteran (i.e., butterflies, skippers, moths)
 34 insect species could be affected by the kurstaki strain of *Bti*, but this strain differs from dipteran-specific
 35 israelensis strain and endangered lepidopteran species are not known to occur in the proposed treatment
 36 area (GFAFB 2003e).

37 **Wetland Habitat.** No impacts on wetland vegetation would be expected from the use of *Bti*. Short-term,
 38 negligible, direct, adverse impacts are expected to occur on minimal species of wetland fauna as a result
 39 of the application of *Bti* (e.g., midges and flies), as discussed in the previous *Wildlife* section.

40 **Adult Mosquito Chemical Control**

41 **Trumpet Liquid Adulticide (Active Ingredient Naled)**

1 **Vegetation.** At the proposed rate of application, no evidence exists that suggests that naled would harm
2 vegetation, and no phytotoxic activity would occur (GFAFB 2003e). Therefore, no impacts on vegetation
3 would be expected from the use of naled.

4 **Wildlife.** Short-term, minor, direct, adverse impacts are expected to occur on nontarget aquatic and
5 terrestrial insects from the application of naled. Mortality would be expected to occur in bees, wasps,
6 flies, dragonflies, damselflies, butterflies, and moths that come into contact with naled. This would
7 include neutral or beneficial species and pest species. Bees foraging on Grand Forks AFB property at the
8 time of application would be killed. Bees can also come into contact with naled through pesticide drift
9 zones, which are areas where the pesticide moves through air at the time of application or soon thereafter,
10 to any site other than that intended for application. Factors influencing the presence and extent of drift
11 include weather conditions, topography, the size of the area being sprayed, type of application equipment
12 and methods, and decisions by the applicator. Bees exposed to naled in drift zones could be killed.
13 However, negligible impacts on bees would be anticipated because application of naled would occur at
14 dusk when bees are in the hive, and beeyards would be notified of spraying operations. Beekeepers living
15 near the installation would be notified prior to treatment so that protective measures could be taken
16 (GFAFB 2003e).

17 In general, hidden/protected terrestrial and aquatic insects would remain unharmed due to the rapid
18 degradability and non-residual nature of naled. An added control benefit would occur from the control of
19 non-target pest species such as biting midges, deer flies, horse flies, stable flies, black flies, and filth flies
20 (GFAFB 2003e).

21 Short-term, minor, direct, adverse impacts are expected to occur on copepods (i.e., small crustaceans) and
22 decapod crustaceans from the application of naled. Tests conducted in the 1960s suggested that naled
23 was quite toxic to shrimp under confined conditions. In the 1980s, additional studies found that
24 significant mortality occurred for copepods when exposed to naled. Environmental factors (e.g., high
25 temperatures and salinities) appeared to influence the sensitivity of copepods to insecticides. It is
26 assumed that copepod and decapod crustaceans populations would recover after treatment (GFAFB
27 2003e).

28 No impacts on fish are expected from the use of naled. According to the USEPA's *Naled Summary*
29 published in 1999, "acute and chronic risk to freshwater and estuarine fish is not expected. There is
30 potential for acute and some potential for chronic risks to freshwater invertebrates from all major uses of
31 naled" (GFAFB 2003e).

32 Short-term, negligible impacts on mammalian and avian wildlife would be expected from the application
33 of naled. A 1987 study summarized the persistence and hazard evaluation of naled on wildlife and
34 concluded that naled has low environmental persistence, which minimizes prolonged exposure to wildlife.
35 Additionally, no reported incidences of wildlife problems are attributable to naled, even though naled is
36 commonly used in areas that provide wildlife habitat. However, wildlife mortalities in wetlands might be
37 more difficult to detect than in agricultural areas (GFAFB 2003e).

38 A reduction in adult mosquitoes/flying insect numbers due to treatment would have negligible impact on
39 bird species in the proposed treatment area due to the type, diversity, and availability of organisms that
40 they are known to feed upon (GFAFB 2003e).

41 The aerial application of this chemical would have short-term, negligible to minor, direct, adverse impacts
42 on wildlife due to noise disturbances from low-flying aircraft. High noise events could cause wildlife to
43 engage in escape or avoidance behaviors, resulting in short-term, minor, adverse effects. Most wildlife

1 species in the project area would be expected to quickly recover once the maintenance activities have
2 ceased for the day and after the treatment is complete.

3 ***Sensitive and Protected Species.*** No federally listed threatened or endangered species are known to occur
4 on the installation. Therefore, no impacts on federally listed threatened or endangered species would be
5 expected.

6 A reduction in adult mosquitoes/flying insect numbers due to treatment would have negligible impact on
7 migratory bird species in the proposed treatment area due to the type, diversity, and availability of
8 organisms that they are known to feed upon.

9 ***Wetland Habitat.*** No impacts on wetland vegetation would be expected from the use of naled.
10 Short-term, negligible to minor, direct, adverse impacts are expected to occur on wetland fauna from the
11 application of naled, as discussed in the previous *Wildlife* section.

12 **Mavrik®**

13 ***Vegetation.*** At the proposed rate of application, no evidence exists that suggests that Mavrik® would
14 harm vegetation, and no phytotoxic activity would occur. Therefore, no impacts on vegetation would be
15 expected from the use of Mavrik®.

16 ***Wildlife.*** Mavrik® has a low in toxicity to mammals because they are quickly broken down into inactive
17 forms and pass from the body, and therefore a low potential for bioaccumulation (NPIC 1998). However,
18 there is a low to moderate potential to accumulate in aquatic organisms. Mavrik® is highly toxic to fish
19 and tadpoles, slightly toxic to birds, and is not toxic to bees (Cornell University 1996, NPIC 1998).
20 Mavrik® would not be sprayed near water and contact with water would be avoided; therefore, no
21 impacts on wildlife would be expected from the use of Mavrik®.

22 ***Sensitive and Protected Species.*** No federally listed threatened or endangered species are known to occur
23 on the installation. Therefore, no impacts on federally listed threatened or endangered species would be
24 expected. Mavrik® is highly toxic to northern leopard frog tadpoles; however, Mavrik® would not be
25 sprayed near water.

26 A reduction in adult mosquitoes/flying insect numbers due to treatment would have negligible impact on
27 migratory bird species in the proposed treatment area due to the type, diversity, and availability of
28 organisms that they are known to feed upon.

29 ***Wetland Habitat.*** No impacts on wetland vegetation would be expected from the use of Mavrik®.
30 Short-term, negligible to minor, direct, adverse impacts are expected to occur on wetland fauna from the
31 application of Mavrik®, as discussed in the previous *Wildlife* section.

32 **Anvil®, Kontrol 4-4, and Duet™**

33 ***Vegetation.*** At the proposed rate of application, no evidence exists that suggests that Anvil®, Kontrol
34 4-4, or Duet™ would harm vegetation, and no phytotoxic activity would occur. Therefore, no impacts on
35 vegetation would be expected from the use of Anvil® or Duet™.

36 ***Wildlife.*** Anvil®, Kontrol 4-4, and Duet™, synthetic pyrethroids, are toxic to fish and aquatic
37 invertebrates, but are not generally toxic to amphibians. In addition, storm water runoff from treated
38 areas or the deposition of spray droplets into a body of water could be hazardous to fish and aquatic
39 invertebrates. Grand Forks AFB would not apply Anvil® directly to water bodies. Anvil® is toxic to

1 bees when they are exposed to directly treated blooming vegetation; however, dusk spraying would
2 mitigate the issue because bees would likely be in the hive. Sumithrin is rapidly inactivated and
3 decomposed by exposure to light and air with a half-life of less than one day in the air, and on plants and
4 other surfaces subject to sunlight (MOHHS 2010).

5 Anvil® and other pyrethroid pesticides are toxic to terrestrial and aquatic invertebrates (e.g., dragonflies,
6 beetles) and fish. Toxicity to aquatic organisms increases as the size of their habitat decreases
7 (MOHHS 2010).

8 ***Sensitive and Protected Species.*** No federally listed threatened or endangered species are known to
9 occur on the installation. Therefore, no impacts on federally listed threatened or endangered species
10 would be expected.

11 A reduction in adult mosquitoes/flying insect numbers due to treatment would have negligible impact on
12 migratory bird species in the proposed treatment area due to the type, diversity, and availability of
13 organisms that they are known to feed upon.

14 ***Wetland Habitat.*** No impacts on wetland vegetation would be expected from the use of Anvil®, Kontrol
15 4-4, or Duet™. Short-term, negligible to minor, direct, adverse impacts are expected to occur on wetland
16 fauna from the application of Anvil®, Kontrol 4-4, or Duet™, as discussed in the previous *Wildlife*
17 section.

18

1 **Adult Mosquito Physical and Biological Controls**

2 **Vegetation.** Long-term, negligible, direct, adverse impacts on vegetation would be expected due to the
3 permanent removal of vegetation from the ditches during initial clearing and cleaning out of the ditches.
4 Short-term, negligible to minor, adverse impacts on adjacent landscape vegetation are possible during
5 maintenance activities. BMPs such as the proper use of machinery on soft or wet ground would be
6 implemented during maintenance to minimize impacts on landscape vegetation. Additional areas
7 disturbed as a result of ditch maintenance would be replanted with native vegetation or approved grass
8 mixtures following maintenance activities.

9 Increasing the bat population on the installation through the increase in the number of bat boxes would
10 result in a long-term, beneficial impact on vegetation because bats are pollinators and can disperse plant
11 seeds.

12 **Wildlife.** Adult mosquito physical control would have short-term, negligible to minor, direct, adverse
13 impacts on wildlife due to noise disturbances as a result of ditch maintenance and equipment use. High
14 noise events could cause wildlife to engage in escape or avoidance behaviors, resulting in short-term,
15 minor, adverse effects. Most wildlife species in the project area would be expected to recover quickly
16 once the maintenance activities have ceased for the day and after the project is complete.

17 Maintenance activities associated with vegetation removal in the ditches could cause increased turbidity
18 levels within water bodies due to runoff from cleared areas during maintenance, which might result in
19 short-term, negligible to minor, adverse impacts on aquatic species. Long-term, minor, indirect,
20 beneficial effects on aquatic species within the ditches would be expected from the elimination of
21 standing water and the resulting improvement in water quality.

22 Introduction of additional bats to the installation through the installation of additional bat boxes would
23 have a long-term, beneficial impact on wildlife as bats consume many pests and would also provide a
24 food source for other mammals. Short- and long-term, negligible impacts on other pest-eating species,
25 such as birds, could occur as competition for the pest food source increases. However, this is not
26 anticipated to outweigh the beneficial impact of increasing the bat population as other food sources are
27 available and the pest population at Grand Forks is adequate.

28 **Sensitive and Protected Species.** No federally listed threatened or endangered species are known to occur
29 on the installation. Therefore, no impacts on federally listed threatened or endangered species would be
30 expected. The USFWS has identified the gray wolf and the whooping crane as having the potential of
31 occurring within the installation. No impacts on gray wolves or whooping cranes are anticipated from
32 ditch maintenance activities. Any wolves that might occur on the installation would be transient and the
33 Proposed Action would not remove any potential wolf habitat and would only cause temporary noise
34 disturbance. It is highly unlikely that the wolf would be in the area during ditch maintenance. There is no
35 suitable stopover feeding or roosting habitat for the whooping crane located within the installation.

36 The Migratory Bird Treaty Act (MBTA) and EO 13186 require Federal agencies to minimize or avoid
37 impacts on migratory birds. BMPs, which are discussed for migratory birds, are recommended for
38 reduction or avoidance of impacts on migratory bird species, including state-listed species, within the
39 Project Area if trees are to be removed by the Proposed Action. Any ditch maintenance activities
40 requiring tree removal should be performed before migratory birds return to Project Area or after all
41 young have fledged to avoid incidental take (i.e., before 1 February or after 15 July). If ditch
42 maintenance activities are scheduled to start during the period when migratory birds are present, a site-
43 specific survey for nesting migratory birds should be performed immediately prior to the activities. If
44 nesting birds are found during the survey, buffer areas should be established around nests. Activities

1 should be deferred in buffer areas until birds have left the nest. Confirmation that all young have fledged
2 should be made by a qualified biologist. If the Proposed Action were to result in adverse impacts on
3 migratory birds, the impacts would likely be negligible from disturbances from noise. The
4 implementation of BMPs would minimize any direct, adverse impacts on migratory birds, including state-
5 listed species that might occur in the Project Area.

6 **Wetland Habitat.** BMPs including installation of silt fencing and hay bales, in addition to
7 implementation of an erosion-and-sediment-control plan, would reduce the impact of ditch maintenance
8 on wetland habitat. Activities would comply with EISA Section 438 and would be coordinated with the
9 USACE, State of North Dakota, and the installation Environmental Office. Effects on wetland fauna
10 would be similar to those described in the previous *Wildlife* discussion.

11 Adult mosquito physical control would have short-term, negligible to minor, direct, adverse impacts on
12 wetland fauna due to noise disturbances as a result of ditch maintenance and equipment use.

13 Maintenance activities associated with vegetation removal in the ditches could cause increased turbidity
14 levels within water bodies due to runoff from cleared areas during maintenance, which might result in
15 short-term, negligible to minor, adverse impacts on aquatic species. Long-term, minor, indirect,
16 beneficial effects on aquatic species within the ditches would be expected from the elimination of
17 standing water and the resulting improvement in water quality.

18 **Noxious and Invasive Weed Control**

19 **Vegetation.** The Proposed Action would have a direct impact on target vegetation (noxious and invasive
20 weeds) by killing or slowing the growth of the target species. Mechanical removal would also have a
21 direct impact on target vegetation. Long-term, indirect, beneficial effects on nontarget plant species
22 (i.e., desired vegetation) would be expected by allowing them to compete better with the target species.

23 Since these herbicides bind to the soil until they are degraded, the likelihood that they would harm nearby
24 plants is negligible. BMPs would be implemented to ensure Milestone® and Weed-B-Gone are not
25 applied within or adjacent to water bodies; therefore, impacts on aquatic vegetation are anticipated to be
26 negligible.

27 **Wildlife.** Noise from the application of herbicides via a spray tank attached to an all-terrain vehicle or
28 from mechanical removal methods could cause wildlife to engage in escape or avoidance behaviors,
29 resulting in short-term, minor, adverse effects. Most wildlife species on the installation would be
30 expected to recover quickly once these activities have ceased for the day and after the applications are
31 complete.

32 The impacts on wildlife from the application of the three products most likely to be used for noxious and
33 invasive weed control are discussed in the following paragraphs.

34 **Rodeo®:** Short-term, negligible to minor, adverse impacts are expected to occur on wildlife from the
35 application of Rodeo®. Several studies on the toxicity of glyphosate to different animal species indicated
36 that glyphosate is poorly absorbed in the digestive tract and is largely excreted unchanged by mammals.
37 In a study conducted on lab rats that were fed glyphosate for 3 weeks, only minute amounts of glyphosate
38 were detected in the tissues 10 days after treatment (Cornell undated). Cows, chickens, and pigs fed small
39 amounts had undetectable levels (less than 0.05 ppm) in muscle tissue and fat. Levels in milk and eggs
40 were also undetectable (less than 0.025 ppm). Glyphosate is only slightly toxic to wild birds. The lethal
41 concentration 50 (LC50) (i.e., the toxicity of a substance that will kill half of a sample population) in both
42 mallards and bobwhite quail is greater than 4,500 ppm. The bioaccumulation factor in chicken muscle,

1 fat, eggs, and liver was found to be extremely low (Cornell undated). Therefore, glyphosate has no
2 significant potential to accumulate in animal tissue (Cornell undated).

3 Glyphosate is practically nontoxic to fish. An additive used in the Roundup® formulation (modified
4 tallow amine used as a surfactant) is apparently more toxic to fish than many common surfactants. For
5 this reason, the formulation for Rodeo® omits this ingredient. The surfactant is used to allow the
6 compound to readily dissolve in solution and to keep the compound from balling up on the leaf surface.
7 There is a very low potential for the compound to build up in the tissues of aquatic invertebrates or other
8 aquatic organisms. Nearly all glyphosate residues were rapidly eliminated by fish that had been exposed
9 for 10 to 14 days once these fish were transferred to glyphosate-free water. Glyphosate is also relatively
10 nontoxic to honeybees (Cornell undated).

11 Milestone®: Short-term, negligible, adverse impacts are expected to occur on wildlife from the
12 application of Milestone®. Aminopyralid has been shown to be practically nontoxic to birds, fish,
13 honeybees, earthworms, and aquatic invertebrates, and is not expected to bioaccumulate in fish tissue.
14 There are no acute or chronic risks to fish, birds, mammals, and terrestrial and aquatic invertebrates
15 (USEPA 2005). Aminopyralid's residual action should alleviate the need for repeat applications,
16 resulting in a reduction in the amount of herbicides applied to the environment to control weeds (USEPA
17 2005).

18 Weed-B-Gone: Short-term, negligible to minor, adverse impacts are expected to occur on wildlife from
19 the application of Weed-B-Gone. Weed-B-Gone is used for the self-help program on the installation. It
20 is applied in very small amounts in the installation housing areas. The active ingredients in Weed-B-
21 Gone are toxic to aquatic fauna and it should not be applied within or adjacent to water. The use of
22 Weed-B-Gone would not be expected to result in adverse impacts on strictly aquatic fauna because no
23 herbicide application would occur within or adjacent to any water bodies.

24 ***Protected and Sensitive Species.*** No federally listed threatened or endangered species are known to occur
25 on the installation. Therefore, no impacts on federally listed threatened or endangered species would be
26 expected. No impacts on gray wolves or whooping cranes are anticipated from the Proposed Action.
27 Any wolves that might occur on the installation would be transient and the Proposed Action would not
28 remove any potential wolf habitat and would only cause temporary noise disturbance. It is highly
29 unlikely that the wolf would be in the area during spraying. The wolf typically hunts animals such as
30 moose, deer, and beaver. Herbicidal spraying would not be expected to have an impact on their food
31 supply.

32 Herbicide application should not occur in areas where any of the four state-ranked plants on the
33 installation have been observed. These areas include the flightline fence in the southwestern portion of
34 the installation (lesser yellow lady's slipper and white lady's slipper) and the northwestern part of the
35 installation where Turtle Creek is present (eastern prickly gooseberry and Dutchman's breeches). These
36 areas should not be sprayed for weeds without coordination from the Environmental Management
37 Element. In addition, a plant species of concern, yellow lady's slipper, should be avoided during noxious
38 weed spraying for BASH management and hay lease weed management operations (GFAFB 2010b). No
39 impacts on the state-ranked plants are expected as the areas where they are found would not be treated.

40 ***Wetland Habitat.*** BMPs would be implemented to ensure Milestone® and Weed-B-Gone are not applied
41 within or adjacent to wetlands. Activities would comply with EISA Section 438 and would be
42 coordinated with the USACE, State of North Dakota, and the Environmental Management Office. Effects
43 on wetland fauna would be similar to those described in the previous *Wildlife* discussion.

1 Noise from the application of herbicides via a spray tank attached to an all-terrain vehicle or from
2 mechanical removal methods could cause wildlife to engage in escape or avoidance behaviors, resulting
3 in short-term, minor, adverse effects. Most wildlife species on the installation would be expected to
4 recover quickly once these activities have ceased for the day and after the applications are complete.

5 The impacts on wildlife from the application of the three products most likely to be used for noxious and
6 invasive weed control are discussed in the following paragraphs.

7 Rodeo®: Short-term, negligible to minor, adverse impacts are expected to occur on wildlife from the
8 application of Rodeo®. Several studies on the toxicity of glyphosate to different animal species indicated
9 that glyphosate is poorly absorbed in the digestive tract and is largely excreted unchanged by mammals.
10 In a study conducted on lab rats that were fed glyphosate for 3 weeks, only minute amounts of glyphosate
11 were detected in the tissues 10 days after treatment (Cornell undated). Cows, chickens, and pigs fed small
12 amounts had undetectable levels (less than 0.05 ppm) in muscle tissue and fat. Levels in milk and eggs
13 were also undetectable (less than 0.025 ppm). Glyphosate is only slightly toxic to wild birds. The LC50
14 in both mallards and bobwhite quail is greater than 4,500 ppm. The bioaccumulation factor in chicken
15 muscle, fat, eggs, and liver was found to be extremely low (Cornell undated). Therefore, glyphosate has
16 no significant potential to accumulate in animal tissue (Cornell undated).

17 Glyphosate is practically nontoxic to fish. An additive used in the Roundup® formulation (modified
18 tallow amine used as a surfactant) is apparently more toxic to fish than many common surfactants. For
19 this reason, the formulation for Rodeo® omits this ingredient. The surfactant is used to allow the
20 compound to readily dissolve in solution and to keep the compound from balling up on the leaf surface.
21 There is a very low potential for the compound to build up in the tissues of aquatic invertebrates or other
22 aquatic organisms. Nearly all glyphosate residues were rapidly eliminated by fish that had been exposed
23 for 10 to 14 days once these fish were transferred to glyphosate-free water. Glyphosate is also relatively
24 nontoxic to honeybees (Cornell undated).

25 Milestone®: Short-term, negligible, adverse impacts are expected to occur on wildlife from the
26 application of Milestone®. Aminopyralid has been shown to be practically nontoxic to birds, fish,
27 honeybees, earthworms, and aquatic invertebrates, and is not expected to bioaccumulate in fish tissue.
28 There are no acute or chronic risks to fish, birds, mammals, and terrestrial and aquatic invertebrates
29 (USEPA 2005). Aminopyralid's residual action should alleviate the need for repeat applications,
30 resulting in a reduction in the amount of herbicides applied to the environment to control weeds (USEPA
31 2005).

32 Weed-B-Gone: Short-term, negligible to minor, adverse impacts are expected to occur on wildlife from
33 the application of Weed-B-Gone. Weed-B-Gone is used for the self-help program on the installation. It
34 is applied in very small amounts in the installation housing areas. The active ingredients in
35 Weed-B-Gone are toxic to aquatic fauna and it should not be applied within or adjacent to water. The use
36 of Weed-B-Gone would not be expected to result in adverse impacts on strictly aquatic fauna because no
37 herbicide application would occur within or adjacent to any water bodies.

38 Off-Installation Properties

39 Impacts on off-installation properties for larval and adult mosquito chemical control would be similar to
40 that described for Grand Forks AFB for chemicals that can be applied using an aerial application. One
41 Federal candidate species, the Sprague's pipit, is found within the Crawford Oakville Prairie WMA. Two
42 federal candidate species, the Sprague's pipit and the Dakota skipper, and one federally listed threatened
43 species, the Western prairie fringed orchid may be found within East Grand Forks, Minnesota. Short-
44 term, negligible, indirect, adverse impacts are expected to occur on these species from the application of

1 the mosquito and noxious and invasive weed controls. Because of the infrequency of applications and
2 concentrations of pesticide used for aerial adulticide applications, impacts to non – target species such as
3 grasshoppers (an important food source for Sprague’s pipits) would be negligible. Data would suggest
4 that although non –target species populations may initially be reduced they rebound quickly in almost all
5 instances (Blom 2011). Additionally, Bald eagles are known to nest within Kellys Slough NWR. Short-
6 term, negligible, adverse impacts are expected on this population, as the mosquito and noxious and
7 invasive weed controls used under the Proposed Action are minimally toxic to birds.
8

9 No impacts on off-installation properties would be expected from mosquito physical and biological
10 controls or noxious and invasive weed control since this action would only occur on Grand Forks AFB.

11 No Action Alternative

12 Under the No Action Alternative, there would be no change from existing conditions at the installation, as
13 described in **Section 3.5.2**. Short-term, negligible to minor, direct, adverse impacts on biological
14 resources would be anticipated due to the fact that invasive and nonnative plant species would continue to
15 grow and decrease the amount of native vegetation on the installation.

16 1.14 Safety

17 Definition of the Resource

18 A safe environment is one in which there is no, or an optimally reduced, potential for death, serious
19 bodily injury or illness, or property damage. Human health and safety addresses both workers’ health and
20 public safety during demolition activities and facilities construction, and during subsequent operations of
21 those facilities.

22 Construction site safety is largely a matter of adherence to regulatory requirements imposed for the
23 benefit of employees and implementation of operational practices that reduce risks of illness, injury,
24 death, and property damage. The health and safety of onsite military and civilian workers are safeguarded
25 by numerous DoD and USAF regulations designed to comply with standards issued by Occupational
26 Safety and Health Administration (OSHA) and USEPA. These standards specify the amount and type of
27 training required for industrial workers, the use of protective equipment and clothing, engineering
28 controls, and maximum exposure limits for workplace stressors.

29 Safety and accident hazards can often be identified and reduced or eliminated. Necessary elements for an
30 accident-prone situation or environment include the presence of the hazard itself together with the
31 exposed (and possibly susceptible) population. The degree of exposure depends primarily on the
32 proximity of the hazard to the population. Activities that can be hazardous include transportation,
33 maintenance and repair activities, and the creation of extremely noisy environments. The proper
34 operation, maintenance, and repair of vehicles and equipment carry important safety implications. Any
35 facility or human-use area with potential explosive or other rapid oxidation process creates unsafe
36 environments for nearby populations. Extremely noisy environments can also mask verbal or mechanical
37 warning signals such as sirens, bells, or horns.

38 AFI 91-301, *Air Force Occupational and Environmental Safety, Fire Protection, and Health (AFOSH)*
39 *Program*, implements AFD 91-3, *Occupational Safety and Health*, by outlining the AFOSH Program.
40 The purpose of the AFOSH Program is to minimize loss of USAF resources and to protect USAF
41 personnel from occupational deaths, injuries, or illnesses by managing risks. In conjunction with the

1 USAF Mishap Prevention Program, these standards ensure all USAF workplaces meet Federal safety and
2 health requirements. This instruction applies to all USAF activities.

3 Existing Conditions

4 Grand Forks AFB

5 All contractors performing activities associated with the Proposed Action are responsible for following
6 ground safety regulations and workers compensation programs and are required to conduct construction
7 activities in a manner that does not pose any risk to workers or personnel. Industrial hygiene programs
8 address exposure to hazardous materials, use of personal protective equipment (PPE), and availability of
9 Material Safety Data Sheets (MSDSs) (**Appendix B**). Chemical pesticides can be human skin irritants,
10 eye irritants, and can cause allergic skin reactions after prolonged and repeated contact. Serious
11 toxicological health effects can occur in humans, if exposed to high enough concentrations and under
12 prolonged duration. This would most likely occur as a result of occupational exposure due to
13 mishandling of the material. It is therefore essential that all of the precautions set forth on the label and
14 on the MSDSs be strictly followed.

15 Industrial hygiene is the responsibility of contractors, as applicable. Contractor responsibilities are to
16 review potentially hazardous workplace operation; to monitor exposure to workplace chemicals
17 (e.g., asbestos, lead, hazardous material), physical hazards (e.g., noise propagation), and biological agents
18 (e.g., infectious waste); to recommend and evaluate controls (e.g., ventilation, respirators) to ensure
19 personnel are properly protected or unexposed; and to ensure a medical surveillance program is in place
20 to perform occupational health physicals for those workers subject to any accidental chemical exposures.

21 Explosive safety clearance zones must be established around facilities used for the storage, handling, or
22 maintenance of munitions. Air Force Manual 91-201 establishes the size of the clearance zone based
23 upon QD criteria or the category and weight of the explosives contained within the facility. QD arcs on
24 Grand Forks AFB are mostly in the southeastern portion of the installation and the northeastern side of
25 the airfield. At Grand Forks AFB, there are QD arcs associated with the munitions storage area and the
26 hazardous cargo parking pad.

27 Aerial spray operations have occurred at Grand Forks AFB and the surrounding townships for several
28 decades; no life threatening mishap or crash has occurred with the USAF Reserve Aerial Spray group in
29 any past spray operations conducted in the vicinity.

30 Off-Installation Properties

31 Chemical applications under the Proposed Action would be within the boundaries of Grand Forks AFB
32 and surrounding public areas. Because pesticide application for mosquitoes would occur in areas where
33 human activity could be high, and the contractor would strictly adhere to all applicable safety guidelines
34 outlined by the DoD and USAF. All procedures and guidelines described for the Proposed Action at
35 Grand Forks would be followed for the off-installation properties.

36 Environmental Consequences

37 Evaluation Criteria

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

- 1 • A substantial increase in risks associated with the safety of construction personnel, contractors, or
2 the local community
- 3 • A substantial hindrance in the ability to respond to an emergency
- 4 • Introduction of a new health or safety risk for which the installation is not prepared or does not
5 have adequate management and response plans in place.

6 Proposed Action

7 Short-term, minor, adverse effects on safety would be expected from chemical application activities.
8 Mavrik® can cause skin irritation and is corrosive to the eyes. Workers exposed to fluvalinate (the active
9 ingredient in Mavrik®) have reported coughing, sneezing, throat irritation, itching or burning sensations
10 on the arms or face with or without a rash, headache, and nausea. Pyrethroids can cause adverse effects
11 on the central nervous system, liver, and kidneys (Cornell University 1996). For some people, short-term
12 exposure to pyrethroids at low levels can exacerbate existing respiratory conditions (e.g., asthma) or
13 cause irritation of the eyes, skin, nose, throat or lungs, and exposure should be limited (MOHHS 2010).
14 Synthetic pyrethroids such as Anvil®, Kontrol 4-4, and Duet™ would not cause adverse effects on human
15 health in low doses, as is consistent with the recommended application rates on the pesticide labels
16 (ATSDR 2003). Mild skin and eye irritation have been reported from direct contact with Vectobac®.
17 However, eating plants or drinking water exposed to Vectobac® has not been shown to produce any ill
18 effects in humans (NYCHMH 2012b).

19 Implementation of the Proposed Action would slightly increase the short-term risk associated with
20 herbicide application contractors performing work at Grand Forks AFB during the normal workday
21 because the area receiving herbicide treatment would be expanded and exposure time to herbicides would
22 be longer. Chemical application contractors would be required to establish and maintain safety programs.
23 The Proposed Action would not pose a safety risk to installation personnel or to activities at the
24 installation. Residents within Grand Forks AFB and the off-installation treatment area would be notified
25 prior to aerial application so that those conducting outdoor activities during that time can minimize
26 unnecessary inhalation and dermal exposure to the pesticide.

27 Only USEPA- and Grand Forks AFB-approved herbicides and pesticides would be applied by licensed
28 and trained applicators and all application rates and techniques would be followed according to label
29 directions. All required PPE to prevent exposure to chemicals would be used. The use of mechanical
30 equipment has the potential for minor, indirect impact on the safety of grounds maintenance crews from
31 flying debris or injury from equipment accidents. Employees conducting mechanical treatments near
32 roadways would be required to wear orange reflective safety vests to minimize potential accidents from
33 inattentive drivers. Gloves would also be worn during treatments to avoid injury to hands. Chemical
34 application activities would be accomplished in accordance with Federal, state, and local regulations to
35 minimize hazards associated with hazardous materials, wastes, and substances.

36 Long-term, beneficial impacts on safety could occur from a slight reduction in the incidence of human
37 illness caused by mosquito bites. In addition, beneficial impacts would be anticipated through the
38 reduction of noxious and invasive weeds along roadways as visibility of roads, signs, vehicles, and
39 pedestrians would improve. Control of weeds would also help to reduce the incidence of cracked
40 runways, roadways, sidewalks, and other pavements due to weed growth, which would provide a more
41 even, stable surface on which to travel.

42 Mechanical control of weeds within ditches would allow easier conveyance of floodwaters, which would
43 reduce the threat of flooding and present a beneficial impact on human health and safety.

1 **No Action Alternative**

2 Under the No Action Alternative, there would be no change from existing conditions. The Mosquito
3 Control Management Plan would not be implemented and herbicide application of noxious weeds would
4 not be expended. Long-term, minor, adverse impacts on safety would be anticipated from the continued
5 growth of weeds that could inhibit roadway visibility and compromise the integrity of runways,
6 roadways, sidewalks, and other pavement. Integrated control of mosquitoes would not occur, and
7 mosquito-related human illness would continue and could increase, depending on the abundance of
8 mosquitoes in the area. Vegetation would not be removed from drainage ditches, which provides
9 breeding habitat for mosquitoes and increases the chances of flooding because water conveyance potential
10 would slow.

Cumulative and Other Effects

1.15 Definition of Cumulative Effects

CEQ defines cumulative effects as the “impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative effects can 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 decision making is served by consideration of cumulative effects resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the reasonably foreseeable future. Reasonably foreseeable future actions consist of activities that have been approved and can be evaluated with respect to their effects.

1.16 Projects Considered for Potential Cumulative Effects

The geographic region of influence (ROI) is an important consideration when discussing cumulative effects. For the purposes of this analysis, the ROI was determined to be Grand Forks AFB and the adjacent communities (i.e., Grand Forks Metropolitan Area and Grand Forks County).

The Grand Forks Metropolitan Area is at the eastern-central portion of Grand Forks County and serves as a regional center for northeastern North Dakota and northwestern Minnesota. Agriculture is the most important industry in Grand Forks County and the majority of the economy is driven by the generation or processing of agricultural products. Government services are also an important segment of the local economy. Overall, the future vision for Grand Forks County is to promote the majority of growth where municipal services are available and manage rural residential growth, while preserving agricultural and native resources. The vision for Grand Forks County is to develop a cohesive countywide land use pattern that ensures compatibility and functional relationships among activities and between jurisdictions. Future land use plans include the following (Grand Forks County 2006):

- The Urban Expansion Area, adjacent to the Grand Forks Metropolitan Area, is anticipated to receive municipal services within the next 50 years. The Urban Expansion Area would be sized to accommodate growth through 2055.
- The aesthetics and environmental quality within the commercial and industrial land use area would be maintained and upgraded, where necessary.
- Growth occurring on a phased-basis, providing for a logical extension of urban and rural growth patterns and related community services.

An effort was undertaken to identify other projects for evaluation in the context of the cumulative effects analysis. This was further developed through review of public documents and information gained from the coordination with various applicable agencies.

There are no formal projects proposed within or immediately adjacent to the project area other than the Proposed Action. However, there are some actions that take place on an occasional basis (see **Table 4-1**). The actions shown in **Table 4-1** are anticipated to continue on an occasional basis over the next 5 years.

1
2**Table 4-1. Past, Present, and Future Actions Within and Immediately Adjacent to Grand Forks AFB**

Action	Description
Bow Hunting	Bow hunting is conducted within the northwestern corner of the installation during scheduled hunting seasons each fall.
Training	Grand Forks AFB, Reserve Officer Training Corps, and National Guard forces conduct training exercises. This training can consist of battle drills in preparation for upcoming missions. No live or blank ammunition is used during these training exercises. All training exercises are conducted during daylight hours. No fires, earth-moving activities, or heavy equipment is allowed during these exercises. BMPs are recommended to prevent the spread of invasive species, and to give consideration for several species of concern and migratory birds.
Forest Management	Grand Forks AFB occasionally conducts forest management activities within the northwestern corner of the installation, including surveying species, removing infected trees and trees deemed a safety hazard, nonnative invasive and noxious species surveys and management, trash removal, tree and shrub planting, tree transplanting, or removal for all trees which penetrate the 7 to 1 imaginary surface approach zone of the airfield.
Riparian Restoration	Grand Forks AFB is proposing to restore the streambank of the Turtle River in the northwestern corner of the installation to control erosion and sedimentation by stabilizing the streambank.
Beaver Control	Grand Forks AFB occasionally traps or relocates beavers.
Haying	Grand Forks AFB conducts vegetative management control by mowing hay and grass species adjacent to the riparian area.
Various Demolition and Construction Projects	Grand Forks AFB continues to demolish, construct, and renovate its structures, including: renovation and repair of the airfield lighting system, demolition of the Freedom Hall Dormitory, demolition and consolidation of munitions maintenance facilities, and repairs to the south taxiways.

3 The actions presented in **Table 4-1** would be expected to occur concurrently, if implemented with the
4 Proposed Action. Some of these actions could result in effects on air quality as a result of ground
5 disturbance that would produce fugitive dust, and use of heavy construction equipment that would
6 produce air emissions. However, these effects on air quality would be limited to Grand Forks AFB. In
7 addition, effects on air quality would be of a finite duration, lasting only during the period associated with
8 ground-disturbing activities. Effects on soils and water resources could occur from ground-disturbing
9 activities during site preparation when soils could be eroded and sedimentation of nearby water bodies
10 could occur. Effects would be reduced by implementing BMPs as described in **Chapter 3**. Furthermore,
11 there are no projects proposed at the installation that would be affected by the Proposed Action nor would
12 the Proposed Action affect any projects proposed at the installation.

1.17 Cumulative Effects on Resource Areas

Table 4-2 summarizes potential cumulative effects on the various resource areas from the Proposed Action when combined with other past, present, and reasonably foreseeable future activities, as presented in **Table 4-1**.

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

Impacts on the ground surface as a result of the Proposed Action would occur entirely within the boundaries of Grand Forks AFB. Construction activities would not result in any significant or incompatible land use changes on- or off-installation. The Proposed Action would be consistent with current and future land use zones. Furthermore, the Proposed Action would not conflict with any applicable land use ordinances or designated clear zones off Grand Forks AFB.

1.19 Relationship Between Short-Term Uses of Man's Environment and Maintenance and Enhancement of Long-Term Productivity

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

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

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

1.20 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that use of these resources would have on future generations. Irreversible effects primarily result from use or destruction of a specific resource that cannot be replaced within a reasonable timeframe (e.g., energy and minerals). The irreversible environmental changes that would result from implementation of the Proposed Action involve the consumption of energy resources and changes to biological habitat and wetlands. The use of these resources is considered to be permanent.

Energy Resources. No significant impacts would be expected on energy resources used as a result of the Proposed Action, though any energy resources consumed would be irretrievably lost. These include petroleum-based products (e.g., gasoline and diesel). During application of pesticides, gasoline or diesel would be used for the operation of privately owned and government-owned vehicles, and propane is used in mosquito magnet traps. Consumption of energy resources would not place a significant demand on their availability in the region.

Table 4-2. Cumulative Effects on Resource Areas

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Air Quality	Grand Forks County is classified as being in attainment or as unclassifiable for all criteria pollutants.	Emissions from aircraft, vehicles, and stationary sources such as generators, boilers, hot water heaters, fuel storage tanks, gasoline service stations, surface coating/paint booths, and miscellaneous chemical usage.	Potential drift during pesticide application activities.	Continued renovation and demolition could cause temporary effects. Continued increase in small arms range use and aircraft operations could result in long-term effects.	Short-term, negligible to minor, adverse effects on air quality. No significant effects.
Geological Resources	Soils moderately impacted from previous disturbance and modification.	Storm water-control measures that favor reinfiltration are used to minimize erosion and sedimentation during storm events.	Short-term, negligible, adverse impacts on soils if pesticides do not decompose quickly. Long-term, beneficial impacts from pesticides that are broken down by microbial action, thereby helping to sustain the soil productivity.	Continued demolition and construction could temporarily increase soil runoff and sedimentation. Continued clearing of vegetation could result in complete removal of soil or soil modification.	No significant effect.
Water Resources	Surface water quality moderately impacted by past construction and demolition activities.	Pollution from industrial and municipal sources is generally moderate.	Short- and long-term, minor, adverse impacts on water quality from the introduction of certain pesticides into the water column.	Continued development of area could result in temporary sedimentation.	No significant effect.

Resource	Past Actions	Current Background Activities	Proposed Action	Known Future Actions	Cumulative Effects
Biological Resources	Degraded habitat of sensitive and common wildlife species. No Federal-listed species or significant habitat present. Occasional use by state-listed species, species of concern, and migratory birds.	Presence and operation of facilities impact wildlife and their habitat, state-listed species, species of concern, and migratory birds.	Minor disturbance of vegetation and habitat during drainage maintenance. No effects on wetlands. No significant habitat for threatened and endangered species. Long-term, beneficial effects on native vegetation from the use of targeted herbicide on nonnative vegetation.	Continued development of area could impact vegetation communities, wildlife habitat, and wetlands. Continued development of area could have minor effects on state-listed species, species of concern, migratory birds, and their occasional-use habitat.	Direct, minor effects from the permanent loss of vegetation, habitat from future actions. Permanent loss of occasional-use habitat by threatened and endangered species would be minimized through continued natural resources management. No significant effect.
Safety	Grand Forks AFB has abided by Federal and state health and safety regulations.	Non-airfield development constrained in clear zones, accident potential zones, and imaginary surfaces. QD arcs constrained for safety reasons.	Short-term, negligible to minor, adverse effects on safety could occur while pesticides are being applied. Long-term, beneficial effects on safety would occur from a reduced risk of disease from mosquitoes.	Continued renovation, demolition, construction, and application of pesticides could cause temporary safety risks.	There is a short-term increase in the risk to contractors during construction, demolition, and pesticide application activities, especially within QD arcs. No long-term or significant effects.

Biological Habitat. The Proposed Action would temporarily result in the loss of some vegetation and wildlife habitat at the proposed application areas. Herbicide applications would remove vegetation, but it would target nonnative weed species, the removal of which could indirectly benefit native species.

Wetlands and Waters of the United States. The Proposed Action has a negligible to minor potential to contribute to adverse cumulative effects on water quality when considered in conjunction with other ongoing activities. The Proposed Action would temporarily result in minor losses of waters of the United States (i.e., Turtle River) at the proposed application areas; however, the functions and values of floodplains and wetlands adjacent to the Turtle River would be enhanced by the Proposed Action; therefore, the minor losses of waters of the United States compared to the beneficial effects of the Proposed Action would be negligible.

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APPENDIX A

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FOR ENVIRONMENTAL PLANNING (ICEP), NATIVE AMERICAN TRIBAL
CONSULTATION, AND PUBLIC INVOLVEMENT CORRESPONDENCE**

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DEPARTMENT OF THE AIR FORCE
319TH CIVIL ENGINEER SQUADRON
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MEMORANDUM FOR DISTRIBUTION

[STAMP DATE]

FROM: 319 CES/CD
525 Tuskegee Airmen Boulevard
Grand Forks AFB, North Dakota 58205-6434

SUBJECT: Draft Environmental Assessment Addressing the Integrated Control of Nuisance Species at Grand Forks Air Force Base (AFB), North Dakota and Finding of No Significant Impact (FONSI)/Finding of No Practicable Alternative (FONPA)

The 319th Air Base Wing (319 ABW) at Grand Forks AFB, North Dakota and Headquarters Air Mobility Command (AMC) are preparing the Environmental Assessment (EA) addressing the treatment of nuisance species, including mosquitoes and noxious and invasive weeds. The Proposed Action addressed in this EA is to manage and control mosquitoes and noxious and invasive weeds species to improve the quality of the human and natural environment at Grand Forks AFB and the surrounding area.

In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation and solicit comments on the attached Draft EA and FONSI/FONPA for this Proposed Action. Please provide your comments within 30 days from receipt of this correspondence. Comments may include any issues or concerns related to the Proposed Action. Also enclosed is a copy of the distribution list of other Federal, state, and local agencies to be contacted regarding this Proposed Action. If you feel there are any additional agencies that should review and comment on the proposal, please feel free to include them in your distribution of this letter and the attached materials.

Please provide any comments or information directly to the 319 CES/CEAO, 525 Tuskegee Airmen Boulevard, Grand Forks AFB, ND 58205-6434, within 30 days from the date of this correspondence. If members of your staff have any questions, the point-of-contact is Ms. Diane Strom (319 CES/CEAO), who can be reached at 701-747-6394, or by email at diane.strom@us.af.mil. Thank you for your assistance.

Sincerely,

MARY C. GILTNER
Deputy Base Civil Engineer

Attachments:

1. Draft Environmental Assessment and Finding of No Significant Impact
2. Distribution List



DEPARTMENT OF THE AIR FORCE
 HEADQUARTERS 319TH AIR BASE WING (AMC)
 GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

JUN 16 2011

MEMORANDUM FOR DISTRIBUTION

FROM: 319 CES/CD
 525 Tuskegee Airmen Boulevard
 Grand Forks AFB, North Dakota 58205-6434

*MCE
19 Jul 11
CEA*

SUBJECT: Final Description of the Proposed Action and Alternatives for an Environmental Assessment Addressing the Integrated Control of Nuisance Species at Grand Forks Air Force Base (AFB), North Dakota

1. The 319th Air Base Wing (319 ABW) at Grand Forks AFB, North Dakota and Headquarters Air Mobility Command (AMC) are preparing the Environmental Assessment (EA) addressing the treatment of nuisance species, including mosquitoes and noxious and invasive weeds. The Proposed Action addressed in this EA is to manage and control mosquitoes and noxious and invasive weeds species to improve the quality of the human and natural environment at Grand Forks AFB and the surrounding area.
2. In accordance with Executive Order 12372, *Intergovernmental Review of Federal Programs*, we request your participation and solicit comments on the attached Description for the Proposed Action and Alternatives. Please provide your comments within 30 days from receipt of this correspondence. Comments may include any issues or concerns related to the Proposed Action. Also enclosed is a copy of the distribution list of other Federal, state, and local agencies to be contacted regarding this Proposed Action. If you feel there are any additional agencies that should review and comment on the proposal, please feel free to include them in your distribution of this letter and the attached materials.
3. Please provide any comments or information directly to the 319 CES/CEAO, 525 Tuskegee Airmen Boulevard, Grand Forks AFB, ND 58205-6434, within 30 days from the date of this correspondence. If members of your staff have any questions, the point-of-contact is Ms. Diane Strom (319 CES/CEAO), who can be reached at 701-747-6394, or by email at diane.strom@us.af.mil. Thank you for your assistance.

Sincerely

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.

7/15/11 Jeffrey K. Towner
 Date Jeffrey K. Towner
 Field Supervisor

Mary Giltner
 MARY GILTNER
 Deputy Base Civil Engineer

28



June 22, 2011

Diane Strom
Dept. of the Air Force
319 CES/CEAO
525 Tuskegee Airmen Blvd.
Grand Forks AFB, ND 58205-6434

"Letter of Clearance" In Conformance with the North Dakota Federal Program Review System -
State Application Identifier No.: ND110622-0219

Dear Ms. Strom:

SUBJECT: Final Description of the Proposed Action and Alternatives for an EA Addressing the
Integrated Control of Nuisance Species at GFAFB, North Dakota

The above referenced notice has been reviewed through the North Dakota Federal Program
Review Process. As a result of the review, clearance is given to the project only with respect to
this consultation process.

If the proposed project changes in duration, scope, description, budget, location or area of
impact, from the project description submitted for review, then it is necessary to submit a copy of
the completed application to this office for further review.

We also request the opportunity for complete review of applications for renewal or continuation
grants within one year after the date of this letter.

Please use the above SAI number for reference to the above project with this office. Your
continued cooperation in the review process is much appreciated.

Sincerely,

James R. Boyd
Manager of Governmental Services
Division of Community Services

bb

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1600 E. Century Avenue, Suite 2 • P.O. Box 2057 • Bismarck, ND 58502-2057
Phone: 701-328-5300 • 1-866-4DAKOTA • Fax: 701-328-5320 • www.ndcommerce.com
Relay North Dakota: 1-800-366-6888 TTY • 1-800-366-6889 Voice

Received 24 Jun 11



REPLY TO
ATTENTION OF

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

June 22, 2011

North Dakota Regulatory Office

319 CES/CEAO
Attn: Ms. Diane Strom
525 Tuskegee Airmen Boulevard
Grand Forks AFB, North Dakota 58205-6434

Dear Ms Strom:

This is in response to a letter received June 21, 2011 requesting Department of the Army, U.S. Army Corps of Engineers (Corps) comments an Environmental Assessment addressing the Integrated Control of Nuisance Species at Grand Forks Air Force Base (AFB), North Dakota.

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 impacting navigable waters. Work over, in, or under navigable waters is considered to have an impact. 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 the waters of the United States.

Please submit a location map and completed Corps permit application (copy enclosed) describing all proposed work and construction methodology, to the letterhead address if a Section 10/404 permit is required.

Do not hesitate to contact this office by letter or telephone (701-255-0015) if we can be of further assistance.

Sincerely,

Daniel E. Cimarosti
Regulatory Program Manager
North Dakota

Enclosure

Printed on  Recycled Paper

Received 27 Jun 11.

**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, identify 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.**

U.S. ARMY CORPS OF ENGINEERS APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT <i>(33 CFR 325)</i>		OMB APPROVAL NO. 0710-0003 EXPIRES: 31 AUGUST 2012	
<p>Public reporting 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 the 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.</p> <p style="text-align: center;">PRIVACY ACT STATEMENT</p> <p>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/or 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.</p>			
(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 (agent is not required)	
First -	Middle -	Last -	First -
			Middle -
			Last -
Company -		Company -	
E-mail Address -		E-mail Address -	
6. APPLICANT'S ADDRESS:		9. AGENT'S ADDRESS:	
Address-		Address-	
City -	State -	Zip -	Country -
7. APPLICANT'S PHONE NOS. w/AREA CODE		10. AGENTS PHONE NOS. w/AREA CODE	
a. Residence	b. Business	c. Fax	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.			
_____		_____	
SIGNATURE OF APPLICANT		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	
15. LOCATION OF PROJECT		City -	
Latitude: +N	Longitude: +W	State-	Zip-
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)			
State Tax Parcel ID		Municipality	
Section -	Township -	Range -	

ENG FORM 4345, OCT 2010

EDITION OF OCT 2004 IS OBSOLETE

Proponent: CECW-OR

17. DIRECTIONS TO THE SITE									
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									
<p>21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Type</th> <th style="text-align: left; border-bottom: 1px solid black;">Type</th> <th style="text-align: left; border-bottom: 1px solid black;">Type</th> </tr> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Amount in Cubic Yards</th> <th style="text-align: left; border-bottom: 1px solid black;">Amount in Cubic Yards</th> <th style="text-align: left; border-bottom: 1px solid black;">Amount in Cubic Yards</th> </tr> </thead> <tbody> <tr> <td style="height: 30px;"> </td> <td> </td> <td> </td> </tr> </tbody> </table>	Type	Type	Type	Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards			
Type	Type	Type							
Amount in Cubic Yards	Amount in Cubic Yards	Amount in Cubic Yards							
<p>22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)</p> <p>Acres</p> <p>or</p> <p>Linear Feet</p>									
23. Description of Avoidance, Minimization, and Compensation (see instructions)									

ENG FORM 4345, OCT 2010

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).

a. Address-

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates 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 permit or permits to authorize the work described in this application. I certify that this 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, OCT 2010



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



June 30, 2011

Ms. Diane M. Strom
319 CES/CEAO
525 Tuskegee Airmen Blvd.
Grand Forks AFB, ND 58205-6434

Re: Final DOPPA for an Environmental Assessment Addressing the Integrated Control of Nuisance Species at Grand Forks Air Force Base, Grand Forks County

Dear Ms. Strom:

This department has reviewed the information concerning the above-referenced project submitted under date of June 16, 2011, with respect to possible environmental impacts.

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

1. Care must be taken during the application of pesticides to prevent drift of the pesticide from the area where it is being applied. Disposal of surplus pesticides and empty pesticide containers must be in accordance with NDAC 33-15-10-02.
2. Care is to be taken during application activity near any water of the state to minimize adverse effects on a water body. This includes minimal disturbance of stream beds and banks to prevent excess siltation, and the replacement and revegetation of any disturbed area as soon as possible after work has been completed. Caution must also be taken to prevent spills of oil and grease that may reach the receiving water from equipment maintenance, and/or the handling of fuels on the site. Guidelines for minimizing degradation to waterways during construction are attached.

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.

Environmental Health
Section Chief's Office
701.328.5150

Division of
Air Quality
701.328.5188

Division of
Municipal Facilities
701.328.5211

Division of
Waste Management
701.328.5166

Division of
Water Quality
701.328.5210

Printed on recycled paper.

Native American Tribal Consultation Distribution List

Spirit Lake Tribe
Myra Pearson, Chairwoman
P.O. Box 359
Fort Totten, ND 58335

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

Three Affiliated Tribes
Tex G. Hall, Chairman
Fort Berthold Indian Reservation
404 Frontage Road
New Town, ND 58763-9402

Turtle Mountain Band of Chippewa Indians
Merle St. Claire, Chairman
Cory LaVallie, Administrative Assistant
4180 Highway 281
Belcourt, ND 58316

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

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

Flandreau Santee Sioux Tribe
Anthony Reider, President
P.O. Box 283
Flandreau, SD 57028

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

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

Rosebud Sioux Tribe
Rodney Bordeaux, Chairman
P.O. Box 430
Rosebud, SD 57570-0430

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

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

Minnesota Chippewa Tribe
Bois Forte Band of Chippewa
Kevin Leecy, Chairman
5344 Lakeshore Drive
Nett Lake, MN 55772

Minnesota Chippewa Tribe
Fond du Lac Band of Chippewa
Karen R. Diver, Chairwoman
1720 Big Lake Road
Cloquet, MN 55720

Minnesota Chippewa Tribe
Leech Lake Band of Ojibwe
Arthur LaRose, Chairman
115 6th Street NW, Suite E
Cass Lake, MN 56633

Minnesota Chippewa Tribe
White Earth Ojibwe
Erma Vizenor, Chairwoman
White Earth, MN 56591

Minnesota Chippewa Tribe
Mille Lacs Band of Ojibwe
Marge A. Anderson, Chief Executive
43408 Oodena
Onamia, MN 56359

Minnesota Chippewa Tribe
Grand Portage Band
P.O. Box 428
Grand Portage, MN 55605

Red Lake Band of Chippewa Indians
Floyd "Buck" Jourdain, Chairman
P.O. Box 550
Red Lake, MN 56671

Shakopee Mdewakanton Sioux Community
Stanley R. Crooks, Chairman
2330 Sioux Trail NW
Prior Lake, MN 55372

Upper Sioux Indian Community
Kevin Jensvold, Chairman
P.O. Box 147
Granite Falls, MN 56241

Lower Sioux Indian Community
Gabe Prescott, President
P.O. Box 308
Morton, MN 56270

Prairie Island Indian Community
Victoria Winfrey, President
5636 Sturgeon Lake Road
Welch, MN 550889

Summary of Comments Received on the DOPAA by Native American Tribes

During early consultation efforts, in accordance with Executive Order 13175, *Consultation and Coordination with Indian Tribal Governments*, the installation received a comment from a Native American tribe regarding the extent of cultural resources surveys within the action area. The tribe requested monitoring actions for any ground disturbing activities occurring in areas that had not been surveyed. In accordance with the GFAFB *Integrated Cultural Resources Management Plan*, the installation would conduct cultural resources monitoring in the riparian or CE park area by a qualified archaeologist. Monitoring would be conducted in accordance with the SHSND during any required clearing and earth-disturbing activities scheduled for nuisance species control work in this area. No other tribe provided comments on this action.

Public Distribution List

Beekkeepers

Andrew L. Terry, Lillie Terry, and Tony Terry
1693 Oak Street NE
Emerado, ND 58228-9796

Paul Reece
12848 County Road
Farwell, MN 56327-8143

Douglas Perkins
188 47th Street NE
Aneta, ND 58121-9607

Robert and Nathan Larimore
P.O. Box 456
Larimore, ND 58251-0456

John D. and Betty K. Kauk
P.O. Box 6122
Grand Forks, ND 58206-6122

Conrad L. Dietzler
2225 37th Street NE
Larimore, ND 58251-9731

Sample Community Letter



DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 319TH AIR BASE WING (AMC)
GRAND FORKS AIR FORCE BASE, NORTH DAKOTA

NOV 27 2012

MEMORANDUM FOR: SEE DISTRIBUTION LIST

FROM: 319 CES/CD
525 Tuskegee Airmen Boulevard
Grand Forks AFB, ND North Dakota 58205-6434

SUBJECT: Environmental Assessment, Integrated Control of Nuisance Species at Grand Forks Air Force Base

Grand Forks Air Force Base (GFAFB) is revising its Environmental Assessment (EA) to control nuisance species including aerial pesticide application for mosquito control. Please review the attached EA and provide any comments within 30 days of this letter. The EA is also posted on the web at <http://www.grandforks.af.mil/library/index.asp>. In the past, GFAFB reached out to surrounding communities and offered aerial mosquito sprays when aircraft time and weather conditions permitted. Communities were required to sign hold-harmless agreements to allow AF Reserve aircraft to fly over to apply your purchased mosquito chemical in an aerial spray. New Environmental Protection Agency (EPA) regulation states that residual sprays applied to surface waters are considered a point-source discharge, now requiring a National Pollutant Discharge Elimination System (NPDES) permit.

As a Federal facility, GFAFB has filed a Notice of Intent (NOI) online with the ND Department of Health and complies with all ND General Permit reporting and monitoring conditions. Details of the General Permit, NOI and Pesticide Discharge Management Plan can be found at <http://www.ndhealth.gov/WQ/WasteWater/Pesticide/Pesticide.htm>. Another informational site is at http://cfpub.epa.gov/npdes/home.cfm?program_id=410#permit.

Activities in the NOI are restricted to GFAFB property/federal jurisdiction. To participate in GFAFB larvicide and adulticide aerial sprays, regional communities must receive permission to discharge pesticides via a ND Pesticide Discharge General Permit. At a minimum, this requires participants to file a Notice of Application and adopt pest management measures. This includes completing a request form found in the EA appendix titled "Innovated Readiness Training Request for Military Assistance". Communities must also sign a hold-harmless agreement and purchase the necessary pesticide as noted on the form. GFAFB recognizes the added burden these requirements place upon communities wishing to continue participation in aerial mosquito control, but is bound by federal and state regulation.

Please provide any comments or questions on the EA directly to 319 CES/CEAO, 525 Tuskegee Airmen Blvd, Grand Forks AFB, ND 58205 within 30 days of receipt of this letter. If members of your staff have any questions, contact Ms. Diane Strom at (701) 747-6394 or by email at diane.strom@us.af.mil. Thank you for your assistance.

Sincerely,


MARY O. GILTNER
Deputy Base Civil Engineer

Attachment: EA Addressing the Integrated Control of Nuisance Species at Grand Forks AFB, ND
DISTRIBUTION: Listed on next page

DISTRIBUTION LIST

City of Grand Forks
P.O. Box 6372
Grand Forks, ND 58206-5200

City of East Grand Forks
600 Demers Ave
East Grand Forks MN 56721

Polk County Board of Commissioners
612 N. Broadway, Suite 215
Crookston, MN 56716

City of Larimore
122 Main St W
Larimore ND 58251

City of Emerado
104 Oldham Ave E
Emerado ND 58228

Township of Arvilla
Chairperson Tyrone Verkuehlen
1698 34th St NE
Arvilla ND 58214

Township of Blooming
Chairperson Theodore Handeland
2350 22nd Ave NE
Mekinock ND 58258

Township of Chester
Chairperson John Aamodt
1330 31st St NE
Arvilla ND 58214

Township of Gilby
Chairperson Pete Griffin
2878 29th Ave NE
Gilby ND 58235

Township of Grand Forks
Chairperson Aaron Drees
2300 73rd Ave S
Grand Forks ND 58201

Township of Falconer
Chairperson Philip Kraemer
2696 Fox Farm Road
Grand Forks ND 58203

Township of Lakeville
Chairperson Brad Stevens
2015 25th Ave NE
Manvel ND 58256

Township of Larimore
Chairperson Joseph Hunt
PO Box 249
4050 14th Ave NE
Larimore ND 58251

Township of Mekinock
Chairperson Ross Erickson
2061 29th St NE
Arvilla ND 58214

Township of Oakville
Chairperson Gary Berger
1767 22nd St NE
Emerado ND 58228

Township of Rye
Chairperson David Meagher
1650 23rd Ave NE
Grand Forks ND 58203

APPENDIX B

MATERIALS SAFETY DATA SHEETS AND LABELS

(REFER TO ENCLOSED CD)

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APPENDIX C

INNOVATIVE READINESS TRAINING REQUEST FOR MILITARY ASSISTANCE

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**Office of the Assistant Secretary of Defense
Reserve Affairs
1500 Defense Pentagon
Washington, DC 20301-1500**

**INNOVATIVE READINESS TRAINING
REQUEST FOR MILITARY ASSISTANCE**

This application is to be used by all civil organizations or governmental agencies requesting Civil-Military Innovative Readiness Training (IRT) support as authorized by section 2012 of Title 10, United States Code. Applications are to be mailed to:

OASD/Reserve Affairs
Attn: IRT Director
1500 Defense, Pentagon
Room 2E573
Washington, DC 20301-1500

All IRT applications for support will be reviewed for completeness and eligibility. The applications will be forwarded to the Service IRT Program Managers and the Services will review the projects for unit and individual training opportunities. The Services will forward a request to support the project to the Office of the Assistant Secretary of Defense for Reserve Affairs (OASD/RA) for final review and approval. It is imperative that the information provided by the requesting official(s) be accurate and complete. A requesting official is an individual who submits the request and can sign contracts or commit funds and resources on behalf of the requesting organization. Specific information related to medical (Attachment A), engineering (Attachment B), and transportation and dive (Attachment C) projects must be included with this application. Complete the additional documents as appropriate for the project. Any additional letters, documents, maps that would provide more information or details to the proposed project also should be attached to the application as appropriate. Any request for support that will exceed one year must submit an annual request for military participation with all supporting documentation.

Please include copies of documents listed below with this application:

1. 501 C3 letter- required for non-profit organization request, must not be more than 10 years old
2. Articles of Incorporation
3. By-laws
4. Copy of newspaper ads which were published twice on two separate dates. State/Federal/local government entity to use their required process to advertise for this project; ie: advertisement in FedBizOpps or contract ads. Ad must be published annually for the length of the project.
5. Affidavit of publication (annual requirement for the length of the project)
6. Environmental study if appropriate
7. Statement of non-competition (Attachment D)
8. Release of liability (Attachment E)

The execution of any approved IRT project is contingent upon the availability of funding and DoD resources.

1. Name of community, agency, State or Federal entity requesting military support:

???(County Mosquito Control Division)

1a. Is the requesting agency/organization a military entity, either State or Federal, active, reserve or Guard?

Yes _____ No

1b. Is the requester a non-profit organization or entity other than city, state, federal entity?

Yes _____ No

If the answer is yes, attach a copy of the articles of incorporation, 501C3 letter, and organization by-laws with this application.

2. Address of requesting organization:

??????????
??????????
City State Zip

3. Provide a short description of the request for your project. Medical projects require Attachment A; Aerial Spray projects require Attachment B and transportation/dive projects require Attachment C.

???(county/city) in (State) is a/an (???) environment supporting excessive development of mosquito populations. ???(County/City) aerially applies larvacide/adulticide pesticides when surveillance methods used by the district indicate high levels of mosquito activity exceeding threshold minimums. Requesting aerial application of pesticides over the large land area of ???(County/City) using the USAFR C-130 MASS.

3a. Will this project take place at a location different from the address listed above?

Yes No _____ If yes, include address in block below.

Variety of areas located throughout the County/City of ????(Ensure all areas are specified in the EA)
City State Zip

4. Will this project take place on a state or federal military installation, post, fort, base or other facility or property operated/leased/owned by or housing a federal or state military service or component?

Yes _____ No

*Spray operations will stage out of (???? Air Base), however, the spray will be supporting the County/City of (????).

5. Information for requesting official submitting request for support:

Name:
Title:
Phone number:
Email address:
I have authority to enter into a binding agreement/MOU/MOA on behalf of the agency I represent: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
I have authority to commit resources or funds on behalf of the agency I represent: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

6. Check which community facilities are available (at no expense) for use by military during the project.

Guard armory	city hall offices	community center	airfield hangar	clinic	school	office trailers
Other: No areas would be needed within the community due to operating out of ??? AFB. If any areas will be needed, please indicate.						

7. What contributions or resources will be provided by the requesting organization to assist this proposed IRT project? Place an "x" next to each that applies.

Pesticide	EPA Permits	
Hazardous Waste Disposal	FAA Congested Area Plan	
Mosquito Collection/Monitoring		

7a. Other assistance/financial/facilities provided by the requesting agency/community:

(County/City) will purchase and provide pesticide used for application over the designated spray areas and the disposal of any hazardous wastes generated as a result of the operation. (County/City) Mosquito Control Division will perform pre- and post- spray mosquito population monitoring and assessments, as well as accomplish all NEPDES permitting measures to fulfill all requirements set forth by the EPA for pesticide applications. (County/City) will accomplish the congested area plan with the controlling FSDO for low level applications over the congested areas of the (county/city).

8. What other funding/support is being contributed to this project?

Fed/State/Local/Private	Department	Amount of funding Requested	Amount of actual appropriated funds/date appropriated
Example- Federal	Dept of Transportation	\$1,000,000	\$500,000 1 Oct 2008
If applicable, please list.			

9. Specify and explain three prioritized time frames for the requested IRT support.

TIME FRAME	REASON FOR SPECIFIC TIME PERIOD
October 12-October 13	During peak periods for mosquito populations in (State/County)

10. Describe any special events/holidays/activities/ or local issues that may be ongoing during the project period. Include any situations that the military should be aware of that may impact their activities in the community.

None (unless known or planned to be a factor then provide a listing)

11. What is the projected length of time needed to complete this project (describe all phases)?

The project will be an annually requested project typically requiring #(i.e. 5) applications during the peak mosquito season. Each application may take up to # (i.e. 5) spraying days to treat all desired areas within the county. Applications will require pre-spray assessment, pesticide applications, and post spray population assessments following the aerial pesticide applications.

(Please ensure the number of applications is in accordance with the amounts specified in the EA)

12. Federal, state, city **Aerial Spray project:** - has this project been listed on the federal/state/county/city websites for aerial spray projects and advertised according to federal/state/county/city contract law or the contract bid process? Yes No
 If no, please attach an explanation to why this process was not completed.

All projects- Please include the public notice ads that were placed in the newspaper for the minimum state required time for public notices

Attach a copy of the ads and notarized affidavit stating the ads were published and what was the response to the ads.

12a.

Place of advertisement	Date advertised
??	??
??	??

13. Is the requested support available from a commercial entity? Yes No
 A negative response means there are no contractors or companies in the area/community of the project that conduct this type of business.

13a. If services are available from a commercial entity, has the official submitting this request received a "certificate of non-competition" from the commercial entity that would otherwise provide such services? Yes No

If applicable, attach a copy of the "certification of non-competition".

14. Has this project been presented to any of the following entities: provide name beneath title if applicable.

US Senator	Governor	State Senator	City Mayor
US Congressman	State TAG	State Representative	other

15. Remarks (attach additional sheet if necessary)

Printed name of requesting official/civil authority

Signature of requesting official/civil authority

Date: _____

Mail application to:
OASD/Reserve Affairs
Attn: IRT Director
1500 Defense, Pentagon
Room 2E573
Washington, DC 20301-1500

Attachment A Medical Support Request

The Civilian Health Organization (CHO) or community/city/state/federal entity shall conform to all applicable federal, state, and local laws that regulate healthcare delivery within the state or territory, and all state laws and regulations specific to the non-DoD healthcare professionals participating.

1. Identify the CHO supervisor overseeing the medical project:

Name: _____
 Title: _____
 Email: _____
 Phone: _____

2. The CHO/community/city/state/federal entity verifies and documents who will be the responsible individual at each location as follows:

Medical waste handling and disposal	Name: Email:
Clinical Laboratory Improvement Act (CLIA)	Name; Email:
Credentialing or privileging or military health care providers to include basic life support, and if applicable, advance trauma/cardiac requirements (strictest requirement applies)	Name: Email:
Initial emergency evacuation plan for a "real life incident"	Name; Email:
Follow-up care plan for patients for continuity of care	Name; Email:
Plan for handling of patients' records for continuity of care and privacy act issues	Name: Email:

3. List the communities in which this project is expected to take place. Additional space is provided at the end of this attachment.

Community	Nearest City	State	Population	Most needed medical support (dental, medical, optometry, veterinary, behavioral health) Use initials D, M, O, V, B for each need in the community.
a.				
b.				
c.				
d.				
e.				
f.				

4. Closest medical treatment facility with trauma/emergency room:

Name/location: _____

5. The CHO shall certify that this medical project:

- a. Accommodates an identified underserved healthcare need that is not being met by current public or private sector assistance. Please provide a description of the criteria used to identify the medically underserved community.

6. Please place an "X" beside each specialty service that is requested; this is a preliminary request that can be updated at the initial project planning conference. Blank space for other specialties not listed.

	Projected case load		Projected case load
General dentistry		Rheumatology	
Oral surgery		Family practice	
Pediatric dentistry		Ob-Gyn	
Endodontist		Physician Assistants	
Periodontist		Nurse practitioners	
Dental hygienist		Physical therapists	
Endocrine		Nutritionists	
General dentistry		Behavior health	
Oral surgery		Ob-Gyn	
Family practice		Physician Assistants	
Pediatrics		Optometry	
Internists		Eye glasses	
Surgeons		Veterinary	
Anesthesiology		CPR certification	
Colonoscopy		Drug demand reduction	
Colposcopy			

7. Have any of the communities stated in the previous section ever received past medical support from the military? If so, state which community, what type of support, when it occurred and the length of time the military was in the community.

M= medical D= dental V= veterinary O= optometry B= behavioral health

Community	Type of support	Dates of medical support	Length of time in the community
a.			
b.			
c.			
d.			
e.			

8. Additional Comments or medical support requests:

9. The CHO shall certify that this medical project is provided in a manner that does not compete with private sector medical/dental/healthcare assistance in the underserved area.

Signature: _____

Title: _____

Email: _____

Phone: _____

Attachment B
Engineering Projects: Aerial Spray

1.

Location: (County/City)
Type of project: Vector control
Description of project: (County/City) mosquito populations create health and nuisance problems for all the people living in (State). Add any additional information to justify you feel is necessary USAFR C-130 MASS can treat large areas of the county in a short period of time. Control measures will typically require up to ?? days to treat all affected areas of the county. Based on past mosquito activity, the county would typically use around ?? applications per spray season. Application dates and times will vary depending upon the pest populations.

2. Project specifics: other items already completed should be added to the list or attached as addendums to this application.

Descriptive requirements	Completed by requesting entity- on file and submitted with this request	Date completed	Date to be completed	Not applicable
Environmental study	??			
NEPDES permits	??			
FAA Congest Area Plan	??			

3. Please place an “X” beside each service that is anticipated to be needed in completing this project: this is an initial estimate of the work to be done. The military will assess the project and make assignments as needed at the initial planning conference.

C-130 Aircrew		
Aerial Spray Mx		
C-130 Mx Support		
Entomologists		

4. Has your organization ever received past aerial spray IRT support from the military? If so, state which community, what type of support, when it occurred and the length of time the military was in the community.

Community	Type of support – brief project description	Dates of engineering support	Length of time in the community
a.			
b.			
c.			

5.

Additional Comments:
 No support for mosquito control has been accomplished under IRT. The 910AW/757AS has provided USAFR C-130 MASS for applications previously under unit training operations but changes to operating procedures is requiring these missions to start coordinating through the IRT program.

**Attachment C
Transportation/Dive Projects**

1. General transportation or diving requests: Describe the transportation or diving request. Additional comments can be attached to this document.

2. Diving projects: annotate availability of the below items:

Mooring permits	Pier permits
Access to fuel from pier	Is USCG aware of project? Yes No
City/community permits	Equipment storage facility
Parking	Source of power/electricity
Potable water source	Meeting room/office space

3. Describe any other transportation or diving issues not addressed in the previous two questions.

Attachment D

Statement of Non-Competition

The Innovative Readiness Training (IRT) Project for Aerial Spray (name of project)

located in _____ (county) _____ (state) for Fiscal Year 2013,
would not compete with the services offered by civilian companies/vendors/entities or
private providers. For the reasons set forth below the requested IRT assistance is not
reasonably available from a commercial entity. I have made inquiries on behalf of my
organization and have found that, while there are commercial entities in the local
geographic area which perform such work, my organization does not have sufficient
financial resources to pay for such work. Therefore, these applications will not be
performed with the assistance from the U.S. Air Force Reserve.

On two occasions, (date) _____ and (date) _____ an advertisement for the
services/project to be performed by the military has been advertised in (name of
publication) _____ consistent with the
requirements of the IRT Program and the rules, if any, of the requesting organization.
Copies of each advertisement are attached to the application.

No responses have been received by the designated deadline specified in the
advertisements, and this organization has received no objection to the military
participation in this project.

Printed Name: _____

Signature: _____

Title: _____

Organization: _____

Phone: _____

Date: _____

Attachment E

RELEASE AND HOLD HARMLESS AGREEMENT

The _____ (name of requesting organization) located in _____ (city/state) agrees that its request that DoD military personnel conduct an Innovative Readiness Training (IRT) mission in support of _____ (organization) during fiscal year 2013 is subject to the following conditions:

1. The DoD IRT military support will be limited to that which is approved by the Department of Defense. Support that has not been previously approved will not be provided; IRT mission personnel may not perform activities beyond those previously approved.
2. Support shall be limited to providing personnel and equipment only.
3. All DoD military personnel and equipment will remain under the control and supervision of the officer or noncommissioned officer responsible for the military unit tasked to provide the IRT support.

The _____ (name of the requesting organization), in exchange for the DoD IRT military support, also agrees, on behalf of itself and its agents, to:

1. Release the DoD, its subordinate units, its officers, military personnel, employees, agents, and servants from any claim, demand, action, liability, or suit of any nature whatsoever for or on account of any injury, loss, or damage to the requesting organization and its agents arising from or in any way connected with the DoD military personnel support, excluding, however, any injury, loss, or damage arising solely from the intentional torts or gross negligence of the DoD military personnel or its agents.
2. Hold harmless the DoD, its subordinate units, officers, military personnel, employees, agents, and servants from any claim, demand, action, liability, or suit of any nature whatsoever for or on account of any injury, loss, or damage to any third person or third person's property arising from or in any way connected with the DoD IRT military support, excluding, however, those arising solely from the intentional torts or gross negligence of the DoD military personnel or its agents.

With full understanding of the conditions and agreements state above, the undersigned representative, who is authorized to execute this document which is binding on his organization and all assigns, heirs, executors, beneficiaries, and derivative claimants, hereby executes this release of liability and hold harmless agreement.

Printed name: _____ Date: _____

Signature: _____

Title: _____ Organization: _____